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PROCEEDINGS OF THE TWENTIETH ANNUAL MEETING

OF THE

BERKELEY LINGUISTICS SOCIETY

February 18-21, 1994

GENERAL SESSION

DEDICATED
TO THE
CONTRIBUTIONS
OF
CHARLES J. FILLMORE

Berkeley Linguistics Society
Berkeley, California, USA

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DEDICATED TO THE CONTRIBUTIONS OF CHARLES J. FILLMORE

edited by

Susanne Gahl

Andy Dolbey

Christopher Johnson

Berkeley Linguistics Society

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PREFACE

We are pleased to present the proceedings of the twentieth annual meeting of the Berkeley Linguistics Society.

To celebrate our twentieth anniversary, BLS decided to dedicate the conference to the contributions of Charles J. Fillmore, in recognition of his influence on the field of Linguistics, and as a thank you from BLS officers past and present.

The idea of dedicating the conference to Chuck was received with great enthusiasm. It soon became clear that, rather than focusing on a narrow topic, in the form of a parasession, the most natural way of honoring Charles J. Fillmore, grammarian-at-large, was to announce our dedication as the theme of the General Session as a whole and to invite papers from all areas touched upon by his work.

The response to this proposal was more than enthusiastic. We were overwhelmed by the eagerness of the conference participants to honor Chuck and to thank him. Special thanks to Matt Shibatani and Sandy Thompson, who allowed BLS to provide the forum for a surprise announcement of the publication of two volumes that they edited together, both of which are dedicated to the guest of honor: *Essays in Semantics and Pragmatics: In Honor of Charles J. Fillmore* (Benjamins), and *Grammatical Constructions: Their Form and Meaning* (Oxford). Sincere thanks to Eve Sweetser who also was at the center of this delightful conspiracy.

We would also like to thank Barbara Kaiser and Josh Guenter, without whom the task of organizing the conference would have been overwhelming. Numerous other members of the Linguistics department at Berkeley also helped to make the conference possible, among them Collin Baker, Kevin Moore, Ju Namkung, Sondra Reinman, Jocelyn Rybka, Laurel Sutton, Natasha Warner, and Comfort Wentum. Leela Bilmes put together an incredible conference party, which everybody who was there will remember for a long time, and which many who weren't there will have heard about by now. We are grateful to the Office of the Dean of the Graduate Division for providing extra funds for this special event, and we are also grateful for the support we have received from the Linguistics Department chair, Larry Hyman.

We hope that you enjoy this volume!

The editors of BLS 20

Susanne Gahl
Andy Dolbey
Chris Johnson

An "introduction" to Charles Fillmore

by Eve Sweetser

(presented before Fillmore's BLS 20 paper)

The introduction of an honored speaker is the kind of situation where general Gricean maxims are at war with more context-specific conventions and intentions. How many people in my position have begun with "this is someone who needs no introduction" - and gone on to do the introducing?

I might succeed in giving an informational introduction this evening by citing aspects of Charles Fillmore's career less familiar to the present audience: you might thus encounter Charles Fillmore the part-time Africanist, to whom a paper was dedicated at Friday's Africanist session - or Charles Fillmore the phonologist - or perhaps Charles Fillmore the sky-diver and lambada dancer, whose photograph appears on our department bulletin board together with his statements about his hobbies. Maybe you can meet the lambada dancer at the BLS party this evening. But Chuck at least will be relieved to hear that this introduction will mostly be a more traditionally framed, if less informative, type of speech act, focusing on Charles Fillmore in his roles as generative and transformational grammarian, generative semanticist, case grammarian, frame semanticist, and construction grammarian. All of these definitions, however, are too narrow for someone whom I prefer to call both grammarian and cognitive scientist.

This conference honors the work of Charles Fillmore on the occasion of his approaching 65th birthday. It is a particularly joyful gathering for me, and as both Chuck's former student and his present colleague, I'll do my best to express sentiments that I hope may represent some of yours as well. As a fellow Minnesotan, I'll begin by happily reminding all of you that Chuck is a native of St. Paul, and began his linguistic studies at the University of Minnesota. After a detour or two, including a teaching job in Japan, he returned to the Midwest to do graduate work at the University of Michigan, where he received his Ph.D. in 1961 with a thesis entitled *A System for Characterizing Phonological Theories.* This Fillmore the phonologist joined the faculty of the Ohio State University, also in 1961. His work in the early 1960's includes well-known papers on the ordering of syntactic transformations and their relationship to the rest of the grammar. The late 60's saw the publication of "The Case for Case," "Towards a Modern Theory of Case," and the 1970 "The Grammar of Hitting and Breaking," all of which developed a theory of case roles as essential components of grammatical theory. We may in fact note that 1993 was the 25th anniversary of Case Grammar, if we date it from the 1968 appearance of "The Case for Case."

A fascinating aspect of case structure is its situation as an interface between lexicon and syntax, which may explain its particular fascination for a lifelong syntactician who is also a lifelong lexical semanticist. The 1970's saw, as well as the 1977 publication of "The Case for Case Reopened," the appearance of a series of Fillmore articles on the structure and nature of lexical representation, and also the series of Santa Cruz lectures on deixis, of which "May we come in?" was later published in *Semiotica*. At the same time, Chuck was also working on idioms and

formulaicity, among many other issues. During the 1970's, graduate students at Berkeley were lucky enough to get a lexical semantics course team-taught by Fillmore, Paul Kay, and George Lakoff, who were already working together closely and developing a very new perspective on linguistic meaning. The ideas of Frame Semantics which Chuck developed during this period are of course also represented in his 1980's articles such as "Frame Semantics" (1982), and "Frames and the Semantics of Understanding" (1985). The concept of a lexical frame has been only one of Chuck's crucial contributions to current cognitive linguistic theories.

Construction Grammar, the current grammatical framework of which Chuck has been one of the principal architects, incorporates insights from his earlier work on case, on frames, and on partial idiomaticity. And this brings me to his recent work - for example, Fillmore, Kay and O'Connor (1988) on "Regularity and idiomaticity in grammatical constructions: the case of *let alone*;" Fillmore's 1992 Presidential Address to the Linguistic Society of America, on "Home;" his recent lexical semantic work on *risk*; and a number of insightful articles on conditional constructions in both English and Japanese, some of which have influenced my own recent work very strongly. Within construction grammar, we should properly no longer separate the lexical and syntactic strands of Fillmore's work. His work with Sue Atkins is part of his long-term dedication to corpus-based linguistics, rather than dependence on speaker intuition alone. Papers such as those presented yesterday by Ohara and Yamaguchi Fujii show the extent to which Chuck has also constantly been involved in - and fostered - work on the syntax and semantics of Japanese, as well as that of English. The conference as a whole testifies to the impact of his work on our general understanding of grammatical structure. There is no doubt that he has brought the field a very long way, in his journey from transformational grammarian to Construction grammarian.

Chuck has received various awards, ranging from his 1984 election to the American Academy of Arts and Sciences, to the "Hero of Construction" medal awarded to him unofficially by the President of the International Cognitive Linguistics Association at that organization's 1991 meeting. He has served as President of the LSA, and as chair of the Governing Board of the Cognitive Science Society. He serves on the editorial boards of multiple journals.

During my own graduate work at Berkeley, among the topics of courses I took from Chuck were: syntax and lexical semantics (of course), lexicography, idiomaticity, speech act verbs and metapragmatics, and Field Methods. Yes, in fact two field methods courses, since a large portion of the Finnish Field Methods class was so impressed with Chuck's teaching methods that we decided to retake Field Methods when we discovered that he would be teaching it again, this time with Bakweri (a Bantu language of Cameroun) as the language to be investigated.

As I said, this conference demonstrates the contribution of Chuck's thinking to that of many of the participants, both his colleagues and his students, all of whom are like me aware of our debt. Not even Chuck can give all his students his acuity, his genius for distinguishing subtle contexts and thinking up potential counter-examples, or his compendious knowledge and his ability to connect

distant pieces of linguistic puzzles, any more than all of us can acquire his deadpan approach to a wicked pun. We have hopefully learned other things, though. We have come to appreciate the need to work on lexicon and syntax side-by-side, to deal with clines of freedom versus formulaicity, and to approach language in context rather than out of context. As a footnote to Haj Ross' comment this evening that Chuck has given us "many wonderful examples," let me cite a salient one. In a graduate course where Chuck was discussing the idea of *neutral* context, he recounted the proposal of an early transformational grammarian that one imagine that the neutrally contextualized sentence had arrived as a message in a bottle, sender unknown. Said Chuck, "I can't imagine a more marked context." I can't imagine a better example, either in the sense of a scholarly information-nugget or in the sense of a teacher's guidance of students, and it has obviously stuck with me over the intervening years. We have also, I think, all acquired from Chuck a profound respect for the complexity of linguistic structure, and a consciousness of the importance of detail and thorough description as a basis for any broad theoretical statements about language.

In short, Chuck has set a high standard against which to measure our efforts at linguistic analysis. As a teacher, an advisor, and a colleague, he sets an equally high standard of kindness, patience, honesty, hard work, responsibility, and concern for his community. Both of these standards might be daunting, if Chuck were less modest. So another thing which he wasn't trying to teach us, but which I think we all learned anyhow, and which I think we share with a large community, is a deep admiration and affection for Charles Fillmore.

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Valence and the Semantics of Causativization

Farrell Ackerman and John Moore
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1. Introduction

Cross-theoretically it is often assumed that causativization is a valence increasing operation: the valence of a base predicate is augmented by the addition of a causer argument which functions as the SUBJECT of the causative predicate. Finnish exemplifies this pattern as seen in the contrast between the base transitive 'build' in (1a) and the causative 'make build' in (1b). (from Volodin et. al. 1969[1])

(1a) Muurarit rakensivat talon
masons-NOM built house-ACC
THE MASONS BUILT THE HOUSE

(1b) Minä rakennutin talon muurareilla
I-NOM build-CAUS-1SG-PAST house-ACC mason-ADD
I MADE THE MASONS BUILD THE HOUSE

(1a) contains the simple transitive predicate 'build' with the nominal 'masons' functioning as SUBJ. In contrast, (1b) contains the causativized form of 'build': this predicate has three argument slots, one of which functions as a new causer SUBJ, namely, the pronoun 'I' , while 'masons' becomes an OBL CAUSEE.

Despite the frequency with which a causative marker is associated with an increase in valence, this does not always occur. For example, T. Mohanan (1991) and Saksena (1982), among others, have observed that causativization is not necessarily associated with a valence increase in Hindi. The pair of Hindi sentences in (2), adapted from T. Mohanan 1991, provides an illustration. In (2a) a base non-causative predicate is accompanied by two arguments: the nominal 'child' is construable as an EXPERIENCER and serves as the SUBJ, while the nominal 'dog' is a STIMULUS encoded as an instrumental OBL. In contrast, (2b) contains the causative variant of the predicate in (2a). Here too the causative predicate takes two arguments: the 'dog', to quote T. Mohanan 1991:46 'is both the causer and the source of fear', while the nominal 'boy' is an OBJ marked with DAT-ACC case.

(2a) baccaa kutte-se ḍartaa hai
child-EXP/NOM dog-SOURCE/INST fear-HAB be-PRESENT
THE CHILD FEARS THE DOG

(2b) kuttaa bacce-ko ḍaraataa hai
dog-CAUSER/SOURCE/NOM boy-DAT-ACC fear-CAUS-HAB be-PRESENT
THE DOG FRIGHTENED THE BOY

In the present paper we examine several different instances of causativization which do not involve an increase in valence. The central and simple point we wish to make is this: given the traditional interpretation of valence as the number of argument slots associated with a predicate, an optimal account of causative formation should permit the separation of valence from the semantic entailments of the causative predicate in much the way that the interaction between different types

of information is analogized to different autosegmental tiers as in T. Mohanan's version of LFG mapping theory.[2] In this spirit we show how a Dowty type proto-role proposal for causatives, which we have formulated elsewhere for instances of valence increase, extends to instances without valence increase.

First we will provide an overview of Dowty's proto-role proposal and then we will introduce an account of causatives based on Dowty involving instances of valence increase. Finally we examine three instances of causativization without valence increase, but which are predicted to occur, given our analysis of the more familiar pattern with valence increase.

2. Proto-Properties and Valence

Dowty (1991) develops a proto-role view of the relation between arguments of a predicate and their grammatical function status. Under this view, semantic roles such as 'agent' and 'patient' are not atomic, but rather are comprised of a set of proto-properties. On Dowty's analysis these properties are hypothesized to be entailments which follow from the semantics of the predicate. He proposes the following suggestive lists of proto-agent and proto-patient properties:

Proto-Agent Properties	**Proto-Patient Properties**
•volitional involvement in event or state	•undergoes change of state
•sentience	•incremental theme
•causing an event or change of state	•causally affected
•movement (relative to position of another participant)	•stationary (relative to another participant)
•exists independently of the event	•does not exist independently of the event, or not at all

The basic idea is that prototypical agents possess the largest number of proto-agent properties, while prototypical patients possess the largest number of proto-patient properties. Constellations of proto-properties determine the grammatical relation status for valence positions of the predicate. Consider how function assignments would be calculated for the Finnish predicate 'build' employed in sentence (4a):

(4a) Pekka rakensi talon
Pekka-NOM build-3SG-PAST house-ACC
PEKKA BUILT THE HOUSE

(4b)

Pekka:	volitional involvement (proto-A) sentience (proto-A) causing a change of state (proto-A) movement relative to the table (proto-A) exists independently (proto-A)
the house:	undergoes change of state (proto-P) incremental theme (proto-P) causally affected (proto-P) stationary relative to John (proto-P) lack of independent existence (proto-P)

According to Dowty's approach, the predicate 'build' entails the proto-properties in (4b); these entailments derive their respective proto-typical agentivity and patienthood. Thus, Pekka is proto-typically agentive; his involvement in the event is volitional, he is sentient, he causes a change of state, he moves, and he exists independent of the event. The house, on the other hand is a proto-typical patient: it undergoes a change of state, it is an incremental theme (in that its change is effected in discrete stages), it is causally affected, it is stationary with respect to Pekka, and its existence is contingent on the building event.

Given these entailment sets of proto-roles, Dowty (1991:576) suggests the Argument Selection Principle in (5):

(5) In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of Proto-Agent properties will be lexicalized as the subject of the predicate; the argument having the greatest number of Proto-Patient entailments will be lexicalized as the direct object.

Thus, since the example in (4a) has a SUBJ and an OBJ, the SUBJ corresponds to the argument with the most proto-agent entailments, while the OBJ bears the most proto-patient properties.

It is important to note that the proto-agent and proto-patient properties in (4) cluster around distinct arguments or valence slots: that is, there is one argument that exclusively possesses proto-agent properties and another that possesses only proto-patient properties. However, there is nothing in Dowty's approach that requires a predicate with proto-agent and proto-patient properties to have both a SUBJ and an OBJ. The Argument Selection Principle in (5) only applies when the clause has a SUBJ and an OBJ. For example, in (6a), the single argument of the Finnish predicate *punastua* 'blush, flush' bears both proto-agent and proto-patient properties, as schematized in (6b):

(6a) Pekka punastui
Pekka-NOM blush-3SG/PAST
PEKKA BLUSHED

(6b) Pekka: sentient (proto-A)
independent existence (proto-A)
change of state (proto-P)
causally affected (proto-P)

Examples like (6) show that a predicate may entail both proto-agent and proto-patient properties, yet not have two independent arguments. From this fact, the generalization in (7) appears to be a necessary consequence of Dowty's approach to argument selection:

(7) Valence and proto-properties are independent notions.

In other words, it is reasonable to assume that both the proto-property entailments and the specification of valence must be lexical properties associated with the lexical representations of these predicates. This is illustrated schematically for the Finnish predicates 'build' in (8) and 'blush' in (9), where the following

abbreviatory conventions obtain: PP refers to sets of proto-properties, ARG is a variable for valence slots and GF refers to grammatical functions associated with particular valence slots.

(8)

PP:	•volitional involvement •sentience •causing a change of state •movement relative to other participant •independent existence		•undergoes change of state •incremental theme •causally affected •stationary relative to other participant •lack of independent existence
rakentaa	<ARG1,		ARG2>
GF:	SUBJ		OBJ

(9)

PP:	•sentient •independent existence •change of state •causally affected
punastua	< ARG1 >
GF:	SUBJ

(8) illustrates that the predicate 'build' projects pure proto-agent and proto-patient entailment sets and that each entailment set is aligned with a distinct valence slot. Moreover, each such alignment is associated with a function assignment. (9) illustrates that 'blush' projects an entailment set that represents an admixture of proto-agent and proto-patient properties and that this set is associated with the only valence slot (and grammatical function) of the predicate.

We turn now to a description of how these assumptions can be adapted for an analysis of causatives.

3. A Proto-Role Account of Causative Formation

Elsewhere (Ackerman & Moore 1993) we have developed an interpretation of Dowty's proto-role proposal designed to address two well-known and prevalent effects associated with valence increasing causative formation operations: one is the encoding of the causee as predicted by the transitivity of the base predicate and the other is the semantics associated with alternative function encoding for the causee. For present purposes it is only possible to illustrate how our proposal addresses what we'll call the *transitivity effect*. Consider the following examples of causativization from Finnish: (10a) contains the intransitive base predicate 'cough' and (10b) its related causative, while (11a) contains the transitive base predicate 'build' and (11b) its related causative form.

(10a) Hän yski koko yön
s/he cough-3SG/PAST whole night
S/HE COUGHED THE WHOLE NIGHT

(10b) Kylmä pakkasilma yski-tti häntä
cold frosty weather cough-CAUS-3SG/PAST him/her-ACC
THE COLD FROSTY WEATHER MADE THE HIM/HER COUGH

(11a) Muurarit rakensivat talon
masons-NOM built building-ACC
MASONS BUILT THE BULDING

(11b) Minä rakennutin talon muurareilla
I-NOM built-CAUS building-ACC mason-ADD
I MADE/HAD MASONS BUILD THE BUILDING

As can be seen, the causative marker correlates with an increase in valence with respect to the base predicate. Given these data, we might propose that causativization is a morphological process that involves adding an argument slot to the valence of the base predicate, as well as adding whatever proto-properties are entailed by the semantics of causation. Minimally, we could assume that the Finnish causative predicate entails that this new argument bears the proto-agent property of causing an event: the event is denoted by the base predicate. Thus, the causative morpheme might be thought of as taking a 'CAUSER' and an 'EVENT' argument, as illustrated in (12):

(12) PP: causing an event
[...*causer*...]
|
CAUSE < ARG1 (PRED < >)EVENT >
|
GF: SUBJ

(13) and (14) show the manner in which this general schema is instantiated to yield the transitivity effect typified by Finnish wherein the SUBJ of a base intransitive is an OBJ CAUSEE and the SUBJ of a base transitive is an OBL CAUSEE in the addessive case. In (13) and (14) we have replaced the variables for PRED and ARG with the relevant values from (10) and (11) to make the relations clear.

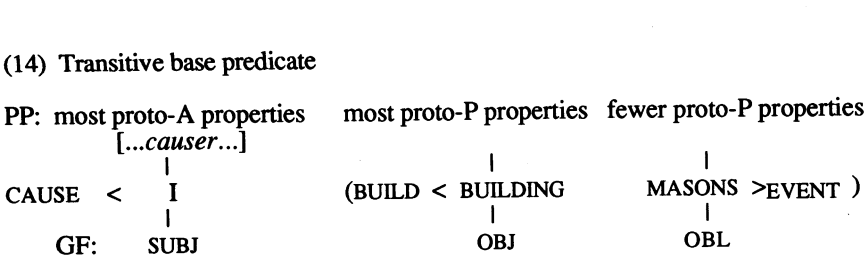
(13) Intransitive base predicate

PP: most proto-A properties most proto-P properties
[...*causer*...]
|
CAUSE < WEATHER
|
GF: SUBJ

|
(COUGH < HIM/HER >)EVENT >
|
OBJ

In (13) the function assignments follow straightforwardly from the Argument Selection Principle: the argument with the most proto-agent properties is lexicalized as SUBJ and the argument with the most proto-patient properties is lexicalized as OBJ. This principle applies in similar fashion for the causativization of transitive base predicates shown in (14):

(14) Transitive base predicate



However, in this instance the encoding of the CAUSEE as an OBL follows from what Dowty refers to as Corollary 2 of the Argument Selection Principle, which is stated in (15):

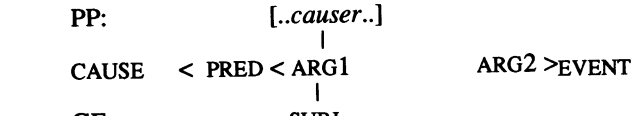
(15) With a three-place predicate, the non-subject argument having the greater number of proto-patient properties will be lexicalized as the direct object and the non-subject argument having fewer proto-patient properties will be lexicalized as an oblique or prepositional object.

Now, while it is clear that the entity with the most proto-agent properties, i.e. the causer, corresponds in all of these instances to a distinct argument, we have seen previously that proto-properties and valence are independent notions. This observation in conjunction with the assumption that *causing an event or state* is an entailment of causatives, leads to the expectation that other instances of causative formation might be found which resemble the one schematized in (12) in that they too would possess a causer, but they would differ from the one in (12) in not exhibiting a valence increase. In other words, an invariant entailment set for causatives - (limiting discussion here to the proto-agent property of *causing an event or state*) - need not, in principle, correlate with valence increase. In the remainder of this paper we discuss three logical options for causative formation without valence increase and demonstrate that they are attested in Malayalam and Finnish.

4. Valence Preservation: the *causer* is the EXPERIENCER of the base verb

The first pattern of alignment between the entailed *causer* property and valence is represented schematically below in (16), where ARG1 of the base predicate is the *causer*:

(16) Pattern 1:



In this pattern the *causer* entailment is associated with the SUBJ argument of the base predicate. Pattern 1 is typified by Malayalam in (17), as observed in T. Mohanan 1991: (examples adapted from Mohanan 1991:43)

(17a) ravik'k'ə saŋŋaṯi manass-il-aay-i
Ravi-DAT matter-NOM mind-L-become-PA
RAVI UNDERSTOOD THE MATTER
(TO RAVI, THE MATTER BECAME IN THE MIND)

(17b) ravi saŋŋaṯi manass-il-aa-**kk**-i
Ravi-NOM matter-NOM mind-L-become-CAUS-PA
RAVI UNDERSTOOD THE MATTER

(17a) contains a (complex) predicate with a valence of two, namely, 'Ravi' and 'the matter': Mohanan provides evidence that 'Ravi' is a DAT or EXPERIENCER SUBJ, while 'the matter' is an OBJ. (17b) contains the causative version of this predicate and retains its valence pattern: here too 'Ravi' is the SUBJ and 'the matter' is the OBJ. Mohanan notes that the SUBJ in (17b) is interpreted as the CAUSER, correlative with the presence of the causative marker. This, she suggests, argues for the need to distinguish the SEMANTIC STRUCTURE of a causative marker from its valence pattern: as on the present account, the semantic properties of a causative marker receive an interpretation in the causative predicate, but need not be associated with an independent valence slot. This corresponds to the notion advanced here that the causative marker yields an entailment of the proto-agent property *causing an event or change of state* , but associates that property with the EXPERIENCER argument of the base predicate. This yields the schematic representations for (17a) and (17b) found in (18) and (19), where ARG1 corresponds to 'Ravi' and ARG2 to 'matter':

(18) PPs: most proto-A properties most proto-P properties
| |
MIND-BECOME < RAVI MATTER >EVENT
| |
GFs: SUBJ OBJ

(19) PPs: most proto-P properties
[..*causer*..]
| |
CAUSE < PRED < RAVI MATTER >EVENT
| |
GFs: SUBJ OBJ

As can be seen in (19) the SUBJ 'Ravi' is associated with the causer entailment and therefore such predicates exemplify pattern 1.[3]

5. Valence Preservation: the *causer* is the STIMULUS of the base verb

The second pattern is illustrated in (20), where ARG2 of the base predicate is *causer* :

(20) Pattern 2:

PPs:		[..*causer*..]
		|
CAUSE	<PRED < ARG1	ARG2 >EVENT
		|
GFs:		SUBJ

Pattern 2 represents a case in which the *causer* entailment is associated with the would be OBJ (or more broadly, the non-SUBJ) argument of the base predicate

This distribution is exemplified by certain Finnish causative constructions. As noted in Vilkuna 1989, Finnish possesses a large class of predicates that denote psychological or physical states and which, as in many languages, exhibit alternative grammatical function encodings for their arguments. In Finnish these psychological predicates appear predominantly in non-causative and causative variants, as illustrated in (21) and (22) with the pairs *hävetä/hävettä* 'feel ashamed/shame' and *pelkää/pelottaa* 'fear/frighten'.

(21a) häpeän asiaa
shame-1SG/PRESENT matter-PART
I AM ASHAMED OF THE MATTER

(21b) asia hävettää minua
matter shame-CAUS3SG/PRESENT I-PART
THE MATTER SHAMES ME

(22a) Pekka pelkää sotaa
Pekka fear-3SG war-PART (from Leiwo 1977)
PEKKA FEARS WAR

(22b) sota pelottaa Pekkaa
war fear-CAUS-3SG Pekka-PART (from Leiwo 1977)
WAR FRIGHTENS PEKKA

The predicate 'be ashamed' in (21a) has two arguments: a SUBJECT EXPERIENCER designated by the 1st person pronoun and an OBJECT STIMULUS designated by the nominal 'matter' in the PARTITIVE case. The related causative predicate in (21b) exhibits the same valence and case marking pattern; however, in this instance the EXPERIENCER is an OBJECT, while the STIMULUS is the SUBJECT. The same pattern is illustrated in (22), while some other predicates that participate in this non-causative/causative alternation are presented in (23):

(23) *epäilläepäilyttää* 'doubt/make doubt', *ajatella/ajatteluttaa* 'think/make think', *harrastaa/harrastuttaa* 'be interested in/interest', *surra/surettaa* 'be sad/sadden', *surra/surettaa* 'be sad about/sadden', *nauraa/naurattaa* 'laugh at/make laugh', *kyllästyä./kyllästyttä.* 'be bored with/bore', *ihmetellä/ihmetyttää* 'wonder at/amaze'...

The predicates in (21) and (22) share the property that the valence of the base predicate is not increased with the presence of the causative marker. Rather, in an intuitive sense the *causer* argument contributed by the causative morpheme is associated with the *stimulus* of the base predicate, rather than correlating with an increase in valence. In fact, Volodin et. al. suggest (1969:233) that "neither a new SUBJ nor OBJ are introduced, but rather a change of grammatical functions occurs: the SUBJ becomes the OBJ and the OBJ becomes the SUBJ."

The resulting pattern for Finnish psychological predicates is represented in (24) with lexical items from (22b) :

(24)

PP:			[*undergoes change of state*]		[..*causer*..]	
			|		|	
CAUSE	<	FRIGHTENS	<	BOY	WAR	>EVENT >
				|	|	
GFs:				OBJ	SUBJ	

The hypothesis that the STIMULUS argument of the base predicate is associated with the causer entailment suggests that these sorts of predicates exemplify pattern 2.

An additional observation is in order concerning these predicates. Dowty (1991:580) speculates that psychological predicates permit doublets or alternative lexicalizations of the sort encountered above because of the nature of the entailments they project. Vilkuna (1989:47) notes the relevance of this view for these Finnish predicates. Dowty suggests that each argument, i.e. the EXPERIENCER and STIMULUS, contain one proto-A property apiece and that such predicates project no other entailments determinative for argument selection: the EXPERIENCER is entailed to be *sentient,* while the STIMULUS, he suggests, "...causes some emotional reaction or cognitive judgment in the EXPERIENCER." On this view, predicates of this sort contain two arguments with equal claim for SUBJ status. This is schematized in (25a), where for convenience we have provided thematic role labels for the argument slots.

(25a)

PP:	[*sentience*]		[*cause emotional reaction or emotional judgment*]	
	|		|	
PRED	< EXPERIENCER		STIMULUS	>

One additional aspect of his analysis is relevant here: he observes, following Croft (1986), that the psychological causative (what he refers to as the 'inchoative reading') entails the proto-P property *undergoing a (definite) change of state)* for the EXPERIENCER argument. This is represented schematically in (25b).

(25b)

PP:	[*sentience*]		[*cause emotional reaction or emotional judgment*]	
	[*undergoing change of state*]			
	|		|	
PRED	< EXPERIENCER		STIMULUS	>
	|		|	
GF:	OBJ		SUBJ	

Though both the EXPERIENCER and STIMULUS are equally good SUBJs, the EXPERIENCER in the psychological causative, he suggests, is a better OBJ by virtue of possessing the proto-P entailment *undergoing a (definite) change*. Given speculations such as these (but see Van Valin 1992 for a critical view), one way of viewing why psychological predicates are prone to this sort of pairing without valence change is that the entailments of these predicates predispose them to a kind of indeterminacy: causative formation seems parasitic on the entailment sets of the simple predicate and foregrounds the properties that inhere in these basic entailment sets (see Talmy 1985:99). That is, the STIMULUS is quite compatible with the *causer* entailment projected by the causative and the EXPERIENCER is easily construable as an entity which undergoes a change of state.

6. Impersonal causatives

Finally, the third pattern is schematized in (27), where no expressed ARG is associated with *causer,* but there is a construal of an indeterminate causer.

(27) Pattern 3:

PPs:		[*causer*]	
CAUSE	< PRED <	ARG1	>EVENT
GFs			

Pattern 3 raises the curious possibility of a form in which the *causer* entailment is not associated with any argument of the base predicate, but is still associated with some aspect of the interpretation of the predicate. Finnish contains a variant of the causative form associated with psychological and physical state predicates. The predicates which participate in pattern 2, just discussed, constitute a subset of the predicates which participate in what we willl call *impersonal causatives*. Vilkuna 1989 presents representative constructions divided into predicates of physical state (see Vilkuna 1989, Hakulinen 1946), as in (28a), and predicates of psychological state (see Vilkuna 1985, Hakulinen 1946, Holman 1984), as in (28b):

(28a) minua oksettaa/ aivastuttaa/ itkettää
I-PART vomit-CAUS-3SG sneeze-CAUS-3SG cry-CAUS-3SG
I FEEL SICK/AM GOING TO SNEEZE/WANT TO CRY

(28b) minua harmittaa/ pelottaa/ huvittaa
I-PART annoy-CAUS-3SG/ fear-CAUS-3SG/ amuse-CAUS-3SG/
I FEEL ANNOYED/FEEL AFRAID/AM AMUSED.

It is characteristic of these constructions that they contain a partitive marked EXPERIENCER OBJ, a 3rd person singular form of the verb and that they convey a sense of compulsion to engage in some bodily function or register a state of being, i.e. X feels/wants to/has the urge to Verb. For convenience we will call this the 'compulsion' reading. The absence of a surface SUBJ and the obligatory 3sg verbal agreement makes these constructions resemble impersonal uses of certain weather predicates, such presented in (29)

(29) nyt pyryttää
now snowstorm-CAUS-3SG/PRESENT (Hakulinen 1946:241)
THERE'S A DRIVING SNOWSTORM NOW

As with the impersonal causatives, there is no identifiable external causer in (29). The impersonal uses of the psychological and state predicates differ from personal uses of these predicates in that the impersonal uses convey the 'compulsion' reading with no identifiable external causer, whereas this sense is absent from the personal uses. This contrast becomes evident when we compare the two uses of 'sneeze' in (30a) and (30b): (examples from Holman (1984:25)

(30a) mustapippuri aivastuttaa minua
black pepper-NOM sneeze-CAUS-3SG/PRESENT I-PART
BLACK PEPPER MAKES ME SNEEZE

(30b) minua aivastuttaa
I-PART sneeze-CAUS-3SG/PRESENT
I FEEL LIKE SNEEZING

(30a) is a personal causative containing a surface SUBJ: 'black pepper' is interpretable as the CAUSER and there is no construal of a sudden inexplicable impulse that overcomes the EXPERIENCER. In (30b) there is no SUBJ, but there is the 'compulsion' reading.

Finally, whereas the SUBJ/OBJ reversal of Pattern 2 seems motivated, as discussed previously, for psych-predicates, there is no similar motivation for limiting a syntactically unexpressed CAUSER entailment of the impersonal type exemplified by Pattern 3. In particular, we would expect to find that this pattern extends beyond the class of psychological and physical state predicates. That this is so can be seen by the pair of causatives in (31) taken from Sulkala & Karjalainen (1992:295). (31a) contains the expected pattern for the causativized transitive predicate *kirjoittaa* 'write': the causee is expressed by an argument in the ADESSIVE case (see the examples in (1) for relevant discussion). In contrast, (31b) contains the impersonal use of this causatived predicate: in this instance the OBJ argument is the EXPERIENCER and this construction both formally and semantically resembles the expressions in (28a) and (28b).[4]

(31a) Pauli kirjoituttaa Harrilla kirjeen
Pauli write-CAUS-3SG Harry-AD letter-ACC
PAULI IS MAKING HARRY WRITE THE LETTER

(31b) Harria kirjoituttaa nyt kovasti
Harry-PART write-CAUS-3SG now hard
HARRY WANTS VERY MUCH TO WRITE NOW

In summary, the impersonal uses of the causative construction all possess an interpretation for the causer, but do not associate this entailment with a syntactic argument. In effect the causative predicate entails a causer, but this entailment is not identifiable with a valence slot. In this sense, these Finnish impersonal constructions appear to exemplify pattern 3.

7. Conclusion

In conclusion, we hope to have shown here on the basis of data from Hindi, Malayalam, and Finnish that there is empirical motivation for theories of causativization to distinguish between the semantics of causation and valence. The causer entailment associated with the causative predicate is (1) associable with a new argument, correlative with valence increase, (2) with either argument of certain base predicates (typically those having STIMULUS and EXPERIENCER arguments), or (3) with no syntactically expressed argument. Given these distributions an approach based on Dowty's proto-role proposal possesses the right ingredients and insights to address a fuller display of causative patterns than is ordinarily considered.

NOTES

[1] We have in several instances employed examples from the Russian article cited in the text: we have done so since this work significantly antedates our own and deserves recognition. Because the Russian work is not written by native speakers of Finnish, we have checked all of the relevant examples with native speakers. We thank Helena Halmari and a network of native Finns in Los Angeles for their assistance in this regard. We would also like to thank Paul Kiparksy for data and insights regarding other aspects of this proposal. We bear sole responsibility for whatever may be wrong.

[2] For analogous notions see Sadock 1991 on autosegmental syntax or Yip et. al. 1987 and Maling 1993 on the Case-Tier Hypothesis.

[3] This pattern of causativation can also be found in Berber as found in Alalou & Farrell in press.

[4] The extension of this class of predicates is presently under investigation. At this time it seems to encompass so-called Unspecified Object Deletion Predicates and various intransitive activity predicates.

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The semantics and pragmatics of verb classifiers in Urdu-Hindi

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Introduction

Constructions involving verb serialization pose a cross-linguistically robust set of problems for the analysis of sentence meaning, as well as for the pragmatic evaluation of sentence-tokens in contextualized acts of utterance. On the semantic side, such constructions pose difficulties for the rule of thumb common in linguistic studies whereby a finite sentence is said to instantiate as many propositions as there are finite verbs in it (Foley and Olson 1985). On the pragmatic side, predicates consisting of a series of verbs appear to constitute indexical categories of diverse types, specifying the perspectival 'direction' of the action, the 'definiteness' of argument reference, epistemic and deontic modality, etc. For some languages, the lack of clarity about pragmatic categories is due partly, at least, to the lack of clarity about the correct semantico-syntactic analysis, and many writers are forced—apparently by this fact—to attempt notional approaches to 'function' which either do not distinguish semantico-syntactic considerations from pragmatic ones, or argue that only one matters, or operate at a great remove from both.

In the present paper, I discuss the semantic and pragmatic properties of the compound verb (hereafter, 'CV'; as opposed to 'SV', or simple verb) construction in Urdu-Hindi, arguing that both kinds of properties must be given their due if a clear analysis is to emerge. The construction at issue combines two distinct verb stems—I shall call these V_1 and V_2 —to yield a type of 'lexical union' (Noonan 1985) where the verbs share all arguments and permit only the insertability of negative and emphatic particles between them. The compound verb—a $[V_1\ V_2]_V$ constituent—takes a single set of inflectional endings. Semantically, only a single predication is understood: V_1 describes a predicated event, and is the head of the CV; V_2 is an adjunct or operator, contributing a number of semantic and pragmatic reflexes to the interpretation of this event[1].

Not all V_2 items combine freely with all possible V_1 types. This suggests that V_2 items selectively discriminate between semantic classes of V_1 verbs. In the last section of the paper, I argue that V_2 item exhibit both a formal selectivity and a functional specificity for V_1 items of the same lexico-semantic class, thus constituting a system of verb classifiers (Silverstein 1986) over the semantic domain of V_1 types in the language. In the intervening sections, I discuss the pragmatic properties of the CV construction. Generically, the CV construction constitutes an indexical category anchoring the sentence-proposition to the context of utterance. Since the construction is formed by means of a verbal operator—the V_2 item—the indexical category has scope over the proposition as a whole, yielding both a referential and a predicational interpretation. More specific types of categorial content are also identifiable with particular V_2 items, due to their inherent lexical properties, and these must be analyzed as additional, lexeme-specific overlays upon the generic meaning of the CV construction.

The scope of V_2 operators in the CV construction

The V_2 element influences the form and interpretation not only of the predicate, but of its arguments as well. Its influence on predicate form is obvious. The effect on argument form is clearest in the realm of case marking. Thus, in

perfective sentences, a transitive verb like khā-'eat' normally takes the ergative case on its agent argument, as in (1a)[2]. However, when it combines with an intransitive V_2 stem, such as ga- 'go' in (1b), the [V_1 V_2] compound behaves like an intransitive verb, requiring nominative agent, just like the intransitive SV bhāg- 'run' in (1c). However, if the same V_1 occurs with a (di)transitive V_2 (such as lī- 'take' in (1d)) the CV thus formed ([khā lī]- in (1d)), takes the usual ergative agent. Thus, (1d) has the same case marking as (1a). Conversely, the intransitive verb bhāg- 'run', which normally takes nominative agents (cf. (1c)), permits ergative agents when combined with a (di)transitive V_2, such as lī- 'take' in (1e).

The fact that the formal reflexes of the CV turn up not only in the predicate but also in the arguments suggests that the CV is an operator on the proposition as whole. If this supposition is correct, and if—as I suggest above—the CV constitutes an indexical category, then we would expect that the pragmatic reflexes of V_2 element would have consequences not only for the way in which the predication is understood in its pragmatic context, but also for the contextualized interpretation of argument reference.

(1)

Example sentence	*Semantic and pragmatic interpretaion*
(a) laṛke ne seb khā-y-ā boy-ERG apple-ABS eat-P-CR	'(A/the) boy ate (an/the) apple'
(b) laṛkā seb [khā ga]-y-ā boy-NOM apple-ACC eat go-P-CR	'The boy ate the apple' [abrupt, unexpected action]
(c) laṛkā [bhāg]-ø-ā boy-NOM run-P-CR	'(A/the) boy ran'
(d) laṛke ne seb [khā lī]-y-ā boy-ERG apple-ABS eat take-P-CR	'The boy {ate/was able to eat} the apple' [premeditated, self-interested act]
(e) laṛke ne [bhāg lī]-y-ā boy-ERG run take-P-CR	'The boy {ran/ was able to run}' [premeditated, self-interested act]
(f) laṛkā [bhāg ga]-y-ā boy-NOM run go -P-CR	'The boy ran (away)' [abrupt, unexpected action; motion 'away']

This is exactly what we find. The English glosses on the right hand side in (1) illustrate a number of differences of interpretation in the Urdu-Hindi sentences, emerging as the result of the SV: CV contrast. Let us consider argument reference first. Given the absence of any obligatory paradigm of NP determiners in Urdu-Hindi, SV sentences—such as (1a) and (1c)—may be translated into English either with definite or indefinite articles. However, the CV sentences of (1b, d-f) are better translated into English with a determiner which specifies the presupposition of existence of referents. This could be the English definite article—as shown in the examples—or the determiner 'some', or other equivalent. If all the NPs in the five Urdu-Hindi sentences were modified by the numeral ek 'one', the NPs in the SV sentences could be translated either with the English indefinite article, 'a', or with the numeral, 'one'; but the NPs in the CV sentences could only be translated with 'one'. This correspondence is due to the fact that the CV construction in Urdu-Hindi indexes the presupposition of existence of referents, as I argue below.

As far as the predication is concerned, the CV generically has a resultative meaning with several specific manifestations, depending on the lexical class of the V_1 and V_2 items, and the utterance context. In (1b) and (1f), the V_2 item ga-

'go' is understood as implying an 'unexpected result'. In (1f), its union with a motion verb as V_1, suggests that the boy is no longer present, that he has run 'away'. This suggestion is weaker without a motion verb, as in utterance (1b), which could also be accompanied by a pointing gesture, ostending the guilty, co-present individual. In (1d-e), the CV predicates, formed with the V_2 item le-/l̄i- 'take', imply that the action is the result of premeditated effort. Their quasi-modal interpretation (glossed as 'was able to') is an implicature of the fact that the premeditated action led to a successful result. Their 'self-interested' implication is a reflex of the V_2 item 'take' (cf. the V_2 de-/d̄i- 'give' which implies 'other benefaction', as discussed below).

Resultativity of predication

Some writers have attempted to characterize the predicative interpretation of the CV construction as involving perfective aspect (Pořízka 1967-69, Hook 1974), but there are several problems with this account[3]. Although there is surely an aspect-like meaning of 'completion' associated with the CV construction, such an aspectual characteristic is always accompanied by a pragmatic implicature of resultativity, as described below. Secondly, such interval-like specification is a reflex of the occurrence of a distinct verb stem, the V_2 item, not a reflex of a lexically empty form such as a bound affix; the lexicalized 'event'-related properties of the V_2 item, qua verb, is critical to the interpretation of the CV as such. However, although the V_2 item is a distinct verb stem, generally capable of occurring as an independent verb in the language, its occurrence as a V_2 item reduces or 'bleaches' the verb stem of any ability to denote an independent event: the sentence containing the CV denotes only the event which is the meaning of the V_1 item, and the V_2 item functions as an operator, modifying the interpretation of this event.

Thus, the V_2 item, although a distinct verb, does not denote a distinct event or state. Rather, it indexes an event or state—whether by presupposition or entailment—thereby invoking an event or state in relation to which the event or state denoted by the V_1 item is understood. The CV construction either indexically presupposes some event/state of which the denoted event/state is the contextualized result, or it indexically entails that the denoted event/state has some event/state as its contextual result. As with any indexical category, the specific meaning of the category cannot be understood without regard to the particular discourse context in which an utterance bearing the indexical category occurs, so that the way in which an indexed event/state is invoked by the CV construction depends radically on discourse context.

Let us first compare the two-sentence utterance exemplified in (2a) with the contrasting utterance, containing a CV in the second sentence, in (2b).

(2)
(a) use dar lag-ø-ā. vah bāhir ā-y-ā
he-DAT fear feel-P-CR he-NOM outside come-P-CR
'He felt afraid. He came outside'
(b) use dar lag-ø-ā. vah bāhir [ā ga]-y-a
he-DAT fear feel-P-CR he-NOM outside come go-P-CR
'He felt afraid. (So) he came outside'

Given the absence of any kind of grammatical linkage between the two sentences, no logically necessary connection is understood between the two events described

in either (2a) or (2b). Nonetheless, we are inclined to infer that the individual in each case experienced fear before he came outside because the sentence describing the former event occurs before the sentence describing the latter event, and none of the entailments of either sentence block this interpretation. But, from the point of view of discourse inference, there is an important difference between (2a) and (2b): (2b) suggests a surer connection between the experience of fear and the decision to come outside than (2a). In the case of (2a), if we knew independently from context, or from prior discourse, that the fear is of a type which can be alleviated by going outside, we might infer a connection between the two events as well. But this requires additional discourse presuppositions. In the case of (2b), the CV itself carries a contextualizing suggestion: it suggests that the event denoted by the CV sentence is related to some other event, understood as its relevant context; thus, in this rather minimal two-sentence discourse text, the event denoted by the CV sentence may straightforwardly be inferred to be the result of the event denoted by the preceding sentence, all other things being equal.

Of course, the event or state which is indexed by the occurrence of the CV need not be denoted by a separate sentence occurring in immediately prior discourse. It may simply be understood from discourse context. Thus, for example, given a context where a young boy keenly and impatiently awaits a letter of acceptance from his college of choice, the actual arrival of the expected letter would be described more felicitously by the CV construction of (3a) than by the SV sentence of (3a') (this is represented by the symbol '/>/' between the predicates), though both are grammatically possible. The CV is more felicitous in such a context becauses it indexes some event or state as relevant to the interpretation of the utterance in which it occurs, whereas the SV does not.

(3)
(a/a') merā xat { [ā ga]-y-ā />/ ā-y-ā }
I-GEN letter [come go]-P-CR / come-P-CR
'My letter has come'
(b/b') merā xat nahĩĩ {%% [ā ga]-y-ā / ā-y-ā }
I-GEN letter NEG [come go]-P-CR / come-P-CR
'My letter hasn't come'

If, on the other hand, the boy discovers upon examining his mailbox that the letter has not arrived, he can only describe this fact by a negated SV utterance, such as (3b'), not by the negated CV utterance of (3b). This is due to the fact that the non-occurrence of the predicated event pre-empts the question of its indexical relation to other events, a point to which I return below.

It is important to keep in mind that the event indexed by the V_2 element of a CV construction can be understood either as the indexical presupposition or as the indexical entailment of the event denoted by the V_1 element. This means that the CV is preferred to the SV both in contexts where the causes of the denoted event are being discussed, as in (4),

(4)
vah {[bhāg cuk]-ø-ā />/ % bhāg-ø-ā } thā. is liye ki nāxuš thā
he-NOM [run finish]-P-CR / run-P-CR PST this reason that unhappy PST
'He had run away. Because [he] was unhappy'

as well as in contexts where its consequences are being discussed, as in (5):

(5)
vah {[bhāg cuk]-ø-ā />/ % bhāg-ø-ā } thā. isī liye nahĩĩ mil-ø-ā
he-NOM [run finish]-P-CR / run-P-CR PST this reason not meet-P-CR
'He had run away. Hence [I] didn't meet [him]'

The CV is preferred in both contexts because its resultative indexicality is interpretable either as indexical presupposition or as indexical entailment. For this reason, it is preferred in discourse contexts where causes and/or consequences are at issue.

So far, I have been discussing examples of indexical presuppositions which are available either from co-occurring sentence-tokens, or from discourse context. However, in certain kinds of multi-clausal sentences, the indexically associated event may be available as the presupposition of a different clause in the same sentence. In the biclausal sentence in (6), the denotation of the nominalized 'inspite of' clause is factively presupposed as true in the evaluation of the meaning (and truth) of the second clause. The CV is preferred here because the event which it indexes is here understood as the proposition factively presupposed by the protasis—the 'inspite of' clause—and the congruence of presuppositions creates a greater coherence across the two clauses.

(6)
(b/b') rahne kī xwahiš ke bāvajūd vah { [bhāg ga]-y-ā />/ bhāg-ø-ā }
stay-INF GEN desire GEN inspite he-NOM run go-P-CR / run-P-CR
'Inspite of [his] desire to stay, he ran away'

The CV construction is preferred in the apodoses of result constructions, such as yah natījā hū-ø-ā ki 'it was the result [of...] that [...]', for the same reason:

(7)
(a/a') us ke mehnat karne kā yah natījā hū-ø-a
he GEN hard.work do-INF GEN this-NOM result be-P-CR
ki vah kāmyāb { [ho ga]-y-ā />/ hū-ø-ā }
that he-NOM successful-ACC [be go]-P-CR / be-P-CR
'As a result of his hard work, he was successful'
(b/b') mere paise māgne kā yah natījā hū-ø-ā
I-GEN money ask-INF GEN this-NOM result be-P-CR
ki us ne fauran { [de dī]-y-e />/ dī-y-e }
that he-ERG immediately [give give]-P-CR / give-P-CR
'As a result of my asking for money, he immediately gave [it] [to me]'

In biclausal sentences where the two clauses are linked by ki 'when', and where no relationship other than simultaneity is semantically specified, the CV is preferred only when a connection between the two denoted events is independently establishable from discourse context.

(8)
(a/a') vah jāne hī vālā thā ki xat { ā-y-ā / [ā ga]-y-ā }
he-NOM go-INF EMPH about.to PST that letter come-P-CR / [come go]-P-CR
'He was about to leave when (a/the) letter came'

In a context where the arrival of the letter is not expected, or has no bearing on the imminent departure, the SV utterance in (8a) is acceptable without infelicity (with

an indefinite article in the English gloss, 'a letter'). However, in a context, where the arrival of the letter is expected, or is of some consequence to the imminent departure, the CV of (8a') would be preferred (here, the English indefinite article would be inappropriate).

The CV is strongly preferred over the SVin the biclausal correlative time construction in Urdu-Hindi, [jab tak 'by the time when ...', tab tak 'by then ...']$_S$. Thus, given a protasis such as (9a), the CV constructions of (9b, c, d) are strongly preferred in the apodosis to the SV constructions of (9b', c', d').

(9)

(a) jab tak maĩ vahā̃ pahũc-ø-ā.....
when till I-NOM there reach-P-CR
'By/till the time I got there....'

(b/b') ... tab tak vah { [bhāg cuk]-ø-ā /%% bhāg-ø-ā } thā
then till he-NOM [run finish]-P-CR/ run-P-CR PST
'...he had run away'

(c/c') ... tab tak vah { [so ga]-y-ā / %% so-y-ā } thā
then till he-NOM [sleep go]-P-CR / sleep-P-CR PST
'...he had gone to sleep'

(d/d') ... tab tak us ne { [khā lĩ]-y-ā /%% khā-y-ā } thā
then till he-ERG [eat take]-P-CR / eat-P-CR PST
'...he had eaten [it]'

In such constructions, the protasis (namely, the jab tak 'by the time when...' clause) provides the temporal ad quem in relation to which the event described by the apodosis is understood. The CV is preferred in this construction for exactly the same reason that it is preferred in constructions like (4-5): the proposition denoted by the protasis is factively presupposed as true in the evaluation of the meaning (and truth) of the apodosis; and the occurrence of the CV establishes a congruence of presuppositions across the two clauses. (Hence, with negated protases, the CV is not preferred in the apodosis). Inevitably, a pragmatic link is established between the two events. Thus, in all the acceptable biclausal utterances in (9), the coming of the speaker, as an event, is understood as having a pragmatic connection with the events described in the second clause, over and above the fact that speaker's coming is the temporal ad quem for these events. This connection may be understood from context (thus, presupposed) or suggested (thus, entailed) by the utterance: for example, in (9a+b), the speaker may have wanted to catch the person who ran away; in (9a+c), to speak with him; in (9a+d), to eat the food.

However, the preference for the CV in the apodosis is relaxed in cases where the jab tak clause is understood only as the temporal ad quem, without any other link between the two events, as in the utterance sequence (9a+10). Here, the CV occurs not in the apodosis clause, but in the following sentence. The pragmatic connection suggested here is not between the arrival and the act of jogging, but between the act of jogging and the exhaustion, construed to be its implied result.

(10) ... tab tak to vah bhāg-ø-ā . lekin bād mẽ thakan se [baiṭh ga]-y-ā
then till he-NOM run-P-CR but afterwards tiredness from [sit go]-P-CR
'...he jogged. But afterwards, [he] sat down from exhaustion'

Presupposition of existence

The CV construction indexes a presupposition of existence for the referents of the verb's arguments. Thus, with arguments with stipulatively non-existent referents—such as koī bhī nahī 'noone' and kuch bhī nahī 'nothing', and their inflected forms—the CV is unacceptable.

(11)
(a/a') kisī ne bhi nahī khānā {khā-y-ā / * [khā lī]-y-ā }
noone-ERG food-ABS eat-P-CR/[eat take]-P-CR
'Noone ate the food'
(b/b') larke ne kuch bhī nahī {khā-y-ā / * [khā lī]-y-ā }
boy-ERG nothing-ABS eat-P-CR [eat take]-P-CR
'The boy ate nothing'

In negated sentences, the CV construction is extremely odd. Thus, the SV sentence in (12a) is perfectly acceptable, whereas the CV sentence in (12a') is not.

(12)
(a/a') larke ne khānā nahī {khā-y-ā / %%[khā lī]-y-ā }
boy-ERG food-ABS NEG eat-P-CR/ [eat take]-P-CR
'The boy didn't eat the food'

The oddity of negated CV sentences, such as (12a'), is due to the fact that sentence negation is interpretable as implying the non-existence of arguments. However, in contexts where the existence of denotata is independently presupposable, negated CVs are perfectly acceptable. Thus, in the negated CV utterances (13a, b), just those arguments receive contrastive stress (represented by underlining) the existence of whose denotata is presupposed from discourse (i.e. as 'someone', 'somebody', etc.) but the identity of which is denied: (13a) is perfectly acceptable in a context where the equivalent of the proposition 'someone ate the food' (i.e. ∃x, eat(x,food)) is discursively presupposable; and (13b) is perfectly acceptable in a context where the equivalent of the proposition 'the boy ate something' (i.e., ∃y, eat(boy,y)) is discursively presupposable. The most common type of discourse situation in which such usage occurs is the situation where the utterance at issue is being used to deny something that has been asserted in immediately prior co-text. Thus, both (13a) and (13b) may be used to refute the prior utterance of (13c), since (13c) makes both the propositions noted above available as presuppositions for denial or refutation in subsequent discourse.

(13)
(a) larke ne phal nahī [khā lī]-y-ā, larkī ne khā-y-ā hai
boy ERG fruit-ABS NEG eat take-P-CR girl ERG eat-P-CR PRS
'The boy didn't eat the fruit, the girl did'
(b) larke ne phal nahī [khā lī]-y-ā, gošt khā-y-ā hai
fruit-ABS meat-ABS
'The boy didn't eat the fruit, [he] ate the meat'
(c) larke ne phal [khā lī]-y-ā
'The boy ate the fruit'

A negated CV utterance can be used to deny the statement in (13c) in another way as well. This is the case of predicate negation, where the existence of the denotata

of both arguments is preserved by presupposition, but the event denoted by the predicate is denied. The utterance of (14) in response to (13c) constitutes the relevant example.

(14) laṛke ne phal [khā nahĩ ĩi]-y-ā, [phēk di]-y-ā hai
throw give
'The boy didn't eat the fruit, he threw [it] away'

The optative constructions in (15a, a') are exactly parallel. The CV variant in (15a') has the presupposition that there is something which the boy might eat (i.e. ∃y, eat(boy,y)), a presupposition which (15a) lacks. (15a) might be uttered by a doctor who is generally concerned that the boy not eat anything for a while; (15a'), by someone who is interested in beating the boy to the food. Similarly, the imperative in (15b) may be interpreted either as an injunction against doing something for a particular boy, or as a general injunction against boy-like behavior; but the CV sentence in (15b') only permits the former interpretation.

(15)
(a/a') agar laṛkā {na khā-e /[khā na jā]-e }, to behtar hai
if boy NEG eat-OP/ [eat NEG go]-OP then better PRS
'Its better if the boy doesn't {eat/eat [it]}'
(b/b') laṛke kā kām {na kar-nā /[kar na de]-nā }
boy GEN work NEG do-IM / [do NEG give]-IM
'Don't do {(a, the)/ the} boy's work'

Modality

Out of the twenty or so V_2 elements in the language, two verbal items are distinct from all the others with respect to the tests we have so far considered. These are the V_2 items sak- 'can' and pā- 'manage'. These items are distinctive, first, because they occur only as V_2 items and are not associated with independent verbs in the language[4]. Secondly (although the V_2 le/lī- 'take' sometimes has a modal meaning, as in (1d-e)) sak- and pā- are the only V_2 items which always and only have a modal sense. Third, whereas other V_2 items do not occur in sentences with non-existent denotata (cf. (11)), the modal V_2s are perfectly acceptable in such sentences, as in (16a-b). Fourth, whereas other V_2s are anomalous with sentence negation or predicate negation except with special discourse presuppositions (cf. (12-15)), the modal V_2s appear to occur freely in such constructions, as in (16c-d).

However, the reason for these anomalies is again straightforward: every token of the sentences in (16) has at least the presupposition that 'somebody tried to eat something' (i.e. ∃x∃y, try-to-eat(x,y)), whatever other presuppositions particular tokens in particular contexts may have.

(16)
(a) koī bhī nahĩ khānā [khā sak]-ø-ā
noone-NOM food-ACC [eat can-P-CR
'Noone was able to eat the food'
(b) laṛka kuch bhī nahĩ [khā sak]-ø-ā
boy-NOM nothing-ACC [eat can-P-CR
'The boy was able to eat nothing'

(c) laṛkā khānā nahī̃ [khā pā]-y-ā
boy-NOM food-ACC NEG [eat manage]-P-CR
'The boy was unable to eat the food'
(d) laṛkā khānā [khā nahī̃ pā]-y-ā
boy-NOM food-ACC [eat NEG manage]-P-CR
'The boy was unable to eat the food'

In general, all CV sentences formed with the two modal V_2s, sak- 'can' and pā- 'manage', have the presupposition: 'somebody tried to do something'. In fact, this presupposition is central to the meaning which is intensionalized as (and notionally felt to be) the meaning of 'modality' associated with these verbs. When these V_2s occur with agentive V_1s in [V_1 V_2] constructions, the sentence so formed has the presupposition 'someone tried to V_1' (specifically: for intransitive V_1s, $\exists x$, try-to-$V_1(x)$; for transitive V_1s, $\exists x \exists y$, try-to-$V_1(x,y)$; etc.). When these V_2s occur with agentless V_1s, the construction so fomed has the presupposition 'someone tried to V' ($\exists x$, try-to-V(x)), where V is the causative of V_1:

(17) kapṛe nahī̃ [sūkh sak]-ø-e
clothes-NOM NEG [be.dry can]-P-CR
'The clothes couldn't be dried'

sentence (17), for example, has the presupposition 'someone tried to dry the clothes'. Thus, the apparent exceptionality of the modal V_2s in occurring more freely than other V_2s in negated sentences is due to the distinctively lexicalized indexical presupposition of these verbs (i.e. the presupposition of a prior attempt), which counts as their modal meaning, not the absence of resultative indexicality.

Predication perspective

Within the paradigm of V_2 items, a number of verb stems differentiate contrasts of predication perspective. Such contrasts involve viewing the predication relative to some type of contextualized zero-point—or 'origo'—in utterance construal. The contrast is analogous to the contrast in English between paired exchange predicates—e.g. 'buy' vs. 'sell', 'take' vs. 'give'—where the same action may be viewed perspectivally as tending towards the actor as origo, or away from it. In Urdu-Hindi, the paradigm of V_2 items constitutes a rather more finely differentiated system, where the paired V_2s include jā- 'go' vs. ā- 'come'; de-/dī- 'give' vs. le-/lī- 'take'; dāl- 'put in/at' vs. nikāl- 'take out'; chor- 'leave (at/behind)' vs. rakh- 'keep'; and baith- 'sit down' vs. uth- 'rise, get up'.

Although the zero-point of such perspectival reckoning can vary considerably by the particular type of V_1 stem occurring in the CV construction, as well as by discourse context, it is nonetheless constrained by the lexicalized meanings of the V_2 items as well. CVs containing V_2s such as le-/lī- 'take', rakh- 'keep' (and, to a somewhat lesser extent, nikāl- 'take out') indicate an action as involving some type of actor self-interest. Here the predication perspective typically constitutes actor as origo. CVs containing receiver- or location-oriented V_2s, such as de-/dī- 'give', dāl- 'put in/at' (and, to a somewhat lesser extent, chor- 'leave (at/behind)') indicate other-directed action. In these cases, actor is never origo, and the action is viewed as involving some measure of actor-neutrality, involuntariness, or (particularly with de-/dī- 'give' as V_2) some type of other-benefaction. In CVs containing the V_2s jā/ga- 'go' and ā- 'come', the zero-point is often the speaker, or some associated location (e.g. the speaker's house, the

speech event, etc.), relative to which the action is viewed as 'tending away' or 'tending towards'. However, such construal is highly context dependent. Thus, in (1f), the origo is straightforwardly interpretable as the location of the speaker from which the boy moves away. But in (2b) and (3a), the same V_2 ga- 'go', indexing 'motion away', occurs in an utterance where the V_1 a- 'come' denotes motion towards the speaker's location. In such cases the speaker is not construable as any kind of zero-point from which the motion tends away. We might suppose that the 'motion away' reflex is nonetheless preserved in such cases if the zero-point or origo is taken to be the 'understood' cause of the movement (e.g. the fear in (2b), the sender of the letter in (3a)) from which the trajectory of motion (of the person in (2b), of the letter in (3a)) is reckoned. However, these are possibilities which can selectively become plausible only in contextualized usage. Even though the lexical structure of particular verbs tends to favor as origo such role categories as speaker, actor, receiver, understood-actant, etc., the only general statement that can in fact be made is that the origo or zero-point is always discursively determined through the interaction of a number of co-textual and contextual factors, of which the lexical content of V_2 is only one.

V_2 items as verb classifiers

In order to investigate the question of the combinability of V_1 and V_2 items in the language, about one hundred verbs were first tested with respect to their inherent lexical characteristics such as agentivity and aktionsart. A distinctive feature notation was used to classify verbs along these dimensions[5]. The test used for classifying a verb along the semantic dimension [+/-agentive] was the ability of the verb to occur in the imperative mood[6]. The aktionsart characteristics were classified by means of two separate features, [+/-durative] and [+/-punctate][7] (these are contracted to [+/-d] and [+/-p] in the table in (18)).

Relative to these semantic dimensions of classification, the sampe of one hundred verbs was divided into six classes, labelled A-F in the table in (18). Valence criteria were used to further subdivide these into sub-classes of monovalent verbs (e.g. A^1, D^1, E^1, etc.) and verbs with valence equal to two or greater (e.g. A^2, D^2, E^2, etc.), though certain classes were found to have only monovalent (e.g. B^1, C^1) or only non-monovalent (e.g. F^2) verbs in them.

Aside from the modals, whose class membership cannot be specified by such distributional tests (since they do not occur as independent verbs), the verbs which occur productively as V_2 items in the language were found to be inherently [+punctate] stems[8], belonging to classes B^1, E^1 or E^2 (see leftmost column in (18)). Thus, all CV constructions in this language residually carry a 'point-like' meaning which admits of more specific interpretations (e.g. completive, inchoative, inceptive, etc.) .

The combinatoric possibilities of particular V_2 items with V_1 classes are listed in the table in (18)[9]. Since each verbal element simultaneously instantiates lexical properties across different categorial domains (agentivity, aktionsart, valence, etc.), the selectivity of V_2 items for V_1 classes is organized around several criterial dimensions of classification. Nonetheless, the co-occurrence restrictions are highly asymmetrically organized as the left-to-right and top-to-bottom distribution of the most productive combinations ('+++') shows: V_1 classes on the far right hand side have many more '+++' markers in their columns than V_1 classes on the far left; this just means that the V_1 types towards the right hand side of the table take more V_2 items in productive combination than those on

(18) Summary of V_2 distribution relative to V_1

Specific V_2 items	Semantic classes of V_1 verb								
	[-agentive]				[+agentive]				
	[+d, -p]		[-d, +p]	[+d, +p]	[+d, -p]		[-d, +p]		[+d, +p]
	A^1	A^2	B^1	C^1	D^1	D^2	E^1	E^2	F^2
(a) sak-'be able'	+++	+++	+++	+++	+++	+++	+++	+++	+++
(b) pā- 'manage'	+++	+++	+++	+++	+++	+++	+++	+++	+++
B^1									
(c) cuk- 'finish'	+++	+++	+++	+++	+++	+++	+++	+++	+++
(d) paṛ- 'fall'	x	++	x	+	x	x	x	—	—
E^1									
(e) jā-/ga- 'go'	+++	+++	+++	+++	+++	+++	+++	+++	+++
(f) ā- 'come'	—	—	—	+	+++	+++	+++	+++	+++
(g) baiṭh- 'sit'	x	+	x	+	+++	+++	+++	+++	+++
(h) uṭh- 'rise'	x	x	—	—	+++	++	x	+	—
(i) kharā ho-'stand	—	—	—	—	x	x	++	x	x
(j) cal- 'start out'	—	—	x	x	x	x	+	++	—
E^2									
(k) le-/lī- 'take'	+	—	+++	+++	+++	+++	+++	+++	+++
(l) de-/dī- 'give'	—	—	—	—	x	++	+++	+++	+++
(m) choṛ- 'leave'	—	—	—	—	+	++	x	+++	+++
(n) rakh- 'keep'	—	—	—	—	+	++	—	+++	+++
(o) ḍāl- 'put in/at'	—	—	—	—	+	++	—	+++	+++

Key

PRODUCTIVITY OF OCCURRENCE	high	'+++' = occurs freely with (virtually) all members	(95-100%)
		'++' = occurs with most members	(71-95%)
		'+' = occurs with some members	(36-70%)
		'x' = occurs with few members of the class	(1-35%)
	low	'—' = does not occur	(0%)

the left. In fact, the V_1 classes on the far right are inherently specific for all of the criterial dimensions of selectivity (i.e. V_1s of the E^2 and F^2 type are [+agentive, +punctate, V>1]) and, for this reason, a wider range of V_2 items are 'attracted' to them. Verbs in these classes yield a wider variety of CV constructions since they accept a wider range of V_2 items.

Let us turn now to the differences among the V_2 items. The fifteen V_2s[10] in table (18) fall into four 'sets', separated by blank rows. Members of the first set, the modals sak- and pā-, occur freely with virtually every V_1 in the language, though for some [-agentive] V_1s, they occur somewhat more freely in negative sentences (like (17)) than in positive sentences. Within each of the three remaining sets, (c-d), (e-j) and (k-o), one V_2 item is an 'expansive' member of the

set, since it occurs productively across a wider range of V_1 types than the others (i.e. (c) cuk- 'finish', (e) jā-/ga- 'go' and (k) le-/lī- 'take', respectively).

The other members of each set have a more restrictive distribution from the point of view of productive combinability. These V_2 items show a high degree of selectivity for V_1s of the same lexical type as themselves along each dimension of classification: the agentless V_2 (see row (d)) prefers agentless V_1 types to agentive ones (given identity of aspectual type, as in classes A^2 vs. D^2, C^1 vs. F^2); agentive V_2s (rows (f-j) and (l-o)) prefer agentive V_1 types; and the transitive V_2s (rows (l-o)), prefer transitive V_1 types. A selectivity of animate-subject V_2s for animate-subject V_1s was also observed in the less productive combinations (e.g. '+' and 'x'), though this dimension is not explicit in the table.

When the 'expansive' V_2s occur with V_1 items significantly different from themselves, interesting types of secondary notional reflexes emerge. The normally actor-origo transitive agentive V_2 le/lī- 'take' often has the sense of actor-reflexive agency (as discussed in the last section), particularly with agentive V_1s (cf. (1d-e)) and with animate subject non-agentives. However, with inanimate-subject non-agentive V_1s (e.g. tut- 'be broken', pak- 'get cooked', etc.) the construction approximates the 'understood cause' interpretation noted for the modal V_2s in (17) above. Such functional 'leakage' is, of course, a cross-linguistically robust property of all classifier systems. In the present case, however, where the density of semantic material recoverable from each V_2 item is quite high, it is precisely at these points of functional leakage that the classifier function of the CV construction merges to a degree with derivational class-changing functions.

Notes

1 This type of compound verb stem construction must be distinguished from two other types of verb concatenation in the language. The first is a type of clause subordination, involving two distinct clauses (and, semantically, two events), formed by means of the 'conjunctive participle', kar 'do', exemplified in (a).

(a) [laṛkā$_i$ [ø$_i$ khānā **khā kar**]$_S$ ā -y-ā hai]$_S$ 'The boy$_i$ has eaten food
boy-NOM food eat do come-P-CR PRS and (then) ø$_i$ come'

Distinct from this conjunctive participial construction is a true serial verb construction, illustrated in (b), where two fully inflected verbs (rather than bare verb stems) occur in serial combination, typically denoting two temporally overlapping but distinct events, one understood adverbially to the other.

(b) laṛkā **bhāg**-t-ā **ā**-y-ā hai 'The boy has come running'
boy-NOM run-I-C come-P-CR PRS

The construction with which I am concerned in this paper is a compound verb stem construction, formed by the lexical union of two distinct stems to yield a compound stem (denoting a single event) with single inflection, as in (c).

(c) laṛkā [**bhāg ā**] -y-ā hai 'The boy has run away (to this place)'
boy-NOM run come -P-CR PRS

The V_1 and V_2 elements may sometimes occur in reversed order, though the underlying order is recoverable by means of tests with negation (Hook 1974).

2 The following glossing conventions are used in the examples:
V verb stem CR cross-reference marker NOM nominative case

PRS	present tense	I	imperfective aspect	ACC	accusative case
PST	past tense	P	perfective aspect	DAT	dative case
NEG	negation	OP	optative mood	ERG	ergative case
YNQ	Yes/no quest.	IM	imperative mood		

3 The most comprehensive and widely known argument that the CV construction marks the perfective aspect has been made by Hook (op. cit.), based in part on a notional analogy with aspect marking in Slavic languages. There are several rather serious problems with this claim, discussed with great elegance and brevity in Masica (1991:326-30). Perhaps the most important problem is that the perfective aspect is already marked in this language by a post verb-stem suffix, -y/-ø, and the CV stem can occur both with the grammatical perfective as well as with the grammatical imperfective. As Masica notes, the CV construction is formally and functionally more akin to resultative verb compounds in East and Southeast Asian languages, also associated with 'definiteness' of argument reference, rather than to aspectual affixes in Slavic.

4 Although there is no independent verb sak- in the language, there does exist an independent verb in the language, pā- 'receive' which resembles the V_2 item pā- 'manage'. However, we cannot assume that the two items are related lexemes, since the functions of the V_2 item pā- 'manage' are not predictable by rule from the functions of pā- 'receive', and the resemblance is best considered a case of homonymy: pā- 'receive' is a lexically transitive verb, but the V_2 pā- 'manage' patterns with intransitive V_2s from the point of view of its effects on argument structure and case marking in the CV construction (cf. examples in (1)).

5 The use of distinctive features for separate dimensions of content yields a clearer interpretation of interval characteristics than the Vendler-Dowty classification in terms of states, activities, achievements & accomplishments. While the latter approach is admirable for its consistent use of distributional criteria as tests for inherent lexical content, and is to be preferred over any purely 'notional' classification for this reason, the main problem with that approach is that the four-way classification does not yield a set of semantic primes. For details concerning the present approach, such as the interpretation of feature clusters, the non-specificity of '-' features, etc., see Agha 1993, ch. 3.

6 If the verb occured freely in the imperative with a canonical 'command' interpretation, the verb was specified [+agentive]; if the verb did not easily occur in the imperative, or occurred only with a non-canonical interpretation (cf. English, 'have a nice day!'), the verb was considered [-agentive].

7 The test used for durativity was the compatibility of the verb with interval adverbs such ek ghante ke līye 'for an hour', ek hafte ke līye 'for a week', etc. The punctateness of the verb was evaluated from its interpretation in the progressive construction, V rahā 'be V-ing': if the verb in the progressive yielded a 'point-like' reflex in the overall interval characteristic (whether an endpoint, or a point of culmination or transition), the verb was considered [+punctate]; if the verb did not occur, or occured without a 'point-like' characteristic (i.e. with internally homogenous, or state-like interval, etc.) the verb was considered [-punctate].

[8] One other verb which occurs as a V_2 item, but is an exception to this rule, is the [-punctate, +durative] verb rah- 'remain, stay'. Such verbs commonly occur in resultative compounds in other languages (e.g. Chinese, Lhasa Tibetan, Worora, etc.), thus constituting a categorial distinction between 'resultative-completive' (formed from [+punctate] V_2s) and 'resultative-stative' (formed from [+durative] V_2s). In Urdu-Hindi, however, the [+durative] V_2 item rah- 'remain, stay' is a defective verb in the sense that it has less than the maximal distribution observed for V_2 items generally: it does not occur as a V_2 item in the perfective grammatical aspect, the future tense, nor in the optative and imperative moods (see Masica 1991: 329). Consequently, it may no longer properly be considered a regular V_2 item, though it probably functioned as such in an earlier state of the language.

[9] The values in the table reflect the judgements of three native speakers (all speakers of Karachi Urdu). Each speaker was asked to judge the acceptability of positive and negative sentences formed by combining about one hundred verbs in V_1 position with about twenty verbs in V_2 position. Those CVs which are interpretable as biclausal conjunctive participial constructions with kar omitted (cf. note 1 above, and Hook 1974) were grouped with the '—' values in the table.

[10] Five other items were tested as V_2, not shown in the table. These are rah- 'remain' (see note 8), mar- 'die' (class B^1), nikal 'emerge' (class E^1) and their causatives, mār- 'kill' and nikāl- 'take out' (both class E^2). The last four are not productive enough for native speaker judgements to be unequivocal.

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Inverse Voice Marking in Mapudungun[1]

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1. Inverse Systems

Many languages have been described as having an "inverse voice system", most notably native American languages such as Algonquian. Although the languages which have received this label do not fall into a completely homogeneous group, there is a core of characteristics which typify inverse systems. A survey of several languages[2] which have been claimed to have an inverse system shows only one characteristic to be common to all of these languages: the interaction between a saliency hierarchy and a thematic hierarchy which determines the verbal form. Mapudungun,[3] an indigenous language of Chile, shares this and other common characteristics of inverse languages. This paper will discuss the verbal system of Mapudungun in light of these characteristics and argue that verbal morphology of Mapudungun constitutes a re-linking of the Grammatical Relations to arguments, in that the Subject and Object switch between the inverse and direct forms.

The feature which has been found to be central to the classification of a voice system as 'inverse' is that the verbal form is dependent on a saliency hierarchy (or animacy hierarchy), in which first and second person are generally considered more salient, as are characters who are the focus of discourse. A common saliency hierarchy is: 1st person > 2nd person > 3rd person proximate > 3rd person obviative. The term 'proximate' denotes a 3rd person that is more salient in terms of the discourse structure, and 'obviative' indicates a more distant 3rd person argument, perhaps a nominal whose referent has not previously been introduced. The terms originate in Algonquian linguistics, where 'proximate' and 'obviative' are also morphologically marked.

In languages with a direct/inverse opposition, the saliency hierarchy for the arguments interacts with a thematic relations hierarchy such as: agent > goal > benefactive > theme, such that between two arguments, the higher on the thematic hierarchy is the Actor, and the lower is the Undergoer. When the Actor is higher on the saliency hierarchy than the Undergoer, the direct verbal form is used, but when the Undergoer is higher, the inverse verbal form is used. The inverse verbal form can be identified in some languages by the appearance of an inverse morpheme. Other languages, however, depend on the distribution of the person/number morphemes to indicate the difference between the inverse and the direct constructions.

In many languages there is only one verbal form available for each combination of arguments; that is, for each combination of the arguments to the verb, the verb must be either in direct form or inverse form. For example, in Mapudungun, the following distribution of direct and inverse forms is found:

(1) Direct:

Actor	Undergoer
1	3
2	3
3 prox	3 obv

Inverse:

Actor	Undergoer
1	2[4]
2	1
3	1, 2
3 obv	3 prox

In most of the languages I surveyed, both of the verbal forms are possible only when the arguments are 3rd person (reflecting the distinction between proximate

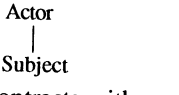
and obviative), although the distribution of forms will vary from language to language.

What I am calling an inverse system is by no means the only analysis that this construction has received. Some linguists have called it a passive (such as Kroskrity for Tanoan, cited in Klaiman 1989, p. 262), since it resembles the passive in English, where the Undergoer becomes the Subject, and the Actor either disappears or is demoted to an Oblique. The inverse, however, can be distinguished from the passive on two counts: first, in all cases of the inverse, the Actor is obligatory, while the passive voice is usually characterized by the potential or obligatory absence of the Actor; second, in all languages with an inverse voice, there is also a passive voice where the Actor is not specified. Thompson (1989, as cited by Payne, et al. to appear, p. 5), finds the difference between inverse and passive to be that in the inverse, the Undergoer is promoted, but the Actor is not demoted, whereas in passive, the Actor is "so completely demoted that it loses the privileges of argumental status" (Payne et al., p. 5).

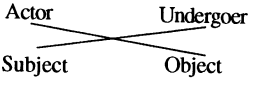
Another issue in the analysis of such systems is if and how inverse constructions affect the linking of arguments and Grammatical Relations (GRs). The crucial syntactic function of GRs in any language is to tell us essentially "who did what to whom." That is, if a given verb projects an argument structure including an agent and a theme, we want to know which element in a phrase is the agent, and which is the theme. One theoretical way to do this is to identify the syntactic elements of the proposition, the Grammatical Relations (GRs): Subject, Object, Object-theta, and Oblique, and link them to the semantic elements of the proposition, the arguments (agent, theme, goal, etc.).

In section 2.4 we will see how Lexical Mapping Theory (Bresnan and Kanerva 1989) can help us to link the Grammatical Relations to the arguments, and how this linking appears to change between the inverse to the direct constructions in Mapudungun. Re-linking the arguments and Grammatical Relations is one way in which the inverse system can work, simplified examples of which are given below:

(2) a. DIRECT



b. INVERSE



This analysis contrasts with one which does not posit re-linking the Grammatical Relations and the arguments in the inverse construction, and instead reserves the label 'Subject' for the higher thematic role.

2. Mapudungun

The data to be used in this section comes mostly from descriptions of Mapudungun by scholars such as Ineke Smeets (1989) and Adalberto Salas (1978, 1979, 1980, 1992), in addition to field work by the author. The present analysis, however, differs from previous analyses primarily in that it presents the verbal system of morphology in Mapudungun as a function of the interaction between a saliency hierarchy and a thematic hierarchy, thus relating Mapudungun to other known languages. In addition, I argue that the Grammatical Relation-argument linking changes between the inverse and direct forms, an issue which heretofore has not been raised in relation to Mapudungun.

2.1 Verbal Morphology

Mapudungun exhibits a highly complex and agglutinative verbal morphology. There are nearly forty verbal suffixes in Mapudungun (see Smeets 1989, ch. 4), which mark such things as person and number of Subject, Object, Mood (Indicative, Hypothetical, or Subjunctive), and arguments like benefactive or source. The morphemes relevant to our discussion of the inverse are shown below in their templatic positions.

ROOT	BEN	SOURCE	PASS 2AG REFL	NEG	TENSE	OBJ (dir)	INV	MOOD	PERS	NUM	OBJ (inv)

Table 1: The verbal template of selected morphemes in Mapudungun.

The root and MOOD, PERS, and NUM are obligatory for all main verbs, and the OBJ (inv) is obligatory for inverse constructions only. The person and number slots refer to person and number of the Subject. The following paradigm shows mood, person and number for each of the three moods: Indicative, Conditional, and Imperative.

Person	Number	Indicative	Conditional	Imperative
1	singular	-n	-l-i	-chi
1	dual	-i-i-u	-l-i-u	-i-u
1	plural	-i-i-ñ	-l-i-ñ	-i-ñ
2	singular	-i-m-i	-l-m-i	-nge
2	dual	-i-m-u	-l-m-u	-m-u
2	plural	-i-m-ün	-l-m-ün	-m-ün
3	all[5]	-i	-l-e	-pe

Table 2: The person and number paradigms for the three moods in Mapudungun.

Although here the mood, person, and number have been separated where possible, the remaining examples will group these three morphemes together and refer to them as the Subject morphemes (SUBJ), for ease of exposition.

Both Subjects and Objects are optional in Mapudungun, which depends instead on verbal suffixes to index the person and number of the Subject and Object. A simple intransitive verb is seen in (3):[6]

(3) küdaw- ün
work - 1s,SUBJ
I worked.[7]

The following example displays a transitive verb in direct form, which is similar to a simple intransitive except for the object morpheme 'fi', which refers to a third person NP:

(4) ngilla- fi- n
buy- OBJ- 1s,SUBJ
I bought it/him/her/them.

Although 'fi' can be coreferential with either an overt or nonovert NP, transitive predicates do not necessarily include the object morpheme 'fi', as evident in the following example:

(5) kiñe tripantu nie- y mari epu küyen.
One year have- 3s ten two months
One year has 12 months. (Catrileo 1988, p. 44, glosses mine)

2.2. The Person and Number Marking System in Mapudungun

My argument that Mapudungun has an inverse system is based primarily on the fact that it has two systems of morphological markers to indicate the logical structure of a sentence, and the choice between these two systems depends on a saliency hierarchy such as the ones described above. The saliency hierarchy for Mapudungun is 1 > 2 > 3[prox] > 3[obv]. As I will show below, the Grammatical Relation-argument linking clearly depends on whether the verb is in direct or inverse form.

Just as in other inverse languages, when the Actor is higher on the saliency hierarchy, the verbal form must be direct, and if the Actor is lower on the saliency hierarchy, the verbal form must be inverse. In Mapudungun, the difference is represented by whether the Actor is the grammatical Subject (direct) or the grammatical Object (inverse). In other words, the higher argument is always the grammatical Subject of the sentence, whether or not it is the "logical Subject" (Actor). For example, if the Actor is 1st or 2nd person and the Undergoer is 3rd person, the predicate is in direct form (and the Actor is the Subject). Interactions between 1st and 2nd persons are a special case, as will be discussed in section 2.2.3.

As in many inverse languages, the only case in which both direct and inverse are possible is between two third person arguments. Although obviative is not overt in Mapudungun, I posit that there is an underlying concept of obviative-proximate which drives the choice between inverse and direct, such that if the proximate 3rd person is Actor, the form is direct, and if it is Undergoer, then the form is inverse. A similar distinction has been made by the linguist Adalberto Salas, although he calls the two 'definite' and 'indefinite'. I prefer to adopt the Algonquian terms 'proximate' and 'obviative', which reflect the importance of discourse status, and not definiteness per se.

The following passage demonstrates how the proximate/obviative distinction is expressed, and why I choose to make such a distinction at all.

(6) From "An Old Man" (Smeets 1989:512)

(a) *I shall continue my story [and tell you] as far as I know this old man. First of all, his name was Joan Soñan Kinchekew. When he was a young man, he used to work around on all sorts of places as a day-labourer. He grew up in great misery;*

(b) kim- ürke- la- y ñi ñuke
know- REP- NEG- 3s,SUBJ his mother
He did not know his mother;

(c) ñi chaw duam- ürke- la- e- y- ew
his father care- REP- NEG- INV- 3s,SUBJ- 3,OBJ
His father did not care for him;

(d) yall- tuku- rke- e- y- ew ka domo- mew
son- beget- REP- INV- 3s,SUBJ- 3,OBJ and woman- with
He begot him as an illegitimate child with another woman.

Notice in (6) that in the beginning of the story (the translation of which is presented in (a)), it is made clear that the story is about 'the old man', who therefore will be more central than any other character. Notice that in (b), 'the old

man' is the Actor, and since it must be 'proximate', due to its discourse status, then it must also be the Subject. Therefore the sentence is in direct form, and 'his mother' is the Object. In (c) and (d), however, 'the old man' is the Undergoer, so the verbal form is Inverse. Other texts from Smeets demonstrate how other 3rd persons besides the protagonist of a story can be proximate, in relation to less salient 3rd persons. In addition, inanimate 3rd persons can be proximate, indicating that animacy is not a factor in the saliency hierarchy in Mapudungun.

It is important to realize, however, that discourse roles do not play a part in the relative saliency of 1st or 2nd persons and 3rd persons. For example, in all cases where a 3rd person NP is the Undergoer and a 1st or 2nd person NP is the Actor, the form will be direct. The distribution of inverse and direct verbal forms is presented in Table 3.

	Actor			
Undergoer	1	2	3 prox	3 obv
1	--	INVERSE	INVERSE	INVERSE
2	MIDDLE	--	INVERSE	INVERSE
3 prox	DIRECT	DIRECT	--	INVERSE
3 obv	DIRECT	DIRECT	DIRECT	--

Table 3: The distribution of verbal forms in Mapudungun.

Although the inverse resembles the passive in English, the same arguments apply in Mapudungun as in Kutenai and Tanoan for its inverse status. In the first place, the Actor is obligatory in inverse forms, and always is indexed by a suffix that follows the Subject suffix. In addition, there is a true passive in Mapudungun which does occur when the Actor is unidentifiable:

(7) pe- nge- n
see-PASS-1s
I was seen.

2.2.1 The Direct Construction

The transitive verb above, repeated here, is an example of a direct verb form, where 1st person is Subject and 3rd person is Object.

(8) ngilla- fi- n
buy- OBJ- 1s,SUBJ
I bought it/him/her/them.

Note that the Object morpheme 'fi' necessarily denotes a third person object. This derives from the inverse/direct distribution presented in Table 3, where it is evident that only 3rd person objects can be expressed with direct verbal forms. The Subject can be 1st person, as in (8), 2nd person, as in (9a), or 3rd person proximate, as in (9b).

(9) a. ngilla- fi- imu
buy- OBJ- 2d,SUBJ
You two bought it/ him/ her/ them.

b. ngilla- fi- y
buy- OBJ- 3,SUBJ
He/ she/ they [prox] bought it/ him/ her/ them [obv].

The two 3rd person arguments in (9) are defined as 'proximate' and 'obviative' by virtue of their discourse functions, where the proximate NP is more salient to the discourse than the obviative one.

2.2.2 The Inverse Construction

In the cases where the inverse marking system must be used, the Undergoer is marked by the Subject suffixes, and the Actor is marked by an inverse object

marker that follows the Subject, where '-(m)ew' indicates a third person object, and Ø indicates a second person. All inverse constructions contain the inverse marker 'e'.[8] In (10) we see two examples of inverse constructions:

(10) a. pe- e- n- Ø
see- INV- 1s,SUBJ-2,OBJ
You saw me.

b. pe- e y- ew
see- INV- 3,SUBJ- 3,OBJ
He/ she/ it/ them [obv] saw him/ her/ it/ them [prox].

2.2.3 The Middle Case: 1st person Actor and 2nd person Undergoer (1->2)

In the case where the Actor is 1st person and the Undergoer is 2nd person, we find a middle-ground between inverse and direct forms, which has been called 'number incorporated' by Salas (1979). To understand the place of this form in the inverse/direct paradigm, we must look at it in a historical context.

2.2.3.1 The Historical 1->2 Form

The following form for 1->2 person interaction existed historically (see Salas 1978:282), and is found today in a dialect spoken by the Huilliche ('people of the south') (Salas 1978:308-309, Agusta 1903:84-85):

(11) pe- e- ymi- ø
see- INV- 2s,SUBJ- 1,OBJ
I see you.

This form follows the same pattern as the inverse forms shown above, in that the Undergoer is the Subject, while the Actor is the Object. However, it adds the stipulation that neither 1st nor 2nd person may be the Object in direct construction. This difference could be captured by modified the hierarchy from 1 > 2 > 3 prox > 3 obv to 1,2 > 3 prox > 3 obv, with both 1st and 2nd persons occupying the highest position, such when either one is the Undergoer, the form must be the inverse.

2.2.3.2 The 1->2 Form Today

In contrast, the common forms in modern-day Mapudungun are those shown in (12):

(12) a. pe- e- yu
see- INV- 1d,SUBJ
I see you(s).

b. pe- w- iiñ
see- REFL- 1p,SUBJ
I(s/d/p) see you(s/d/p). (where the total number is greater than 2)

While the form in (12a) obviously includes the inverse morpheme 'e', it does not mark the Undergoer with the Subject morphemes. Rather, the Subject morphemes indicate 1st person dual. Since the meaning of (12a) is 'I see you' (in contrast with 'pe-iyu': 'We (2) see'), the number of the Subject morpheme appears to indicate the total number of the participants in the action of the predicate (ie, number of Subject + number of Object), leading to Salas's term 'number incorporated'.

Similarly, in (12b) a 1st person plural Subject indicates an interaction between first and second person where the total number is 3 or more. While '-e-yu' uses the Inverse morpheme, however, '-w-iiñ' includes the Reflexive morpheme, creating an ambiguity between the readings 'I saw you(p)' and 'We(p) saw ourselves / each other' (see footnote #8).

I place these forms at a level in between Inverse and Direct. It seems that while the historical placement of 2nd person in Subject position is preserved, placing 1st person in a lower position than 2nd person is avoided, following the

inherent force of the saliency hierarchy. The result is the extension of the 1st person dual and plural forms to include the total number of Actor and Undergoer.

2.2.3.3 The middle form cross-linguistically

This unusual status of 1st and 2nd person interactions is not unique to Mapudungun. McConvell mentions that in some Algonquian languages, the inverse marker *ekw is present only in 3rd person Subject constructions, and other forms are used for interactions between 1st and 2nd person (Linguist List: Vol-4-1092), and Rhodes also observes that when a system does not pattern perfectly, it is in the interactions between first and second person where it varies (personal communication). The verbal marking in Nootkan displays a similar split, in that the inverse marker '-at' is only used when the 3rd person is the Actor (Yang 1992:265).

An inventory of all possible constructions in Mapudungun is presented in Table 4.

Under-goer	Actor 1s	1d	1p	2s	2d	2p	3 prox	3 obv
1s	-w-ün			-e-n-ø	-mu-n		-e-n-ew	
1d		-w-iyu		-mu-iyu			-e-iyu-mew	
1p			-w-iiñ	-mu-iiñ			- e-ymu-mew	
2s	-e-yu			-w-imi			-e-ym-ew	
2d		-w-iiñ			-w-imu		-e-ymü-mew	
2p						-w-imün	-e-ymün-mew	
3 prox	-fi-n	-fi-iyu	-fi-iiñ	-fi-imi	-fi-imu	-fi-imün	-w-i	-e-y-ew
3 obv							-fi-y	-w-i

Table 4: The possible verbal forms for each combination of Actor and Undergoer. Data compiled from Salas (1979), Smeets (1989), and Fontanella (1967). The reflexive morpheme is 'w'.

2.4. Grammatical Relation-Argument Mapping

Mapudungun appears to change the GR-argument relations, unlike some other inverse languages described above, since the Subject is the Actor in direct constructions, and the Undergoer in inverse constructions. Example (13) illustrates that the first person, which is indexed by the Subject suffix, is the Actor in (13a), and the Undergoer in (13b). The subject suffix is in boldface.

(13) a. ngilla- fi- **n.**
buy- OBJ- **1s, SUBJ**
I bought it/him/her/them.
Subject = I = agent
Object = it = theme

b. ngilla- e- **n-** ø
buy- INV- **1,SUBJ-** 2
You bought me (as a slave).
Subject = I = theme
Object = you = agent

At this point it becomes useful to introduce a mechanism for dealing with the changes in the GR-argument linking. Lexical Mapping Theory, introduced by Bresnan and Kanerva (1989) and revised in work in progress, takes the argument structure of the verb as basic, and assigns values of +objective and +restricted to certain arguments, leaving some unmarked. Each argument is then linked to the Grammatical Relation with the same value. The values of Grammatical Relations are listed in (14).

(14) Subject = [ ]
Object = [+o]
Object-theta = [+o, +r]

Unclassified arguments are Obliques. A classified argument can either be unmarked, have one mark [+o], or two marks [+o and +r]. The Actor (A) and Undergoer (U)[9] start out completely unmarked, and one of them is chosen as the Subject (the unmarked element) by the following principles:

(15) i. a. If there is an unmarked A, leave it unmarked.
b. If there isn't an unmarked A, leave the U unmarked.
ii. Mark every other argument once.

Every argument which is not the A or U is intrinsically marked once, so with (ii) it is marked twice, which means it is an Object-theta.

Cross-linguistically, it is unusual for the Actor to be an Object-theta. Languages such as English allow the Actor to be either the Subject, in which case it is unmarked, or an Oblique, in which case it is absent from the characterization of GRs. Mapudungun, I argue, allows the Actor to be either a Subject or an Object. To prohibit the Actor from becoming an Object-theta, I assume there is an additional constraint against marking the A more than once. (16) demonstrates how applying Lexical Mapping Theory to (13a) would work.

(16) ngilla- fi- n SUBJ = 1s = agent
buy- OBJ- 1s,SUBJ OBJ = 3 = theme
I bought it/him/her/them.

	A	U
buy	< ag,	th >
	[ ]	[+]
	SUBJ	OBJ

1. The predicate argument structure is projected by the verb. The Actor and Undergoer are intrinsically unmarked (other arguments, if present, are marked once):

2. By (15.i.a), the A is left unmarked, and by (15.ii) the other argument is marked once. This results in the mapping of Subject to the agent, and Object to the theme.

Mapudungun also contains a number of lexical processes, triggered by verbal morphemes, which I propose affect the linking process in the following way:

Process	Morpheme	Effect
Inverse	e	Marks the A once.
2 Actor	mu	Marks the A once, and identifies it as 2nd person.
Benefactive	lel	Adds a benefactive/goal argument to the predicate argument structure.
Source	ñma	Adds a source/possessor argument to the predicate argument structure.
Reflexive	w	Binds the Actor and Undergoer.
Passive	nge	Suppresses the agent.

Table 5: Lexical processes affecting the GR-argument mapping in Mapudungun.

An example of a simple inverse predicate in Mapudungun is presented in (17):

(17) mütrüm- e- y- ew
call- INV- 3,SUBJ- 3,OBJ
He/she/it/them[obv] called him/her/it/them [prox].

	A	U	
call	< ag,	th >	SUBJ = 3 = goal
	[ ]	[ ]	OBJ = 3 = agent
e	[+]		
	OBJ	SUBJ	

In this case the inverse function marked the Actor once, leaving it unavailable to be the Subject. Thus, the Undergoer became the Subject. Rule (ii) was unable to apply to the Actor because of the general constraint against it being marked twice, leaving the Actor as the Object.

The GR-argument relations become more complicated when there are more than two arguments in the predicate, by virtue of argument changing morphemes such as 'lel' or 'ñma'. For example, in (18) the presence of the benefactive morpheme makes the Undergoer the benefactive, which is mapped onto the Object:

(18) ngilla- lel- fi- n ti ñarki iyael
buy- BEN- 3,OBJ- 1s,SUBJ the cat food
I bought the cat food. (Arnold 1992:41)

	A	U		
buy	< ag		th >	SUBJ = I = agent
lel		ben		OBJ =cat = benefactive
	[ ]	[ ]	[+]	OBJ-th = food = theme
(ii)		[+]	[+]	
	SUBJ	OBJ	OBJ-th	

In contrast, when the verb is in the inverse form, as in (19), the A is marked once by the inverse function, preventing it from being the Subject. Thus, the benefactive argument becomes the Subject.

(19) kintu- lel- e- yu mamüll
look.for- BEN- INV- 2d,SUBJ wood
I looked for wood for you. (Salas 1980:41)

	A	U		
look.for	< ag		th >	SUBJ = you = benefactive
lel		ben		OBJ = I = agent
	[ ]	[ ]	[+]	OBJ-th = wood = theme
e	[+]			
(ii)			[+]	
	OBJ	SUBJ	OBJ-th	

The passive in Mapudungun is similar to the passive in English in that the Actor is demoted, with the difference that the Actor argument can appear in English as an oblique, but in Mapudungun its absence is obligatory. Example (20) shows how the 'nge' suppresses the Actor, making it unavailable to be the Subject:

(20) Inche ulel- nge- n (Arnold 1992:46)
I hit- PASS- 1s,SUBJ
I was hit.

hit	< ag	th >
nge	Ø	
		[ ]

Thus, the Undergoer is the structural Subject in both inverse and passive constructions, but in the inverse the Actor is demoted to an Object, whereas the passive removes it from the set of classified arguments altogether.

2.5 Switching the Subject and Object

The analysis outlined above, where the Grammatical Relations and the arguments link differently in the direct and inverse verbal forms contains the crucial assumption that the Subject morphemes indicate the Subject in both direct and inverse forms, and that the inverse and direct Object morphemes are both Objects. It is the inverse Object morpheme that indicates the person of the Actor in inverse constructions, and by assuming that it is an Object I am claiming that Mapudungun's inverse system involves the direct reversal of Subject and Object, as reflected in the reversal of the marking of the Actor and Undergoer in Lexical Mapping Theory.

My argument for treating the Subject as constant across direct and inverse forms stems from evidence from word order and Subject-marking in subordinate clauses.

2.5.1 Word Order

When NPs are overt, there are three basic word orders possible in Mapudungun: SVO, SOV, and VOS, according to data from Rivano 1988. The example sentences in Rivano's article include the six direct sentences and six inverse sentences, listed here:

(21) Direct

a. SVO:	domo	langüm-	fi-	i	wentro
	woman	kill-	OBJ-	3,SUBJ	man
	the woman killed the man				
	wentro langüm-fi-i domo				the man killed the woman
b. SOV:	domo wentro langüm-fi-i				the woman killed the man
	wentro domo langüm-fi-i				the man killed the woman
c. VOS:	langüm-fi-i domo wentro				the man killed the woman
	langüm-fi-i wentro domo				the woman killed the man

(22) Inverse

a. SVO:	domo	langüm-	e-	y-	ew	wentro
	woman	kill-	INV-	3s,SUBJ-	3,OBJ	man
	the man killed the woman					
	wentro langüme-y-ew domo					the woman killed the man
b. SOV:	domo wentro langüm-e-y-ew					the man killed the woman
	wentro domo langüm-e-y-ew					the woman killed the man
c. VOS:	langüm-e-y-ew domo wentro					the woman killed the man
	langüm-e-y-ew wentro domo					the man killed the woman

(Rivano 1988:80, glosses mine)

Although Rivano describes the word order of these data in terms of the thematic roles of the arguments (yielding two sets of word orders: one for direct, and one for inverse), I argue that the exact mirror placement of the Actor and Undergoer in the direct and inverse sentences indicates that the Subject and Object switch in the Inverse, thus producing a unified account of the word order. If, on the other hand, we were to maintain a semantically based analysis of the Subject as the Actor and the Object as the Undergoer, we would find two separate sets of possible word orders, one for the inverse, and one for the direct. In addition, the analysis of the

Subject as Undergoer in inverse allows for consistent morphological marking of the Subject.

The fact that the verb and object always occur next to each other indicates that the verb and object form a constituent in Mapudungun. Furthermore, when Rivano asked native speakers to read these sentences, pausing where it sounds natural, they paused between the Subject and the verb-object pair: S(VO), S(OV), (VO)S, strengthening the hypothesis that there is a verb phrase in Mapudungun.

Questions in Mapudungun exhibit a slightly different word order than matrix clauses: (SOV, OSV, and OVS), but just as in statements, the same word order holds for both inverse and direct verbal forms, as long as we assume that the Subject and Object switch between the two forms.

One characteristic feature of *wh*-questions is that it is always the Object that is being questioned. This follows from the requirement that the higher argument in saliency must be the Subject; if the speaker does not know the identity of one NP, that NP cannot be higher in saliency, and therefore must be the Object.

2.5.2 Subordinate Clauses

Subordinate clauses in Mapudungun bring further support to the analysis of a constant Subject in that the possessive pronoun that accompanies many subordinate clauses marks the structural Subject. Subordinate clauses are marked in a number of ways, two of which are with the morpheme clusters 'fi-el' and 'e-t-ew' (direct and inverse, respectively), the distribution for which is similar to the direct/ inverse distribution described above. Subordinate clauses differ from matrix clauses in that the Subject of these forms is marked not by the Subject morpheme, but rather by a possessive marker preceding the predicate. In (23), which is in direct form, note that the Actor is marked by the 2nd person plural possessive pronoun 'mün'. In contrast, it is the Undergoer in (24) which is marked by the 2nd person singular possessive pronoun 'mi'.

(23)	müle-y	**mün**	allkü-	tu-	ñma-	ya-	fi-	el	ñi	dungu		
	have-3s,SUBJ	you(p)	listen-	REG-	SRC-	FUT-	OBJ-	VN	his	word		
	You must listen to his word.									(Smeets 1989:278)		

(24)	fey muna	kutran-ka-	w-	üy	**mi**	trem-	üm-	a-	t-	ew[10]		
	she very	illness-FAC-	REF-3,SUBJ	your		grow-	CAUSE	FUT-INV-	VN-	3,OBJ		
	She made a lot of sacrifices in order to raise you.									(Smeets 1989:278)		

The only difference in distribution of direct and inverse between matrix clauses and subordinate clauses lies in that which has already been noted as a special case: the interaction between first and second persons. In subordinate clauses, 'fiel' can be used for both 1->2 and 2->1 interactions, leaving the form 'e-t-ew' to be used only when a 3rd person is the Actor. This case is furthermore unusual in that both 1->2 and 2->1 interactions take the 2nd person possessive pronoun (Smeets p. 272).

(25)	fey-mu	inche	küpa-	n	**mün**	fey-	pi-	pa-	ya-	fi-	el:	
	therefore	I	come-	1s	you(p)	this-	tell-	here-	FUT-	OBJ-	VN:[10]	
	Therefore I have come to tell you this.									(Smeets 1989:278)		

This unusual behavior further characterizes interactions between 1st and 2nd persons as a case where the language wants both participants to be the Subject, and therefore resorts to using markers from both the inverse and direct forms. In the case of the subordinate clauses, it appears as if 2nd person may be the Subject in 1->2 interactions (as if it were an inverse), even though the verbal form is direct.

3. Conclusion

I have shown that Mapudungun bears an inverse system, based on the fact that it depends on a saliency hierarchy to determine its verbal form, just as the inverse languages I surveyed do. I have also argued that the inverse and direct verbal forms in Mapudungun link the Grammatical Relations to the arguments differently. The evidence for this re-linking is found in word order of statements and questions and the morphological marking of Subject in both matrix and subordinate clauses.

The analysis of Mapudungun that I have presented here results in two implications for morpho-syntactic theory. In the first place, it adds to the number of languages which have been described as 'inverse languages'. In doing so, it further defines the possible characteristics of inverse languages, such as the dependency on a saliency hierarchy, a switch in GR-argument mapping between inverse and direct, and a split in marking between predicates with a 3rd person Actor and predicates with 1st and 2nd person Actors. In the second place, analyzing the Actor as the Object in the Inverse argues for a theory of syntax which allows the Actor to be the Object. Specifically, it calls for a theory of syntax that allows the GRs to be re-mapped in this way, and thus strengthens the need for an underspecified version of LMT.

Notes

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2 Kutenai (Dryer 1991, to appear), Tanoan languages (Klaiman 1989, 1991), Algonquian languages (Dahlstrom 1986, Piggott 1989, Rhodes 1990), Korean (Klaiman 1991), Cherokee (Scancarelli 1987), and Chukotko-Kamchatkan languages (Comrie 1980).

3 The name 'Mapudungun' is composed of the morpheme 'mapu', which means 'earth', and the morpheme 'dungun', which means 'speak, talk'. The people who speak Mapudungun are called the Mapuche, composed also of 'mapu', plus 'che', which means 'people'. Another term often used to refer to the Mapuche is the Spanish word for them, 'Araucanian'.

4 As we will see later, the 1->2 interaction works in a slightly different way from the rest of the interactions, but for now it will be included with the other inverse forms.

5 Note that while number for third person is not marked on the verb, the optional quantifiers 'engu' or 'engün' may be added to indicate a dual or plural Subject.

6 The transcription of Mapudungun is in the Unified Alphabet, one of the standard alphabets used in Chile for Mapudungun. Most of the characters are the same as the IPA, except for the following: ü = ø, ll = λ, ng = N = d = Q, q = X.

7 Note that in Mapudungun a verb with no tense morpheme is the past for non-stative verbs.

8 In cases where 2nd person is the Actor and 1st person is the Undergoer and the total number is greater than 2, the morpheme *-mu* is used instead of the inverse *e*, as in the following example.

pe-	mu-	n
see-	2A-	1s,SUBJ

You see me/us. (total # > 2)

Otherwise, however, this form functions as the inverse, in that the Subject is indicated by the Subject morphemes, while *-mu* indicates that the Object is 2nd person.

9 The terms 'Actor' and 'Undergoer' replace the terms 'proto-agent' and 'proto-patient' used by Bresnan and Kanerva, following Dowty 1991.

10 Note that the inverse marker 'e' is missing. I hypothesize that this is the result of a phonological process which assimilates the 'e' to the 'a'.

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Analyzing the verbs of seeing: a frame semantics approach to corpus lexicography.

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What are dictionaries for? Let us suppose that a reader, coming across the sentence *Ned spotted Millie in the forest*, were to turn to a dictionary in the hope of discovering how this differed from other similar sentences such as *Ned saw Millie in the forest, Ned sighted Millie in the forest*, or *Ned espied Millie in the forest*. An American might reach for the *American Heritage Dictionary* (AHD), while a British reader might look these words up in the *Collins English Dictionary* (CED). Both might on further rumination conclude that a number of other verbs, such as *glimpse, spy, behold* or *descry* could also have appeared in that sentence, without greatly changing the meaning. Fired with enthusiasm for the chase, they look up each of these verbs in turn. Are they any the wiser? The definitions that they find are shown in Appendix 1.

1. What the dictionaries say

The most salient feature of the definitions, in both dictionaries, is the way in which they define the members of this little set of near-synonyms in terms of each other; only *see*, in both cases, is fully defined[1]. The phrase *catch sight of* is used thrice in the CED (where as a definiendum it is mentioned but not defined) and twice in the AHD (where it is not even mentioned as a definiendum). Often the definitions consist simply of two or three of the other verbs, but in both dictionaries a little more information is sometimes given. AHD seems to be saying that *descry* means the same as *discern*, while *spot* means *discern* and *detect* at the same time. CED on the other hand suggests that *spy* means *catch sight of* and *descry* simultaneously — or is one to understand that *spy* really means something like *catch sight of* with overtones of *descry*, or a cross between *catch sight of* and *descry* (which itself, according to CED, means some combination of *discern, make out*, and *catch sight of*)? As synonymy is transitive, the information in the two dictionaries may be summarized in the series of synonymy chains shown in Figure 1.

behold = observe = spot = perceive = catch sight of

descry = discern = spot = catch sight of

espy = glimpse = sight = catch sight of

notice = perceive = espy = catch sight of

spot = perceive = espy = catch sight of

spy = descry = discern = spot = catch sight of

Figure 1 Synonymy in dictionary definitions

Such definitions may allow the reader to understand any of these words in context, but they do not explain differences among near-synonyms. Indeed, dictionaries rarely offer contrastive accounts of word meaning across sets of semantically related words, and it is perhaps unfair to expect this of them, given the commercial

pressures on editorial time and print space to which they are subject. The basic text of the established collegiate dictionaries was laid down long before computerized lexicography came into its own, and it has not yet been proved that compiling entries for 80,000 words in semantic sets, although logically compelling, is a feasible proposition for a trade dictionary.

However, the words are discussed contrastively in a number of dictionaries, for semantic sets form the basis for some of the usage notes, where one might well expect a more systematic approach to meaning description. The AHD entry for *see* (see Appendix 1) is followed by a note in which some of the words we are interested in are discussed. The scope of this note (which adds a little to the information in the entries for these verbs) is not restricted to the modality of sight: synonyms given for *see* include *note, notice, observe, perceive* and *remark*, which, unlike *see*, operate in other modalities of perception. Register is mentioned for *behold* ("usually in literary or other formal contexts"), yet not for *espy* or *descry*, where the same would apply. All the information given in these two dictionaries is collated in the table in Figure 2.

Verb	Genus	Differentia		
		Manner	Duration	Feature of object
behold	look at, observe gaze at, look upon	awareness		
descry	discern make out catch sight of			distant obscure
espy	catch sight of perceive glimpse			distant previously unnoticed
glimpse	catch sight of obtain view of	incomplete	briefly momentarily	
sight	see, glimpse view, observe			
spot	observe, perceive discern, detect	suddenly		obscure
spy	catch sight of descry, see			distant obscure

Figure 2 Information in CED and AHD

If our readers were determined enough to search through other major collegiate dictionaries, they would wind up even more confused and frustrated. The defining approach in those surveyed[2] is similar to that found in AHD and CED, in that they all use the same few genus terms and the same few differentia, the only difference being the definienda to which these are assigned. The two[3] which offer a discussion of near-synonyms of *see* ring the changes on the verbs to which they ascribe distance and obscurity of the object, and both mention (rightly) the fact that the use of *behold* implies that the object is an impressive sight. All in all, however, it is fair to say that existing dictionaries do not describe the similarities and differences in the meaning of this little group of verbs.

2. Does the corpus support the dictionaries' views?

What can corpus evidence add to the dictionary descriptions? A current, general-language corpus[4] of approximately 50 million words of mainly British English, wordclass-tagged, offers 81,636 citations for the verb *see*. Frequencies for the other verbs discussed here are *behold* 199, *descry* 2, *espy* 24, *glimpse* 278, *sight* 255, *spot* 1,363, and *spy* 331; there were 192 citations for *catch sight of*. A 2-million-word subset of a specialist sentence corpus (the result of a structured reading programme of British and American English) added seven citations for *espy* and six for *descry*.

A survey of these citations did not always support the differentia offered in the dictionary definitions, although in many cases it was impossible to tell, even from contexts of paragraph length and over, whether the object *espied* had not been noticed before, or whether the thing *spotted* or *descried* was far off or difficult to see properly. In the case of *glimpse*, where almost all the dictionaries agreed on the fleeting nature of the experience, corpus citations reinforced this intuition, as in the following:

1a. Only *as the car approached them* did Ludens think he glimpsed a figure standing in the shade under a tree.
1b. *Passing the Wilcoxes' house* in Avondale Road, she glimpsed a hand shaking a duster from an upstairs window.
1c. *Turning*, Meredith was *just in time* to glimpse a man standing by one of the loose-boxes.
1d. Gower chased after him, glimpsing him *each time he rose with the swell.*
1e. The steely smile was glimpsed *briefly.*
1f. She glimpsed again that girlish figure *momentarily* outlined against the walls of the abbey.
1g. The more *briefly* glimpsed a grandparent, the more likely the recollection is to be no more than an external image.
1h. And there were mountains, though *miles away* and only glimpsed at *through a tiny tree gap.*

In **1a** through **1c** the italicized phrases (my italics) make it clear that the glimpser was moving, and therefore presumably prevented from focussing for any length of time on the object in view; in **1d** the person glimpsed was moving, with the same result; **1e** through **1g** exemplify the many instances of explicit adverbials reinforcing the meaning of this verb; and **1h** includes a description of the reasons why the mountains were "only glimpsed".

More often than not, however, the corpus evidence contradicts the dictionary definitions, as for instance in the case of *spot*, defined in CED as "to observe or perceive suddenly, especially under difficult circumstances": an occasional citation implies that the object was difficult to see (*I happened to spot a flicker of movement close to the north bank of the pool*) but more often the contrary is implied, as in the following:

2a. A water bailiff spotted Harty fishing openly on the banks of the Tees.
2b. "They were fairly easy to spot," said police.
2c. The bombs are covered in black tape to make them less easy to spot.
2d. She launched her criticism after spotting four boys aged about ten pelting stones at ducks in the pond.

In **2a**, the use of the word *openly* makes it clear that it was not difficult to see Harty; in **2b** and **2c** the phrase *easy to spot* is difficult to reconcile with the claim that spotting something means seeing it under difficult circumstances, and one would have to be determined to take the *ex cathedra* view of dictionary pronouncements to believe on reading **2d** that it was difficult to see four little boys throwing stones at ducks in a village pond.

Difficult as they may be to differentiate, however, these words are not synonymous, nor are they even interchangeable in all contexts. In the corpus citation *Apart from being functional, it is also beautiful to behold*, the substitution of *glimpse* for *behold* would be unacceptable; equally unacceptable would be the substitution of *behold* for *glimpse* in *Gower chased after him, glimpsing him each time he rose with the swell.* The children's game *I spy with my little eye something beginning with ...* would sound unlikely if it were *I glimpse* (or *sight* etc.) *something beginning with ...*, and *Glimpse the ball!* or *Spy the ball!* would be an improbable name for the popular newspaper competition *Spot the ball* (in which participants guess the location of a football airbrushed out of an action shot of a game), while *Behold the ball!* would have quite the contrary effect.

Approached in a theoretical vacuum, the corpus data, rich as it is, is not enough to allow lexicographers to describe adequately the meaning of each of these words, far less to distinguish the tiny shifts of meaning that occur from one to the other. The sheer weight of undifferentiated data carries the lexicographer to the seabed. It is difficult to believe that the dictionaries would have done any better if their editors had had thousands of citations to consult for each word. Without some formal method of structuring the lexicographical evidence, corpus analysis can only be impressionistic. Richer data may give us better impressions, but cannot give us much more. I shall now try to describe how a frame semantics approach to corpus analysis, as described in Fillmore & Atkins (1992 and in press), appears to offer a useful environment for lexicographical work on this group of near-synonyms.

3. A frame semantics approach to corpus analysis

The "perception frame"[5], within which operate the verbs of seeing as well as those of feeling, hearing, tasting and smelling, is peopled with various categories, or elements; they are all necessary to account for the various usages of the word, and each of them may or may not be expressed in any sentence in which a verb of seeing is found. The names Experiencer (the animate being that sees) and Percept (what is seen) are given to two of the major frame elements in this visual event. Thus *Bill* in *Bill looked at Marie* and *Joe* in *Joe saw the sparrow* are expressions of the Experiencer, while *Marie* and *the sparrow* express the Percept in each case. When the meaning of the verb (*look*, for instance) includes an element of volition, there is an Active Experiencer (*Bill*); otherwise (*see*, for instance) the Experiencer (*Joe*) is Passive. The work of scholars such as Rogers (1971), Cooper (1974, 1975) and Miller & Johnson-Laird (1976) is relevant here.

The voluntary/involuntary aspect of its nature is central to a description of the visual event, but neither of the dictionaries examined distinguishes this clearly. The AHD defines *behold* (which has a Passive Experiencer) as *To gaze at; look upon*, yet both *gaze* and *look* are verbs in which the Experiencer is Active; moreover, the AHD lists as synonyms of *see* (where the Experiencer is Passive) the verbs *contemplate, survey, view, scan* and *skim*, which have Active Experiencers.
In a frame semantics analysis, a distinction is also made in the case of the Percept: the name Stimulus is given to the type of Percept found when an object appearing in the field of vision produces in the Experiencer the experience of seeing something, but there are verbs of visual perception where this is not always the case. One of these is *look*. In *Bill looked at Marie*, the noun *Marie* clearly represents the same type of Stimulus Percept as is found in *Joe saw the sparrow*, but in *I'm looking for my car*, the car in question has not yet been seen, and cannot therefore constitute a Stimulus, although the verb and particle unit *look for* are described as belonging to the visual modality of the perception frame. We would want to call this type of Percept a Target. Other modalities within the perception frame call for other subtypes of Percept, but these are not relevant to this discussion.
To complete the brief overview of the principal categories required to describe verbs of visual perception, mention must be made of the other major frame element, Judgment[6]. This refers to the opinion which the Experiencer forms about the Percept as a result of the visual experience. There are various subtypes of Judgment, and the names they are given are self-explanatory, and are indicated in brackets in the following examples, where the words expressing the Judgment are italicized:

3a. He looked to me *like a yellow budgerigar*. (Judgment-Simile)
3b. Diana looks *relaxed*. (Judgment-Inference)
3c. Polished tools look *better*. (Judgment-Evaluative)
3d. The lens makes things look *eight times bigger*. (Judgment-Domain-Specific-Quality)

As these examples show, the same frame element may be expressed in various grammatical ways. The Experiencer, the subject of the perception verb in *Joe saw the sparrow*, is expressed by the prepositional phrase *to me* in *He looked to me like a yellow budgerigar*, while the Percept is the object of the verb (*the sparrow*) in the first sentence and the subject of the verb (*he*) in the second.
In an attempt to record systematic information about the ways in which the verbs of seeing are used, a database was built in which about one hundred sentences for each verb were analyzed (as described in Heid & Krueger 1994). More than forty different types of data were recorded about the verb and its context in each sentence: some of this was detailed morphosyntactic information about the keyword itself, but the main focus of interest was the interface between semantics and syntax. The semantic information was of two types: first, each frame element overtly expressed in the sentence was named and recorded, and, second, a small number of semantic features (+human, +concrete, +event, +definite etc.) were noted about the nouns used in the expression of frame elements. A profile was also drawn up of the grammatical expression of each frame element: this consisted of a code describing the type of phrase used to express the element, and its grammatical function in the clause containing the key verb. The verbs so far analyzed in this way are: *see, watch, look, sight, glimpse, spot, spy, espy, behold* and *descry*.

4. What can the corpus offer?

This coding made it possible to produce tabulations of frame elements and their lexical and grammatical expressions, and to contrast the set of data relating to one word with those relating to its neighbours in the same frame. Figure 3 gives an example of the difference in patterning between the verbs *look* and *sight*. The percentages in the extreme left column indicate the proportion of the citations in which each pattern is found. It must be emphasized that the subcorpus of sentences for the verbs[7] studied in this research is of course not large enough to allow any reliable statements about the way any of the words is used in the language generally; it is the methodology, rather than the results, that is of interest here.

LOOK					
31.7%	exp-active			direction	
14.6%		perc-stimulus	judg-infer		
12.2%				direction	
7.3%		perc-stimulus	judg-simile		
7.3%	exp-active	perc-stimulus			
4.9%		perc-stimulus	judg-evaluat		
4.9%	exp-active			direction	manner
4.7%		perc-stimulus	judg-dom-spec		
2.5%	exp-active	perc-target		direction	
2.5%	exp-active				manner
2.5%	exp-active	perc-stimulus			manner
2.5%					manner
2.4%	exp-active	perc-stimulus			manner
SIGHT					
22.2%	exp-passive	perc-target			
18.5%		perc-target		place	
18.5%		perc-target		place	time
13.0%	exp-passive	perc-target			time
9.3%		perc-target			
7.4%	exp-passive	perc-target		place	
3.7%	exp-passive	perc-target		place	time
3.7%		perc-target			time

Figure 3 Frequency of frame element patterns
% refers to percentage of corpus citations in which the pattern is found

From the table in Figure 3, it is clear that the most frequent cooccurrence of frame elements for the verb *look* is the pattern Active Experiencer + Direction, as exemplified in *He looked away* and *He looked uninterestedly over the crowd.* The next most frequent, Stimulus Percept + Inference Judgment, is found in sentences like *Now it was Burden's turn to shrug and look baffled.* The Passive Experiencer + Target Percept configuration which dominates the data for the verb *sight* is exemplified by *As soon as they sight a predator approaching, they swiftly dart round to the far side of a tree-trunk*; the Target Percept + Place is found in sentences such as *The cliffs of Dunnose were sighted about two miles off.*
The information from the hundreds of sentences thus coded was tabulated in many different ways, offering a flexible tool for studying the many different aspects of meaning and grammar that underlie word usage. One instance of the kind of

reasoning that this allowed is the description of the contrast between frame elements and patternings found for the two verbs shown in Figure 3. The most salient difference between the verb *look* and the verb *sight* is perhaps that the former allows the expression of the frame element Judgment, while the latter does not. Also very prominent is the contrast between the Active and the Passive Experiencers, and the Stimulus and Target Percepts.

Another important contrast between the usages of *look* and those of *sight* lies in the presence of so many time and place adjuncts in the context of the latter verb. This was perhaps the feature which distinguished *sight* most clearly from the other verbs in the group. When a speaker selects *sight* rather than *see* or *spy* or *glimpse*, it is, apparently, because there is something important and interesting about the time at which the visual event took place, and the location of the Percept at that time. Also apparent from the data in Figure 3 is the fact that the manner in which people direct their visual attention to someone or something else is an important factor in the choice of verb. When this aspect of the visual event is to be highlighted, *look* or another Active Experiencer verb is chosen (as shown by the presence of manner adjuncts in the verb's contexts); when it is not, then *sight* may be selected. This is not to say, of course, that these factors are consciously weighed by speakers before a verb is selected; rather that the unconscious choice is influenced by some perceived relative importance of the various aspects of the visual event, or elements in the frame of visual perception. These more peripheral aspects of meaning (place and time in particular) proved useful in exploring the difference between quasi-synonyms: the contrast here highlights differences of usage in the data for *glimpse, spot* and *sight*, as may be seen from the percentages in Figure 4, where only some examples of each frame element are given.

The distinction made within the frame element Place between the two subtypes, Place-Percept and Place-Experiencer, needs no commentary, except to note that occurrences of the former are fairly evenly represented across the three verbs (the percentage figures indicate the number of corpus citations in which the frame element is overtly expressed), indicating that *glimpse, spot* and *sight* are all used when the speaker or writer intends to mention the location of the Percept at the moment of the visual event, although it may be noted that the types of Place-Percept differ from verb to verb. *Spot* and *sight* are used with adjuncts indicating exact locations in terms of measurements such as *feet, yards, miles* and *degrees*, while vaguer expressions like *beyond, far off, above the clouds* and *across the valley* tend to appear in the contexts of *glimpse*. Place-Experiencer, on the other hand, does not occur in the *sight* subcorpus. Where the Experiencer was located when the visual event took place seems to be of little significance when the verb *sight* is selected, as opposed to *spot* or *glimpse*, where it seems to have some relevance.

From cross-tabulations of this type it may be seen that, unlike *glimpse* and *spot*, *sight* — as noted earlier —focuses the attention on time as well as place, and here again the emphasis is on exact timing (*three years ago, at 8.00 a.m., on Friday night*), rather than vaguer time phrases such as *recently* or *last year*. Gradually, the profile of these three verbs begins to emerge.

PLACE-PERCEPT		
GLIMPSE 43%	**SPOT 39%**	**SIGHT 43%**
beyond	700 feet below	a mile away
far off	a hundred yards away	below
above the clouds	a mile off	14 degrees N, 18 W
across the valley	down below her	at a London studio
among the pedestrians	among the dinner guests	in Romania
at football matches	at a local auction	in the water
beneath his uniform	in the Big Apple	near a campervan
by the roadside	in the personal column	on a brass plate
in a backstreet bar	on a piece of board	at the aerobics class
on her cheek	on the hillside	in Hundens Lane
PLACE-EXPERIENCER		
GLIMPSE 8%	**SPOT 5%**	**SIGHT 0%**
from the catwalk	from a distance	
from the depths of the car	from a few feet away	
from the library window	from below	
from the ship		
TIME		
GLIMPSE 0%	**SPOT 0%**	**SIGHT 35%**
		recently
		three years ago
		last year
		at 8:00 a.m.
		before being attacked
		in 1983
		on Friday night
BARRIER		
GLIMPSE 15%	**SPOT 0%**	**SIGHT 0%**
between moving boughs		
through the alders		
through the studio walls		
through the mist and rain		
through the storm		
through the white flakes		
through tall trees		

Figure 4 : Distribution of some frame elements across verbs
% refers to percentage of corpus citations in which the pattern is found

The table in Figure 4 contains a reference to another frame element, to which I gave the name "Barrier": this aspect of meaning seemed important for *glimpse*, and for *glimpse* only, in the group of seven that were being contrasted, since it did not appear at all in the contexts of any of the other verbs (*behold, descry, espy, sight, spot* and *spy*). The strong representation of the Barrier element in the *glimpse* subcorpus reminds the observer that glimpsing something is catching sight of it briefly, often because there is some physical object between the Experiencer and the

Percept, partially or sporadically obscuring the Percept. It suggests that while the duration of the visual event is certainly a factor in the use of *glimpse*, the brevity of the experience is not always caused by the fact that one or other of these entities is moving (as noted in Section 2), but may be due to some intervening object or some event which makes vision difficult. A summary of the frequency of expression of the main frame elements in the contexts of these verbs is given in Figure 5.

	EXP	PER	PL-PER	PL-EXP	BAR	TIME
see	86%	95%	14%	-	-	-
catch sight of	100%	100%	7%	2%	-	-
glimpse	67%	98%	43%	8%	15%	-
sight	45%	92%	43%	-	-	35%
spot	70%	95%	39%	5%	-	-
behold	81%	100%	3%	-	-	6%
descry	100%	100%	-	-	-	-
spy	95%	100%	15%	5%	-	-
espy	100%	100%	8%	-	-	-

Figure 5 : Distribution of frame elements across verbs of seeing
% refers to percentage of corpus citations in which the element is expressed

Finally, on the subject of contextual features, we should recall the aspects of meaning referred to in the dictionary definitions (see Appendix 1), in particular their use of words like *briefly, suddenly* and *easily*. A search through the corpus found little evidence to support the dictionaries' claims, but it did become obvious that the phrase *in the mirror* often occurred in the context of *catch sight of*, and none of the other verbs. This fact firms up the profiles a little more. *Catching sight of* is something that happens suddenly, and is often triggered by seeing one's own appearance in a mirror; *glimpsing* (as everyone knew already) is a brief experience; and *beholding*, like *catching sight of*, has a sudden quality about it.

5. Using the data from the frame semantics analysis

This approach to lexicographical analysis offers a more systematic differentiation of the meanings of the seven semantically close verbs of seeing, and allows the lexicographer to use the corpus data, in conjunction with his or her own intuitive understanding of the meanings of the words, in order to identify the parameters along which more clearly their similarities and differences may be distinguished. I should like briefly to introduce some of the points which emerged from this process, before attempting, in the final section, to apply the findings to practical lexicography.

The table in Figure 6 is an attempt to differentiate the seven verbs under review, together with the verb *see* itself, the verb phrase *catch sight of*, and the not wholly visual *notice*[8]. Of the seven, *espy* and *spy* appear to be almost synonymous, except in the dimension of register, where *espy* is more formal than *spy*. Otherwise, on the basis of the corpus evidence, there is little to choose between them. Human Percepts are rare: things *espied* or *spied* tend to be inanimate objects, sometimes places. There is nothing in the corpus to make us think that they are necessarily small or difficult to see (despite what the dictionaries say).

Verb	Percept				Visual Event
	Expected-Unexpected	Inherent Interest	Visual Salience	Distance	Duration
see	-	-	-	-	-
notice	unexpected	high	-	-	-
catch s. of	unexpected	-	-	-	-
glimpse	-	-	-	-	short
espy - spy	-	high	-	-	-
spot	-	high	low	-	-
behold	-	high	high	far	long
sight	non-specific expected	high	-	far	-
descry	specific expected	high	low	far	-
witness	-	high	high	-	-

Figure 6 Aspects of the meaning of the verbs of seeing

In essence, all these words are used to refer to very similar visual events, with the possible exception of *glimpse*, where the duration is noticeably brief. Choosing one word rather than another seems to be a way of shining a light on one particular aspect of the event, or of implying the existence of certain preconditions which may not have been consciously known to the participants.

The headings in Figure 6 arise from consideration of the frame semantics analysis of the corpus citations discussed above. Sometimes, however, the frame elements proposed did not seem to account for all the shades of meaning that the verbs carry, and this rough categorization is not in a final form. Rather, it attempts to show the axes along which the words share meaning components, or are differentiated from each other. Linguistic intuition has been checked against corpus evidence, and nothing has been included if contradicted by material in the corpus. However, absence in the corpus does not prove absence in the language, and not all intuitions are amenable to support from corpus evidence.

The aspects of meaning named in the column headings are divided into two groups: the first which relates to the Percept, and the second which relates to the visual event itself. The table does not include details of the Experiencer, which is passive in all these cases. The first option in each column is "unmarked" or "marked". A dash in a column indicates that the verb is unmarked in respect of that particular aspect of meaning. The marked state has further options, and these will be discussed as we go along.

Expected/Unexpected

This is a development from the systematic recording of the Percept in several hundred sentences. The verb *sight* differs form *see* in that its Percept is a Target, while that of *see* is a Stimulus. It is however possible to *sight* things you are not looking for[9], which means that the Target Percept in the case of *sight* differs from that of *look for*, or *descry*. You can only *descry* something that you are actually looking for, which you recognize once you have found it. The fact that you do not

know exactly what it will look like makes the descrying more difficult. It seems justified, therefore, to distinguish between a **specific** Target, in the case of *descry*, and a **non-specific** Target, in the case of *sight*. That is to say that the sentence *Ned sighted Millie in the forest* implies that Ned had been looking around for something non-specific of interest and his glance fell upon Millie. *Ned descried Millie* implies that he was looking for Millie specifically, and managed to find her.
To summarize: the idea that there was an expectation of something interesting is captured in the **expected** coding; if the Experiencer was expecting to see something specific, then this is coded as **specific**, otherwise it is recorded as **non-specific**; when the Experiencer was not looking around for anything and was probably slightly surprised to see whatever the Percept was (as in the case of *notice* and *catch sight of*), this is coded as **unexpected**.
When the coding is 'unmarked' in this column, it means that the verb does not imply anything at all about this aspect of meaning, and can be used in situations where the context makes it clear that the Experiencer was looking for something and in others where the contrary is true. You can, for instance, *glimpse, espy* or *behold* something you are expecting to see, or something that takes you completely by surprise.

Inherent Interest

Whereas the previous column related to the expectation of the Experiencer before the visual event, this column is concerned with the interest inspired by the Percept at the moment of seeing. The choice of the verbs coded **high** implies that the Experiencer found the Percept (once perceived) to be of interest; it seems unlikely that the value **low** would ever occur here, because if the Percept were of no interest to the Experiencer then the event would not be worth reporting at all.
When the coding is `unmarked' in this column, it means that the verb does not imply anything at all about this aspect of meaning and can be used in situations where the context makes it clear that the Percept was interesting and in others where it was clearly of no interest to the Experiencer. To report, for instance, that *There was a dining area, and beyond I glimpsed a further ward* does not imply that the ward so glimpsed was of any particular interest to the Experiencer; whereas in *I glimpsed a familiar face and pushed my way through the crowd crying "William!"*, the implication is that the Experiencer found the familiar face of great interest.

Visual Salience

This relates to how visible the Percept was; **low** means it was difficult to see (in the words of the dictionaries examined, "obscure" or "difficult to catch sight of"); the use of a verb coded **high** implies that the Percept was so salient that the Experiencer could not have missed it. So, for example, the objects of *behold* in the corpus tend to be such impressive sights as *the armies of the Lord, your prince and sovereign* or *the execution of an unending stream of aliens and heretics.*
When the coding is 'unmarked' in this column, it means that the verb can be used in situations where the context makes it clear that it was impossible for the Experiencer not to see the Percept, and others where the Percept was clearly almost invisible. It is apparent from the corpus citations that this is the case for *see, notice, catch sight of, glimpse, espy* and *spy*.

Distance

This refers to the distance between the Experiencer and the Percept at the time of the visual event. The value **far** is meant to indicate that the Percept was out of touching range. For instance, if you are flicking through a book, you can *notice* or *catch sight of* your own name in it, but you cannot really *sight* your name in it.
When the coding is `unmarked' in this column, it means that the verb can be used in situations where the context makes it clear that the Percept is at a considerable distance (*She caught sight of a windsurfer falling in the far distance*) and in others where it is clearly close to the Experiencer, although in general, apart from the verbs *see* and *notice*, these verbs tend to be used in circumstances where the Experiencer and the Percept are quite far apart. This is understandable, since the visual event would hardly be worth reporting otherwise.

Duration

This column owes its existence to the verb *glimpse*, which undoubtedly implies a fleeting event (it is derived from a Germanic word meaning a flash of light). It is also arguable that it is impossible to *behold* something very briefly (it has the same Germanic origins as *hold*). The other verbs appear to be unmarked for this aspect of meaning.

6. Implications for lexicography

AHD lists as synonyms of *see* the verbs *behold, note, notice, espy, descry, observe, contemplate, survey, view, perceive, discern, remark, scan, skim*; Webster's New Dictionary of Synonyms (1984: Merriam-Webster Inc.) offers the same list without *scan* and *skim*; the verbs examined in this paper add *glimpse, spot, spy* and *catch sight of*; Collins Dictionary and Thesaurus (1987) adds *distinguish, heed, identify, look, make out, mark, recognize, regard* and *witness*.
In compiling a usage note, or an entry in a dictionary of synonyms, there are certain aspects of meaning to which one would wish to give priority. The first is the modality of perception. Synonyms of *see* in its core sense should belong exclusively to the visual modality. This requirement removes from the list above the following verbs: *note, notice, perceive, discern, remark, distinguish, heed, identify, make out, mark* and *recognize*.
Second in priority order is the type of Experiencer, Active or Passive. In frame semantics terms, *see* has a passive Experiencer; this would exclude from the list those verbs where the Experiencer is active, namely: *contemplate, look, observe, regard, scan, skim, survey* and *view*. The survivors are the verbs considered already in this discussion (*behold, catch sight of, descry, espy, glimpse, spot, spy*) and *witness* (in the non-legal sense).
What needs to be said about these verbs in a usage note on synonymy at the entry for *see*? First, of course, that all the near-synonyms share the property of not being at the conscious disposal of the person who has the visual experience: you cannot deliberately *see* or *behold* or *catch sight of* (etc.) something. Full information about the semantic type of the Percept (or the subcategorization of the verb) would not normally be included in a collegiate dictionary, but would have to be discussed in a dictionary for learners of English.

A usage note beside the entry for *see* in a general dictionary might read:

> *See* and its near-synonyms *behold, catch sight of, descry, espy, glimpse, spot, spy* and *witness* refer to the involuntary perceiving of something by the sense of sight. *See* implies nothing further about the event. *Catch sight of* suggests that it was unexpected; *glimpse* that it was brief; *spy* and *espy* (a literary word) stress the interest factor of what was seen, as does *spot*, which also emphasizes the location of the thing seen, often implying that it was difficult to make out; *behold* (a literary word) lays emphasis on the impressive nature of the sight, and implies that it was not close by; *witness* refers to seeing something happening, suggesting that this was easily seen and of considerable interest, and highlights the presence of the perceiver; of these, only *catch sight of* implies anything about the perceiver's expectations before the visual event. *Descry* (a rare word) implies a previous searching for the thing eventually seen with difficulty, and often in the distance; *sight* implies a previous searching of a distant area, not necessarily for the specific object eventually sighted, and the finding of something of great interest. *Glimpse, spot* and *sight* are often used when details are given of the perceiver's location when the thing was seen, and *sight* also frequently occurs with adverbials indicating the location of the object sighted, and the time at which this happened.

The thousands of citations in an electronic text corpus undoubtedly hold rich information about aspects of meaning not yet fully understood. I have tried in this paper to describe a method of lexicographical analysis which uses frame semantics to structure the insights derived from the data, and the data itself to control the lexicographer's intuitions, and which offers a vocabulary to describe more consistently similarities and variations in word meaning.

NOTES

1. It is only fair to say that this introverted defining technique is not exclusive to AHD and CED; the same could be said of the other major monolingual English dictionaries of similar size.
2. As well as AHD and CED: *The Chambers Dictionary*, Edinburgh: Chambers Harrap, 1993; *Concise Oxford Dictionary*, 8th Edition, Oxford, UK: Oxford University Press, 1990; *Longman Dictionary of the English Language*, London, UK: Longman, 1984; *Webster's New World Dictionary*, 3rd College Edition, New York: Simon & Schuster Inc., 1988; *Webster's Ninth New Collegiate Dictionary*, Springfield, Mass.: Merriam-Webster Inc., 1983.
3. *Webster's New World Dictionary* and *Longman Dictionary of the English Language.*
4. All the citations are drawn from the corpora used by the lexicographers of Oxford University Press; most come from a 50-million-word subset of the main Oxford Corpus of current English, but some for *espy* and *descry* were taken from the Oxford English Dictionary Reading Programme Corpus.
5. The research described here was based on the work of Charles Fillmore (Fillmore 1975, 1978, 1982, 1985; Fillmore & Atkins 1992, and in press), and was carried out as part of the DELIS project ("Descriptive Lexical Specifications and Tool for Corpus and Lexicon Building"), which is partly financed by the

Directorate General XIII of the Commission of the European Community, Luxemburg, in the framework of the Linguistic Research and Engineering Programme (LRE 61.034).
6. As well as Experiencer, Percept, and Judgment, other frame elements were identified for the perception frame, and a full description of these is given in Ostler (in preparation).
7. 100 sentences were extracted manually from the thousands of citations scanned for the verb *look*, and 70 out of the 255 available for the verb *sight*.
8. Paul Kay (personal communication) has pointed out that *spot* can also be used to denote non-visual perception. I should alas have spotted this from the corpus sentence *John had spotted the Cockney pronunciation of the word `tea'*.
9. I owe this insight (and many others) to Charles Fillmore.

APPENDIX 1

The visual senses extracted from the verb entries in the two dictionaries.

behold
CED *vb. Archaic or literary.* to look (at); observe.
AHD *tr.v.* To gaze at; look upon.

descry
CED *vb. (tr.)* To discern or make out; catch sight of.
AHD *tr.v.* To discern (something difficult to catch sight of): *"Through the mists they could descry the long arm of the mountains"* (J.R.R.Tolkien).

espy
CED *vb.* **1.** *(tr.)* to catch sight of or perceive (something distant or previously unnoticed); detect: *to espy a ship on the horizon.*
AHD *tr.v.* To catch sight of; glimpse.

glimpse
CED *vb.* **4.** *(tr.)* to catch sight of briefly or momentarily.
AHD *v.—tr.* To obtain a brief, incomplete view of.

see
CED *vb.* **1.** *(intr.)* to perceive with the eyes.
AHD *v.* —tr **1.** To perceive with the eye.
Synonyms: *see, behold, note, notice, espy, descry, observe, contemplate, survey, view, perceive, discern, remark, scan, skim.* These verbs refer to being visually or mentally aware of something. *See*, the most general, can mean merely to look at but more often implies recognition, understanding, or appreciation. *Behold*, usually in literary or other formal contexts, is stronger in implying real awareness of what is seen... *Espy* and *descry* both stress acuteness of sight that permits detection of something distant or obscure... *View* usually implies close attention but suggests examination in a special way or with a particular purpose in mind. *Scan* usually refers to quick visual inspection of something but can also mean to examine closely.

sight
CED *vb.* **21.** *(tr.)* to see, view, or glimpse.
n. **5.** a glimpse or view (esp. in the phrases **catch sight of, lose sight of**).
AHD *v.* **1** To see or observe within one's field of vision: *sight land.*

spot
CED *vb.* **22.** *(tr.)* to observe or perceive suddenly, esp. under difficult circumstances; discern.
AHD *v.* —*tr.* To detect; discern.

spy
CED *vb.* **7.** *(tr.)* to catch sight of; descry.
AHD v. —tr. **2.** To catch sight of; see.

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Conventional Form*

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The central objective of this paper is to present arguments in favor of the existence of two interacting components which encode the syntactically-relevant aspects of semantic interpretation. I will argue that binding constraints are sensitive to this distinction between two components at the syntax-semantics interface and that these components guide the semantic interpretation of linguistic expressions in ways expressible in terms of Herzberger's (1973) "two dimensional" logic or Karttunen and Peters' (1979) translation to ordered pairs of formulas of the type: <extension expression; implicature expression>.

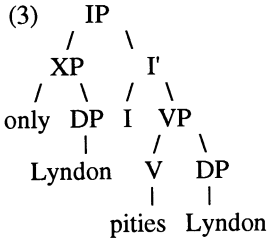
It has been known for some time that linguistic expressions such as even and only, which can be thought of as adverbial operators taking nominals, predicates, sentences, etc. as their focus, create exceptions to the well-known constraints on A-binding whenever they attach to a potential binder for an R-expression or a pronominal. Consider in this respect the sentences in (1) where the underlined nominals are licitly taken to denote the same individual:

(1) a. Only Lyndon pities Lyndon. (McCawley 1970)
b. Only Churchill remembers Churchill('s) giving the speech about blood, sweat, toil and tears. (Fodor 1975)
c. Everyone has finally realized that Oscar is incompetent. Even he has finally realized that Oscar is incompetent. (Evans 1980)
d. Only John expects for him to win. (adapted from Higginbotham 1980)

As pointed out by Grodzinsky and Reinhart (1993), previous attempts to capture these apparent exceptions to Condition C and Condition B of the Binding Theory either account for only part of the paradigm in (1) or overgenerate in that they cannot distinguish between, say, the grammaticality of examples like (1c) and (1d) and the ungrammaticality of examples like the ones in (2).

(2) a. *Oscar is sad. He thinks that Oscar is incompetent.
b. *John is happy. John expects for him to win.

Of interest is the fact that the minimal pairs (1c) vs. (2a) and (1d) vs. (2b) seem to indicate that these apparent violations of the Binding Theory correlate with the presence of words like even and only, which focus the potential binder for the R-expression or the pronoun. One syntactic explanation directly tied to the example in (1d) is provided by Higginbotham (1980), which relies on the crucial assumption that since John does not c-command him in (1d), the two expressions can be coreferential since no binding actually takes place. The configuration for (1a) could then be assumed to be as in (3), a structure which does not yield a violation of Condition C.



If we adopt this view that only embeds the phrase that it focuses in such a way that the latter cannot c-command elements outside of the only-phrase and if we further extend these assumptions to even, then the apparent violations of the Binding Theory examined so far follow in a straightforward fashion. However, as we will see, much more is involved here than a simple c-command problem.

The type of binding theoretic problems raised by focusing elements like even and only in fact are not limited to A-binding. Both Wasow (1972) and Postal (1993) point out that it seems to also be relevant to the A-bar binding system in that it plays a role in the determination of weak crossover effects. This is illustrated by the contrasts in (4) and (5), taken from Postal's (1993) paper:

(4) a. *Which lawyer$_i$ did his$_i$ clients hate t_i ?
b. Which lawyer$_i$ did even his$_i$ clients hate t_i ?
c. Which lawyer$_i$ did only his$_i$ older clients hate t_i ?
d. Which lawyer$_i$ did his$_i$ own clients hate t_i ?

(5) a. *the lawyer$_i$ who$_i$ his$_i$ clients hate t_i
b. the lawyer$_i$ who$_i$ even his$_i$ clients hate t_i
c. the lawyer$_i$ who$_i$ only his$_i$ older clients hate t_i
d. the lawyer$_i$ who$_i$ his$_i$ own clients hate t_i

As Postal emphasizes, these contrasts are triggered not by the status of the moved wh-phrase (as shown by the (a) examples) but, rather, by the nature of the phrase containing the pronoun. In particular, the apparent violations of the weak crossover constraint occur when the pronominal is embedded in a phrase which is itself the focus of a word like even or only. Of crucial importance to the discussion at hand is the fact that the weak crossover constraint prohibits the bound variable reading of a locally A-bar bound pronominal which is not in a c-command relation with the wh-trace sharing its index. Higginbotham's account of sentences like (1d), which relies on the lack of c-command between the phrase focused by only and the coindexed phrase located lower in the structure, has therefore no impact on the facts in (4) and (5). Yet it would be rather surprising if the influence of only and even on disjointness A-binding requirements illustrated in (1) and their parallel influence on disjointness A-bar binding requirements illustrated in (4) and (5) turned out to be purely coincidental.

Now Higginbotham's account of sentences like those in (1) also includes the assumption that only-phrases QR at LF. One might then conjecture that perhaps what allows the violation of weak crossover in the grammatical examples of (4) and

(5) is the fact that the pronominal functioning as a bound variable is contained in a quantificational phrase. Assuming that the whole quantificational phrase is pied piped at LF, one could then stipulate that weak crossover does not apply to LF representations which contain a locally bound pronoun embedded in a subject argument phrase in an adjoined position. However, the facts in (6) militate against this hypothesis:

(6) a. *Who$_i$ did every one of his$_i$ clients hate t$_i$?
b. *Who$_i$ did some of his$_i$ clients hate t$_i$?
c. *Who$_i$ did none of his$_i$ clients hate t$_i$?

What the sentences in (6) show is that embedding the offending bound pronoun in a quantificational phrase known to undergo QR at LF does not allow the created configuration to escape weak crossover effects. From this we must conclude that even if we assume that only-phrases have quantificational status and QR at LF, we are still no closer to an explanation as to why a bound pronominal embedded in an only-type phrase in subject position can circumvent the weak crossover constraint.

The same type of problem arises in conjunction with Progovac's (1992,1993) account of only-type phrases in subject position which, she argues, undergo wh-raising to the specifier position of CP at LF, thereby licensing a negative head of CP under Spec-head agreement and allowing negative-polarity items in their scope. Even if we adopt this assumption, we are no closer to an explanation as to why the grammatical sentences in (4) and (5) escape the effects of the weak crossover constraint since embedding the offending bound pronominal in a subject wh-phrase contained in a multiple interrogation structure does in no way circumvent weak crossover as shown in (7):

(7) *[Which lawyer]$_i$ did [which client that he$_i$ liked] fire t$_i$?

Note first that the ungrammaticality of (7) cannot be attributed to a superiority violation since the wh-phrases are D-linked in the sense of Pesetsky (1987). Further wh-phrases in situ in mutiple interrogations are assumed to undergo wh-raising at LF. Therefore, if the fact that only-type phrases undergo wh-raising was in some way responsible for the grammaticality of the well-formed examples in (4) and (5) we would expect the sentence in (7) to be grammatical as well, but this expectation is not fulfilled. Thus, we must again conclude that the explanation for the contrasts in (4) and (5) is not tied to the hypothetical LF movement of only-type phrases.

What I would like to argue here is that an adequate analysis of the problem just outlined must make reference to a component at the syntax-semantics interface distinct from (but not incompatible with) the syntactic level of LF. Specifically, I will propose that binding constraints may be satisfied at a level at which conventional implicatures are formally represented.

So far, we've established that words like even and only appear to somehow be at the root of some possible circumventions of disjointeness requirements in the A as well as the A-bar binding systems. Examples of this phenomenon are repeated in (8):

(8) a. Lyndon$_i$ pities only Lyndon$_i$ (circumvents Condition C)
b. Only John$_i$ expects for him$_i$ to win. (circumvents Condition B)
c. Which lawyer$_i$ did even his$_i$ clients hate t$_i$? (circumvents weak crossover)

That even and only are very closely related both in their grammatical behavior (as floating adverbials) and in their syntactic distribution is shown in some detail by Lycan (1991). There is, however, less agreement on what these two words have in common in terms of their interpretive contribution to the sentences in which they appear. Capturing the meaning of even has led to a considerable amount of discussion in the literature; see in particular Barker (1991), Bennett (1982), Ducrot (1973), Fauconnier (1976), Fillmore (1965), Horn (1969), Kay (1990), Karttunen and Peters (1979), and Lycan (1991). Of these, at least Horn (1969) and Lycan (1991) examine possible semantic connections between even and only, while Karttunen and Peters (1979) put forth what is perhaps the most formal treatment of the interpretive contribution of even. As a point of departure, let us consider the view found in Karttunen and Peters (1979) that the contribution of even to sentence meaning is that of conventional implicature. On this view, the word even in a sentence like (9a) does not play a role in determining the primary truth conditions of that sentence, since (9a) and (9b) express the same proposition and are therefore truth-conditionally equivalent.

(9) a. Even Mary drinks Elephant beer.
b. Mary drinks Elephant beer.

However, according to Karttunen and Peters, what the presence of even contributes to the meaning of a sentence like (9a) is the conventional implicature expressed by the two sentences in (10).

(10) a. Other people besides Mary drink Elephant beer.
b. Of the people under consideration, Mary is the least likely to drink Elephant beer.

To show that the part of meaning informally expressed in (10) cannot be treated at the same level as those aspects of meaning which are truth-conditional, Karttunen and Peters present the following argument: if we embed (9a) in a conditional, as in (11), then the speaker is no longer committed to the truth of (9b). However, uttering (11) commits the speaker to the implicata in (10) just as much as uttering (9a) did.

(11) If even Mary drinks Elephant beer, then all is well.

Further, they note that conventional implicatures cannot be dismissed as part of discourse pragmatics since they cannot be canceled or dissociated from the sentence. Thus, a speaker who utters (9a) while attempting to deny the truth of the conventional implicature carried by that sentence utters a contradiction as (12) shows:

(12) ! Even Mary drinks Elephant beer, but no one else does.

Before moving on to establishing the link between the conventional implicata introduced by even and only and binding constraints, it will be useful to examine the implicatum in (10b) more closely. Kay (1990) presents evidence that while (10a) is a conventional implicatum carried by (9a), the inference expressed by (10b) does not arise in all contexts and therefore is not, as Karttunen and Peters (1979) claim, a conventional implicature but rather, a pragmatic aspect of meaning. The example in (13), taken from Kay's paper, illustrates this point:

(13) A: It looks as if Mary is doing well at Consolidated Wiget.
George [the second vice president] likes her work.
B: That's nothing. Even Bill [the president] likes her work.

Kay's argument runs as follows: (13B) can be uttered in a situation in which nothing is assumed about the relative likelihood of George and Bill liking Mary's work. The fact that Bill's liking Mary's work is construable as evidencing a higher level of success than merely George's liking her work is sufficient to justify the use of even. From this we must conclude that the expectation violation expressed in (10b), which pervades numerous interpretive accounts of even, is a pragmatic aspect of meaning tied to the context of utterance and is therefore not to be treated on a par with the conventional implicature expressed by (10a).

Returning now to (10a), we may wonder what the logical representation of such an implicature might be. If we follow the natural language representation of the implicature given by Karttunen and Peters (1979) in (10a), we end up with the representation in (14), in which the existential quantifier has been substituted to the subject Mary in the original sentence (9a).

(14) $\exists$ x (x $\neq$ Mary) [x drinks Elephant beer]

The existential quantifier in (14) asserts the existence of at least one individual who drinks Elephant beer while the set over which the quantifier ranges is the set of humans made relevant by the discourse which excludes the individual Mary. Following Lycan (1991), let us further assume that even and only are in a contrariety relationship. To see this, consider the sentence in (15):

(15) Only Mary drinks Elephant beer.

While the semantic assertion associated with this sentence is the same as that found in Mary drinks Elephant beer, the conventional implicature which arises in conjunction with the presence of only in (15) is expressed by the sentence in (16):

(16) No one besides Mary drinks Elephant beer.

Once again we can represent this implicature by using the existential quantifier as in (17); that is, (17) denies the existence of any individual satisfying the description between brackets, it being understood that the relevant set over which the existential quantifier operates does not include the individual Mary.

(17) $\neg \exists$ x (x $\neq$ Mary) [x drinks Elephant beer]

The conventional implicature triggered by only in (15) is therefore obtained by substituting a variable bound by the (negated) existential quantifier for the subject Mary. The words even and only can thus be viewed as logical contraries at the level at which conventional implicatures are represented.

I take it as rather uncontroversial that any successful semantic theory must include at least those aspects of meaning which are independent from the pragmatic context. If so then we need to extend the notion of truth to include conventional meaning, while recognizing that the traditional notion of truth-conditional meaning and the notion of conventional meaning must be kept separate. This is because the truth of a conventional implicatum is guaranteed by the use of a lexical item (or a syntactic construction such as clefting) and remains unaffected by the logical words (such as negation) which may appear in its host sentence. This problem has in fact been discussed by philosophers and linguists alike (see for instance Putnam (1981) and Jackendoff (1983)). Suppose further that genuine semantic aspects of meaning, now including conventional meaning, are derived from the syntactic structure available at the syntax-semantics interface, putting together ideas proposed independently by Chomsky and Montague. If so then it would seem to follow that truth-conditional meaning and conventional meaning should be derivable from roughly the same structural representation. A proposal of this sort can be found in Reed (1993) where it is additionally argued that some conventional implicata are signaled by syntactic modules such as Case Theory and θ-Theory. More specifically, what I wish to suggest here is that conventional meaning is read off a syntactic structure. This structure is obtained by allowing words which carry conventional meaning such as even and only to substitute logical operators binding variables in positions dominated by the projections to which those words are adjoined in the syntactic LF component. As a concrete example, consider the LF representation in (18):

(18) [$_{IP}$ Even Mary [$_{VP}$ kicked John]]

Suppose that even, by virtue of its conventional nature, signals at LF the availability of a superimposed representation which is obtained by substituting to the noun phrase in the scope of even a variable which partakes in an (existential) operator-variable structure, satisfying the well-known ban on vacuous quantification. We then obtain the representation in (19):

(19) [$_{IP}$ ∃ x [$_{IP}$ x kicked John]]

Assume finally that any value assigned to an element marked for a conventional implicature at LF may not be assigned to the substituted variable. By so doing we ensure that the existential quantifier in (19) ranges over a set which excludes the individual Mary. This need not be a stipulation. Rather, this requirement can be seen as expressing the fact that elements already computed in the truth-conditional component may not enter in the computation of the superimposed component which expresses conventional meaning (call it conventional form or CF). We thus end up with two syntactic components at the syntax-semantics interface which each yield an independent semantic translation. Taken together, these translations make up what we mean by semantic interpretation. By assuming two superimposed syntactic components at the syntax-semantics interface, we are in effect reinforcing

the view that all semantic interpretation is read off a syntactic representation: LF will serve as the structure from which the denotation of a phrase is derived while CF will serve as the structure which guides the semantic translation of what the phrase conventionally implicates. This model accords with Karttunen and Peters' (1979) view that each sentence is associated with two expressions of intensional logic, namely, an ordered pair of formulas <extension expression; implicature expression>, where the extension expression is what is commonly known as truth-conditional meaning while the implicature expression is what is conventionally implicated by the sentence. Thus, extension expressions are associated with LF representations while implicature expressions are associated with CF representations. A similar syntax/semantics interface model can be built, using Herzberger's (1973) "two dimensional logic," since in Herzberger's system each sentence is associated with two binary semantic values: a correspondence value and a bivalence value, which roughly play the same role as Karttunen and Peters (1979) extension expression and implicature expression respectively.

A natural question which arises in connection with positing two syntactic components at the syntax-semantics interface is whether or not requirements which can be satisfied in LF can also be satisfied at CF. I would like to argue that this is precisely what's behind the apparent binding violations in (8). According to my hypothesis, the presence of only and even in the examples in (8) signal at LF the existence of a superimposed CF structure. The CF representations corresponding to these sentences are as in (20):

(20) a. $\neg$ [$\exists$ x (x $\neq$ Lyndon) [Lyndon pities x]]

b. $\neg$ [$\exists$ x (x $\neq$ John$_i$) [x expects for him$_i$ to win]]

c. [[which x] [$\exists$ y (y $\neq$ x's clients) [y hated x]]]

All of the representations in (20) contain a variable in argument position which is bound by an existential quantifier. The only condition put on the set of values over which these variables may range is that it must exclude the particular value(s) specified in parentheses. This condition, as I have already stated, simply expresses the fact that elements which trigger conventional implicatures have their referential value expressed once in the truth-functional (LF) component. This value may not be repeated as one of the possible values the variable element which is substituted for them in the CF component may take. As a result, the representations in (20) do not violate the binding constraints mentioned in (8) and the sentences in (8) are well-formed.[1] This indicates that binding requirements can be satisfied at either LF or CF for a derivation to converge, as expressed in (21):

(21) Given a sentence S containing an item Y subject to a binding constraint Z,
if Z is satisfied in the LF representation of S or if Z is satisfied in the CF representation of S then Y allows the derivation of S to converge.

The principle in (21) not only serves to capture the data examined so far but also takes a life of its own in that it naturally extends to cover a number of unexplained phenomena which until now were not thought to be related. For instance Postal (1972) and Authier (1993) point out that quizmaster questions, though they are

truth-conditionally indistinguishable from genuine wh-questions, appear to be immune to weak crossover effects. Consider in this respect the contrasts in (22) and (23):

(22) a. Mr. Smith, for $1,000, which secretary of state$_i$ did [the man who appointed him$_i$] later say t_i was an imbecile?
b. *By the way, which secretary of state$_i$ did [the man who appointed him$_i$] later say t_i was an imbecile?

(23) a. For $1,000, do you know which empty category$_i$ its$_i$ antecedent must A-bind t_i at S-Structure?
b. *By the way, do you happen to know which empty category$_i$ its$_i$ antecedent must A-bind t_i at S-Structure?

In Authier (1993), I suggest that the interpretive difference between quizmaster and genuine wh-questions is one of conventional implicature; that is, the intonational contour displayed in quizmaster questions signals the presence of an implicatum which can be informally characterized as in (24):

(24) The answer to my question is available to me.

The conventional nature of the implicatum in (24) is reflected by the impossibility of cancelling or dissociating such an implicatum from a quizmaster question without uttering a contradiction as shown in (25):

(25) ! For $10,000, do you know who was the first queen of England? I just have no way of finding out.

While in Authier (1993) I suggest that it is the availability of (24) which allows the apparent weak crossover violations in (22a) and (23a), I stop short of giving the exact circumventing mechanism at play in those sentences. However, given the theory I have just developed, such an account can now be provided.

Consider again the conventional implicature in (24). This implicature can be formally expressed at the level of CF by replacing the LF variable (and the A-bar chain it is a link of) with a constant representing the answer assumed to be available to the questioner uttering a quizmaster question. For ease of exposition let us call that constant John Doe. The CF representation for a sentence such as (22a) will then be as in (26):

(26) Mr. Smith, for $1,000, (tell me that) [the man who appointed him$_i$] later said John Doe$_i$ was an imbecile.

In this CF representation no violation of the weak crossover constraint is possible since the wh-trace/variable has been eliminated and the constant introduced is not c-commanded by the coindexed pronoun. By the principle in (21) the sentence in (22a) is therefore predicted to be well-formed. As further proof of the relevance of (21) to binding requirements, consider the fact, illustrated in (27), that quizmaster questions remain sensitive to the strong crossover constraint:

(27) *Mr. Smith, for $1,000, which secretary of state$_i$ did he$_i$ say was t$_i$ a genius?

According to what we said about how the conventional implicatum is reflected in CF, the representation of (27) at that level will be as in (28):

(28) *Mr. Smith, for $1,000, (tell me that) he$_i$ said John Doe$_i$ was a genius.

As can be seen, the strong crossover violation observable in the LF representation of (27) is not circumvented in its CF representation in (28). Strong crossover is often assumed to be a Condition C violation (variables being R-expressions with respect to the Binding Theory) and (28), which is obtained by replacing the variable with a constant (i.e., a name), simply duplicates this violation. As a result, (27) is rightly predicted to be ungrammatical.

The main purpose of this paper was to provide a theory of why some elements which induce conventional implicatures such as even and only seem to allow nominal elements to freely violate the well-known disjointness requirements operative in both the A and the A-bar systems. This was achieved by devising a model of the syntax-semantics interface which makes reference to a dual syntactic representation and can be characterized as in (29):

(29) a. Besides the syntactic level known as LF, there exists a syntactic level of representation called CF created by conventional inducing elements (or CIEs) which is obtained by modifying the LF representation in such a way that the phrase appearing in the scope of a CIE at LF is replaced by the operator-variable chain or constant corresponding to the relevant conventional implicature.

b. Principles such as Conditions B and C of the Binding Theory, and the weak crossover constraint may be satisfied at either LF or CF for a derivation to converge.

c. The syntactic levels of LF and CF have semantic correlates called extension expression and implicature expression respectively and these semantic representations are simply read off their syntactic counterparts. Thus, semantic meaning is closely guided by syntactic structure.

Notes

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1. As Ivan Sag has pointed out to me, my analysis straightforwardly extends to other conventional inducing elements such as too, a word which introduces a conventional implicature roughly equivalent to that carried by even. Consider in this respect the example in (i):

(i) As for Clinton$_i$, everyone voted for him$_i$. Clinton$_i$ voted for Clinton$_i$ too.

The CF representation of the second sentence in (i), given in (ii), does not violate Condition C and, as a result, (i) is rightly predicted to be well-formed.

(ii) $\exists$ x (x $\neq$ Clinton$_i$) [x voted for Clinton$_i$]

Further, as pointed out to me by Bill Ladusaw, the NPI either can also create a CF representation analogous to that created by too, which explains why sentences like (iii), the CF representation of which appears in (iv), can circumvent Condition C as well.

(iii) John$_i$ doesn't like John$_i$ either.

(iv) $\exists$ x (x $\neq$ John$_i$) $\neg$ [x likes John$_i$]

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Uighur Vowels: An Acoustic and Perceptual Study

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Introduction

The Uighur language of Northwest China, with at least eight to ten million speakers, is Turkic, closely related to neighboring Kazakh and Uzbek and partially mutually intelligible with modern Turkish. One might suppose, therefore, that, like modern Turkish, it would have eight vowels, symmetrically ±high, ±back, and ±round. Like Turkish, Uighur has vowel harmony, with some vowels under-specified to various degrees and, furthermore, in Uighur the harmonic features can spread from either stem to affix or affix to stem, so it is not too surprising that there should be disagreement about the number of underlying vowels. Some authors, such as Hsu (1992) treat Uighur as having eight vowels, but others, such as Hahn (1991:33) regard it as a nine-vowel system, including three degrees of height in the front. Fig. 1 compares these two analyses:

(Hsu 1992)	front		back	
round	-	+	-	+
high	i	ü	ɨ	u
low	e	ö	a	o

(Hahn 1991)	front		back	
round	-	+	-	+
high	i	ü	ɨ	u
mid	e	ö		o
low	ä		a	

Fig. 1. Two analyses of Uighur vowels

In working with an informant who speaks the Kashgar dialect, we found that we had difficulty in transcribing certain vowels in a way that would accord with the informant's judgments, particularly with regard to [e] vs. [ä] (approximately IPA [ɛ] vs. [æ]). Hahn says that [e] "occurs almost exclusively in certain roots that are derived from foreign words and proper names, where such roots have not yet been 'nativized', i.e., have not yet been made to conform to native phonological principles..." (1991:37), but [e] seems to be reliably found in at least a few native words, such as eqiš 'flowing' and eğiz 'mouth'. There are two symbols in the Uighur alphabets for these vowels (see Fig. 2.), yet there is also considerable variation in the pronunciation of words containing them. In some cases, [e] occurs in informal speech where careful speech has [ä].

To help resolve the question of whether we were dealing with an eight or a nine-vowel system, an acoustic study was performed . After the acoustic data had been analyzed, a perceptual experiment was also performed, to see how the informant himself and other hearers (non-native) would classify tokens of all the vowels. The results indicate that there are nine vowels in Uighur, at least in the idiolect of our informant, although the issue is not completely resolved. More generally, the results suggest that the common practice of plotting the vowels of a language in the F1-F2 plane may not adequately represent them or the phonetic cues which native speakers use to distinguish them, especially in languages where rounding is a distinctive feature.

kona yeziq (isolated form)	yeŋi yeziq	Hahn (1991) phonemes	IPA	graphs in this paper
ﻯ	i	i	i	i
ﻰ	e	e	e	e
ﻯ	ə	ä	æ	A, ae
ﺍ	a	a	ɑ	a
ﻭ	o	o	o	o
ﻭ	u	u	u	u
ﯗ	ü	ü	y	U
ﯚ	ɵ	ö	ø	O
	i	ı	i	I

Fig. 2. Alphabets for writing Uighur

Theories of vowel quality

Theories of vowel quality can be divided into two broad classes, "target" models and "non-target" models (Strange 1989). The traditional theories are target models, based on the idea that for each vowel of a language there is some acoustic target, some set of values of acoustic parameters which constitute the perfect realization of that vowel. Individual tokens of vowels in utterances are thus better or worse examples depending on how well they approximate those values. This view can be dated back at least to Wilhelm von Helmholz; and was reinforced by the advent of the sound spectrograph in the 1930s and 40s, which made possible more accurate measurement of the fundamental frequency (f_0) and the formant frequencies (F1, F2, F3, etc.). Since then, many linguists have believed that the basic determinants of vowel quality are F1 and F2, and that these correspond roughly to the inverse of vowel height and frontness, respectively (Joos 1948).

One problem with defining vowels in these terms is that formant frequencies depend not only on the positions of the articulators, but also on the size and shape of the vocal track itself. Peterson and Barney (1952) measured the frequencies of the first three formants of American English vowels of 76 men, women, and children. They found that the vowels for an individual speaker could usually be distinguished reasonably well on a plot in the F1-F2 plane, but that the vowel spaces of different speakers overlap considerably. In particular, men, women, and children have substantially different vowel spaces, so that a given point in F1-F2 space might represent one vowel for a man and another for a child.

There has been considerable debate on the question of how we adjust our perception of vowels to compensate for these differences among speakers (a process known as "speaker normalization"). One suggestion has been that vowels are distinguished mainly on the basis of the ratios of formant frequencies rather than the absolute frequencies themselves. These ratios are much more constant both across individual speakers, and across groups such as men, women, and children. But different vowels, with quite different formants, may have identical formant ratios (even within speakers), so we cannot simply discard formant

frequencies in favor of formant ratios (for a summary of the history of formant ratio theories, see Miller 1989).

Furthermore, the theory that there is a single target for each vowel, whether it is defined in terms of formant frequencies, their arithmetic differences or their ratios, has been challenged and become more elaborated as a result. For example, Stevens and House (1963) showed that the consonants preceding and following a vowel affect the formant frequencies. Lindblom (1963) found similar effects for Swedish, and also that the effect increases with rate of speech; he suggested that this results from the speaker's failure to reach the articulatory target (called "target undershoot"), especially in rapid speech.

Yet speakers of a language do rather well at identifying even isolated vowels, even when tokens produced by several speakers are presented in a random sequence (Assman, Neary, and Hogan 1982), which seems surprising given the above findings. If the formant frequencies of vowels (and their ratios) vary depending on the speaker, the surrounding consonants, and the rate of speech, how can native hearers hear them apart? Miller (1989) is a careful attempt to find acoustic parameters that will reliably distinguish the tokens of the vowels of American English. Citing research on auditory perception, Miller argues for describing the vowels in a perceptual space defined in terms of the $\log_{10}$ of the ratios F3/F2, F2/F1 and one additional ratio relating F1 to the mean f_0, which is supposed to aid in speaker normalization.

Recently, a number of researchers have suggested that vowels should not be described in terms of articulatory/acoustic targets at all. For example, Strange *et al.* (1976) showed that vowels in a consonantal context are correctly categorized much more often than vowels in isolation, and Strange *et al.* (1983) found that vowels from which the "steady state" central portion had been excised, leaving only the transitions into and out of the vowel, were recognized as well as vowel centers from which preceding and following transitions had been removed. This suggests that the dynamic information contained in C-V and V-C transitions is at least as important as the "steady-state" information as defined in traditional target models. On the other hand, Rakerd and Verbrugge (1985), using isolated vowels and /dVd/ syllables, and asking subjects for ratings of similarity, found two perceptual dimensions (D1 and D2) which corresponded fairly well with the F1 and F2 of the vowels. Rackerd and Verbrugge found that duration was also a significant factor in vowel discrimination, even among English monophthongs.

Assman, Neary, and Hogan's (1982) article is perhaps the most directly relevant to the present study. They performed both an acoustic analysis of vowel tokens and a perceptual study in which the same tokens were classified by a group of native speakers. There are important differences, however: First, in the study by Assman *et al.*, the speakers, experimenters, and listeners were all native speakers of the same dialect of Canadian English. The present study depends primarily upon one native speaker of Uighur, although the perceptual experiment includes data from two listeners who are native speakers of American English but also familiar with Uighur. Second, Assman *et al.* used a recording of ten speakers, reading from a list of keywords, and carefully eliminated any erroneous pronunciations; their tokens were thus far more uniform and free of errors of classification from the beginning than the Uighur tokens studied here. As always, there is a trade-off between naturalness and control; their elicitation method meant that their tokens constitute reading pronunciations, which may differ from vowels occurring in natural conversation.

Assman *et al.* found that the nature of the response task influenced the error rate for vowel identification; listeners who responded by marking a word with the same sound as the one heard on tape were wrong about 15% of the time, but when the same listeners were asked to repeat the word they had heard, they spoke the incorrect vowel only about 5% of the time. There were no significant differences for categorization of isolated vowels vs. those in the context /p_p/, contra Strange *et al.* 1976. They suggest that in some of the earlier studies, categorization differences due to consonantal context were confounded with differences due to different response tasks.

Furthermore, they found that under good conditions with trained listeners, even isolated vowels from mixed speakers are miscategorized only 5.4% of the time, partially refuting the theory that listeners need consonant transitions and some time for speaker normalization to take place, although there is a slight but significant improvement when speakers are blocked, so that listeners can adjust to each speaker in turn. (Some other results reported in Assman *et al.* will be discussed below, in connection with the results of the present study.)

Acoustic Study

Methodology

The informant was an adult male native speaker of the Kashgar dialect of Uighur who is also fluent in English. In order to assure that samples of all the vowels were obtained, the examples in Hahn (1991:34-58) were used as the basis of the recording session (although Hahn's phonological analysis is not being adopted here). Every effort was made to obtain tokens which would be as near as possible to those of natural speech, given the constraints of making a recording of high acoustic quality. The order of presentation was randomized, so that the original groupings would not influence the informant. If the subject were simply to be asked to read the examples, that might prejudice the results in favor of the vowels represented orthographically; if prompted in Uighur, that might also influence the outcome. Therefore, the informant was asked in English to translate each of the glosses given by Hahn. Sometimes this resulted in the expected Uighur word; sometimes a second prompt was needed in Uighur suggesting another possible way of expressing the idea, and sometimes the informant did not recognize the word reported in Hahn as a possible translation of the gloss. Often the informant repeated the Uighur word or phrase several times, giving several tokens of the same vowel(s), or offered several ways of translating the gloss. The entire session was recorded in an anechoic room using a high quality analog tape recorder; the Uighur utterances were then transcribed, and the accuracy of the transcription was checked afterward by the informant.

Eighty-five sections of the recording were digitized at 10,000 Hz sampling rate on a Macintosh computer using an 16-bit DSP board, then each waveform was carefully examined, and the endpoint and the duration of the central portion of each vowel was recorded; so far as possible, the portion marked was steady state in terms of both the shape of the waveform and the sound of the vowel, even if this meant marking a relatively short segment. A total of 352 usable tokens of monophthongs were marked in this way.

The digitized samples were then processed on a Unix workstation, using the Waves-ESPS formant extraction program to find the first four formants by autocorrelation LPC. The order of the LPC was 12, and the calculation was done

over a 50 ms. window moved in 10 ms. steps. A measure of the probability of voicing was also calculated by the program every 10 ms. Only those portions of the vowels which had a probability of voicing higher than 90% as calculated by the extraction program **and** were within the "hand-measured" endpoints were used. The remainder of the acoustic analysis is based on the duration of each vowel center and the values of the first three formants at 10 ms. intervals within it.

Results

The median duration of the vowels was 46 ms; this may seem quite short, but is reasonable in the light of the strict definitions of what constitutes the steady state portion of the vowel. The distribution was highly skewed; there were two long tokens (around 200 ms.), resulting from hesitation or emphasis on the pronoun [u] 'he'.

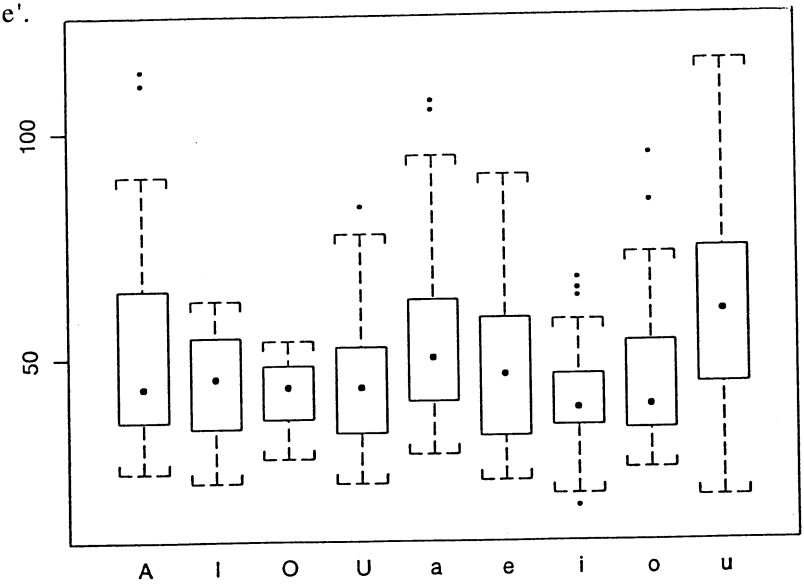


Fig. 3. Durations of vowel tokens by vowel.

Fig. 3 shows the durations grouped by vowel in a Box chart. (The ends of the boxes mark the first and third quartiles, and the dots in the centers mark the medians.) As the chart suggests, the difference in the durations are partially predictable from the type of vowel (an ANOVA gave $p < 0.01$ for the model duration = vowel). but the converse is not true; a vowel with a duration of 55 ms., for example, could easily be [a], [o], or [u]. This suggests that duration may be one of the factors in vowel discrimination, but will not be decisive by itself.

Indeed, the data is very rich and therefore difficult to display adequately in two dimensions. One useful way is to plot all the values for F1 and F2 which have been calculated. This shows us the trajectory of the formant values in F1-F2 space at 10 ms. intervals in the vowel. Figure 4. is an example of such a trajectory, for two repetitions of the phrase yäp maŋmak 'keep on eating', with the axes inverted so that front vowels are to the left and high vowels toward the top of the chart, as in traditional vowel charts based on articulation. The long connected lines show the

initial glides starting very high and front and ending fairly low, between mid and front, while the two repetitions of maŋmak show all four vowels in the same general area, quite low and somewhat back. Plots of the trajectory based on the logarithms of formant ratios, as suggested by Miller (1989), show a similar pattern.

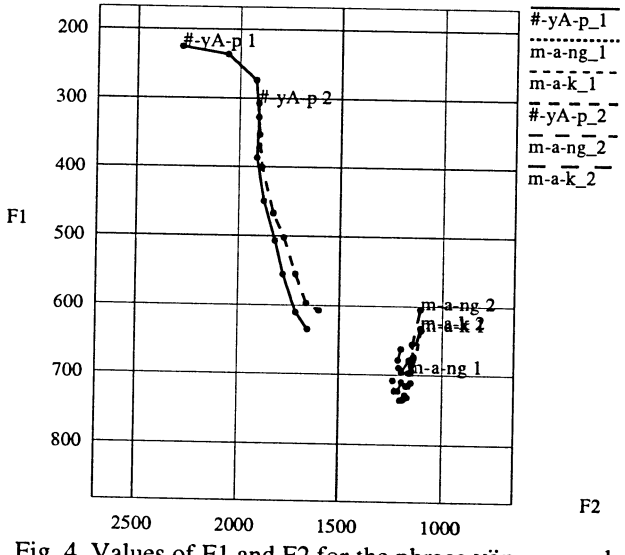


Fig. 4. Values of F1 and F2 for the phrase yäp maŋmak

These kinds of plot provide a level of detail which is lost when we average formant values either over an entire vowel token or over a group tokens of a vowel type. But we do need to make generalizations; one way of generalizing is to choose good tokens of each vowel type and treat every point in such tokens as a valid example of a set of parameter values for that vowel. We can then simply draw a convex hull around these points to define a region which can be identified with the vowel. If we do this for all the vowels, we get a chart like Figure 5 for all the vowels of Uighur in F1-F2 space. This can then be overlaid on other trajectories, giving an idea of how long the trajectory is in the space of a given vowel and how close it comes to the center. The "tails" of the trajectory show the influence of the consonantal context, which will be discussed in more detail below.

A more traditional method of generalizing about the formants of vowels is to average the readings for many tokens, to get a mean value for each vowel type; Fig. 6 shows a graph of such values, along with F1-F2 values for American English vowels derived from Peterson and Barney (1952). Note that, although there are about the same number of vowels in the two languages, the Uighur vowels are much closer together in F1-F2 space. This is due in part to the presence of front rounded vowels in Uighur, whose lowered F2s (and to a lesser extent, F1s) cause them to coincide with some central vowels in that plane. Another factor may be errors in the classification of vowels in the present study, which causes them to appear as outliers, far from the center of vowel regions.

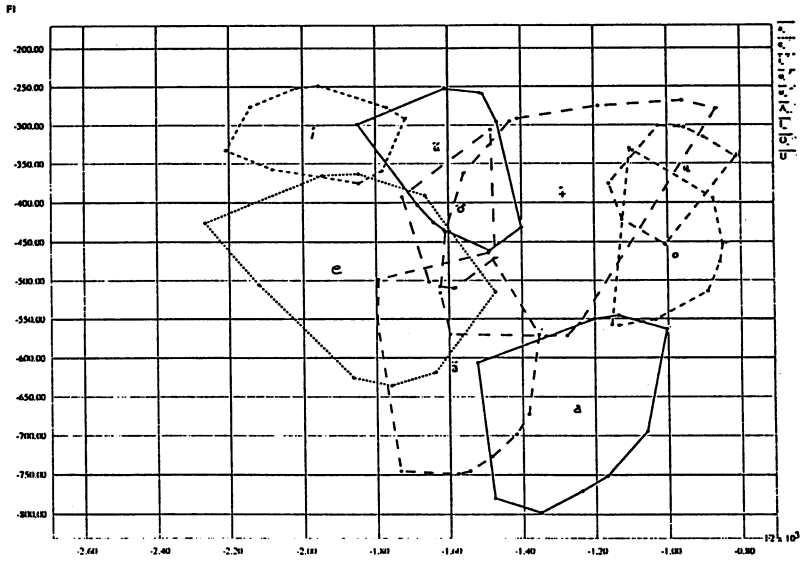


Fig 5. Convex hulls for all vowels of Uighur

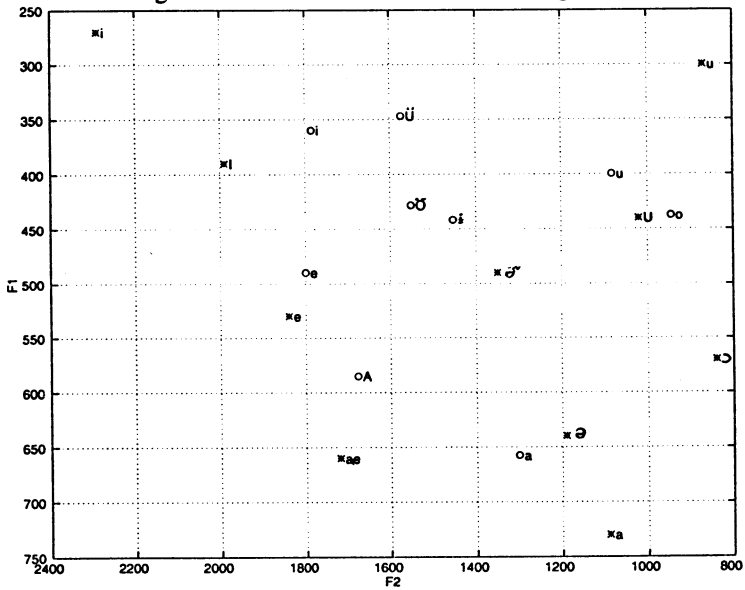


Fig. 6. Mean F1-F2 values for Uighur (o) and American English (*) vowels.

Insofar as we can separate vowels on the basis of F1 and F2, we would expect that at least the vowels in the corners of the triangle, [i], [a], and [u] should be well separated. Fig. 7 (a) shows the mean F1 and F2 for each token of these three vowels; as expected, the regions are fairly separate, although there is still a little overlap. In this regard, neither the ratios of the first three formants nor the

logarithms of these ratios (shown in Fig. 7 (b)) seem to do any better than (or even as well as) the formant frequencies at defining separate regions for each vowel.

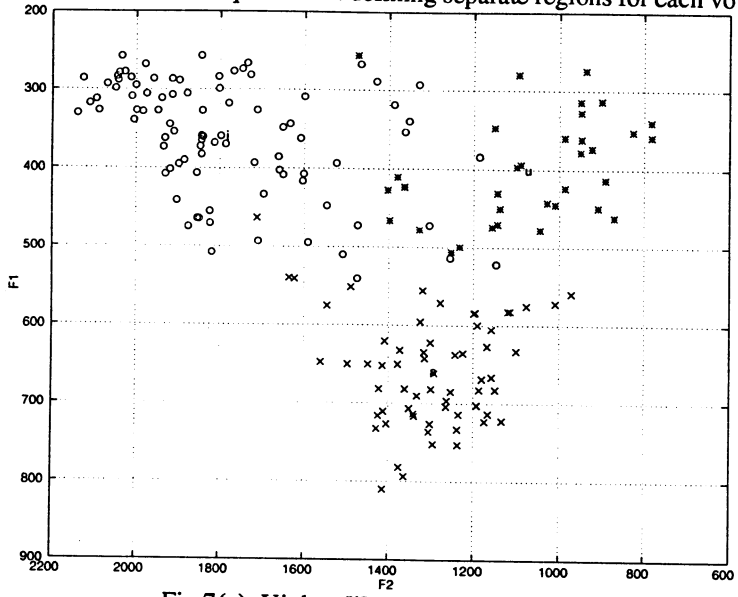


Fig.7(a). Uighur [i], [a], and [u]. F1 x F2

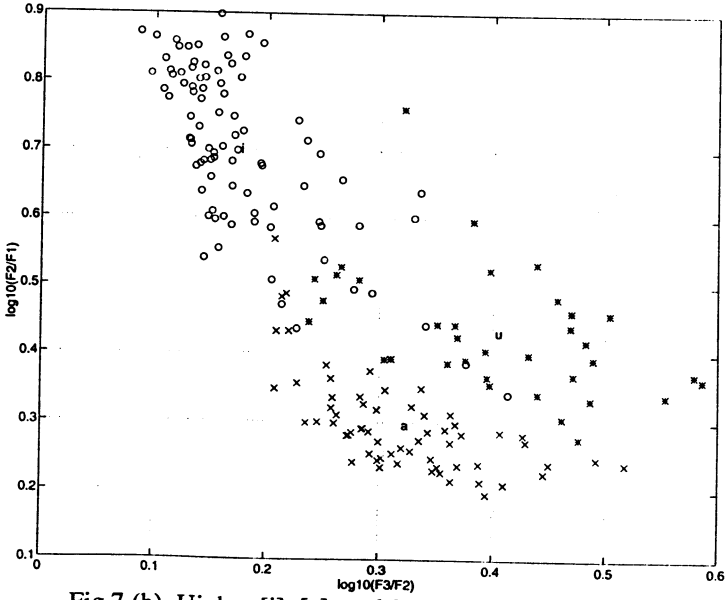


Fig.7 (b). Uighur [i], [a], and [u]. log(F2/F1) x log(F3/F2)

Perceptual study

Methodology

Given that none of the methods discussed above for graphing the vowels produce a complete separation of the vowel regions in the F1-F2 plane, it seems fair to ask ourselves how well native speakers can distinguish tokens of the vowels. If they can do so reliably on the basis of isolated tokens, this suggests that the acoustic clues are present in the speech signal, even if not reducible to simply F1 and F2. If native speakers have difficulty distinguishing vowels without a sentential context, this would suggest that higher level processing, involving semantics and lexical recall is necessary, and we would not expect to find everything in the acoustics of the signal.

To answer these questions, a second experiment was carried out, in which our informant heard digitized Uighur sounds and was asked to classify each of them into one of nine vowel types. For comparison purposes, two non-native speakers of Uighur were also asked to do the same classification task. In this experiment, two sets of stimuli were used, short stimuli consisting of the centers of the vowels which had been marked already, and a new set of longer stimuli, each comprising a full syllable, extracted from the same recordings. The latter were used to test the influence of the consonantal context; some were (monosyllabic) words which could be pronounced in isolation, while others were merely parts of words. The short stimuli were tapered over the first and last 10 ms. intervals to reduce distortion and "popping". The stimuli were presented randomly within each set, and the subjects responded by clicking with a mouse on one of nine buttons, corresponding to the eight graphemes of the Uighur alphabet plus a central vowel written with i (barred i). Note that this meant asking the informant to make all the usual distinctions and one more, deciding which vowels were reduced to something like schwa, although he had already had some practice in making this distinction.

Results

Figure 8 shows the results of the perception experiment for the native speaker informant (abbreviated NS); the left side gives the number of times each vowel type appeared and the number of times it was classified as each of the types. Perfect agreement between the classification on the basis of listening to the central part of the vowel and the spelling given earlier would be represented by having all of the scores on the diagonal. The only case where this occurred was in the classification of the short stimuli of [ä] by the native speaker (16 of the 16 presentations). Overall, the NS classified the short stimuli correctly 60% of the time and the long stimuli 61% of the time. The relatively low success rate on the short stimuli is understandable, given the very short segments that were presented in the experiment, but the equally poor results on the longer stimuli are surprising. Looking at Figure 8 in a little more detail, we notice that the poor results on the long stimuli are due mainly to problems with [i] and [e]. Some difficulty with [i] is more or less predictable, since it is not represented in the orthography. With regard to [e], a check of the response data showed that many of the errors were in the misclassification of [e] as [ä] in presentations of the loan word [rentigen], 'X-ray' (from the name "Röntgen"). If we omit all the tokens of [e] from the calculation, we get 58% success for the short stimuli and 89% for the long ones. (While there were many misclassifications of [e] as [æ], there were very few in the opposite

Frequencies

Short stimuli

Response→ / Stimulus ↓	ä	i	ö	ü	a	e	i	o	u	Tot
ä	**16**									16
i		**14**				2			11	27
ö		1	**19**	2						22
ü	1	10	10	**33**	4	1		2		61
a					**35**				1	36
e	21		2		1	**37**	3	1		65
i	6	13	4	12	1	6	**5**			47
o		7			1			**25**		33
u								8	**11**	19

Long stimuli

ä	**25**				1					26
i		**9**	1	20	11					41
ö			**37**							37
ü	1	21		**62**						84
a					**26**					26
e	100	4			4	**55**				163
o								**35**		35

Percentages

ä	i	ö	ü	a	e	i	o	u
100								
	52				7			41
	5	**86**	9					
2	16	16	**54**	7	2		3	
				97				3
32		3		2	**57**	5	2	
13	28	9	26	2	13	**11**		
	21			3			**76**	
							42	**58**

96				4				
	22	2	49	27				
		100						
1	25		**74**					
				100				
61	2			2	**34**			
							100	

Fig 8. Vowel Perception by Native Speaker

Frequencies

Short stimuli

Response→	ä	i	ö	ü	a	e	i	o	u	Tot
Stimulus ↓										
ä	**21**	2			1					24
i		**24**	4						6	34
ö		1	**19**	1					1	22
ü		34	45	**26**					6	111
a		1			**35**			3		39
e	20	8				**50**	8			86
i	6	27	2	5		17	**16**		5	78
o			1	1				**23**	9	34
u			4	1				2	**17**	24

Long stimuli

ä	**19**									19
i		**48**		3						51
ö		1	**28**	1						30
ü		21	12	**41**					1	75
a					**18**					18
e	2	2			2	**126**	1			133
o		2						**32**		34

Percentages

ä	i	ö	ü	a	e	i	o	u
88	8			4				
	71	12						18
	5	**86**	5					5
	31	41	**23**					5
	3			**90**			8	
23	9				**58**	9		
8	35	3	6		22	**21**		6
		3	3				**68**	26
		17	4				8	**71**

100								
	94		6					
	3	**93**	3					
	28	16	**55**					1
				100				
2	2			2	**95**	1		
	6						**94**	

Fig. 9. Vowel Perception by Non-native Speakers

direction. This reinforces the idea that [e] may be an variant of [æ] used in informal speech.)

Figure 9 shows the results for the non-native speakers (NNS), which were 51% correct for the short stimuli, and 89% correct for the long. The NNSs were both able to discriminate [ä]/[e] as well as any of the other pairs, which is not surprising, since both were native speakers of English. The NS fared better than the NNSs on distinguishing the rounded front vowels, [ö] and [ü], but actually did worse than the NNSs on [ɨ] and [i], which may be due to the lack of a symbol for [ɨ] in the Uighur alphabet.

Conclusions and discussion

With regard to one of the initial questions, whether [æ] and [e] are two separate vowels in Uighur, the results are not completely conclusive. The areas of the tokens overlap somewhat in the F1-F2 plane, but no more than many other adjacent pairs of vowels. There is some indication the NNSs are resolving these sounds more precisely than the NS, perhaps because the NNSs are both English speakers, and the difference is definitely phonemic in English (cf. Blankenship 1991). But our informant is also able to correctly categorize the difference more than half the time, and there are two symbols in Uighur orthography, so the hypothesis that there are two low front vowels is likely to be true.

Assman *et al.* found that error rates were much higher for tokens which had been "gated" to remove the initial and final transitions, leaving a 100 ms. central portion of the vowel. Error rates for these gated vowels were much higher in the mixed speaker condition (13.75%) than in the blocked speaker condition (9.50%). They conclude that the information required for speaker normalization is still present in the "steady state" central portions of the vowels, but that the higher error rates overall are due to the removal of clues from formant transitions and duration. The error rates for NS vowel recognition of short stimuli in the present study are higher than those reported in Assman *et al.*, probably because the stimuli were approximately half as long as theirs.

Finally, Assman *et al.* created a series of parameters derived from the acoustic data to be used as predictors of categorization; linear discriminant analysis was used to measure the relative success of various combinations of these parameters. They were able to achieve categorizations that were 80 to 90% correct by means of some of these parameters, although the correlations for individual tokens were less impressive. Unfortunately, the use of linear discriminant analysis requires a normal distribution for each of the underlying acoustic variables; this criterion was not true of the Uighur data in the present study, so different statistical methods will need to be used to model the categorization from the acoustic parameters.

Like Assman *et al.*, we find very large differences across vowels with regard to the reliability with which they can be distinguished. This is contrary to what is predicted by theories such as Lindblom (1986), which suggest that over time, vowels will tend to spread out in acoustic space so that they become maximally differentiable, and thus a more efficient system for encoding information. Natural language seems rather inefficient in this regard, and, furthermore, neither English nor Uighur orthography has been kind enough to provide consistent spellings for the vowels, particularly [ə] and [ɨ], (although in general Uighur orthography does

much better than English). We have also found acoustic evidence of some of the phonological processes in Uighur described in Hsu (1992) and Lindblad (1990), such as fronting, reduction to schwa, etc. These may account for some of the discrepancies between the orthography and the acoustic parameters, reflecting the phonological conservatism common to many writing systems, although it is not possible to go into detail here.

With regard to methodology, the technique of plotting tracks of individual tokens of vowels through time reveals much fine detail which is lost when researchers average tokens together in order to describe "typical" or "standard" values for vowels. On the other hand, as mentioned above, we have also found strong evidence that descriptions of vowels in terms of points or areas of the F1-F2 plane are inadequate, especially where rounding is phonemic. The question then becomes how we can represent this kind of temporal detail in a multidimensional space, both graphically as an aid to understanding, and mathematically, as we seek to understand the relation between the acoustics and the perception of vowels.

These results suggest several directions for future research. One would be to measure the effects of surrounding consonants upon the formants of the vowels, based on the methods used in Lindblom (1963). In his work, very consistent F1 and F2 target values were found for vowels provided that the observed values were adjusted by an amount related to the surrounding consonants. Such an adjustment might produce a better clustering of Uighur vowels, also. Whether or not Lindblom's method produces a better separation of the vowels, it seems likely that a more precise model of the Uighur perceptual results in terms of the acoustic data can be found. Although linear discriminant analysis may not be appropriate (due to the non-normal distribution as noted above), there may be tree-based procedures that will yield comparable models. Finally, it should also be possible to measure the perceptual similarity of the vowel tokens directly, using a different technique. Pairs of tokens could be played for NSs and NNSs, asking just for a response of "same" or "different". This kind of response should be relatively free of any orthographic influence, and would also help point out any tokens that are inconsistently classified.

(I am indebted to John Ohala for numerous suggestions with regard to both data collection and interpretation in this study; any errors that remain are my own.)

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Formal, Lexical, and Semantic Factors in the Acquisition of Hebrew Resultative Particles

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1. Introduction

This study examines when and how Hebrew-speaking children learn to express the notion of **resultant endstate.**[1] Conceptually, this involves a causal chain, proceeding from an initial state in which an entity is situated, via an activity that incurs a change-of-state, leading to a resultant endstate. For example, if somebody is hungry—the initial state—he or she performs the activity of eating, and ends up *full, no longer hungry, satisfied.* The notion of resultativity can thus be expressed by single-word adjectives or past participles, and by prepositional or other phrases.

The study also relates to children's construal of **word-formation** processes in their language. Research has shown that from around 3 years of age, Hebrew-speaking children master the complex morpho-lexical operations involved in new-word formation: in deriving nouns from verbs (Clark & Berman 1984), verbs from nouns (Berman 1989, Berman & Clark 1993), and verbs from verbs (Berman 1993a).[2] That is, new-word formation in Hebrew, as in other languages (Clark 1993), is a rather late development compared with children's earlier command of grammatical categories like case-marking and inflections for tense or number and gender agreement (Berman 1985, 1993b).

The category of endstate resultatives is special from this point of view. It lies between grammar and lexicon, having a fully productive set of grammaticized forms. All transitive verbs have a perfective or resultative form, but this may not always be regular in morphophonological form, as shown by the examples of English past participles in (1).

(1) English Past Participle Resultatives:

Regular verbs: *boil/boiled, splash/splashed, wrap/wrapped*

Irregular verbs: *catch/caught, write/written, cut/cut*

In Hebrew, resultative verb forms also tend to the structurally productive, grammatical end of the lexical/grammatical continuum. Hebrew verbs are all formed in one of five morphological patterns, called *binyan* conjugations, three of which allow transitive verbs that take direct objects. Each of these three patterns has its own perfective alternant—in the form of the **passive participle.**[3] The examples in (2) illustrate these forms.

(2) Hebrew Passive Participle Resultatives:[4]

Verb-Pattern *binyan*	Root	Gloss	Active Forms Infin.	Present	Resultative/ Perfective	
Pa'al:	s-g-r	close / closed	*li-sgor*	*soger*	CaCuC	*sagur*
	t-p-s	catch / caught	*li-tfos*	*tofes*		*tafus*
Pi'el:	s-p-r	cut (hair)	*le-saper*	*me-saper*	meCuCaC	*mesupar*
	p-r-q	break / broken	*le-farek*	*me-farek*		*mefurak*
Hif'il:	s-t-r	hide / hidden	*le-hastir*	*mastir*	muCCaC	*mustar*
	p-s-d	lose / lost	*le-hafsid*	*mafsid*		*mufsad*

This paper focuses on forms illustrated in the rightmost column in (2), represented by a combination of root consonants "C" and affixal elements as **CaCuC**, **meCuCaC**, and **muCCaC**. These three patterns share the vowel *u*, which uniquely marks **passive** forms of Hebrew verbs.[5] The questions addressed here are: When and how do children acquire grammatical marking of resultativity through these *u*-marked perfective participles, and is there any difference between how well they cope with these three sets of alternations?

2. Predictions

The study was guided by the folowing four predictions.

Comprehension before production: Children will understand the relevant forms before they are able to produce them. Studies in word-formation and other structural domains show that children can give an appropriate interpretation to novel forms of words and unfamiliar structures before they use them correctly in their own speech output (Clark & Berman 1987).

Productive use of *u*-form participles from age 3: At first, children will use periphrastic means to express the notion of resultativity, but by age 3, they will rely on *u* forms for this purpose. In this, they may demonstrate earlier command of resultative *u*-forms than other, less grammatically productive areas of new-word formation, e.g. deriving novel verbs from familiar nouns (Berman 1989, Berman & Clark 1993) and deriving novel nouns from familiar verbs (Clark & Berman 1984).

Juvenile unconventional use of *u*-forms: Young children may alternate across conjugations to produce a meCuCaC form from a source-verb in the *pa'al* conjugation, or a CaCuC form from a source-verb in *pi'el*, rather than vice versa. With age, their *u*-form participles will comply with the grammatical system of verb-pattern alternations and with the established lexicon.

Differential treatment of the three forms: Children will have least difficulty with CaCuC or meCuCaC, and most with muCCaC. CaCuC seems easiest, because lexically it relates to verbs in the high-frequency, most basic pattern *pa'al* (Berman 1993b); morphologically it has canonic CVCVC syllable-structure. Yet meCuCaC is also morphologically transparent, and it obeys the principle of "formal simplicity" (Clark 1993), since it shares the familiar and salient prefixal *m*-present-tense marker with the active form of the verb (Berman 1983). The muCCaC form is

most complex: semantically, it is often based on a verb which is a causativized form of a verb in another conjugation; lexically, there are many gaps in the muCCaC form, which are often preempted by intransitive verbs in the *nif'al* conjugation (see fn. 5); and in form, muCCaC is perceptually opaque, since the *u*-vowel marker combines with the *m*-initial present-tense marker in a synthetic prefix, rather than being part of the stem as in CaCuC and meCuCaC.

3. Data Collection

The study has two main sources of data: resultative forms used by Israeli preschoolers in their naturalistic speech output and a structured elicitation test. Longitudinal speech samples show that Israeli children both understand and produce conventional, lexicalized *u*-forms in semantically appropriate contexts from as young as age 22 to 24 months, in forms like *katuv* 'written', *mekulkal* 'broken, not working', *mudlak* 'lit, switched on'. They also commonly produce **unconventional** *u*-forms, like those illustrated in (3) from the naturalistic speech output of Israeli preschoolers.

(3) Unconventional *u*-forms in spontaneous usage:

1.	Nir, b, 3;6	*ha-kafe* *shapuax* The-coffee's spilt	cf. CaCuC *shafux*
2.	Keren, g, 2;10	*ha-mecax sheli kasuy be-se'ar* My forehead's covered with hair	cf. meCuCaC *mexuse*
3.	Hagar, g, 2;10	*axshav hu meshutaf* Now it's washed (of coin she had rinsed in basin)	cf. CaCuC *shatuf*
4.	Shay, b, 5;1	*ani shomea she at meshu'Elet* I hear that you're coughed = have a cough	cf. Active *mishta'el*
5.	Yael, g, 4;6	*ani me'od me'ulevet* I'm very offended (children had called her names)	cf. Middle *ne'elevet*
6.	Shay, b, 4;10	*ha-raglayim yihyu mukfot mikor* my feet will-be frozen+FM-PL from cold	cf. CaCuC *kfu'ot*

These "creative errors" show that 3-year-olds can express resultative end-states with semantically appropriate and phonologically well-formed *u*-participles, even though these are not always morphologically conventional or lexically established. We documented around 70 such innovative usages, of which the bulk (79%) were in either the CaCuC or the meCuCaC form—one-third and nearly a half respectively; less than a quarter were in muCCaC, like the last example in (3), or else in other, unconventional *u*-forms.

These findings are robust across different children, but they are based on an incidental sampling from longitudinal and diary records. In order to make more controlled comparisons across children speaking different languages, a test was constructed of both comprehension and production. The test was given to 60 children, 12 at each age-group aged from 2 to 7 years, and to 12 adults, all native Hebrew speakers of middle-class, educated backgrounds. As illustrated in (4), there were 4 classes of test items, one group in each of the three active

conjugations, which require CaCuC, meCuCaC, or muCCaC forms, and a fourth group of transitive verbs which have lexical adjectives formed from the same root.[6]

(4) Classes of Test Items (see fn. 4):

	Root	Gloss	Resultative Forms = Passive Participle			*binyan* Conjugation	NonResultative Verbs Infinitive	Active Participle
1.	s-g-r g-z-r	close cut	CaCuC	e.g	*sagur* *gazur*	*Pa'al*	*lisgor* *ligzor*	*soger* *gozer*
2.	s-r-q k-s-y	comb cover	meCuCaC	e.g.	*mesurak* *mexuse*	*Pi'el*	*lesarek* *lexasot*	*mesurak* *mexuse*
3.	s-t-r sh-q-y	hide water	muCCaC	e.g.	*mustar* *mushke*	*Hif'il*	*lehastir* *lehashkot*	*mastir* *mashke*
4.	y-b-sh r-t-v	dry wet	meCuCaC muCCaC	e.g.	*meyubash* *murtav*	~ Adj *yavesh* ~ Adj *ratov*	*leyabesh* *lehartiv*	*meyabesh* *martiv*

Each test item had a set of 5 pictures, 3 cue pictures and 2 distractors. The first picture showed an object or person in an initial state, e.g. an apple, a dark room, or a boy dripping wet; the second showed some means of changing that initial state, e.g. a knife, a candle, or a towel; the third showed the resultant state, e.g. the apple cut in pieces, the room lit up, or the boy dry. Subjects were shown the picture sets and asked to interpret or to describe the resultant endstate for each set.

4. Findings

On the comprehension test, responses were counted as correct if the child chose the picture that depicted the target object in the resultant endstate described by the *u*-form of the verb. On the production task, three classes of responses were scored as **appropriate**, as shown in (5).

(5) Types of "Appropriate" Responses on Production Task:

	Input-Source	Output-Target	Child	Age
a. CORRECT = ESTABLISHED:	*lisgor* to close	*sagur* closed	Shay	2;6
	lenapeax to blow up	*menupax* blown up	Tomer	3;6
	lishbor to break	*shavur* broken	Roni	3;0
b. UNCONVENTIONAL = OTHER [+u]:	*lehavrish* to brush	*mesurak* combed	Daniel	2;3
	lekacer to shorten	*namux* short = low	Tal	2;4
	leharkiv to assemble	*mekurav* neared	Tal	3;6

c. PERIPHRASTIC	*lehalbish* to dress	*hilbishu oto* dressed + Pl him = impersonal	Ido	2;3
	lexasot to cover	*loh roim oto* not see + Pl him = you can't see him	Shiran	3;2
	legaleax to shave	*bli zakan* without (a) beard	Raviv	3;3

Results showed, first, that even 2-year-olds, aged from 24 to 30 months, could understand resultative *u*-forms nearly half the time, a proportion which rose to three-quarters by age 3 years. In contrast, only one-third of the 2-year-olds **produced** appropriate responses, almost none of them in the required *u*-form. By age 3, nearly half the children produced an *u*-marked participial form, although this was the correct alternant of the active input form only about half the time. The test findings thus confirm the first prediction, that children would understand *u*-marked resultative forms before they produce them.

The proportion of **appropriate** responses which were produced, showing that chidren can express resultativity in words, rose sharply between age 2 and 3 years, and less significantly between 3 and 4 years of age, with 5-year-olds reaching ceiling. Around 20% of these appropriate responses were periphrastic, non-*u* formed descriptions of the resultant endstate.[7]

Results of the production task also confirm the second prediction, that children will use the *u*-marked perfective participles productively from age 3 years, but not before. The 3-year-olds did significantly better than 2-year-olds at producing these forms (only 10% of all 2-year-old responses compared with around half those given by 3- and 4-year-olds, and around three-quarters from age 5 years up). Moreover, the proportion of [+u] forms out of total appropriate responses rose sharply between age 3 and 4 years to around two-thirds, and increased gradually from age 5 years up to around three quarters among the older children.

These findings are consistent with other studies of Hebrew word-formation, where the period between age 3 and 4 marks a major step forward in mastery of the relevant morphological alternations. On the other hand, unlike what I had predicted, 3-year-olds did **not** do better in producing *u*-marked resultative forms, which are gramatically fully productive, than they did on more innovative word-formation tasks which required them to fill lexical gaps. In studies where children were required to derive novel nouns from familiar verbs (Clark & Berman 1984), novel verbs from familiar nouns and adjectives (Berman & Clark 1993), and novel verbs from familiar verbs (Berman 1994), 3-year-olds coined morphologically appropriate forms over half the time in each case (between 55% and 59%). The 3-year-olds in the present study (aged 3;0 to 3;6) produced [+u] forms to a quite similar degree, slightly under half of their responses.

Third, as expected, children produced numerous **nonconventional** *u*-forms, for example, a CaCuC form from a verb in *pi'el* or the converse, a meCuCaC form from a verb in *pa'al*—as illustrated in (5-b).[8] The proportion of

these noncanonic *u*-marked forms peaked at age 3, accounting for nearly half of the *u*-forms produced, and a third of all appropriate responses at this age. That is, the proportion of **correct** *u*-marked forms showed a clear developmental trend, from a low 4% of all 2-year-olds' responses to around one-quarter at age 3, 40% by age 4;0, and 60% among the 5-year-olds. This demonstrates that, during the period of acquisition of the system, between age 3 and 4, children master the structural devices of the grammar before they command the appropriate lexical matching between source and target forms.

A fourth prediction, relating to the same issue of the "matching" of input and output forms, was that children would find some forms easier than others, specifically, they would do better on CaCuC and meCuCaC forms than on muCCaC. This was confirmed by the higher proportion of the first two forms among the spontaneous innovations described at the beginning of this section. The test showed that children at all ages were best able to interpret items presented in the CaCuC form—the passive participle of the *pa'al*, most significantly among the 2-year-olds, with the difference decreasing from age 3 up. Otherwise, in **comprehension**, children succeeded overall equally well on the two *m*-prefixal passive participle forms—meCuCaC from *pi'el* verbs and muCCaC from *hif'il* verbs, across the age-groups.

In **production**, however, as predicted, subjects did far worse on the muCCaC form than on the other two. Here, children overwhelmingly favored CaCuC, both when it was compatible, in response to source verbs in *pa'al*, and when not, in response to verbs in the *pi'el* and *hif'il* patterns. Unlike the adults, nearly half of the children's *u*-marked responses were in CaCuC, followed by around one-third in meCuCaC, with a very low proportion of responses in muCCaC (only 15% of all *u*-marked forms from ages 2 through 7). Children's preference for CaCuC forms is also shown by the fact that 4-year-olds produced as many of them as did older children, but they produced relatively fewer meCuCaC and muCCaC. The difficulty of muCCaC forms is further demonsrated by the very low number of these forms produced by the younger, preschool children. Besides, the very few *u*-forms which were illformed, that is, which violated constraints on permissible Hebrew-verb syllable structure, were in the muCCaC form.

These findings are reaffirmed by comparison of source-conjugation / target-form **matching** across the age groups. The proportion of input/output mismatchings was lowest for the *pa'al* / CaCuC pairing, next for the *pi'el* / meCuCaC pairing, and it was very high indeed (40% of such responses) for the *hif'il* / muCCaC pairing. Similarly, when providing an inappropriate, nonmatching *u*-form, muCCaC was hardly ever selected across the age-groups, compared with meCuCaC and CaCuC, in increasing order of preference.

These findings combine to yield a highly robust trend for preference of one *u*-form over another. As depicted in (6), **CaCuC** is favored over **meCuCaC**, and both these far precede **muCCaC**.

(6) CaCuC < meCuCaC < muCCaC

The test showed this ranking to apply across comprehension and production, across children in the different age-groups, across test items, in overall frequency with which a given form was produced, and in degree of match between source and target forms.

5. Comparison of Three Resultative Forms

The question is **why** these forms manifest such differential behavior, when all three represent the same semantic notion of resultative endstate, and all are members of the same grammatical category, passive participles, which has only these three forms in Hebrew. I propose that the answer lies in a combination of factors, structural, semantic, and lexical. These conspire to make CaCuC most favored and to demote muCCaC to the level of lexical specificity rather than grammatical across-the-board application.

5.1 Structural Factors

The notion of "structural simplicity" has two facets: (1) the amount of formal **alternation** between different members of a given grammatical category, and (2) the formal **transparency** of the items which realize that category. The alternations relevant to the category under study here are shown in (7), which illustrates tense/aspect and voice marking in the three transitive *binyan* conjugations.

(7) Alternation of Forms in the Transitive Conjugations

		Active		Perfective	Passive	
	Infin	Present	Past	Resultative	Present	Past
Pa'al:	li-CCoC	CoCeC	CaCaC	CaCuC	niCCaC	niCCaC
Pi'el:	le-CaCeC	meCaCeC	CaCeC	meCuCaC = meCuCaC		CuCaC
Hif'il:	le-haCCiC	maCCiC	hiCCiC	muCCaC = muCCaC		huCCaC

In terms of source-target matching, meCuCaC is most straightforward, since verbs in *Pi'el*, both active and passive, show the least variation in syllable structure across their paradigms. CaCuC forms, in contrast, derive from the *Pa'al* conjugation which, as shown in the first line of (7), has a very different phonological structure, of prefix and stem, in infinitives compared with the present and past, and in active compared with passive forms. Also, meCuCaC shares the same prefixal *me-* in both active and passive, and children as young as age two recognize this as a marker of present tense.

However, the other structural factor, of formal **transparency**, can also explain favoring CaCuC. It is formally simpler than either meCuCaC or muCCaC, since it consists of the bare stem, with the CVCVC syllable structure canonical for Hebrew. The three forms in (6) can be ranked from most to least transparent in terms of *u*-placement, as follows. (1) **CaCuC** [=CVCuC] : the *u* is salient in forming the stem-final stressed syllable; (2) **meCuCaC** [=CVCuCVC] : the u is part of an unstressed medial syllable, between the prefixal present-tense participle-marking syllable *me-* and the stem-final syllable; (3) **muCCaC** [= CuCCVC] : the *u* is least distinctive, since it forms part of the prefix syllable combined with present-tense *m-* , and it is followed by a consonant cluster of the two initial root-consonants, blurring the borders between affix and stem. That is, muCCaC is opaque in form, since the *u-* vowel marker is incorporated into the *m*-initial present-

tense prefix, rather than being part of the stem as in CaCuC or meCuCaC. If, as I claim, children early on recognize *u* as a unique marker of perfectivity, the difficulty ranking in (6) reflects factors of perceptual salience.

5.2 Lexical factors

Patterning in the conventional lexicon also accounts for the favoring of CaCuC forms. Its source pattern, *pa'al*, has the highest frequency, of both type and token, in Hebrew usage, across populations and registers (Berman 1993b), and its verbs account for nearly all those commonest in everyday usage. In fact, most of the test items on which children did best on the comprehension test were in the CaCuC form, suggesting that the *pa'al* verbs on the test were particularly familiar to young children. Also, transitive verbs in *pi'el* and *hif'il* generally have related non-*u* adjectives, e.g. *ayef* 'tired', *xazak* 'strong' and *gadol* 'big', *xarif* 'sharp', respectively. Transitive verbs in *pa'al*, in contrast, take only CaCuC-form adjectives.

Lexical accident also explains why we had a hard time finding enough *hif'il* conjugation verbs likely to be familiar enough to children for use on out test. The muCCaC form has many gaps in the established dictionary, unlike CaCuC and meCuCaC, which are lexically fully productive alternants of transitive verbs in *pa'al* and *pi'el*. One reason is that muCCaC is commonly preempted by intransitve change-of-state verbs in the *nif'al* pattern, which functions not only as a passive or medio-passive alternant of *pa'al*, but also as an intransitive alternant of causative verbs in *hif'il*. For example, causative *hivhil* 'startle' alternates with the change-of-state verb *nivhal* 'be startled, get a fright', and the associated muCCaC form *muvhal* is avoided; *he'eliv* 'insult' alternates with *ne'elav* 'be insulted', but there is no established muCCaC *mu'alav*; *he'elim* 'conceal, make disappear' has a counterpart in *ne'elam* 'disappear', but the muCCaC form *mu'alam* is not used. This asymmetry in the set of active-passive and causative-intransitive alternations provides a relatively productive lexical alternative for muCCaC, even though the *nif'al* forms neutralize the semantic distinctiveness of endstate resultativity. And it explains why all speakers to some extent, and children in particular, avoid muCCaC more than the other two [+u] forms.

5.3 Semantic and functional factors

Verb semantics and functional asymmetries can also account for the order of preference in (6). (1) **CaCuC** alone is restricted to perfective resultatives; meCuCaC and muCCaC also function as verbal (syntactic) passives in the present tense. That is, CaCuC has a functional uniqueness within the system of Hebrew tense/voice/aspect alternations. (2) As for **meCuCaC**, the *pi'el* conjugation is very widely favored for **denominal** verb formation (Berman 1989, Bolozky 1982). This in part explains the relatively high proportion of innovative meCuCaC forms in children's spontaneous usage, e.g. *meluman* 'lemoned = lemony' from *limon* 'lemon' [Varda, 5;7]; *mefurax* 'flowered = floral' from *perax* [Sivan, 4;0], *megusham* 'rained (on) = wet' from *geshem* [Avi, 5;4].). But it also explains the relative avoidance of meCuCaC for verb-based resultatives, as against purely verbal CaCuC. As for (3) **muCCaC** forms, these are semantically complex, since they are based on the *hif'il* conjugation, which contains almost no basic, or nonderived, verbs. Rather, *hif'il* most productively functions as the **causative** version of intransitive activity verbs in the *pa'al* conjugation. These factors are summed up in (8).

(8) Functional Load of Active vs Passive/Perfective Patterns:

Pa'al Active (Trans) > CaCuC Perfective

Pi'el Active ~ Noun > *Pi'el* Denominal > meCuCaC Perfective

Pa'al Active (Intr) > *Hif'il* Causative > muCCaC Perfective

It turns out that the **derivational path** of CaCuC forms is most straightforward, from the basic transitive source verbs to their perfective reflex; meCuCaC forms may be derived either directly from *pi'el* source verbs **or** via an additional process of denominal verb-formation; muCCaC forms are, again, most complex, since they are nearly always derived via causative versions of intransitive source verbs (in *pa'al* but often also in *nif'al*). Thus the functional as well as sructural asymmetries noted earlier (see, too, fns. 5 and 6), explain the ranking charted in (6).

6. Conclusions

Results on acquisition of Hebrew resultative forms confirm findings for developmental patterns revealed by research on other aspects of Hebrew word-formation. First, age 3 years is the critical period for acquisition of this kind of knowledge, following on earlier command of inflectional systems. The 4-year-olds cope with these tasks much better than younger children in the **amount** of such forms which they produce, but their responses show the greatest variability and a high degree of idiosyncratic forms, symptomatic of the period when knowledge is being consolidated.

Second, comprehension precedes production here as in other similar domains; children are able to interpret the target forms before they can produce them. Moreover, correctness of the match between source items (active forms of verbs) and the target resultative forms has less of an effect in comprehension than in production. This is consistent with the observation that difficulty of input forms affects the formal **correctness** of innovative or productive lexical responses more than the extent of suitable responses produced in quantitative terms.

The ability to fully match input to output forms is a later, school-age acquisition. This finding for matching of input active verbs from three conjugations to three different [+u] resultative forms parallels findings for innovative denominal verb-formation in Hebrew: preschool children had great difficulty in assigning the exact consonant structure of familiar source nouns to the verbs they innovated from them (Berman 1989, Berman & Clark 1993). We explain this as a combination of two factors: processing difficulties in exact morphophonological matching of distinct input and output forms, on the one hand, and incomplete command of lexical convention, on the other. As these two types of ability and knowledge evolve with age, children approximate more closely the normative, adult matching between input and output forms, both structurally and lexically.

This suggests that children early on acquire command of the structural, grammatically-constrained systems of their language—whether for consonantal root extraction in new-verb formation, or for *u*-marking in forming passive participles. It takes much longer for them to further constrain these processes by lexical convention and normative matching of input-outptut forms.

Results of this study are compatible with a view of language development I have argued for in different domains—null subjects (Berman 1990), verb-argument relations (Berman 1993b), and narrative structure (Berman 1988). The case of Hebrew resultatives further demonstrates that acquisition of linguistic knowledge cannot be explained in monolithic terms. Rather, multiple mechanisms and a confluence of cues apply both in initial entry into a linguistic system and across the course of development. Here, perceptual salience, formal simplicity of the alternation between source and target forms, semantic transparency and functional uniqueness (of the *u*-forms), combine with the lexical factors of familiarity and convention to explain children's construals of endstate resultatives in Hebrew.

NOTES

[1] The study was funded by a grant from the United States-Israel Binational Science Foundation (BSF), and was conceived with Eve Clark of Stanford, in the framework of a larger project on acquisition of such notions as source (Clark & Carpenter 1989a, 1989b) and goal (Cheung 1991).

[2] Derivation of compound nouns in Hebrew is a rather later development (Berman 1987, Clark & Berman 1987).

[3] These participles also serve as the passive forms in the Hebrew *benoni*, literally 'intermediate', present tense (Berman 1978, Gordon 1981) in two of the three transitive-verb conjugations: the *pi'el* and *hif'il*. Verbs in the *pa'al* conjugation have a separate form for the resultative participle and for the syntactic passive in the present tense.

[4] Transcription is a broad phonetic rendering of current everyday pronunciation, except for the historical forms of the root elements. This yields several non-normative forms which are typical of standard spoken Hebrew, as well as of children's usage, though not approved by the Hebrew language establishment, e.g. infinitive *litfos* "should be" *litpos* with a medial, syllable-initial stop; the medial *r* of *me-furak* requires vowel-lowering to *me-forak*; and the normative form of passives and resultatives based on the *hif'il* conjugation is often *moCCaC*.

[5] In fact, only but not all passive forms of Hebrew verbs are *u*-marked. A historical asymmetry between forms in the *pa'al* pattern compared with *pi'el* and *hif'il* (see fn. 3) accounts for the fact that the passive of *pa'al* is constructed in a separate, non-*u*-marked conjugation, *nif'al*. Compare, for example, *pa'al* active *li-sgor, soger* 'close' / *nif'al* passive *nisgar* 'be-closed', *li-tfos, tofes* 'catch' / *nitpas* 'be caught'.

[6] Causative verbs which have related lexicalized (nonpassive-form) adjectives occur in only the two strictly transitive *binyan* conjugations, *pi'el* and *hif'il*; corresponding adjectives with transitive verbs in *pa'al* are always in CaCuC.

[7] Nonmorphological strategies used by children to express an endstate include responses such as the following: (1) Resultative descriptions—e.g. *im xitul* 'with a diaper' for *lexatel* 'to diaper' [Yael 2;7, Tal 3;6]; *lemala* 'high up' for *leharim* 'to pick up' [Tomer 3;6]; (2) appropriate non-*u* adjectives e.g. *gadol* 'big' for *lenapeax* 'to blow up' [Daniel 2;3], *naki* 'clean' for *lishtof* 'to wash' [Adit 3;2]; and (3) forms in other intransitive conjugations, e.g. in the *nif'al* form, with a change-of-state sense, *nishpax* intransitive 'spilt, got spilled' from *lishpox* 'to spill' [Shaul 2;1, Uri 2;5, Tom 2;1].

[8] Other examples are: *Pa'al ligzor* > *meguzar* 'cutten' [Yaniv 3;4]—cf. conventional *gazur*; *Pi'el lexatel* > *xatul* 'diaperied' [Vered 5;2], *muxtal* [Yoxay 5;3]—cf. *mexutal*; and *Hif'il leharkiv* > *merukav* [Omer 3;2] 'assemblied' or *rakuv* 'rotten' [Orit 4;1]—cf. *murkav*.

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Uniqueness, Familiarity, and the Definite Article in English*

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1. Introduction

Research into the meaning of the English definite article has generally been approached from one of two perspectives, characterizable as `familiarity' and `uniqueness'. That is, felicitous use of the definite article has been argued to require that the referent of the NP be either familiar within the discourse (e.g., Christopherson 1939; Heim 1982, 1983; Green 1989; inter alia) or uniquely identifiable to the hearer (e.g., Russell 1905, Hawkins 1978, Lewis 1979, Kadmon 1990, Roberts 1993, Gundel et al. 1993, inter alia). The vast majority of uses can be accounted for under either view, since an entity typically must be familiar in a given discourse in order to be identifiable to the hearer. However, neither approach alone can account for all felicitous uses of the definite article. For example, a unique but unfamiliar entity may be felicitously referred to with *the*, as in (1), while in other instances, a familiar but non-unique referent may be felicitously referred to with *the*, as in (2):

(1) a. In her talk, Baldwin introduced *the notion that syntactic structure is derivable from pragmatic principles.*

b. If you're going into the bedroom, would you mind bringing back *the big bag of potato chips that I left on the bed*?

(2) a. [To spouse, in a room with three equally salient windows] It's hot in here. Could you please open *the window*?

b. [Hotel concierge to guest, in a lobby with four elevators] You're in Room 611. Take *the elevator* to the sixth floor and turn left.

In this paper we argue that unique identifiability within the discourse context is a sufficient but not necessary condition for felicitous use of the definite article; however, we claim, whenever the referent is not uniquely identifiable on the basis of the definite NP it must be both undifferentiated and not relevantly differentiable in context (cf.Kadmon 1990). It should be noted that we are dealing here only with the definite article, and will not be considering other definite determiners, such as possessives, deictics and quantifiers, whose usage appears to be governed by distinct pragmatic principles. We begin with a brief survey of previous approaches to the meaning of the definite article.

2. Previous approaches

A Heim-style approach to definiteness, where use of a definite NP is felicitous just in case its referent has been previously evoked (and thus is associated with an existing filecard in the model) provides neither necessary nor sufficient conditions for the felicitous use of the definite article.

For instance, in the example given above in (1a), *the notion that syntactic structure is derivable from pragmatic principles* is felicitous even when the claim in question represents brand-new information (in the sense of Prince 1981). Crucially, however, it also represents information that is uniquely identifiable, in that there is exactly one notion that is denoted by the NP (cf.Hawkins 1978, 1991). Thus, the NP itself uniquely specifies the claim in question.

Similarly, (1b) the bag of potato chips is likewise unfamiliar information. Moreover, in this case the entity isn't NECESSARILY uniquely identified by the NP, as it was in (1a); there could in principle be any number of such bags in the bedroom. Nonetheless, as long as it is in fact (believed to be) the only big bag of potato chips left on the bed by the speaker, it is uniquely identifiable and the use of the definite is felicitous.

Note that unfamiliar entities such as those (1a) and (1b) must be distinguished from what has been called `accommodation', `inferrability', or `bridging' (Lewis 1979, Prince 1981, Clark and Marshall 1981, Heim 1982, inter alia), illustrated in (3):

(3) a. I had dinner at that new Italian restaurant last night. It was a nice place, but *the appetizer* was far too spicy for my tastes.

b. I hated that book. *The author* is an idiot.

In these examples, the italicized NP represents an entity that is strictly speaking new to the discourse, yet its existence is easily accommodated on the basis of the evoked triggers *dinner* and *book*, respectively. That is, given a dinner we can infer the likely existence of an appetizer, and given a book we can infer the likely existence of its author. Note that in both cases, however, we infer uniqueness: in (3a) we infer a UNIQUE appetizer (i.e., an appetizer which is salient or prominent), and in (3b) we infer a unique author.

The felicity of (1a), however, requires no such trigger on the basis of which the hearer can infer the likely existence of the notion in question, nor in (1b) need there be a trigger on the basis of which the hearer can plausibly infer the existence of the bag of potato chips in question. Since the definite article may be felicitously used to refer to entities that have not been previously evoked in the discourse and which are not assumed to be otherwise familiar to the hearer or inferrable from the context, such as in (1a) and (1b), we can conclude that familiarity (either within the discourse or within the hearer's knowledge store) is not a necessary condition for felicitous use of the definite article.

On the other hand, it is easy to show that familiarity is also not a sufficient condition for the felicitous use of the definite article. Consider (4):

(4) Professors Smith and Jones are rivals in the English Department, and each of them has received a major research grant for next year. #The other members of the department are very excited about *the grant.*

Here, although the grant in question has been evoked in the prior utterance and can therefore be considered familiar to the hearer, the use of the definite article is nonetheless infelicitous. The problem, of course, is that the hearer has no way of knowing which of the two grants previously evoked is the one being referred to. In this example we see that familiarity alone does not license the use of the definite

article. Thus, familiarity is neither necessary nor sufficient for the felicitous use of the definite article in English.

Similarly, it can be shown that uniqueness is not a necessary condition for the felicitous use of the definite, as illustrated in examples such as those in (2a) and (2b) above. These examples illustrate the use of the definite article for referents that are familiar but non-unique, and in each case the utterance is fully felicitous. Again, note that these cases do not involve accommodation, as there is no trigger on the basis of which the hearer is expected to infer a unique relevant window or elevator, respectively. Moreover, in the felicitous cases of accommodation given in (3) above, the hearer is expected to infer a particular uniquely identifiable appetizer and author. Without this uniqueness, the accommodated definite NP is infelicitous, as illustrated in (5):

(5) a. I went skiing yesterday and did pretty well, even though *the ski poles* were bent.

b. I went skiing yesterday and did pretty well, even though *#the ski pole* was bent.

In this case, the hearer can accommodate a unique set of ski poles, rendering (5a) felicitous; but because the individual poles are non-unique, neither can be referred to individually with a definite NP, and (5b) is infelicitous. In (2a) and (2b), on the other hand, no unique window or elevator need be intended or inferred, yet the utterances are nonetheless felicitous; these examples therefore differ from cases of accommodation. Since, as in (2a) and (2b), the definite article may felicitously be used for referents that are familiar but non-unique, we see that uniqueness is not necessary for the use of the definite article.

It does appear to be the case, however, that uniqueness is sufficient for the felicitous use of the definite. Here, `uniqueness' is crucially defined as the property of being (believed by the speaker to be) uniquely identifiable to the hearer -- where by `identifiable' we mean distinguishable from all other discourse entities, whether or not it can be identified on the basis of other attributes. (For example, *the tallest boy in my class* refers to a uniquely identifiable entity whether or not the hearer is able to attach a name or other attributes to the referent.) Lewis (1979) observes that uniqueness cannot be determined independently of speaker and hearer beliefs. Consider (6), where world knowledge rules out a coreferential reading for the two kings mentioned:

(6) *The king* is dead. Long live *the king*!

Here, the infelicity of wishing a long life for a king just proclaimed to be dead renders the referent of the second utterance of *the king* unambiguously and uniquely identifiable. Thus, in all cases where the speaker believes that the hearer would identify a single unique referent for the relevant NP, the speaker may felicitously use the definite article. This uniqueness is frequently but not always established on the basis of prior knowledge of the referent -- i.e., on the basis of familiarity. The definite article, then, may be used to refer to an unfamiliar entity just so long as that entity is nonetheless uniquely identifiable. We will discuss below a range of cases in which familiarity and uniqueness diverge in this respect.

Finally, proponents of Relevance Theory, while acknowledging that most uses of the definite article involve unique identification of the intended referent, note

that in some cases uniqueness needn't hold. Wilson (1990), for example, claims that no sense of uniqueness obtains in contexts where `optimal relevance' will be achieved no matter which referent is selected, as in (2) above. However, consider the examples in (7):

(7) a. [a pile of books lies on the floor in front of A and B, closer to B] A: I need a hard surface to write on. #Would you please hand me *the book*?

b. I went to class today but I forgot my backpack and had nothing to write with. Fortunately, the guy sitting next to me had three identical pens on his desk. Before I could say anything, #he gave me *the pen*.

These utterances would presumably be optimally relevant no matter which book or pen is selected as the referent, yet the definite is infelicitous in each case. However, that is not to say that the Relevance approach is without merit: as we will see, relevance plays a crucial role in the use of definite NPs to refer to entities that are not uniquely identifiable.

3. The mismatch between familiarity and definiteness

As noted above, there is a great deal of overlap between the set of entities that are (presumed to be) familiar to a hearer and the set of entities that are (presumed to be) uniquely identifiable to the hearer, since an entity typically must be familiar in a given discourse in order to be identifiable. However, there are a number of exceptions to this correlation. We will now show that just as a familiar entity needn't be uniquely identifiable, likewise a uniquely identifiable entity needn't be familiar.

In earlier work (Birner & Ward 1993, Ward & Birner 1994), we identified a number of classes of definite NPs that represent information which is simultaneously new to the hearer and uniquely identifiable. One such class, exemplified in (1) above, are those NPs that are sufficiently rich in description to fully and uniquely identify a relevant discourse entity which nonetheless constitutes new information for the hearer. Such NPs are felicitous in first-mention contexts, as illustrated in (8):

(8) Repeated school cancellations due to the recent snowstorms have given rise to *the possibility of an extended schoolyear.*

Here, although *the possibility of an extended schoolyear* may be new information to the hearer, or `hearer-new' (Prince 1992), the description provided in the NP is sufficient to fully and uniquely identify the possibility in question, hence the felicity of the definite.

Other instances of the definite article marking NPs that represent hearer-new yet uniquely identifiable entities include superlatives, cataphoric references, and deictics, as in (9a)-(9c), respectively (see Hawkins 1978):

(9) a. *The best student in my history class* was at the party last night.

b. I propose *the following explanation* to account for these data...

c. *The example underneath it here* [pointing to overhead] shows that...

In (9a), *the best student in my history class* is semantically sufficient to uniquely identify a new entity which the hearer is being instructed to add to his or her model of the discourse. Similarly, *the following explanation* in (9b) uniquely identifies the explanation, even though it is new to the hearer; it's the explanation that's about to be presented. Finally, in (9c) the speaker refers to an example while gesturing toward it; in the context of the gesture, the NP uniquely identifies the example being referred to. Again, in each case the unique identification licenses the use of the definite article. That is, despite the fact that the entity represents presumably new information for the hearer, the NP provides a sufficiently rich description of that entity to make it unique in the discourse model. Thus, in each case it is the hearer's (presumed) ability to uniquely identify the referent that makes the felicitous use of the definite possible.

4. Uniqueness and the definite article

Nonetheless, as we have seen, uniqueness is only a sufficient condition; the definite article may be felicitously used even in the absence of an assumption of uniqueness. Consider, for example, (10):

(10) [At a table containing four pitchers of milk, all equidistant from the hearer] Please pass *the milk*.

Here, the NP typically is not taken to be specifying the entire uniquely identifiable quantity of milk, but rather some non-unique unit thereof. Notice, however, that in this case not only is the relevant unit of milk not uniquely identified by the definite NP, it is also non-unique in a more general sense: that is, it is not relevantly differentiable from any other unit of milk present. If the units are individuated in some relevant way, the non-unique definite reference becomes infelicitous (cf. Kadmon 1990). Thus, consider (10) again in a context where it is mutually known that two of the four pitchers contain skim milk and two contain whole milk; in this case, the quantities of milk are no longer undifferentiated, and the use of the definite article is no longer felicitous without additional identifying description. If, on the other hand, the units of milk are differentiated only by virtue of being in, say, different-colored pitchers, the utterance is again felicitous, since the units are not differentiated in any way that is relevant to the speaker's perceived intent. Thus, it is the inferred intent of the speaker that will determine whether the use of the definite conveys a reference to the totality of the uniquely identifiable quantity (cf.Clark & Marshall 1981, inter alia) or a reference to some subset thereof which is not relevantly differentiable for the purposes of the exchange.

This use of the article is not restricted to mass nouns like *milk*, but applies as well to plural NPs used to refer to sets of countable but undifferentiated entities. So, again in the context of a dinner table, a speaker can say *Pass the rolls* to refer to some subset of dinner rolls, e.g. one of three baskets of rolls on the table. The singular, however, cannot be analogously used to request a single roll, as in (11):

(11) [At a table containing four baskets of rolls] #Please pass *the roll.*

Likewise, in (12) there is no suggestion that every mountain in Switzerland seen by the speaker appears in the photograph:

(12) When I was traveling through Switzerland last year, I took a beautiful photograph of *the mountains.*

Again, it is the inferred intent of the speaker that determines whether the definite conveys a reference to the totality of the set or to some undifferentiated subset thereof.

Similarly, there is a restricted class of uses of singular NPs containing the definite article that do not require uniqueness to guarantee felicity, as illustrated in (13):

(13) a. As soon as my cousin arrived in Santiago, she broke her foot and had to spend a week in *the hospital.*

b. Your 10:00 appointment -- a Mr. Johanson -- said he'd be late because he had to stop at *the bank* first.

c. My history professor announced to the class today that he wasn't going to give us a final. He said that, while waiting in line at *the grocery store*, he realized that he already had enough information to assign us a grade.

In each of the above cases, the definite NP -- *the hospital*, *the bank*, and *the grocery store*, respectively -- refers to some non-unique and not necessarily familiar entity, yet the use of the definite is felicitous. Notice, however, that these NPs are used to refer to locations that are not relevantly differentiable from other locations denoted by the same NP (cf. Givón 1978). That is, in (13a) the hospital in question is not relevantly differentiable from any other hospital for the purposes of the exchange; what is being conveyed is not that the speaker's cousin spent a week in a particular hospital, but rather that she was laid up for a week. For this reason, a sentence like *My cousin had to go to the hospital today* used in a context where the particular hospital in question is not uniquely identifiable will always convey that the cousin was in the hospital in some stereotypical capacity, i.e. as either a patient or a visitor; it would be infelicitous, for example, if the cousin were there as an architect designing a new wing (cf.Stvan 1993). Moreover, adding a modifier results in infelicity:

(14) #While in Santiago, Bill broke his foot and was rushed to *the big hospital.*

Here, the hearer is licensed to assume that the modifier is relevant (in accordance with the maxim of Relation (Grice 1975)). However, the modifier in (14) could only be relevant if it distinguishes this hospital from others, in which case the hospital in question is no longer undifferentiable and, in the absence of unique identifiability, the conditions for the felicitous use of the definite have not been met. Hence, infelicity results. To put it another way, since the modifier is presumed to

be relevant, it must be the case that it matters which hospital, or at least what type of hospital, is under discussion -- i.e., that it is big. Thus, the condition of not being relevantly differentiable is not met, and the hearer must assume that the other condition for the felicitous use of the definite applies -- i.e., that the hospital be uniquely identifiable. In the absence of a uniquely identifiable hospital, the utterance in (14) is simply infelicitous.

Other examples of definite NPs used to refer to locations that are not relevantly differentiable from others denoted by the same NP are given in (15):

(15) a. This afternoon I went to *the park.*

b. Johnny, go stand in *the corner.*

c. Put this book on *the bookshelf*, please.

These sentences may be felicitously uttered in the absence of a uniquely identifiable park, corner, or bookshelf, respectively.

It has been suggested to us by Paul Kay, Tadashi Kumagai and others that the use of definite NPs to denote non-unique locations such as those in (13) and (15) may be explained in terms of frames, in the sense of Fillmore (1977, 1987). For example, in (13a) the mention of Santiago may give rise to a frame for a typical city, which includes a hospital. However, this does not seem to account for all cases:

(16) a. The first thing we did upon arriving in Santiago was to go to *the park* and have a relaxing picnic lunch.

b. When I was six years old, I had to spend a night in *the hospital*, and I was terrified.

In (16a), use of *the park* seems felicitous despite the fact that there is typically more than a single park within a given city. In (16b), there is no mention of a city or any similar scene to give rise to a frame that might plausibly contain a hospital.

Nor, alternatively, is it the case that the definite NP is licensed by virtue of itself calling up a frame of prototypical entities and events. As discussed earlier, use of *go to the hospital* in a context where the relevant hospital is non-unique may indeed suggest a prototypical hospital visit (i.e., either as a patient or visitor) because of the pragmatic restriction against the particular hospital in question being relevant. However, such uses need not always involve prototypical entities and events, so long as the particular referent remains irrelevant:

(17) Somebody left their shopping cart outside here where it could roll into a car. As a good citizen, I'll take it inside. I'll only be a minute; I'll just leave it up front near *the cash register.*

Here, the definite *the cash register* is felicitous even in a context where there are quite likely a number of cash registers, despite the fact that bringing in a shopping cart from outside and leaving it nearby is not a prototypical event with respect to any plausible frame for a cash register. All that matters is that, in this context, it is irrelevant for the purposes of the exchange which particular cash register the cart is left near.

Notice also that the locations in question needn't be inherently undifferentiable. Clearly hospitals, for example, are unique and differentiable from one another; however, in the utterances in question, they are not differentiable in any way that is relevant to the discourse at hand. Thus, the discourse context and the speaker's inferred intent are crucial to the felicity of the definite. Consider (18a)-(18b), each uttered in, first, a room containing three identical windows, and second, a room containing three windows of different shapes and sizes, and with different-colored curtains:

(18) a. It's stuffy in here. Can somebody please open *the window*?

b. Next week I'm going to start redecorating this room. #I'll start by replacing *the window*.

In either context, (18a) is perfectly felicitous, given that the windows are in either case undifferentiated with respect to the purpose at hand; it makes no difference whether the windows are differentiable by their appearance. Notice also that the hearer might felicitously respond by opening more than one window; that is, a single unique referent need not be intended or inferred. On the other hand, (18b) is infelicitous in either context, due to the fact that it is crucially relevant which window is being referred to. Similarly, while *Mr. Johanson just went to the bank* may be felicitously used in the absence of a uniquely identifiable bank, *Mr. Johanson just robbed the bank* may not. Thus, the felicity of such utterances is crucially dependent upon the beliefs of the speaker and hearer regarding the relevance of unique identification of the particular entity being referred to.

Finally, consider again (2b), repeated here as (19):

(19) [Hotel concierge to guest, in a lobby with four elevators] You're in Room 611. Take *the elevator* to the sixth floor and turn left.

Here, a non-unique elevator can be felicitously referred to using the definite article. However, it has been pointed out to us by Bill Ladusaw that, in the absence of uniqueness, the definite may be used only for those conveyances that move along a regular, pre-established path, as illustrated in (20) and (21) below:

(20) a. To get to Dr. Smith's office, I suggest taking *the stairs*.

b. To get to Dr. Smith's office, I suggest taking *the bus*.

c. To get to Dr. Smith's office, I suggest taking *the train*.

(21) a. #To get to Dr. Smith's office, I suggest taking *the car*.

b. #To get to Dr. Smith's office, I suggest taking *the bike*.

c. #To get to Dr. Smith's office, I suggest taking *the taxi*.

In (20), the sentence-final definites each represent an entity which follows a predetermined route between the two relevant points. It is this path, rather than the entity itself, which is uniquely identifiable. In contrast, the examples in (21) evoke no such established path; in the absence of a uniquely identifiable car, bike, or taxi,

therefore, these utterances are infelicitous. Note that for this reason, (22a) is unremarkable, in contrast to (22b):

(22) a. To get to Ludington, we took *the ferry*.

b. ?To get to Ludington, we took *the boat*.

In (22b), the suggestion seems to be either that the speaker owns the relevant boat or that there is an established boat line that travels regularly to Ludington. Here again, the context and the interlocutors' beliefs conspire to determine the felicity of the definite.

5. Conclusion

We have seen that none of the previous analyses can account for all uses of the definite article in English. We have shown, first, that familiarity and identifiability are not equivalent, and have discussed a number of cases in which an unfamiliar entity may be referred to using the definite article if it is nonetheless uniquely identifiable. We have also shown that a familiarity-based account provides neither necessary nor sufficient conditions for the felicitous use of the definite article, while an approach based on unique identifiability provides sufficient but not necessary conditions for use. Specifically, the definite article may be used whenever the intended referent is believed to be uniquely identifiable in the discourse context. As we have seen, however, there are also cases in which the definite article may be used to refer to non-unique referents. In all such cases, not only must the referent not be uniquely identifiable, but there must in fact be no relevant basis for differentiating it from other referents denoted by the NP. We have identified two such uses: plural or mass NPs, in which a definite may be used to refer to some subset of the mass or group denoted by the NP, and singular NPs, in which a definite may be used to refer to some location of the type denoted by the NP.

While there is clearly more to be said on the subject of definiteness, we have shown that no single factor proposed -- familiarity, uniqueness, or relevance -- can alone account for the full distribution of the definite article in English. In particular, pragmatic factors such as the inferred intent of the speaker and the differentiability of referents in context contribute crucially to the interpretation of the definite article.

NOTES

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Prosodic Constraints in American Sign Language

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0. Introduction.

One of the central questions in the current literature on formal models of signed language phonology can be stated as the following: To what degree can models constructed for spoken language phonology accommodate signed languages? Do features, segments, timing units and syllables in signed languages function the same as their spoken language counterparts? With respect to syntax, this issue is largely irrelevant since the formal constituents have little or nothing to do with the peripheral systems in which they are expressed. A noun phrase is a noun phrase regardless of whether it is signed or spoken. If signed languages are to contribute significantly to theories of general linguistics, we expect a number of contributions to be in the area of phonology, since it is here that systems of perception and production have a prominent role.

In this paper, I present two sets of forms that raise questions about the way that the relationship between simultaneous and sequential structure in spoken language models has been adopted by sign language research. The evidence that I will present here will argue that while sequential structure plays an important role in prosodic organization in sign, the set of constraints on simultaneous structure is more robust in signed languages than in spoken languages. There is a view about sign language structure that, except for different segment and feature labels, the phonological units of signed languages are completely explicable using spoken language formalism. This is Perlmutter's (1992, 1993) view. Position segments behave like consonants, movement segments like vowels, handshapes behave like tones, and the syllable contains an internal structure completely explicable through current formalism using a moraic account (Hayes 1989) or a modified form of CV phonology (Clements and Keyser 1983). I argue against this view here. The two types of languages do share a great deal about their prosodic constraints, as we will see, but there are also important differences. It is important to feed information about these differences back into general theories of phonological structure.

This paper addresses: 1) how visual sonority in ASL interacts with timing units and weight units in the formation of syllables, 2) how these units are used in ASL to construct prosodic templates, and 3) how these templates are used both to target forms eligible for morphological processes and to constrain surface outputs of phonological forms. First, I will show how sequential timing units are used in setting a maximum on length of words, using the lexicalization of fingerspelled forms to argue that the longest monomorphemic words in ASL are disyllabic, a view which has also been argued for in Perlmutter (1992, 1993). Then I will show that the process of reduplication requires that simultaneous weight units be counted in order to identify potential input structures. The set of forms picked out for reduplication provides evidence that signed languages exploit simultaneous structure to a relatively greater degree than do spoken languages. Accounts of ASL phonology which allow simultaneous structure to play a role can be seen in my early work, and Uyechi (1994) has also proposed simultaneous prosodic templates for the minimal monomorphemic words in ASL using a similar type of argumentation.

The assumptions made in this paper are the following. First, the sonority hierarchy in (1) is assumed, which incorporates the findings made elsewhere by myself and others (Brentari 1993a, Sandler 1993, Perlmutter 1992, Corina 1990).

All of the units given in (1) can function as well-formed syllables, except partial handshape change, which has been argued to be ill-formed when occurring with no other dynamic unit (Corina 1990). Second, I assume a pressure on forms in ASL to be monosyllabic whenever possible; this was first noted in Coulter (1982). Third, features are organized into four class nodes that function as independent tiers -- movement, place of articulation, hand/arm configuration, and non-manual behaviors. Fourth, any path movement feature on the movement tier or any branching structure on any one of the tiers of place, hand/arm configuration or non-manual behaviors will have a weight unit assigned to it. These weight units have been shown elsewhere to contain the minimum amount of sonorous material to function as an independent syllable. In (2) I have listed the criteria I have developed for counting syllables in ASL (Brentari 1994), although for these analyses we only need a crude measure -- (2a) is all we need.

(1) Sonority Hierarchy in ASL (Δ=change)

mvt > full hs Δ/non-manual Δ > orient. Δ > p.o.a Δ > secondary mvt > partial hs Δ

(2) Criteria for counting the number of syllables in surface forms.
   a. The number of sequential phonological dynamic units in a string equals the number of syllables in that string.
      i. When several shorter dynamic units co-occur with a single dynamic element of longer duration, the longer unit is the one to which the syllable refers.
      ii. When two or more dynamic units are cotemporaneous, it counts as one syllable.
   b. If a structure is a well-formed syllable as an independent word, it must be counted as a syllable word-internally.

1.0 Lexicalization of Fingerspelled forms in ASL[1]

Fingerspelling in ASL, which is the representation of English words in handshapes that depict written letters, serves many purposes. Fingerspelled forms are a part of the language, and as such should conform to constraints proposed for the phonological grammar. Fingerspelling is used when there is no ASL sign for a concept, such as in most proper names used outside of a local community of signers (for example, the town of Stockton, CA, has a sign for the name of the town, but outside of the inhabitants of the local area, no one would recognize it and so it is fingerspelled most of the time), but fingerspelling serves other functions as well. Often fingerspelled forms are used to introduce a term, the sign for the term is then given, and subsequently the sign is used. Fingerspelled forms may also be used to assign emphasis to a word that has an ASL lexical item. (For example, it would be appropriate to fingerspell the word 'home' in the following sentence if the signer is tired and is anxious to leave: WE-TWO GO H-O-M-E!). The context of the fingerspelled forms analyzed in this paper demonstrate yet another use: In specific academic disciplines, fingerspelled forms are sometimes preferred over a coined sign because they may refer to domains of knowledge whose center is

outside the Deaf community, or because they refer to a discipline-specific term that may have not undergone broad discussion within the Deaf community.

Fingerspelled forms of the discipline-specific type just described go through a rapidly occurring lexicalization process, which I will henceforth refer to as local lexicalization, whereby a fingerspelled form comes to stand not for each letter in the English word, but for the concept the word conveys; this process fixes the shape of the fingerspelled form for the duration of a single discourse. This process typically occurs over the course of just three productions. When the form appears for the first time, each letter shape is distinctly formed. By the third production however these fingerspelled forms conform closely to constraints proposed for other well-formed native signs and have achieved a stable state in which the forms will remain for the rest of the discourse. There are also fully lexicalized fingerspelled forms in ASL, such as BACK, BANK, EARLY, EASY, JOB, YES, which have been discussed elsewhere in the literature (Battison 1978, Brentari 1990b) and will not be discussed here since we no longer have access to the process of lexicalization for these forms.

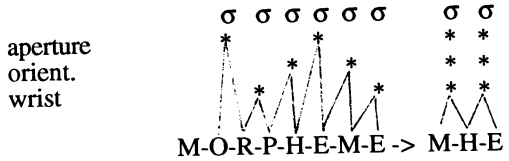
A subset of the forms used for this analyses is given in (3). The formal representation of the lexicalization process I will describe is given in (4) for the form M-O-R-P-H-E-M-E. These forms are taken from a course videotape for the book Linguistics of American Sign Language (Valli & Lucas 1992); Clayton Valli is a pre-lingually deaf, fluent ASL signer, who has produced a videotape that is a summary of the contents of the written text of the book intended for linguistics students who are more comfortable with ASL than with English. Each form in the corpus was signed at least three times and as many as twelve times; however the forms were in transition only during the first three forms; after that the forms were the same during each production.

Let us explore the phonological constraints exerted during the local lexicalization process. Of the four tiers of movement, handshape, place and nonmanual behavior, these constraints take place within the handshape tier alone. They are summarized in (5); we will look at each in turn. All of these constraints can be considered processes of resyllabification.

(3) A subset of locally lexicalized fingerspelled forms from the corpus (ø=epenthetic dynamic element; #=word boundary)

# ltrs	1st/2nd production	3rd production	#syllables
6	S-Y-M-B-O-L	S-I-L	2
6	S-Y-N-T-A-X	S-Y-ø-T-X	2
8	C-U-P-B-O-A-R-D	C-P-D	2
8	L-O-C-A-T-I-O-N	[L-I]-O-ø-C-N	2
8	M-O-R-P-H-E-M-E	M-O-ø-H-E	2
9	P-H-O-N-O-L-O-G-Y	P-H-G-Y	2
10	M-O-R-P-H-O-L-O-G-Y	M[wig]P-G-Y	2
10	L-I-N-G-U-I-S-T-I-C	L-I-N-G-I-C	2
10	C-L-A-S-S-I-F-I-E-R	C-L-[I-A]-E-R	2
11	O-R-I-E-N-T-A-T-I-O-N	O-[R-I]-ø-C-N	2
12	I-N-C-O-R-P-O-R-A-T-I-O-N	I-N-C-O#	2
12	M-E-T-A-L-I-N-G-U-I-S-T-I-C	P-[wig]-C-N	2
		M-E-ø-T-A#	2
		L-I-N-G-I-C	2

(4) Resyllabification of M-O-R-P-H-E-M-E ->M-H-E (*=weight unit)



(5) Resyllabification in locally lexicalized fingerspelled forms
- A. Disyllabic constraint on phonological words enforced
- B. Alignment of dynamic units into disyllabic structure
- C. Syllable peaks are chosen according to two criteria:
  - a. word final position as a site of attraction
  - b. the sonority hierarchy
    - i. wrist nod/ wrist retraction
    - ii. full handshape aperture change
- D. Merger occurs along the following dimensions
  - a. handshape symmetry
  - b. handshapes containing the same aperture setting are reduced
  - c. long sequences of different aperture settings merge to a single instance of finger wiggling

The disyllabic constraint on phonological words is enforced in all the forms analyzed, and the use of changes in selected fingers as an index of the number of syllables argued for elsewhere in the literature (Perlmutter 1992, 1993; Brentari 1990b) is dropped. Instead, the dynamic units that involve aperture change in handshape, wrist movement, and orientation change are used to construct syllables. All forms between 6-11 original letters are reduced to two syllables in the lexicalized form, given the criteria in (2). The disyllabic constraint on lexical items has been argued in monomorphemic forms in Perlmutter (1992). Forms longer than 11 letters are then broken into two phonological words; this break is signaled by a longer pause between the last letter of the first word and the first letter of the second, plus the movement or handshape between the first and second words take on the properties of an inter-word epenthetic movement. We can determine this unit is epenthetic because the handshape change is more abrupt than word-internal handshape changes, and when this handshape co-occurs with a movement, it is more abruptly articulated with respect to the duration of the movement (Brentari, Poizner, and Kegl 1994). These epenthetic dynamic units occur word internally without the extended pause in the lexicalized forms of L-O-C-A-T-I-O-N between the 'O' and the 'C' and in S-Y-N-T-A-X between the 'Y' and the 'T.'

If a long word is to be reduced to two dynamic elements from 6 syllables in a form such as M-O-R-P-H-E-M-E in (4), how does the phonological grammar accomplish this? I propose the processes in (5B-D). Weight units, shown in (4) as '*' are aligned to a disyllabic template according to sonority considerations and the word-final site of attraction. Selected finger groups of the same aperture setting are then merged according to principles of symmetry and reduction. The sonority hierarchy proposed in (1) has been shown to operate in constructing syllable peaks in monomorphemic forms (Perlmutter 1992); all of the asterisks represent dynamic units that can function a well-formed syllables: that is, they are all higher on the sonority scale than 'partial handshape change.' This work suggests that word-final

position is a site of attraction for dynamic units in the lexicalization process in the way described by Mohanan (1993), for codas in the way that they attract processes of weakening and neutralization in spoken languages.

The distinctive aperture settings are 'fully open,' flat open,' 'curved open,' 'curved closed, 'flat closed' and 'fully closed.' These distinctions can be demonstrated with the 'B' handshape. In the sign 'HI' the aperture setting is fully open; in the first handshape in BOY the aperture setting is 'flat open' and second handshape is flat closed; in CUP the aperture setting is curved open; in NUMBER it is curved closed, and in PASSPORT it is fully closed (Ann 1993, Uyechi 1994, Johnson 1994). A partial handshape change is a change of just one aperture setting; a full handshape change is a change of two aperture settings, and it has been argued that a single partial handshape change is not sonorous enough to be a well-formed syllable (Corina 1990) . In M-O-R-P-H-E-M-E, the 'M' to 'O' is a partial handshape change, and so this change is ignored for purposes of syllabification, even on the first production of the form. The change from 'O' to 'R' contains a full handshape change; the change from 'R' to 'P' has a wrist nod; 'P' to 'H' has an orientation change. 'H' to 'E' has a full handshape change; 'E' to 'M' has an orientation change; and finally, 'M' to 'E' has a wrist retraction. There are six syllables in all in the first production. By the third production of this form, the full handshape change, wrist nod, and orientation change produced in the M-O-R-P-H are produced in one smooth movement, and the full handshape change, orientation change and wrist retraction produced in the H-E-M-E are produced likewise in one smooth movement. This is a typical example of the principles listed in (5B-C). The word-final dynamic unit will be included if it meets the sonority requirement, while other dynamic may be deleted. For example, the 'S' to 'F' handshape change in C-L-A-S-S-I-F-I-E-R is deleted, but the 'E' to 'R' handshape change is not, even though both are full handshape changes. In word-final position, there are also routinized sequences of those handshapes frequently used in such forms. One such sequence that appears in the corpus -- I-O-N becomes 'I' (often articulated with another letter due to merger, which will be discussed below), 'O', 'C', 'N', increasing the sonority value in the last dynamic unit by inserting a 'C' to insure a well-formed syllable between word-final 'O' and 'N.' This change from 'O' to 'N' is a partial, rather than full handshape change without the inserted 'C.'

Let us now take a few examples of the principles listed in (5D). It is clear from the M-O-R-P-H-E-M-E example that handshapes depicting some letters are eliminated, and some undergo handshape merger. The first principle is handshape symmetry. If there are handshapes with the index finger and middle finger selected (e.g., L, R, D, U, etc.), and the word contains an 'I' or 'Y' handshape which has a pinkie finger selected, these forms will be articulated simultaneously, even if they are not adjacent in the English word. The word L-O-C-A-T-I-O-N illustrates this. The 'I' is 4 letters removed from the 'L', but they are produced simultaneously in the lexicalized form. The second principle in (5D) states that adjacent handshapes which realize a partial aperture change or no aperture change will be reduced or deleted. We see this in O-R-I-E-N-T-A-T-I-O-N. The E-N-T-A-T are all produced with partial handshape changes, and by the third production of this form these are deleted. Finally, long sequences of handshapes that differ in aperture setting in word-internal position are reduced to a single instance of finger wiggling, as in the third productions of C-U-P-B-O-A-R-D, M-O-R-P-H-O-L-O-G-Y, and in the second phonological word of I-N-C-O-R-P-O-R-A-T-I-O-N.

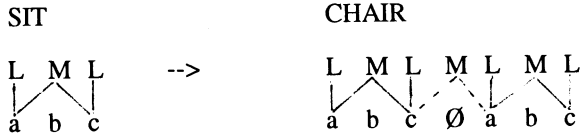
What these forms tell us can be summed up in the following points. First, there are sequential constraints on these forms, but syllables are not formed in these

lexicalized fingerspelled words on the basis of the selected finger groups, as we might expect from the criteria developed elsewhere in the literature (Brentari 1990b; Perlmutter 1992, 1993); rather, syllables are constructed on the basis of the dynamic units of the form. Second, the alignment of the dynamic elements suggests that the principle of ALIGNMENT argued for in Optimality Theory is at work in these forms in ASL (Prince and Smolensky 1993). Third, the lexicalized forms can be described by a canonical definition of borrowing, even though the borrowing from English to ASL occurs across modalities. We see this by looking at the possible candidates for this phenomenon shown in a recent paper by Kiparsky (1993) in addressing lexical diffusion. The fact that the lexicalized fingerspelled forms occur item by item, over a very short period of time, add new words to ASL's vocabulary, and use handshapes not found in other ASL lexical items, such as the forms produced by the merger of two forms 'L' and 'I' together, establishes this point clearly.

2.0 Prosodic templates and reduplicated forms

In this section I would like to briefly discuss one way that looking at the simultaneous weight units of signs is important in constructing a morphological template for reduplication in noun-verb pairs in ASL. Reduplication has been cast in the Hold-Movement and in the Hand Tier model in segmental terms, roughly as in (6). Although the form in (6) is an LML sign SIT, the forms that undergo reduplication can consist of other segment sequences as well -- that is, single Movement segments (e.g., the pair AIRPLANE and FLY), a Movement segment and a Location (e.g., WINDOW and CLOSE-WINDOW), or a single handshape change (e.g., STAPLER and STAPLE), represented in earlier versions of the Hand Tier model as single Locations.

(6) Reduplication in the Hand Tier model (Sandler 1989) (the lower case letters represent entire feature matrices; L and M stand for Location and Movement, respectively)



The problem that arises from this segmental format is twofold: first, there is no uniform class of segmental sequences that can pick out the forms eligible for reduplication; and, second, the emphasis is on the segmental units and not what is contained in the feature bundles. It is in the feature bundles that the true structural generalization can be found. The first work on noun-verb pairs (Supalla and Newport 1978) contains an appendix of 105 noun-verb pairs. The noun verb pairs are specifically described in Supalla and Newport (1978) as 1) related in meaning, 2) containing a verb that expresses the activity performed with or on the object named by the noun. There are 37 signs in the corpus that are either bi-directional (e.g., ERASE/ERASER, TYPE/TYPEWRITER) or repeated or continuous unidirectional forms (e.g., SMOKE / CIGARETTE, COMB (as noun and verb)). These 37 forms do not employ reduplication; they do not copy anything from the stem onto the noun form, but only apply restrained movement to the existing movement of the stem to form the noun. All 68 of the forms that do undergo

reduplication of the stem to form the noun form contain one and only one dynamic parameter; that is, one simultaneous weight unit. The representation using simultaneous weight units to capture this generalization is given in (7). The sets of forms to which this process applies are given in (8).

(7) Input structure using simultaneous weight units



(8) Noun /verb pairs (from Supalla and Newport 1978)

(The verb form is the first one, the noun is second)

Reduplicated Movement

SIT/CHAIR
GO-BY-PLANE/AIRPLANE
GO-BY-BOAT/BOAT
GO-BY-ROCKET/ROCKET
GO-BY-TRAIN/TRAIN
GO-TO-BED/BED
PUT-ON-BRACELET/BRACELET
CLIP-FINGERNAILS/CLIPPER
PUT-ON-COAT/COAT
PRESS-DOORBELL/DOORBELL
PULL-DRAWER/DRAWER
PUT-ON-EARRING/EARRING
PUT-ON-GAS MASK/GAS MASK
CLOSE-GATE/GATE
PUT-ON-GOGGLES/GOGGLES
HANG-UP/HANGER
SCREW-ON-JAR LID/JAR LID
FLICK-LIGHTER/LIGHTER
THUMP-MELON/MELON
SQUEEZE-PLIERS/PLIERS
PUT-ON-RING/RING
CUT/SCISSORS
PUT-ON-SOCK/SOCK
PUT-ON-TAPE/TAPE
OPEN-UMBRELLA/UMBRELLA
BLOW-WHISTLE/WHISTLE
ZIP-UP/ZIPPER
CALL/NAME
HIT-WITH-HAMMER/HAMMER
GO-BY-FLYING-SAUCER/FLYING-SAUCER
GO-BY-SHIP/SHIP
PUT-ON-BACKPACK/BACKPACK
COVER-WITH-BLANKET/BLANKET
PUT-ON-BROOCH/BROOCH
PUT-ON-CLOTHESPIN/CLOTHESPIN
OPEN-DOOR/DOOR
TURN-DOORKNOB/DOORKNOB
PUT-ON-DRESS/DRESS
PUT-ON-EARPHONES/EARPHONES
ADD-GAS-TO-TANK/GAS
SHIFT-GEARS/GEARSHIFT
SHOOT/GUN
PUT-ON-HAT/HAT
PUT-ON-HEARING-AID/HEARING-AID
STRIKE-MATCH/MATCH
TAKE-PILL/PILL
PLUG-IN/PLUG
PUT-ON-SCARF/SCARF
TURN-SCREW/SCREWDRIVER
PUT-ON-SUSPENDERS/SUSPENDERS
TELEPHONE/TELEPHONE
OPEN-WALLET/WALLET
CLOSE-WINDOW/WINDOW

Reduplicated Handshape

SNAP-PHOTOGRAPH/CAMERA
STAPLE/STAPLER

Most of them are forms which contain a movement and no handshape change; a few contain a handshape change and no movement (e.g., SNAP-A-PICTURE (verb) vs. CAMERA (noun)). Some nominals are not formed in this way, and these are exceptions to the semantic criterion described in Supalla and Newport (1978); these are the activity nouns, such as those discussed in Padden and Perlmutter (1987) -- e.g., ACT / ACTING, CHAT / CHATTING and apply another formational process.[2] However, whatever the form, if it undergoes reduplication, it contains just one mora. Consider the forms in (9). The nouns are all reduplicated forms, and they all are monomoraic.

(9) Forms not meeting Supalla and Newport's semantic criteria, but which undergo reduplication to form their nominal.

a.	noun	verb	noun	verb
	SUPPORT	SUPPORT	APPLICATION	APPLY
	DEBT	OWE	ASSISTANT	ASSIST
b.	nouns only			
	CHURCH	COUGH	CUP	
	COLD	DOCTOR	NURSE	

The 68 forms from Supalla and Newport that undergo reduplication, plus the forms in (9) are forms that contain one and only one weight unit. A segmental representation can not capture this. These forms span the range of segmental representations proposed; only by counting the number or simultaneously occurring weight units can we capture the appropriate generalization. Furthermore, Perlmutter (1992, 1993) has proposed that moras in ASL are primarily units of timing. Implicit in the proposal is the claim that the phonological grammar in ASL is not sensitive to the number of weight units in a syllable, but rather, just as in spoken languages, after a specified threshold of sonority has been reached by a given feature bundle, a single mora is constructed on the timing tier. This set of reduplicated forms shows that moraic units are not counted on the basis of some threshold of sonority, but instead maintain their individual identity as simultaneously occurring weight units that are visible to the morphology.

3.0 Conclusion

These two sets of forms have demonstrated that both sequential and simultaneous constraints operate on sign structure. The sequential constraints, such as those seen in the lexicalized fingerspelled forms, look very similar to those found in spoken languages. The simultaneous constraints found in the reduplicated forms are less common in spoken languages, yet these are important for sign. This separation of timing units from weight units is necessary if we are to understand sign structure.

To conclude, we have seen two sets of forms that are not monosyllabic -- lexicalized fingerspelled forms and reduplicated forms. The lexicalized fingerspelled forms conform to the constraints of monomorphemic forms: namely, they must not exceed two syllables in length. The reduplicated forms are disyllabic as well, but exhibit a different kind of constraint, one that scans input forms for the number of weight units contained in the input structure. These two sets of forms show that by uncovering the violations of the tendency towards monosyllabicity and describing these exceptions in terms of simultaneous and sequential structure,

we may be able to make better predictions about where polysyllabic words in ASL will occur.

FOOTNOTES

[1]This section is part of a longer joint project on fingerspelling done in collaboration with Robert Johnson of Gallaudet University.

[2]Another possible source of exceptions to this generalization come from nouns whose stems are adjectival forms -- OLD / AGE; POOR / POVERTY. However, in consulting native informants, these forms do not undergo reduplication.

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The Origin of Adversative Passives

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1. Introduction

This paper addresses the question of why the various 'passive' constructions, (1A)-(1B), in Mandarin are predominantly 'adversative', as exemplified by (2). A related question is why the Agent markers (also referred to in the literature as prepositions or co-verbs (Chao 1968; Huang 1974)) often appear without the Agent that they are supposed to mark, as shown in (1A), which is unique and curious in view of the fact that other prepositions in this language require an NP to follow (Hagège 1975:178).

(1) Mod Mandarin passive constructions: (PM: passive marker)

A. Subj + PM+(Agent) + Verb (Verb):

a. *gěi* + (Agent)

b. *jiào* + (Agent)

c. *ràng*+ (Agent)

d. *ái* + (Agent)

e. *zāo* + (Agent)

f. *bèi* + (Agent)

e.g. Shū + bèi + (tā) + ná zǒu le.
book PM-BEI (3sg) take go ASP
'[Unfortunately] the book was taken away by him.'

B. Lexicalized or frozen expressions:

jiàn/bèi+Verb:

a. *bèidòng* BEI move 'passive' *bèigào* BEI tell 'the accused'

b. *jiànyí* see suspect 'be suspected' *jiànguài* see strange 'be blamed'
jiànxiào see laugh 'to be laughed at'

(2) a. Wǒ kànjiàn tā. (Active)
1sg see 3sg 'I saw him.'

b. Tā bèi wǒ kànjiàn. (Passive)
3sg PM-BEI 1sg see '[Unfortunately] he was seen by me.'

A historical perspective is proposed here to provide answers to these questions. The modern 'adversative' passives, as suggested here, are of the evolutionary lineage of the type of sentences found in the early history of the language whose function it is to express that the grammatical Subj is involuntarily affected by an outside force encoded in the VP. The genesis is traced to the *gòu*

'encounter' and *jiàn* 'see' type of Active sentences in the oracle-bone inscriptions (OBC) in 14-11th c BC in which these verbs are followed by a grammatical Obj representing an uncontrollable phenomenon, e.g. raining, calamity, descending spirits in the ritual, or enemies. That is, the Actives in OBC that evolved into the modern adversative passives are those in which the **direction of transitivity** of the main verb is from Obj to Subj, similar to the English *He endured the treatment* in which the Obj *treatment* affects the Subj *he*, rather than the other way around. In other words the notion of in-bound transitivity (*I fear him*) as distinguished from out-bound transitivity (*I hit him*) is important here. The former is Active in form but Passive in meaning. The structural opacity between Active and Passive in the early stage can be made transparent if we distinguish the direction of transitivity: out-bound from or in-bound toward the grammatical Subj.

The rest of the paper is organized in the following way. Since word order is a defining feature of Chinese passives, Section 1 provides background information on word order in Chinese inasmuch as it is relevant to passives. Section 2 is the proposed account of the rise of the 'adversative' passive markers and their subsequent development and interaction with another area of the grammar, that of the evolution of prepositions. Section 3 returns to focus on the incipient stage when passive markers were full verbs and the structure that contained them overlapped with the active.

The term 'adversative' is to be understood as 'affected' and 'beyond the control'[1] of the grammatical Subj, thus often is adverse. Historically, there are cases in which the grammatical Subj is benefited rather than disadvantaged; the source of force in these cases typically comes from higher up, e.g. heaven or a king in connection with his benevolent act toward his subjects. But the function of adversity has been generalized in the course of time. By 'passive' it is meant here the type of sentences in which it is grammatically coded by the markers shown in (1A) that the grammatical Subj is impacted by the denoted action and the Subj/Patient is involuntarily (thus often negatively) affected, as shown in (2) above.

2. General background: passive and word order in Chinese

Chinese has always been basically a SVO language (Hu and Zhang 1988:180; for a different view, see e.g. Li and Thompson 1974a; Hashimoto 1988), with a strong tendency to put Topic, Focus, Contrast, etc. in sentence initial position. When the Focus is a Patient, the sentence would look like a passive, as seen in (3a) and (4a). In this kind of passive the interpretation of the grammatical Subj as the Patient or Undergoer is due to common sense knowledge. The structure itself is not Passive exclusively, since Active also share this structure, as illustrated in (3b), and (4b).

(3) a. Xìn xiě le.
letter write ASP 'The letter was already written.'

b. Wǒ xiě le.
1sg write ASP 'I wrote already.'

(4) a. Háizi wèi le.

baby feed ASP 'The baby has been fed.'

b. Háizi chī le.
baby eat ASP 'The baby has eaten.'

Structures like these have been in the language ever since the earliest written documents available to us. Chinese grammarians refer to them as *yìniàn bèidòng*, lit. sense passives, as different from structural passives, which are what we are interested here.

Though Modern and Ancient Chinese share the same basic SVO word order, there is a great difference between the two. The latter tends to put oblique cases (Instrumental, etc.) after the main Verb, whereas in Mod Mandarin these have migrated to the pre-verbal position (Chen 1994), as exemplified in (5).

(5) a. Classical Chinese: Verb PP

Yǐn mǎ yú hé.
drink horse PP-at river 'Let horses drink from the river.'

b. Mod Mandarin:

Ràng mǎ zài hé-li hē shuǐ.
let horse PP-at river-in drink water 'Let horses drink from the river.'

The historical fronting of prepositions (as case markers), as we shall see later, is consequential to the re-anaylsis of the passive markers (which have always been before the main verb of action, any way (see Section 4)) as Agent markers.

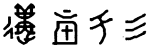
3. Predecessors of present affected/adversative passives

Chinese grammarians generally have associated the modern passives with the following three structures in Classical Chinese (wén yán) (e.g. Wang 1957:15), translatable by modern passives: (a) a construction in which a non-topic agent is sometimes introduced by a preposition, most often a generalized preposition *yú* 'at', (b) the *wéi* Agent *suǒ* Verb construction, in which the non-topic agent is sometimes introduced pre-verbally by the preposition *wéi*, and (c) *jiàn* 'see'/*bèi* 'cover' + V (to express a meaning similar to the English *got VERBed.*) While this historical observation is correct, it does not answer the questions raised in the beginning of this paper. The present approach takes us further back in history before the formation of (b). That is, back to the time (i.e. OBC) when the ancestors of the modern Agent markers were main verbs

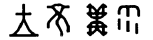
4. Historical development

In OBC the event encoded by the verb *gòu* 'encounter', or *jiàn* 'see', as distinguished from look, has in-bound transitivity, as proposed here, in that a sight/phenomenon appears before the subject and the subject is involuntarily affected.[2] The verb *gòu* 'encounter' typically collocates either with the descending spirits of ancestors in temple rituals (Yu 1979:179; Zhang Y 1988: 28-

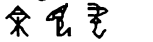
45), as in (6), or undesirable natural phenomena from heaven such as raining, as in (7), and still later, encountering an enemy tribe; and the verb *jiàn* 'see' has similar collocations, as shown in (8)-(9). Both are most especially seen in the context of asking gods whether the king will incur/encounter blame from the irresistible power (ancestors or gods) from heaven. Later *jiàn* increased its productivity as a grammatical marker by being able to cooccur with more and more activities not necessarily associated with the power of nature, as exemplified in (12)-(13); so did *gòu*, as shown in (10)-(11), though the collocations of the two verbs did not exactly coincide. ({...}: indicates OBC source with collector and individual bone ID number)

(6)  {Tunnan 488}

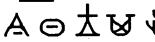
gòu Shàng Jiǎ [3] yú shan#[4]
encounter SJ PP-at shan-ritual 'meet with ancestor SJ in the ritual shan#'

(7)  {Qian 3.16.1}

Wáng bù gòu yǔ
king not encounter rain '[The king] perhaps will not encounter rain?'

(8)  {Qian 7.33.1}

Yú jiàn zāi.
I see harm. 'I will be harmed.'

(9)  {Xu 6.10.4}

Jīnrì wáng qǐ bù, jiàn yǔ.
today king PART walk see rain 'Today the king went out, he got rained on.'

(10) Lú Bó yú gòu Wáng xiū. (bronze inscription, Zhou dynasty(12-7th c BC))
Earl of Lu go encounter King's grace
'The Earl of Lu was blessed by the King's graciousness.'[5]

(11) gòu mǐn jǐ duō, shòu wǔ bù shǎo (before 6th c BC)
encounter suffering quite many, receive insult not few
'was saddened [by] many [sufferings] and humiliated [by many insults].'

(12) Gōng Tàishǐ jiàn fú yú Zōng Zhōu nián. (bronze inscription, early Zhou)
Gong Taishi see official-duty PP-at temple Zhou year
'in the year when the Grand Recorder was charged with the official duty [by the King] in Zong Zhou'

(13) gù jiàn fù yú shì ;. . . bì jiàn zǐ yú mín. (3rd c BC)
definitely see condemn PP-in world; . . . must see ridicule PP-in people
'would surely be condemned by the world [and] ridiculed by the people.'

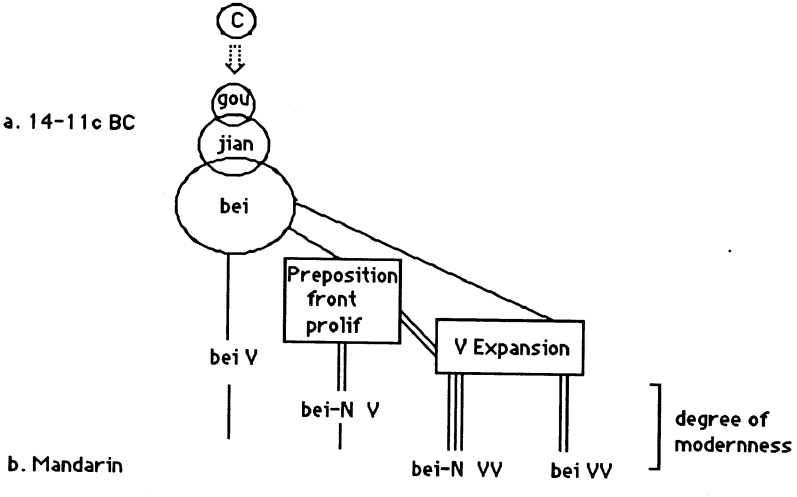
Still later, *bèi*, as shown in (14) (notice both the functional and structural parallelism between *jiàn* and *bèi*), and other morphemes rose to take over the

function represented by the earlier *gòu* and *jiàn*, retaining the essential meaning of suffering from, or being affected by, an irresistible outside action.

(14) xín ér jiàn yí, zhōng ér bèi bàng (1st c BC)
truthful but see doubt, loyal but BEI-cover slander
'Those who are truthful are being suspected and those who are loyal are slandered (lit. to be covered by slanders].'

An independently motivated historical change of Preposition Fronting and Proliferation (notice the post-verbal prepositions in Classical Chinese as double underlined in (13)) and later another independently justified historical Verbal Expansion (V--->VV) (see Chen 1993a and 1993b) account for the coalescence of the passive markers with the newly preposed prepositions (taking Agent as object, thus assuming the modern Agentive marking function), and the varied passive constructions shown in (1A)-(1B). These two major historical structural developments interact with the functional affected passives as expressed by *jiàn/gòu* in a way perhaps analogous to the relationship between cookie cutters and dough: the affected function being the dough and the content, and the cookie cutters being the grammatical coding or chunking that are responsible for the different shapes and forms that the passives appear at different stages. Each of the historical changes mentioned above did not totally replace the previous forms: remnants of early forms of differing productive strength persist in modern Mandarin. A schematic overview of this is illustrated in (15).

(15) Lexicalization and grammatical codification of the concept of the Subj being (adversely) affected:



The modern passive markers *ràng, jiào, gěi, zāo,* and *ái* still retain their strong adversative meaning, but *bèi* is on its way to becoming a pure passive

marker, losing ever increasingly its original adversative function, especially under the influence and association with English passives (Wang H. 1959:43; Hsueh 1989:119) as evidenced in newspaper writings and translations, in fact so much so that it is regarded as an Agent marker in passives, much like the English *by*.

The proposed approach accounts for the pervasive adversative meaning in the various marks of the modern passives, their differences from other prepositions, the chronological order (albeit with much overlappings) of changes, and the modern reflexes reflecting degrees of modernness.

5. The rise of passives: structural opacity between active and passive

The beginning of Chinese affected passives occurred, as is suggested here, at the time when they were indistinguishable from actives in form. Certain verbs, like *gòu* 'encounter' and *jiàn* 'see', come to be typically used in contexts of adversity or fear and they become contaminated by that sense, so that when used outside the contexts of natural phenomena, spirit rituals, etc, which engendered the sense of 'advers effect' they continue to denote that content. Both the verbs *gòu* 'encounter' and *jiàn* 'see' appear in the syntactic environment shown in (16), which is the same as a prototypical transitive active, (17).

(16) SUBJ-person + gòu 'encounter' +N/V
jiàn 'see'

(17) SUBJ-person + lǐng 'order' +N
hùo 'hunt'

The structural opacity between (16) and (17) is further strengthened by the fact that the V in (16) can be used as N (Guan 1953; Chen W. 1980:195; Chen M 1953). For example the word *yǔ* 'rain, raining' is N/V in (18a) (=(9)), whereas in (18b) it is the main Verb. It is interesting to note that oracle-bone grammarian Zhao (1986:21) consistently uses modern passives to gloss this type of *jiàn* sentences, as shown in (18a').

(18) a. Jīnrì wáng qí bù, jiàn yǔ.
today day king PART go-outing, see rain
'Today the King went outing, was rained.'

b. Jīn xī bù yǔ.
today night not rain
'Tonight [perhaps it will] not rain?'

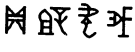
a'. Mandarin: Jīnrì Shāng wáng chū xíng, bèi yǔ lín.
today Shang king go out, BEI rain pour
'The Shang king went outing today; [he] was rained.'

The word *zāi* 'calamity, harm' is another N/V example (Zhu 1990) that appears in both a prototypical transitive active as the main verb, (19b), and incipient passive, (19a), which Zhao glossed with the modern passive marker *bèi*, (19a').

(19) a. 

{Qian 7.33.1}

Yú jiàn zāi.
I see harm. 'I will be harmed.'

b. 

{Qian 1.11.5}

zhēn: Zǔ Xīn zāi wǒ?
divine: Zu Xin harm I '[The King] divined: will ancestor ZX harm me?'

a' Mandarin: Wǒ bèi zāihài.
1sg BEI harm 'I'll be harmed.'

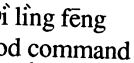
When *jiàn* or *gòu* is followed by an action, the grammatical Subj is involuntarily affected (i.e. understood as Patient). Take for instance the action of raining or being windy. If it is desired for agricultural reasons, the sentence would be 'will God orders rain?' That is, a voluntary Subj/Agent (god) is followed by an out-bound transitive verb *lìng* 'order, bestow' or *jiàng* 'make fall'), as shown in (20). Or, if it is a plain question asking whether it will rain (as in our modern weather forecast), the sentence will either have gods as Subj/Agent, (20), or Time/Place word, (21)-(22), much like the modern Chinese, (23).

(20) a. 

Dì bù lìng yǔ
god not command rain 'God [will] not command rain/ (it to) rain?'

b. 

Dì lìng fēng
god command wind 'God [will] command wind/it to be windy?'

(21) 

rènxù qí yǔ, rènxù fēng. {Hou Shang 32.1}
renxu [day 59] PART rain, renxu [day 59] wind
'Renxu [day 59] [it will] rain? renxu [day 59] windy?'

(22) 

Jīn xī bù yǔ.
today night not rain 'Tonight perhaps it will not rain?'

(23) Mod Mandarin:
Jīntiān wǎnshang xià yǔ ma?
today evening fall rain Q 'Will it rain tonight?'

However, if raining is not desired (as when divining for a fine day for outing or hunting), the involuntarily affected Patient (King) will be cast in the Subj position followed by the in-bound transitive verb *jiàn* 'see' or *gòu* 'encounter' as seen in (7) and (9) earlier. When the Agent/Causer (god) is the grammatical Subj, *jiàn* or *gòu* is never used for the same information. Also, when divining for a sunny day (*yáng* 'sunny', *qǐ* 'become sunny') or when other positive connotation words were used (*yòu* 'blessing', *ruò* 'god's approval'), the grammatical Subj (King) is not followed by *jiàn /gòu* ', instead it is followed by verbs like *shòu* 'receive' (*Wáng shòu yòu* 'The King will be blessed' {Heji 30925}).

It was the verb *jiàn* 'see'/*gòu* 'encounter' followed by action that become specialized and grammaticalized, acquiring the grammatical status of adversative/affected passive markers. The reason is that the following action nominal is a phenomenal occurrence (descending spirits, disaster, rain, etc.) which renders the preceding *jiàn* 'see'/*gòu* 'encounter' pale by comparison, losing its lexical content and information value. A construction with verbs in sequence is a potential breeding ground for grammaticalization. The evolution of grammatical markers from full verbs is a recurrent theme throughout the history of the language.

The incipient Passive markers in *jiàn/gòu* +V, unlike their descendants, were not Agent markers yet; the agent was introduced later by the general, common preposition *yú*, as shown in (13) above, repeated here.

(13) gù jiàn fù yú shì ;. . . bì jiàn zǐ yú mín.
definitely see condemn PP-at world; . . . must see ridicule PP-at people
'[would] definitely be condemned by the world and ridiculed by people.'

While *gòu* 'encounter' became non-productive and retired from the language shortly after the period of the Book of Odes (ca. 7th c BC),[6] *jiàn*, ever increasing in its productivity, continued to flourish into the Classical period until later *bèi* 'to cover; to be covered' (originally a noun meaning 'coverlet') rose to join it ca. 1st c BC, appearing only sporadically. *The Records of the Historian* (1st c BC) provides us with a view of overlapping in progress: (24), without an agent, being the oldest; (25), with an agent introduced by preposition *yú*, hallmark of the high Classical Chinese; and (26), the new passive marker *bèi* working parallel to/overlapping with the older *jiàn* . Mod Mandarin, as a full-fledged final stage of Passive, complete with Passive marker as Agent marker, is provided here, (25b), for comparison.

(24) jiàn shā (1st c BC)

see kill '[He] was killed.'

(25) a. jiàn duǎn yú dà chén. (1st c BC)
see short PP-at great official '[He] was slighted by high officials.'

Cf. Mod Mandarin:

b. bèi dà chén qiáobuqǐ
BEI great official belittle '[He] was slighted by high officials.'

(26) xǐn ér jiàn yí, zhōng ér bèi bàng (1st c BC)
truthful but see doubt, loyal but BEI slander
'The truthful are suspected and the loyal are slandered.'

Around the 5h century, *bèi*+Agent NP already appeared (Mei 1990:199) though not wide spread. By the 8th century when vernacular literature (e.g. biànwén and huàběn) began to flourish, *bèi* was so generalized (grammaticalized) and entrenched in the language that it threatened to replace the passive marker *jiàn* in the then vernacular Chinese. While *jiàn 'see'* had never fully developed into a grammaticalized Agent marker (preposition) before it died out, the grammaticalization of *bèi* continued and steadily increased into modern times. Along the way it collided into the path of the historical development of prepositions (from few to many and from predominantly post-verbal to pre-verbal), which had a very weak beginning in OBC, much earlier than the grammaticalization of *bèi*, and became intertwined with the latter (i.e. the development of prepositions), thus the infamy 'co-verb or preposition?' (Chang 1977, Li and Thompson 1974b).

Like *jiàn*, *bèi* became a passive marker; moreover it went a step further -- becoming a pure Agent marker. The two functions co-exist in Mod Mandarin, as shown earlier in (1f).

(27) Stages of grammaticalization for *bèi* :

i as a transitive verb taking (a) concrete and (b) action nominals as Obj
ii grammaticalized as a Passive marker yielding to the following action verb for lexical content
iii expanded to incorporate Agent NP by means of the then general preposition *yú* or *wéi*
iv further grammaticalized as a pure Agent marker while retaining the usage of Passive marker

Data in (28) provide supporting evidence for the above.

(28) a. ér mín bù bèi qí zé (ca. 4th c BC)
but people not wear/cover his benevolence
'but people are not blessed with [the king's] benevolence '

b. Guǎrén bù xiáng, bèi yú zōngmiào zhī sùi. (ca. 3rd c BC)
I not auspicious, cover PP-at temple's curse
'I [the king] am unfortunate; [I] got cursed by our ancestors.(Lit. I am covered/shrouded by the curse of the temple.)'

c. zhōng ér bèi bàng (1st c BC)
loyal but BEI slander 'those who are loyal are slandered.'

d. miǎn bèi pángrén zhǐzhū qù (AD 8th c)
lest BEI others criticize go 'lest [he] should be criticized by other people'

Cf. wéi jiǔ suǒ kùn (<--kùn yú jiǔ) (5th c BC)
not by wine PART hamper 'not to be hampered by wine

e. Wǒ bèi tāmen xuǎn zuò bān zhǎng. (20th c)
1sg BEI 3pl elect as class chief 'I was elected by them as class president.'

At the risk of oversimplifying a historical complexity while reiterating that the changes happened in different verbs at different time with slight variations in collocations, the following illustration offers an over-all glimpse at the grammaticalization path of Chinese affected/adversative markers.

(29)

a. A: V + PP --> B: (PP) + V (PP) --> C: PP + V

b. $V_{tr\text{-}inb}$ + N

[N_{cc} ----------]----------> V + N

[[N_{ph} / N_{Action}]--> V + V --> v + V --> co-v + V

PP_{agent} + V

Notations:
A: incipient stage B: intermediate stages C: final/modern stage
$V_{tr\text{-}inb}$: V_t with inbound transitivity N_{cc}: concrete/common nouns
N_{ph}: noun invoking phenomenal event co-v: co-verb/preposition

The contribution of the historical Preposition-Fronting and Proliferation to the making of modern passives (in the re-analysis of co-verbs as preposition) is recognized here by its (i.e. (a)) presence along side of (b). The structural opacity that camouflaged the difference (between common and event nominals) responsible for their eventual parting their ways is reflected in the outer brackets under N.

6. Concluding remarks

The origin of Chinese adversative/affected passives has been shown to be formally active sentences with in-bound transitivity towards the grammatical Subj from an irresistible outside force denoted in the grammatical Obj. The semantic feature of outside force/source also sets Chinese affected passives apart from passives in other languages which have a historical association with the middle voice.[7] Verbs denoting self-generation, creation, and reflexivity in their characteristic activity do not appear in Chinese passives. Thus the following English passives cannot have Chinese passive counterparts: *The foal was sired by*

Secretariat; Blood /tears were shed; Stones were passed; The meal was prepared by the chef; These cars were manufactured by the Ford Motor Co; Words were said by both parties; Rice is grown in China; etc.

The historical explanation accounts for not only the subsequent development (grammaticalization) and the alliance made (with prepositions for the functional purpose of case marking), but also the persistent tenor, ever since the nascent phase, of the attitudinal viewpoint conveyed by the speaker. The latter was historically inherent in the lexical source of the markers (verbs expressing the subjectexperiencer being involuntarily impacted visually (see) and experientially (encounter)). It is not surprising that there have never been regular Active-Passive alternations. The longevity of the expression is attributable to the nature of function and form -- function clings to form, and vice versa, each feeding on the other. Thus in the end, both have generalized a great deal concerning what constitutes irresistible outside forces.

NOTES

1 Klaiman (1991).

2 The involuntarity of the verbs see and encounter in Chinese can be seen in the fact that in Mandarin *kànjiàn* 'see' and *yùjiàn* 'encounter' cannot collocate with *gùyì* 'purposely' (**Wǒ gùyì kànjiàn/yùjiàn tā.* 'I purposely saw/encountered him'), while *kàn* 'look' can (*Wǒ gùyì kàn tā.* 'I purposely looked at him').

3 Shang kings' names, typically disyllabic, were often written as one combinatory graph in the oracle bones. The oracle-bone inscriptions are reproduced here in consultation with Li X. (1965), Gao (1980) and Zhang B. (1988).

4 # indicates a graph without a modern correspondence. Its phonetic spelling provided here only indicates a possible pronunciation.

5 Dobson's (1962:206) translation 'the Earl of Lu happened upon the King's graciousness' is more literal, which also reflects the ancients' view that activities of Heaven or the graciousness of the King (as Son of Heaven *tiānzǐ*) is beyond one's will: one (the Subj) does not deserve to get it; one can only chance upon it.

6 In late Zhou the character *gòu* is written alternately with the original walking radical  and the eye radical  , like the character *jiàn* (see (9)), which is corroborating evidence that the two (*gòu* and *jiàn*) were perceived by scribes to share the same abstract meaning.

7 For the relation between middle voice and passive see Kemmer 1993.

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Speaker Perspective and Lexical Acquisition

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Speakers can choose among different perspectives when they present entities and events to their addressees in conversation. Each perspective may be marked by a combination of syntactic and lexical choices on the part of the speaker. In this paper, I focus on lexical choices and on how they affect assumptions we make about the acquisition of meaning in the lexicon. In exploring speaker perspective, I will take both non-linguistic and linguistic skills pertinent to perspective-taking, and show how very young children already appreciate certain aspects of perspective-taking, both in terms of line-of-sight and in terms of lexical choice. These skills, I will suggest, should lead us to modify some proposals that have been made about constraints on the early acquisition of word meaning.

Choice of perspective leads speakers to categorize entities and events in different ways. Each perspective leads to the selection or highlighting of different properties pertinent to the goal in discourse while leaving other properties unmentioned because they are not currently relevant. As Lakoff and Johnson (1980:163) put it:

> "In making a statement, we make a choice of categories because we have some reason for focusing on certain properties and downplaying others."

For example, I can talk about one of my neighbors as *the cellist, the climber, the mother, the teacher*, or *the rose-grower*, depending on who I am talking to and why. That is, I choose how to present my neighbor to my addressee, and that choice depends in part on my goals in the conversation (and in part on what my addressee already knows). In essence, choice of PERSPECTIVE is always relative to the speaker's purpose in talking to the addressee:

> "...the truth of a statement will always be relative to the way a category is understood for our purposes in a given context [Lakoff and Johnson, p. 164]."

What implications does this have for language acquisition? First, children hear multiple labels for the same entities from the very start. Parents, for instance, may talk about the family pet on one occasion as *the dog*, and on others as *our pet, Tim's pup, the collie, the destroyer of shoes*, or *the rubbish bin* (Ravn 1988). So young children hear a range of different labels, each presenting a different perspective, and they do so from long before they themselves begin to speak. To give a couple more commonplace examples, children may hear their parents talking about another child as *the baby, Jan's son, the little boy, Duncan's cousin, Kate's nephew, the pest*, or *our messy eater*. Or they may hear them talk about a particular piece of china as *the bowl, the dish, the rose-bowl, the center-piece, the Dresden china, Grandma's treasure*, or even *the gold-rimmed basin*. The point I want to underline here is that adults continually vary the perspectives they take and choose their words accordingly. They do not choose one single perspective and present only that to their young children on every occasion. So the children have heard several labels for many of the everyday entities around them for many months before they themselves begin to speak.

Exposure to different labels, of course, by no means guarantees that children will grasp the fact that different lexical choices mark differences in perspective. But they will be highly familiar with the notion that the same referent may be talked about in several different ways. The next question, then, is, Do one- and two-year-olds have any perspective-taking skills that would help them grasp the fact that lexical choice, like physical position, can mark different perspectives? The answer is critical for some of the assumptions being made today about how children map meanings onto forms as they build up their lexicon (see Clark 1993). For example, several researchers have assumed that children impose certain constraints as they try to isolate meanings and map them onto forms. One of these is that young children assume that an entity can have only one label and no more. Another is that there is no overlap in meaning among labels, and another is that all labels contrast at a single level in the lexicon. Yet none of these assumptions is consistent with the input children are being exposed to, and children as young as one or two are very sensitive to many properties of the input they hear (e.g., Choi & Bowerman 1991).

I will argue that in fact very young children exhibit quite sophisticated perspective-taking skills, both non-linguistic and linguistic, from as young as 1;6 to 2;0 years old. The early emergence of these skills is quite consistent with the lexical input children receive, but it is inconsistent with many recent formulations about lexical acquisition. I first present some of the evidence that children develop perspective-taking skills at an early age, and show that these skills are relevant to their learning of linguistic distinctions that we all, as speakers, exploit to mark distinct perspectives. I then look at some of the implications for research on early meaning acquisition.

Evidence for perspective-taking

Evidence for perspective-taking comes from several sources, some non-linguistic and some linguistic. Combined, they strongly suggest that by age two, children are quite aware that one can look at and talk about the same object from different perspectives.

Pretend play. In non-linguistic domains, one source of evidence for perspective-taking comes from the ability to consider an object on one occasion in its canonical or usual role—a spoon as a spoon, or a block as a block—and on another occasion in some other role—a spoon being treated as a walking stick or a block treated as a cup. In fact, young children begin to exhibit symbolic play, often using one object to "stand in" for another, from as young as 10 months old (e.g., Bates 1979). For example, 10- to 12-month-olds readily hold a spoon up to their ears as if it were a telephone receiver, yet they know perfectly well that they are holding a spoon, and at mealtimes use the spoon for eating. The same infants will take a block, a pebble, or a matchbox and make it move across the table, with accompanying car-noises ("vroom-vroom") when pretending it is a car, but on other occasions show clearly that they know what a matchbox is for, where one might find pebbles, and how to place one block on top of another when building. And the same infants will also pick up a bread-basket, familiar from mealtimes as a container for slices of bread, invert it, and place it on their heads. (Notice that nothing inherent to these objects leads to their particular "assignment" as something else in pretend-play.) In effect, in pretend-play, children assign to familiar objects a different role and in so doing, they temporarily take another perspective on the object and through their actions demonstrate to the observer just what perspective they have chosen.

Physical perspective. Children are also able to take different physical perspectives at an early age. For example, they become adept quite early on at taking someone else's point of view. They realize that what people can see depends on where they are looking from (Lempers, Flavell, & Flavell 1977). For example, if 18-month-olds are shown a cup with a picture pasted on the inside bottom surface, they already know that when showing it to another person, they must tilt the cup towards that person so the inside bottom picture will be visible. Similarly, infants as young as one year will turn a book towards an observer, although they typically do so by turning the book through the vertical plane towards an observer seated facing them. (That is, the page is therefore upside down for the observer.) By age two, though, children realize that, in such contexts, they need to rotate a book in the horizontal rather than the vertical plane, and consistently do so when asked to show someone a picture. Finally, by age two, children can also comment explicitly on the fact that for people to see something, they must be looking towards it, as in the following interchange (Clark, unpublished diary data):

> D (2;0,9), after supper, playing with two small plastic rabbits and another small figure; he first placed all three on a low table, on the edge, so they faced his Mo, and said:
> — *∂watching Eve, rabbits watch Eve.*
> Then D carefully moved them across the table to an adjacent side, turning them so they faced his Fa:
> — *∂watch Herb.*
> Fa: Can you make them watch television, can you make the rabbits watch television?
> — *Yes.*
> Then D re-arranged them again, along another edge of the table, so they faced the TV, and added some other toys to the array; then, pointing at them, he said to his Mo:
> — *Eve, Eve, ∂all watching TV.*

In summary, by 1;6 to 2;0, children can appreciate differences in perspective, and so know how to make objects available for someone else to see. This physical perspective-taking complements children's ability to pretend that one object is another, effectively presenting it from a different perspective.

Multiple levels. Young children also display their perspective-taking ability in their spontaneous speech. By age two, they can often use labels from more than one level to talk about many of the objects around them. They may call a dog *dog* on some occasions and *collie-dog* on others; or a car *car* on some occasions and *Volvo-car* on others. Young two-year-olds are adept at coming up with labels, built from the words they already know, for subcategories of basic categories, as in the following examples:[1]

GR (1;7) *crow-bird* (picture of a crow)
HL (1;11) *oil-spoon* (spoon used for cod-liver oil)
EP (2;0) *coffee-churn* (coffee-grinder)
D (2;2) *tea-sieve, water-sieve* (small and large strainers)
D (2;3) *boat-shirt* (T-shirt with picture of boat)
A (2;3) *car-smoke, house smoke* (exhaust, smoke from chimney)

And young two-year-olds, as well as still younger children, also reveal a quite extensive ability to use several different labels for the same referent, as in these examples from D (Clark, diary data):

D (1;7,1) looking at his bowl of cereal at breakfast:
— *Food.*
A moment later, looking at his own and his parents' cereal:
— *Cereal.*

D (1;7,20) doing his animal puzzle, D named each animal type as he took it out (e.g. *lion, zebra, monkey*, etc.); then on completion, with all of them back in the puzzle:
— *Animal back.*

D (2;1,27), after his Mo asked what he was usually called;
Mo: Are you 'lovey'?
— *No, I 'Damon', I 'cookie', I 'sweetheart'! Herb 'lovey'.*

D (2;2,24), playing with some small dolls:
Mo: Do you call them people?
— *They not people, they childrens. They kids.*

Notice that on each of these occasions, the child readily applies two or more labels to the same entity. Such exchanges and uses of multiple labels turn out to be common in two-year-old speech, as in this conversation between Eve (2;1) and her mother (from transcript 16, CHILDES; Brown 1973):

E: *We don't like the fan. People and Momma, and Fraser and Nanna and Papa and Cromer.*
Mo: They're all people.
E: *Huh?*
Mo: They're all people.
E: *And all children.*
Mo: No, they're not children. Mom and Fraser are grownups and you're a child. You and Sarah.
E: *Daughters.*
.....
Mo: Oh, daughters. Daughters, that's right you and Sarah are daughters. That's right. You're a daughter and Sarah's a daughter.
E: *And Papa a daughter.*
Mo: No, Papa's not a daughter. Papa's the papa.
E: *Eh?*
Mo: Papa's the papa. We're a family. We're called a family.
E: *Family.*

Mo: Uhhuh.
E: *You and Cromer.*
Mo: No, not me and Cromer. Me and Papa.

Multiple labels for the same referents are often commonplace by age two or two and a half, and the numbers only increase from that point on.

More elaborate perspective marking appears in children's speech around age four, as they explicitly take on the perspective of other creatures that are larger or smaller, for instance, than humans (Clark, diary data):

D (3;11,17) at a wild animal park:
— *ANTS think people are walking trees.*

D (4;5,2), Mo reading K. Graham's *The reluctant dragon*, D holding his fingers an inch apart:
— *...and I would be this big to the dragon.*

D (4;5,27), thinking about giants:
— *You know what hours are for giants from other people? Years! They have twelve years every day!*
(That is, each giant day would be made up of 12 human years.)

D (4;5,27), on giants again:
— *For a GIANT, a year is just an hour, and an hour is just a minute! (pause) And for an ANT, an hour is a year!*

In summary, multiple labels and explicit reference to point of view have already begun to emerge by age two. These linguistic markers of perspective parallel children's non-linguistic skills in knowing what it means to take different perspectives.

Using the lexicon to mark perspective

Speakers can present entities to their addressee at different levels of categorization, on some occasions relying on the basic-level term like *car* or *tree*, on others relying on subordinate terms like *Fiat* or *Volvo*, *beech* or *oak*. There is often no morphological relation between the basic-level term and its subordinates, but speakers sometimes mark this relation explicitly, by using the basic-level term as the head of a compound labeling the subordinate category, e.g. *car* in *Fiat-car* or *tree* in *beech-tree*. This option is frequently adopted spontaneously, from around age two on, by children acquiring Germanic languages such as English, German, or Swedish (Clark 1993).

Using noun compounds. The generality of these observations is supported by experimental evidence from both comprehension and production tasks. For example, English-speaking two-year-olds are close to adults in their ability to identify the initial, stressed element in a novel noun^noun compound as the modifier and the second element as the head (Clark, Gelman, & Lane 1985). Young Hebrew-speaking children equally reliably identify the first element in a noun^noun combination as the head, and the second as the modifier (Berman & Clark 1989). That is, children as young as 2;6 (or younger) know which element in a novel

compound is the head and therefore picks out the kind of category being talked about, and which the modifier, that then picks out the specific sub-type.

English-speaking two-year-olds have also mastered this modifier-head order in producing novel noun^noun compounds in an elicitation task. For example, an adult would hold up a card with pictures on both sides, and say of the side facing her but not visible to her child addressee either: "I have a bird-tree" or "I have a picture." She would then point at the side of the card invisible to her but visible to the child, which showed a picture of one tree with pencils on it and one tree with carrots on it, and ask, "What do you see?" Children typically reply with the compounds *pencil-tree* and *carrot-tree*, respectively. That is, they used the basic-level *tree* as the head noun and *pencil* and *carrot* as modifiers to pick out the two sub-types. By age two, children can produce both basic level terms like *car, tree, chair* or *cup*, and can pick out subcategories such as *Volvo-car* (for a Volvo), *bamboo-tree* (for bamboo), *telephone-chair* (for a chair where one sat when telephoning), and *juice-cup* (for a cup used for juice). Reliance on such compounds shows that young children can label objects at at least two levels, and hence from two distinct perspectives (Clark et al. 1985, Waxman & Hatch 1992).

Using multiple labels. Children as young as two turn out to be quite adept at switching perspective. In another study, we looked at whether two- to four-year-olds could switch labels either within a domain—as when a speaker shifts levels from *cat* to *animal*, for instance—or across domains—as when a speaker shifts from *cat* to a term in a distinct domain orthogonal to the first such as *pet* (Clark & Svaib, in prep.). Shifts like these are common in everyday speech and also in speech to young children, where adults are sensitive to which of many terms may be the most useful in different contexts (e.g. Brown 1958). We predicted that since children are exposed to multiple labels for the same referents from the start, they should readily accept multiple labels from the earliest stages on in acquisition. In addition, children should be able to produce multiple labels, marking different perspectives, again from an early point in acquisition. (The findings I have just reviewed all offer general support for this view.)

These predictions, however, are at odds with predictions based on some current research on the kinds of constraints children might bring to the acquisition of word meanings. For example, several investigators have argued that children assume each category can have only one label. A cat can at first only be called *a/the cat* and nothing else. This follows from the assumption that children treat all labels for objects as mutually exclusive.[2] That is, there should be no overlap (partial or full) between any pair of labels that young children accept or produce. If this were the case, young children (two- to three-year-olds) should reject one of the labels offered in utterances where the same referent is labeled in two or more ways, whether the added labels are drawn from the same domain or from a separate one (i.e. within- or across-domain uses).

Our study was designed to test these competing predictions. At the same time, we also predicted that because children are known to take some time to learn superordinate terms, they might find it easier to shift perspective when they moved from one domain to another (the ACROSS condition) than when they moved from one level to another in the same domain (the WITHIN condition). That is, the WITHIN shifts might be harder than the ACROSS ones. We therefore designed a picture-book for children to look at, with multiple figures in each picture, and then asked children aged 2;0 to 4;6 a series of questions about the arrays on each page. (The figures in

the pictures were based on the animal characters in human roles familiar to most children from Richard Scarry's books.) To study WITHIN-domain shifts, we asked questions using basic level animal terms (e.g. *bear, pig, cat, dog*) and their superordinate for the domain "animals", namely *animal*. For ACROSS-domain shifts, we used the same basic level terms (*cat, dog, bear, pig*) in our questions, plus terms for professions (e.g. *cook, painter, fireman, sailor*).

Overall, the results showed that even the two-year-olds did very well on both types of perspective-shift, and were able to use more than one label for each targeted reference over 97% of the time. There were no significant differences in children's ability to respond to questions involving WITHIN versus ACROSS shifts in perspective. One of the only differences between the two types of shift was that the younger children were more likely to produce lexical innovations in the case of ACROSS-domain shifts. When they didn't know the conventional profession-name for a particular profession, they would coin one. For example, a cat with a fishing-rod was called a *fish-cat* (in lieu of *fisherman*), a cat holding a lasso, a *jump-roper* (in lieu of *cowboy*), and a pig baking bread, a *caker* (in lieu of *baker*). In short, even the youngest two-year-olds were highly successful in switching their perspective on the characters they saw, and they did equally well in switching from one level to another (e.g. *animal* to *bear* or *cat* to *animal*) within a domain, and from one domain to another, from animal-type to profession (e.g. *pig* to *sailor*) or from profession to animal-type (e.g. *mailman* to *cat*) (Clark & Svaib, in prep.).

Rejecting labels. Lastly, let me turn to some data on children's rejections of words offerred by adult speakers. Such data have often been relied on to support the view that children do not allow two labels for the same entity. However, reports of such rejections turn out to be extremely rare, and analysis of detailed records shows that most appear to involve *not* rejections of words that are new, and therefore unfamiliar, but rejections of words already well-known to the child (Clark 1993). That is, the vast majority of such rejections do not support "single level" or "no overlap" accounts of early lexicons since *both words*—the one rejected and the one chosen in its place—are already known to the child. Rather, the rejection data offer further support for the view that children as young as two are able to mark different perspectives through lexical choices between pairs like *bear* versus *doll* or *parrot* versus *bird* (Clark 1993):

> D (1;10,9), Fa reading book about dolls, picks up a small Paddington Bear,
> Fa: This is a doll.
> — *No, bear!*
>
> D (2;0,29), Fa giving D last spoonful at supper,
> Fa: Clean up the whole plate!
> — *Don't have ∂ plate, have ∂ bowl.*
>
> D (2;2,20), looking at a book with Fa,
> Fa: Look at those birds.
> — *That's not birds, those PARROTS.*
>
> D (2;2,24), D playing with small Fisher-Price dolls,
> Mo: D'you call them people?
> — *They not people, they childrens. They kids.*

Data from children's rejections of some labels in favor of others, then, offer further evidence that they already have some understanding of speaker perspective in language use.

Some Implications

These findings—non-linguistic and linguistic, observational and experimental—all show that even very young children can and do use the lexicon to present objects from different perspectives. The findings reported here have implications for some of the work being done on early lexical acquisition. One tenet of some of that research is that children themselves impose certain constraints on what they consider as a potential meaning for an unfamiliar word form.

The predictions from some of these constraints are not supported by the present data. For example, the Mutual Exclusivity assumption proposes that children act as if lexical items do not overlap in meaning, and are therefore mutually exclusive. Something called *the cat* can't also be called *the dog*. But notice that the cat can be called *my pet, the animal next door, the Siamese, the bird-catcher*, or *the purrer*, all terms that overlap and that can have the same reference. Some of these labels are superordinate to *cat* (e.g. *animal*), some subordinate (e.g. *Siamese*), some orthogonal (e.g. *pet*), and some focus on specific characteristics (e.g. *purrer, bird-catcher*). And children are exposed to at least this range of perspectives in the input around them from the start.[3]

In effect, these findings show that by age two, children do not place restrictions on the number of labels applicable to a specific individual, but allow multiple labels; these may be subordinate, superordinate, or orthogonal, or they may pick out parts or specific characteristics. Even when they reject a label, they appear to do so in order to propose their own in place of the already familiar label offered by the other speaker. The point is that these observations are entirely consistent with young children having already grasped the notion of speaker perspective. But they are not consistent with children's assuming just one label per entity, assuming a single level in the lexicon, or assuming no overlaps in meaning.

Some assumptions about the nature of the constraints on young children's mappings of meanings onto words will therefore need drastic revision. Children themselves show us that they can look at many things from more than one perspective by their second birthday. And they can do this both with respect to physical location and word choice.

NOTES

[1] These children already knew the basic-level terms for the categories in question, and were coining compounds in order to label sub-categories (see also Clark, Gelman & Lane 1985).

[2] See, for example, Woodward & Markman (1991): "To preserve mutual exclusivity children should not allow lables to overlap".

[3] Notice that these data are in no sense incompatible with the principle of contrast (e.g. Clark 1990). They simply underline the fact that sense and reference are not equivalent. Terms with different senses may be applied to the same referent.

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Focus in Irish and English: Contrast and Contact

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1. Introduction

It has been recently observed that a shift is occurring in the Irish system of emphasis, with the English system replacing the Irish system—in particular sociolinguistically motivated cases. One could argue that this is yet another symptom of the demise of Irish; or, at the very least, a compelling example of superstratum interference in a language whose symbolic significance shows *no* sign of decline. In this paper, I will discuss focus in Irish and English, how the two systems of emphasis compare, and how a consideration of focus gives us another parameter for exploring the effects of linguistic contact between the two languages in Ireland. The evidence from Irish can also contribute to the broader discussion on the nature of focus itself.

Given the range of theoretical opinion as to what constitutes focus, I will limit myself to the following operational definition, which has allowed me to work with this particular Irish data: *Focus is a highlighting or emphasis of a particular constituent in an utterance; it is not necessarily a binary property, but an additive property whose full implications are realized in discourse contexts.* I am not defining focus in relation to presupposition or background, or topic-comment or theme-rheme oppositions, although these concepts are relevant to the overall discussion. It is my intention to use this operational definition to temporarily sidestep some of the thornier issues that automatically accrue to the various definitions, so that my way will be free and clear to present what I consider to be interesting data in the context of language contact. My notions of language contact and shift follow Thomason and Kaufman's, who claim that a sociolinguistic history, in addition to innate tendencies toward structural change, prompts language shift or change in particular instances (Thomason and Kaufman 1988: 35).

I will use the more generic term "emphasis" interchangeably with "focus" to describe the fixing of speaker or hearer attention on a portion of utterance. I will use "pitch accent," or "voice accent" or "voice stress" to mean pitch prominence in a sentence. "Intonation" is the umbrella term that covers general mention of prosodic phenomena; intonation contours also function as a linguistic unit in describing facts of discourse.

2. The different systems

Much of what is signaled by intonation in English is encoded grammatically in Irish. In particular, the most "important" aspect of an utterance will be moved toward the front of a sentence in Irish or be marked morphologically, whereas in spoken English that constituent will be emphasized by a pitch movement (generally up) from a baseline and not (usually) by a constituent-order change. For example, in English we would say *I have a red book* in the unfocused situation, but *I have a RED book* (using voice, or pitch, accent) if we wanted to contrast or emphasize "red." In Irish, a speaker would employ a sentence structure that re-orders the constituents, as in (1a) and (1b):

(1a & b)

Tá leabhar dearg agam.	to:	Is dearg an leabhar a tá agam.
Is book red at-me		*COP **red** the book REL is at-me*
I have a red book		I have a **red** book

Irish also makes a grammatical distinction between what has been called "narrow" or "contrastive" focus, and "broad," or "non-contrastive" focus. For example (2a) is broadly focused, with the function of intensifying the subject NP:

(2a)

Téann sise chun na Mór-Roinne gach samhradh.
Goes she.EMPH to the Continent each summer
She goes to the Continent every summer

The use of the emphatic pronoun in (2a) indicates, as Mac Eoin says, that the statement is true with respect to the emphasized constituent but could also be true of people who are *not* mentioned (Mac Eoin 1986: 27). Compare this with his example in (2b),

(2b)

Is ise a théann chun na Mór-Roinne gach samhradh.
COP she.EMPH REL goes to the Continent each summer
It is **she** who goes to the Continent every summer

which is to be read contrastively, as precluding all other candidates from consideration. In Mac Eoin's words, "the statement is not true except in the case which is being referred to" (Mac Eoin 1986: 27).

Because the differences between the focus systems of the two languages are so significant with respect to contact, I will describe them in greater detail, starting with English.

3. English pitch prominence

Although cleft or pseudo-cleft constructions can be employed, English relies by and large on pitch prominence in the context of the larger intonation contour to signal what constituent of an utterance predominates semantically or pragmatically. In this way, the constituent to which the speaker wishes to draw attention—for reasons of contrast, or new information, or singling out—can be differentiated from other portions of the utterance. The examples in (3), provided by Mac Eoin (pp. 28-29), should seem unremarkable to most native speakers of English.

(3)
Sentence without focus:
(a) My father reaps the corn with a scythe
Emphasis on a possessive particle:
(b) MY father reaps the corn with a scythe
Emphasis on the subject:
(c) My FATHER reaps the corn with a scythe
Emphasis on the verb:
(d) My father REAPS the corn with a scythe
(e) My father DOES reap the corn with a scythe

Emphasis on the object:
(f) My father reaps the CORN with a scythe
Emphasis on a noun that is governed by a preposition:
(g) My father reaps the corn with a SCYTHE
Emphasis on a preposition:
(h) My father reaps the corn WITH a scythe

Mac Eoin points out that these sentences can be interpreted contrastively, but they are not restricted to contrastive focus only, as in the Irish case (2b) we've seen.

The pitch prominence or voice accent system of English in and of itself cannot be represented in written form, except through typographic conventions like italicization, underlining, or boldface type which are outside of the writing system per se. These conventions are not acceptable in all registers, especially formal contexts such as academic prose. For example, Mac Eoin, in discussing his use of linguistic terminology, is able to position himself in relation to other linguists when he writes the following (4a):

(4a)

Tá cuid mhaith scríofa ag teangeolaithe ag iarraidh na cineálacha
Is part good written at linguists at attempting the kinds

treise a mhíniú agus ní hé ab áil **liomsa**
*stress.GEN to explain and NEG-COP it REL desire **with-me-EMPH***

míniú nua a thabhairt.
explanation new to give

A faithful translation into English would have to resort to typographic devices to fully capture his meaning, as in my version in (4b):

(4b)

There's been a good bit written by linguists trying to define the types of emphasis and **I** [among all the others] would not like to give a new definition.

4. English clefting

Both Irish and English use cleft sentences to focus or emphasize a particular constituent by bringing that constituent toward the front of the utterance after a copular form, although there are certain differences between the two languages. English cleft sentences include those in (5) from Mac Eoin (p. 29).

(5)
Sentence without focus:
(5a) My father reaps the corn with a scythe
Emphasis on the possessive particle:
(b) It is MY father who reaps the corn with a scythe
Emphasis on the noun:
(c) It is my FATHER who reaps the corn with a scythe
Emphasis on the verb: Does not occur.
Emphasis on the object:

(d) It is the corn that my father reaps with a scythe

Emphasis on the prepositional phrase:

(e) It is with a scythe that my father reaps the corn

It is interesting to note that sentences (5b) and (5c) cannot be differentiated in surface form without relying on pitch accent to disambiguate them, as the capital letters indicate. Nor does the system allow for emphasis on a finite verb—a constraint which also holds for Irish.

5. Irish morphology

To turn now to the Irish system of focus, we will see that morphology and clefting accomplish what in English is done mostly by phonology and secondarily by clefting. There is no voice stress sytem in Irish. English speakers use pitch accent where an Irish speaker wouldn't—or grammatically couldn't. This is not to say that pitch prominences do not occur, but they are considered to convey affective states, or to realize intonation contours for discourse reasons, or they show up under conditions of excitement. When salient pitch prominence does occur, it is used in tandem with the focus strategies of the Irish language. Various informants have said that with few exceptions pitch accent means nothing to an Irish speaker in terms of focus or emphasis. A sentence with pitch accent is ungrammatical.

Focus in Irish is realized in part through the morphological strategy of a system of unaccented suffixes. Emphatic suffixes attach to personal pronouns, prepositional pronouns, nouns and verbal nouns before which there are possessive particles, adjectives which modify possessed nouns, and synthetic verbal forms (cf. Mac Eoin and The Christian Brothers). The person in question (possessor, subject, etc.) is then in focus. The regular forms of these suffixes are given in (6).

(6)

1s	-sa (se)
2s	-sa (se)
3s	-san (sean) (m.)
3s	-sa (se) (f.)
1p	-e
2p	-sa (se)
3p	-san (sean)

In all cases in which suffixes are used, focus or emphasis is taken to be on the animate being referred to in the sentence. Mac Eoin (1986) lists the following Irish examples in (7). The suffixed forms are underlined.

(7)

Focus on the possessive particle:

Sentence without emphasis:

(a) Baineann m'athair an t-arbhar le speal
Reaps my father the grain with scythe

Sentence with morphological emphasis:

(b) Baineann <u>m'athairse</u> an t-arbhar le speal
*Reaps **my** father the grain with scythe*

Emphasis on the pronoun:

Sentence without emphasis:

(c) Baineann sé an t-arbhar le speal
Reaps he the grain with scythe

Sentence with emphasis:

(d) Beaneann seisean an t-arbhar le speal
*Reaps **he** the grain with scythe*

Emphasis on the verb: Not possible.

Emphasis on the object:

Sentence without emphasis:

(e) Baineann m'athair le speal é
Reaps my father with scythe it

Sentence with emphasis:

(f) Baineann m'athair é sin le speal
*Reaps my father **it-that** with scythe*

(Here the demonstrative particle is used in place of the emphatic particle on the inanimate "grain.")

Emphasis on the prepositional phrase:

(Again, the demonstrative particle, which is linked etymologically to the emphatic particle, is used because the the pronoun refers to an inanimate thing):

Sentence without emphasis:

(g) Baineann m'athair an t-arbhar léi
Reaps my father the grain with-it.

Sentence with emphasis:

(h) Baineann m'athair an t-arbhar léi sin
*Reaps my father the grain **with-it-that.***

Since emphatic suffixes that attach to nouns do not emphasize the noun itself, the reflexive pronoun **féin** is used in those cases, as in (8):

(8) . . .go dtí go raibh sé níos aoirde ná Jimín féin.
. . .*until REL was it COMP big than **Jimmy self***
. . .until it was bigger than JIMMY.

6. Irish clefting

In the Irish cleft system, the part of the sentence that is to be emphasized is brought to the front with the copula (cf. Mac Eoin and The Christian Brothers). As Ó Siadhail states, "There is a close relationship between the word order of the copula sentences and its function of bringing an element into focus" (Ó Siadhail 1989: 250). This relates to the general principle invoked by fluent Irish speakers that the constituent the speaker wishes to emphasize or bring into focus is brought to or near the front of the sentence. It is the cleft system which underpins that principle. I've listed Mac Eoin's examples in (9), which can be compared with (7):

(9)
Sentence without emphasis:

(7a) Baineann m'athair an t-arbhar le speal
Reaps my father the grain with a-scythe
My father reaps the grain with a scythe

Emphasis on the possessive particle:

(9b) Is é m'athairse a bhaineann an t-arbhar le speal
*COP it **my** father.EMPH REL reaps the grain with a-scythe*
It is **my** father who reaps the grain with a scythe

Emphasis on the subject:

(c) Is é m'athair a bhaineann an t-arbhar le speal
*COP it my **father** REL reaps the grain with a-scythe*
It is my **father** who reaps the grain with a scythe

Emphasis on the verb: Not possible as such, but options are:

(d) Is é (rud) a dhéanann m'athair an t-arbhar a bhaint le speal
COP it (thing) REL does my father the grain A- reaping with scythe
Reaping is the thing my father does (to) the grain with a scythe.

(e) Is amhlaidh a bhaineann m'athair an t-arbhar le speal
COP thus REL reaps my father the grain with scythe
It is thus my father **reaps** the grain with a scythe.

(f) An t-arbhar a bhaint le speal, sin é (an rud) a dhéanann m'athair
The grain A reapingwith scythe, that is (the thing) REL does my father
Reaping the grain with a scythe, (that) is (the thing) my father does.

Emphasis on the object:

(g) Is é an t-arbhar a bhaineann m'athair le speal
COP it the grain REL reaps my father with scythe
It is the **grain** that my father reaps with a scythe

Emphasis on the prepositional phrase:

(h) Is leis an speal a bhaineann m'athair an t-arbhar
COP with the scythe REL reaps my father the grain
It is **with the scythe** that my father reaps the grain

As in English, the cleft system of Irish does not differentiate between focus on the possessive pronoun which qualifies a noun and focus on the noun itself, without drawing in the emphatic suffix, as can be seen in sentences (9b) and (9c). There is no cleft form for verb focus, because it is not possible for verbs to be predicates of the copula. The options available for verbs are included in (9d- f).

In the case of an intransitive verb, one brings the verbal noun (a noun derived from the verb that serves the purpose of the English infinitive or gerund) to the beginning, and puts a suitable tense of the verb déanaim *do* in the relative clause, as in Mac Eoin's example in (10):

(10) Titim de chrann a rinne sé
Falling from tree REL did he
Falling from a tree is what he did, or
He **fell** from a tree

When a tense of the verb which involves a prepositional phrase is employed, as in ag baint *at reaping* in (11), it is possible to put this prepositional phrase at the front with the copula, as in (12).

(11) Tá m'athair ag baint arbhair le speal
Is my father at reaping grain.GEN with scythe
My father is reaping grain with a scythe

(12) Is ag baint arbhair le speal atá m'athair
COP at reaping grain .GEN with scythe REL-is my father
My father **is reaping** the grain with a scythe

There are other grammatical situations in which focus clefting is relevant. For example, in the case of a copular sentence—Irish has both a copula and *be* verb, like Spanish—the predicate complement of the copula is moved to the front, as in (13c). Sentence (13a) is the non-emphatic statement, and (13b) employs the emphatic suffix.

(13a) Is dochtúir mé.
COP doctor I
I am a doctor.

(13b) Is dochtúir mise.
COP doctor I.EMPH
I am a doctor.

(13c) Dochtúir is ea mise.
Doctor COP it I
I am a **doctor**.

In summary, if we compare the two systems in Irish and in English we notice various differences between them, besides the ones already mentioned. First, while it is possible to put emphasis on any part of the sentence through the pitch prominence system of English, it is not possible to emphasize a constituent other than an animate being by the emphatic suffix in Irish. So the Irish system relies on cleft sentences for emphasis on other constituents.

Second, the pitch accent system of English by itself can convey broad or narrow focus on a constituent, in that focus selects from a pool of possible candidates in the broad case, and exempts all other candidates in the narrow case. The same is not true of Irish sentences with emphatic suffixes. Broad focus is possible through the suffix system, and narrow or contrastive focus through clefting. Mac Eoin suggests that there is a greater distribution of cleft sentences in Irish because the cases in which the emphatic suffixes apply are so restricted.

7. Implications for contact

Now that the distinctive differences in the two languages' focus systems have been established, it is possible to consider the particular implications for language contact. What appears to be occurring now in spoken Irish is a tendency for some speakers to use the English phonological system of pitch accent to focus constituents, instead of the strategies that the Irish language itself offers. For instance, Mac Eoin (1986) cites usages like the ungrammatical (15a), in which the non-stress-bearing preposition provides the focus

(15a) *Tá an leabhar AR an mbord
The book is ON the table.

instead of the grammatical, clefted construction of (15b);

(15b) Is ar an mbord atá an leabhar
COP on the table REL-is the book
The book is **on the table**.

and (16a), in which the unstressable possessive pronoun is taking stress,

(16a) *Sin é MO leabhar
COP-that it my book

instead of the construction in (16b) that uses the emphatic suffix:

(16b) Sin é mo leabharsa
*COP-that it **my** book.EMPH*
That's **my** book.

This change is recent, Mac Eoin says, and is heard among people who speak a great deal of English (1986: 35), a judgment corroborated by native speakers of the Connemara Gaeltacht. The change is significant, because it indicates the degree to which English is influencing the language structurally. It also shares some parallels with a rapid shift process that occurred some 300 years ago in Ireland.

In the earlier instance, the political domination of the British, by the 17th century, extended to social and educational realms (cf. Ó Murchú 1985). English was the dominant language, used for High linguistic functions and as such it carried the prestige in diglossic communities. As the 18th and 19th centuries progressed, literacy in Irish was legally restricted, and other anglicizing influences, like eradicating Irish place names, held sway. A period of transitional bilingualism during this time resulted in a rapid decrease in the Irish language, and an abrupt rise in English. Negative language attitudes towards Irish, among uneducated and rural native speakers as well as among both Irish and English speakers with economic and educational advantage, cemented this stratification (Ihde 1994: 33). The result was—and is—a dialect of English known presently as Hiberno-English, the variety of English spoken by people in Ireland. According to Thomason and Kaufman (1988), Hiberno-English is the result of substratum interference: imperfect group learning during a process of language shift, such as occurred under British domination.

A consequence of contact is the striking intonation patterns of Hiberno-English, the remnants of "the prosodic features of the original language [which] are very frequently maintained in a shifting group's version of [the language they are to be learning]. . .if they haven't learned those of the [target language]," according to Thomason and Kaufman (1988:42). Besides the intonation contours, features of Hiberno-English include dental stops from the Irish inventory in place of English dental fricatives, as in "t'ing" for "thing"; a habitual usage of *be* to match the usage of the cognate Irish verb *bí*; and a recent past construction using "after" (as in *Look what your daddy's after doin' to my trumpet*, meaning *Look what your daddy's just done to my trumpet*—from the 1991 film The Commitments) to match the use of indhiaidh *after* in Irish constructions. Mac Eoin would also add to this list of characteristics the high frequency of cleft constructions or verb fronting in Hiberno-English.

Examples of Irish-influenced English cleft constructions are easily found in the Hiberno-English of Irish films and literature. The sentences in (18) include a range of examples from Irish playwright John Millington Synge's drama, "Deirdre of the Sorrows." Notice the copular structure followed by the focused element in the sentences in (18a), and the reflexive pronoun that emphasizes particular pronouns in (18b), both strategies in the Irish focus system that have influenced the forms of English speakers.

(18a) It's a dark sky and a hard and naked earth we'd have this night in Emain.
It is I will be your comrade and will stand between you and the great troubles are foretold.
It's for this life I'm born, surely.
It's little I heed for what she was born.

(18b) Here's health, then, to herself and you!
Yourself should be wise surely.
There's herself on the hillside with a load of twigs.
Conchubor'll be in a blue stew this night and herself abroad.
Let you not be talking too far and you old itself. (=and you so old)

The Irish language has continued to decline in this century, and its former low status among speakers, as well as the economic advantage of knowing English, has hastened the process of language loss. At the same time, it has managed to remain strong as a *symbol* of Irish nationhood. Revival efforts in the past 50 years have begun to reverse the erosion in many respects, but it has also brought with it other problems that are affecting the status of Irish linguistically. The strong dialect group affiliations have in some sense hindered the revival; with no standard dialect, and no dialect group willing defer to another, a compromise standard that includes features from all the dialects, known as *An Caighdeán*, was instituted for education and government functions in the 1950s. The result is what is known as "school Irish" or "book Irish," a variety spoken primarily by native English speakers, which brings its own influence to bear on the language, as we might guess from the preceding discussion of Hiberno-English. But this time the prosodic features of the English language are being maintained—in cases where the speakers are dominant in English—at the expense of the non-prosodic options available in Irish, as Mac Eoin and others have documented.

School Irish is not considered "good Irish" by native or near-native bilingual speakers. But it is a relevant phenomenon, because it is the variety used

by most Irish-language print and broadcast media, and as such is widely disseminated, particularly through the national Irish-language radio station. It is through School Irish that we are beginning to see once grammatically questionable constructions reanalyzed as acceptable locutions, a fact that shows that the dominant language of use—English—is having a profound effect as the Irish language is being revitalized (John McWhorter, pers.com.). The recent evidence from focus points to superstratum effects upon a substrate language. As the complexities of the Irish focus sytem remain inaccessible to semi-speakers, the options familiar and available in English will come into play—a shift that mirrors to some extent the development of Hiberno-English.

8. Conclusion

In conclusion, it is easy to see lexical evidence of contact in Irish (such as British "pub" used by native speakers in the Connemara Gaeltacht instead of Irish "teach tábhairne"), but evidence of contact is also present in the less obvious but deeper context of sentence structure and consequently, discourse organization.

Examination of focus and emphasis in Irish leads us to questions with larger implications for language study, such as what is the *role of intonation*—in particular, phonological pitch accent—in a language where sentence structure and morphology have until now provided the focus cues. According to Cruttenden, for many languages pitch accent occupies a secondary role to word order, and as such the other systems must be studied alongside pitch accent placement for a full consideration of what focus comprises (Cruttenden 1986: 147). Another question is how intonation in a language that doesn't rely on voice accent plays into the *larger structure of discourse*; how would Irish fit into an account such as Ford and Thompson's which correlates intonational completion points with grammatical and semantic ones at turn-taking transitions.

In another linguistic context, evidence from Irish could be added to existing data from other languages concerning grammatical and intonational presentations of *focus*, and perhaps refine our definitions—or at the least, challenge our received assumptions. One standard definition of focus explains that one of the "correlates of neutrality or non-neutrality, in English and presumably in all languages, is stress and intonation" (Lyons 1977:504), which in Irish—and in other languages we can think of—is strictly not the case. Other definitions view focus solely as new information, a position which Chafe (1976) has argued persuasively against. While many researchers have come to agree that focus is a relevant component of the grammar, and not merely a stylistic overlay, how it functions, and the extent to which its properties can even be construed *as* focus, varies by definition—perhaps reflecting ambivalence in relation to the earlier position. To what extent should the "expressiveness component" of intonational structure, to use Selkirk's terms, be separated from its informational or focus structure component—this issue, too, varies by definition.

Considering focus on a *pedagogical level* is also relevant, especially for an endangered language undergoing a small but enthusiastic revival. While there is discussion of "emphatic constructions" in the grammar books, there is virtually no sense of the discourse context in which a form would most likely be used.

Finally, study of the focus system of Irish points to the relevance of social context (cf. Thomason and Kaufman 1988) in assessing the direction and extent of *language shift and change*. The number of lexical borrowings into Irish, considered one factor in the robustness of a language, is not a clear indicator because English

loanwords are a status marker in Irish (cf. Watson 1989) and don't necessarily imply an imminent demise. Neither do the various phonological changes, such as the disappearance of initial consonant mutation, which could be viewed as internal development, especially since they vary by dialect. Therefore, the consideration of focus gives us another, important parameter for discovering what effects linguistic contact has had and is having on speakers of English and speakers of Irish in Ireland.

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The Semantic Parameters of Basque Split Intransitivity in Role and Reference Grammar

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Introduction

Following the advance of the Unaccusative Hypothesis [UH] by Perlmutter (1978) most research has attempted to explain split intransitivity in syntactic terms, while at the same time allowing for certain pretheoretical generalizations regarding the observable semantic character of the phenomena. Recently, Van Valin (1990) has argued, within the framework of Role and Reference Grammar [RRG], that an explanatory account of split intransitivity can be rendered in terms of semantics. This paper is an examination of the intransitive split in Basque within the framework of RRG. Focusing on that theory's system of verb classification and predicate semantics, the semantic parameters of Basque (Vizcayan dialect) intransitive predicates will be identified and a predictive account of the morphosyntactic behavior related to split intransitivity in the language will be rendered.

1.0 Syntax and Morphology

1.1 Basic Properties of Basque Sentences

Basque is an elaborately inflected ergative language, possessing at least sixteen nominal cases. A typical tensed sentence in the language is composed of a verb in a participial form together with an inflected auxiliary bearing tense, person, number and case marking, along with NPs bearing argument relations to the verb. Basque has traditionally been described as a relatively free word order language. This description, however, pertains primarily to basic constructions in which any permutation is possible. In the main, a default SOV word order is observed together with a fixed preverbal focus slot.

Basque verbs have traditionally been divided into two major classes according to canonical case array assignment and auxiliary selection. The first of these classes typically takes a single argument marked with the NOR case (i.e. the case commonly identified as the absolutive case) and occurs with the auxiliary IZAN 'to be'. This class is referred to as the 'NOR' class. The second class of verbs typically takes two arguments, one marked with the NOR case and the other marked with the NORK case (i.e. the case commonly identified as the ergative case) and occurs with the auxiliary UKAN 'to have'. These are referred to as the 'NOR-NORK' verbs. Traditional descriptions link these classes with the intransitive and transitive verb classes respectively. This paper, in part, intends to highlight specific faults with this characterization. I will, however, make use of the terminology just described for the purposes of coherence with traditional literature.

1.2 Ergativity

Examples (1) and (2) show that Basque displays an ergative pattern of case marking:

(1) Ni-k gizona-ø ikusi d-u-t
1s-NORK man-NOR seePrf 3sNOR-UKAN-1sNORK
I have seen the man

(2) Gizona-ø etorri d-a-ø
man-NOR comePrf. 3sNOR-prs-IZAN
The man has come

Notice that the subject in example (2) and the object in example (1) (*gizona* in both cases) are both marked with the NOR case (i.e. the morphologically unmarked case in Basque). The pronominal subject *ni* in the transitive construction in example (1) receives a distinct and overt case marking; the NORK case. In contrast with an accusative system of case morphology, wherein the distinct case is associated with the object of a transitive predicate, Basque clearly conforms to an ergative pattern.

1.3 Intransitive Split

Beth Levin (Dissertation 1988) observed that those single argument predicates in Basque which motivate a NOR case configuration, in fact represent only a subclass of the intransitive verbs in the language. Consider example (3) below:

(3) Ni-k dantzatu d-u-ø
1s-NORK dancePerf. 3sNOR-UKAN-1sNORK
I have danced

This intransitive construction contains a subject which is marked with the NORK case. This represents evidence of a distinct class of intransitive predicates which mark for case in a way which distinguishes them from those single argument predicates which have traditionally been thought to comprise the whole of the class of intransitives in Basque (i.e. the NOR marked intransitives). Levin (Ibid.) has correctly identified this pattern as indicative of an intransitive split; describing the NOR class of intransitives as an 'unaccusative' class and the intransitive NORK predicates as an 'unergative class'. Explaining the phenomena along traditional GB lines, she suggests that Basque is unique in that it has a system of morphological case that reflects d-structure grammatical relations directly rather than allowing distinct notions of s-subject and s-object (Ibid. 334). Unaccusatives are described as having d-structure objects and unergatives as having d-structure subjects. In the following sections, I will present an alternative analysis of intransitive split, based on the framework of Role and Reference Grammar.

2.0 Role and Reference Grammar

Merging traditional structural grammatical concepts with a functionalist perspective which views language as a system of communicative social action, Role and Reference Grammar [RRG] has been described as a 'structural-functionalist theory of grammar' (Van Valin 1993). Crucially, syntax in RRG is not viewed as autonomous but as relatively motivated by semantic and pragmatic factors. Consequently, RRG's system of lexical representation and semantic roles represents the most central feature of the theory.

The system of lexical representation in RRG builds on approaches to the lexical decomposition of predicates engineered by Dowty (1979). His work in turn makes integral use of Vendler's (1967) schema for the analysis of verbs into four distinct classes (i.e. states, activities, achievements and accomplishments). For each class Dowty assigned a unique formal lexical representation or 'logical structure' [LS] (see table (6.1)). Class membership for a verb is determined by a set of semantic and syntactic tests designed to reveal the inherent aspectual quality or 'aktionsart' of a predicate (see table (6.2)). The applicability of a specific test in a given language depends, in large measure, on the identification of morphological elements in that language which are commensurate with those identified in the tests. Importantly, the predicate and test phrase must cooccur with the correct interpretation as identified by the prototypes. Test selection, then, is motivated by specific language internal criteria in concert with the general guidelines provided by the theory.

RRG posits two 'tiers' of semantic roles. The first of these tiers makes use of thematic concepts which parallel traditional theoretical notions. The second tier, on the other hand, makes use of less recognizable role concepts. This tier consists of two generalized semantic roles called 'macroroles', referred to as 'actor' and 'undergoer.' Each macrorole subsumes a number of more specific thematic relations which are in turn systematically identified by argument positions in LSs. Macroroles are then determined by relative position on a markedness hierarchy involving two clines which bias between agent and patient at the extremes. In a given default transitive construction the most agent-like argument will be actor and the most patient-like argument will be undergoer.

All of the intransitive verbs examined in this analysis are listed in table (6.3). It should be noted that many of these verbs also have transitive counterparts. It is the intransitive uses of these verbs, however, which are to be examined. Transitive constructions will be scrutinized only in so far as they serve to further distinguish the class identity of the predicates in question. An analysis of these verbs in terms of Dowty's approach to classification allows for various distinct class groupings. The format of the database in table (6.3) is organized according to the identified classes, various semantic subsets within classes having been distinguished by lettered groups.

3.0 Analysis

3.1 Activity Predicates

In all simple declarative intransitive constructions containing the intransitive predicates in (a - d) in table (6.3), the auxiliary verb selected is UKAN, and the single argument receives the NORK case accordingly (see (4a)). As described above, this group of verbs represents an unergative class of predicates in Basque (i.e. the single argument predicates which are marked with the ergative case). Unergative predicates share the common general semantic character of describing an activity. Within this group of predicates various semantic subsets can be distinguished. These subsets can be characterized as follows: general activities (a), involuntary and voluntary bodily activities (b), manner of speaking verbs (c), and verbs describing sounds made by animals (d). These predicates, together as a class, can be shown to respond positively to the primary aktionsart tests for the identification of activities (see table (6.2)). The following tests represent the critical

indicators of activity status for a verb in Basque: *Progressive* (with the verb *ari* 'to be engaged in'), 'X is Ving' entails 'X has Ved, 'spend an hour Ving'(with the verb *igaroz*) entails 'V at all times in that hour.' The relevant constructions involving the verbs in groups (a-d) are shown in the following examples.

(4) a. Jon-ek dantzatu d-u-ø
Jon-NORK dancePrf 3sNOR-UKAN-3sNORK
Jon has danced

b. Jon ari haiz lanegi-te-n
Jon continuePrf 3sNOR-prs-IZAN work-nom-loc
Jon is working

c. Jon-ek ordu bat-ø igaroz z-u-en
Jon-NORK hour one-NOR spend time 3sNORK-UKAN-pst
dantzatzen
danceHab.
Jon spent one hour dancing

There are two ways to express a progressive aspect in conjunction with activity verbs in Basque (Saltarelli 1988). One approach involves the stative verb *egon* ('to be/exist') together with the descriptive predicate in an adverbial form. This construction, however, appears to only marginally allow activity verbs. In addition, it does not yield a true progressive aspect, but rather motivates something more like a stative expression (this will be discussed shortly). Example (4b) shows the construction in which activities most naturally occur with the progressive. Here the progressive aspect is expressed by using the verb *ari* 'to continue' together with a nominalized verbal complement marked with a locative case which serves to describe the action in progress. Notice, in this example an unaccusative case array and auxiliary have been selected, rather than the unergative case array and auxiliary typically associated with these verbs in simple constructions. This is consistent with the fact that the main verb *ari* is a NOR intransitive (i.e. it marks as such when it occurs independently of verbal complements). The identity of *ari* as an unaccusative is further evidenced by the fact that it cannot occur as a nominalized complement in a progressive construction in which it is itself the main verb. The focus of the test 'X is Ving' (progressive with *ari*) entails 'X has Ved,' is to identify the aspectual quality which suggests an inherently unspecified extent of the activity being described. As such, the progressive aktionsart test serves to distinguish activities and accomplishments from states and punctual achievements. Constructions of the type in (4b) crucially entail parallel constructions of the type in (4a). Thus all activity predicates realized in the progressive aspect with the verb *ari* are shown to describe an *atelic* action (i.e. an action with a temporally unbounded extent, possessing the inherent potential of an unbounded duration for the action described).

Expressions of the 'spend time' type are crosslinguistically equivalent to constructions of the 'X for an hour' type, as indicated in test (3) (see table (6.2)). This test is the canonical indicator of atelic quality for a predicate. In these constructions a temporal portion of a potentially unbounded event is focused on. Constructions using the verb *igaroz* 'spend time', together with the activity verbs in (a-d) in an adverbial form, yield a 'spend time Ving' interpretation. The verb

igaroz is a transitive predicate which motivates structures that subcategorize for a temporal object, making this verb specific to constructions like the one in (4c). As with other transitive activity predicates in Basque, constructions with *igaroz* are marked ergatively (i.e. arguments receive the NOR and the NORK cases). Unlike the progressive construction containing *ari,* only intransitive unergative verbs can occur with *igaroz*. That is, only intransitives which mark ergatively can occur in constructions with *igaroz*. This fact helps to further distinguish the independent atelic aktionsart identity of unergatives in Basque.

3.2 States, Achievements and Accomplishments

The intransitive predicates which mark their argument with the NOR case (i.e. the absolutive case) and select the auxiliary IZAN belong to the remaining three aktionsart classes of predicates; states, achievements and accomplishments. These intransitives behave unaccusatively together as a group.

3.2.1 States

The state class includes predicates describing states or conditions of being (e). This class also includes predicates such as *jakin* 'to know' and *ikusi* 'to see'. These, however, represent two argument stative predicates and, as such, are not considered in this discussion. All intransitive state predicates occur with the auxiliary IZAN together with arguments which receive the NOR case. Examples (5a) - (5c) exemplify:

(5) a. Jon-ø egon d-a-ø
Jon-NOR be/existPrf. 3sNOR-prs-IZAN
Jon has existed

b Jon-ø bizirik-egon d-a-ø
Jon-NOR be alivePrf. 3sNOR-prs-IZAN
Jon has been alive

c Jon-ø ordu bete egon d-a-ø egon-ga
Jon-NOR hour full be/existprf 3sNOR-prs-IZAN be-Adv
Jon has been in the state of existing for a full hour

A fundamental aktionsart opposition exists between state predicates and all other classes. Activities, accomplishments and achievements can be characterized equivalently as dynamic actions, in so far as they each describe a 'happening' of some sort. Stative predicates, conversely, do not describe a 'happening' but instead describe a condition of existence irrespective of change. This basic distinction among predicates motivates the characterization of states as [-dynamic] and all other classes as [+dynamic]. In most cases, a given predicate can be readily identified as a state by determining whether it can be used as the answer to the question 'what happened?' By this criteria alone, the verbs in (e) in the database represent states. Furthermore, these verbs respond positively to the main test listed in table (6.2) for states: 'X for an hour' entails 'X at all times in that hour' (see example 4c). This test reveals that the conditions described by the predicate are atelic inherently, a quality states share with activity predicates. Unlike activity predicates, state predicates can not occur in *ari* type progressive constructions, or

in "spend time' type constructions with *igaroz*. This serves to distinguishing them from activities.

3.2.1.1. Other Stative Constructions

As mentioned above, a progressive aspect may also be expressed by using the verb *egon* 'to be' together with an adverbial complement. All classes of verbs (with the exception of states) can be shown to occur in this construction (activities occurring with a strictly limited acceptability). The resulting constructions, although appearing to reflect a progressive aspect in translation, in point of fact motivate something more like a stative expression. When used in conjunction with the stative verb 'egon' (be/stay), predicates are interpreted as stative manifestations of the activity, achievement or accomplishment which they describe. Examples of the *egon* 'progressive' construction containing members of the various classes appear below.

(6) a. (*) Jon-ø egon z-ø-en ja-ten
Jon-NOR bePrf 3sNOR-IZAN-pst eat-Avd
Jon has been in the act of eating

b. Jon-ø egon z-ø-en ito-ten
Jon-NOR bePrf 3sNOR-IZAN-pst drown-Adv
Jon has been in the act of drowning

c. Jon-ø parke-ra egon z-ø-en corritz-an
Jon-NOR park-to bePrf 3sNOR-IZAN-pst run-Adv
Jon has been in the act of running to the park

Constructions using the intransitive verb *egon*, like constructions with *ari*, select the unaccusative auxiliary and case array. Unlike the progressive with *ari*, however, the verbal adjunct in these constructions appears in an adverbial form and the action described is not truly progressive. In (6a) the action is conceived of not as a canonical atelic activity (i.e an activity having the inherent potential of extending beyond the moment described) but rather as a completed state of action with a definite bounded duration. In examples (6b) the inchoative *ito* 'to drown' receives a like interpretation, the state change associated with an achievement predicate having been extracted from focus. Importantly, the resulting condition of 'having drown' is conceived of (by virtue of a default implicature) as having followed necessarily from the event described. A similar state interpretation is realized for accomplishments in construction with *egon* (see example (6c)). The implicature associated with achievements, however, does not obtain for accomplishments. In (6c) 'Jon's having arrived at the park' is assumed as a tentative implicature such that his 'having arrived' is contingent on a more direct proposition. Additionally, it can be observed that the constructions in (6a)-(6c) make operator-like use of the stative predicate *egon* in motivating what are clearly stative concepts. These constructions, as such, reveal a parallel between the structures employed in Basque to express stative notions and the canonical stative structure as constrained in the LSs utilized by RRG.

3.2.2. Achievements and Accomplishments

Many of the intransitive predicates which select the NOR case belong to the class of achievements and accomplishments. These include inchoatives as in (f), aspectuals as in (g), verbs of happening listed in (h), and verbs of motion in (i). The critical tests for determining achievement status for a predicate in Basque include the following: *Progressive* (with the verb *ari* 'to be engaged in,' and *egon* 'to be/exist'), 'X is Ving' entails 'X has Ved.' Regarding achievements in progressive constructions, test (1) (see table (6.2)) indicates that punctual achievements cannot occur, whereas durative achievements can. The achievement predicates in Basque behave accordingly (see examples (7a) - (7b)). Durative and punctual achievements both can appear in 'progressive' constructions with *egon.* In these constructions, however, they are interpreted similarly as states, as has been outlined in conjunction with example (6b). Achievement verbs can not occur in 'spend an hour' type constructions, thus distinguishing them from activity predicates (see example 7c).

(7) a. *Jon-ø ari d-a-ø heltzen
Jon-NOR continuePrf 3sNOR-prs-IZAN arriveNomLoc
Jon is arriving

b. Jon-ø ari d-a-ø hiltzen
Jon-NOR continueprf 3sNOR-prs-IZAN dieNomLoc
Jon is dying

c.* Jon-ek ordu bat igaroz z-u-en ateratzen
Jon-NORK hour one spend time 3sNORK-UKAN departHab
Jon has spent an hour leaving

Achievements cannot occur in a 'for x time' phrase but are grammatical in an 'in x time' phrase (as indicated by test 4 table (6.2)). The Basque equivalent of an 'x in y time' phrase utilizes the transitive verb *eroan* meaning 'to take.' Like 'igaroz,' this verb is transitive and it also subcategorizes for a temporal object. In constructions with *eroan* the verb describing the action appears in a nominalized form. Achievement verbs are the only verbs which can occur in these constructions, distinguishing them from activities and accomplishments (see e.g. (8a)). Constructions with *eroan* appear to be constrained by volitionality such that achievement verbs which do not allow volitional control (like *hil* 'to die' in (8b)) are not acceptable. Consequently, *eroan* constructions have a limited diagnostic power regarding aktionsart analysis.

(8) a *Jon-ek ordu bat-ø eroan z-u-en
Jon-NORK hour one-NOR take 3sNORK-UKAN
etorrtea
comeNom
Jon took an hour to get here

b. *Jon-ek ordu bat-ø eroan z-u-en hil-tzea
Jon-NORK hour one-NOR take 3sNORK-UKAN die-Nom
Jon took an hour to die

c. Jon-ø joan d-a-ø
Jon-NOR goPrf 3sNOR-prs-IZAN
Jon has gone there/out

Since accomplishments in Basque cannot occur in 'spend time' type constructions with *igaroz,* it is difficult to distinguish them from achievements. The verb *joan* in example (9b), for instance, appears in an intransitive accomplishment structure. This same verb may also belong to the class of achievement predicates when it appears on its own. Example (8c) demonstrates that *joan* operates not as an activity but as a general motion achievement predicate indicating origin or destination state change (i.e. a departure from a location and/or an arrival at a location). In addition, *joan* does not occur in *ari* progressive constructions or in *igaroz* constructions, further distinguishing it from activities. The tests used to determine accomplishment status for a predicate in Basque are: 'x is V-ing' does *not* entail 'x has V-ed' , 'x Ved in and hour' entails x was V-ing during that hour'. Additionally, the stative constructions described in (6a) - (6c) may represent a secondary diagnostic for achievements and accomplishments. In (6c) the utterance does not suggest, necessarily, that the resultant state of affairs associated with accomplishment predications has occurred (i.e. 'Jon's having arrived at the park'). When appearing in constructions with *egon* , in contrast, achievement verbs more strongly entail the suggestion that the change of state associated with achievements has occurred.

3.2.2.1. Accomplishments From Activities

The use of activity type verbs in accomplishment predicate structures is a crosslinguistically well supported operation. In English, for example, this is done with the addition of a prepositional phrase which serves to specify a change of state, condition or location which results from the stated activity. Consider the sentence 'Bill ran *to the park* '. In this sentence the prepositional phrase 'to the park' motivates an accomplishment interpretation for this structure because it serves to specify a result change of location, namely 'Bill's being at/in the park'. Certain activity verbs in Basque are inherently activities and they cannot appear in accomplishment structures even with the addition of some specification of a resultant change of state, condition or location. Consider examples (9a) and (9b):

(9) a. *Jon-ek parke-ra corridu z-u-en
Jon-NORK park - to runPrf 3sNORK-UKAN-pst
Jon ran to the park

b. Jon-ø parke-ra joan z-ø-en arrin-arrin-ga
Jon-NOR park-to goPrf 3sNOR-IZAN-pst fast-fast-Adv
Jon ran to the store

(9a) shows that an activity predicate with a NORK marked argument cannot occur with a locative marked NP indicating result destination. Instead, a construction like the one in (9b) is needed to express this meaning. The predicate *joan* is used in combination with a NOR marked NP and an adverbial which serves to describe the manner peculiar to the action being described. In example (9b) the action being described is that of running. The resulting intransitive accomplishment structure incorporates the canonical quality of motion associated with running (i.e. fastness),

with *joan* . In phrases of this type the precise nature of the activity associated with the accomplishment is derived by an implicature. With the addition of case marked nominals describing manner, such as *oin-ez* 'by foot', the action may be made more explicit.

3.2.3. Ibili

The Basque verb *ibili*, translated traditionally as 'walk', suggests itself as a canonical activity verb based on its crosslinguistic identity as a predicate describing pedal locomotion. As such, this verb would be expected to pattern like other members of the activity class of predicates in Basque in motivating an unergative case array. Some researchers have suggested (Saltarelli 1988), however, that *ibili* selects an unaccusative auxiliary and case rather than an unergative one. This research suggests that *ibili* is, in fact, ungrammatical on its own in an intransitive construction (see example (10a)):

(10) a. *Ni-ø ibili n-a-iz
1s-Nor (walk)Prf 1sNOR-prs-IZAN
I have done it

b. Zu-ø ibili h-a-iz lan-ean
2s-NOR (walk)Prf 2sNOR-prs-IZAN work-at(Adv)
Have you engaged in the act of working?

c. Jon-ø oin-ez ibili z-ø-en
Jon-NOR foot-by (walk)Prf 3sNOR-IZAN-pst
Jon has (been in the act of) walked

d. Jon-ø atzera eta aurrera ibili z-ø-en
Jon-NOR backwards and forwards (walk)Prf 3sNOR-IZAN-pst
Jon has (been in the act of) walked up and down

The sentence in (10a) is acceptable only as an answer to a question like the one in (10b) in which the quality of the action is identified by an adverbial expression having the form NP + locative. Most importantly, the verb *ibili* can not take *igaroz* or occur in a progressive construction. This distinguishes *ibili* from typical activity verbs in Basque. Additionally, *ibili* appears to possess some of the generalized achievement properties associated with the motion achievement verb *joan*. It fails the progressive test, however, thus distinguishing it from achievements. In (10b)-(10d) the activity is focused on not as an atelic action but rather as a state or condition of existence with a bounded temporal extent which is characterized by the associated activity. The fact that *ibili* passes the tests for states suggests a stative interpretation for the verb. The meaning of this verb may be roughly described as 'to be in the midst of' or 'to be located in *an action*'.

4.0 Basque Unergatives as Transitive Predicates

Some research has suggested that Basque unergative predicates assign the NORK (i.e. ergative) case to their argument because they are, in fact, transitive

overtly in the syntax (Laka 1993; Hale & Keyser 1991; Uribe-Etxebarria 1989). Basque unergative predicates, it is argued, appear in constructions in which object deletion has occurred. Additionally, it is further argued that verbs of this type do not involve a true nominal incorporation but instead represent the interaction of a 'light verb' (i.e. *egin* 'to do') and an action noun. Citing the free movement of the NP element of unergative compounds as evidence, unergatives are described as being unincorporated lexical compounds whose constituents display independent behavior in the syntax, thus showing that they diverge from unaccusatives in terms of the syntax. These analyses are based on a view which claims primary unergative identity for verbs of the NP + EGIN ('to do') form. This necessarily discounts the behavior of unergative borrowings and unergatives not of the NP + EGIN. Example (4a) shows that the non-compound verb *dantzatu* 'to dance' behaves unergatively. This verb is an obvious Spanish borrowing, but it is nevertheless fully incorporated into the syntax and semantics of Basque and as such must be accounted for. Verbs such as *jan* ('to eat') and *egin* ('to do') itself (clearly non-compounds and non-borrowings) also display unergative behavior which must be accounted for. Additionally, in consideration of the free word order properties of Basque, the general argument could be made that this behavior may be indicative of more general conditions obtaining in the syntax. In terms of RRG it is of crucial importance to determine whether movement of the nominal element in EGIN compounds alters the aktionsart character of the specific construction in question. This research suggests that it is the aktionsart characteristics of predicates, not syntactic factors, which correlate with the morphological behavior in question. Crosslinguistic evidence strongly suggests that the existence of split intransitive phenomena in Basque should not necessarily be denied on the basis of structural clues alone. The default morphosyntactic behavior for Basque activity verbs in intransitive constructions (i.e. *sans* 'object') clearly indicates an unergative morphology. The semantic parameters identified in this paper lend further support to the general claims regarding the existence of an unaccusative class in Basque.

5.0 Conclusion

As has been shown, Basque displays two distinct patterns of marking for intransitive predicates. This analysis has revealed that the following generalization holds true regarding these predicates: Intransitive NORK verbs which select UKAN as their auxiliary (i.e. the unergatives) are activity verbs; the class of verbs identified by Van Valin as being consistently marked unergatively crosslinguistically. The intransitive NOR verbs which select IZAN as their auxiliary (i.e. the unaccusatives) belong to the other three classes of predicates. An analysis of the logical structures of the verbs in question will serve to delimit the differences that exist between NOR and NOR-NORK marked intransitive predicates. The sentences in (11) contain examples from all four verb classes, along with their corresponding LSs.

(11)

Activity	**State**
Jonek dantzatu du	Jon egon da
Jon has danced	Jon has been/existed
do' (Jon [**dance'** (Jon)])	**be'** (Jon)

Achievement	**Accomplishment**
Jon joan da	Jon parkera joan zen arrin arringa
Jon has gone	Jon ran to the park
BECOME NOT **be at'** (Jon, ø)	[**do'** (Jon [**go'** (Jon)])] CAUSE [BECOME **be at'** (Jon, park)]

The LSs above represent intransitive manifestations of the four classes (the accomplishment LS serving to represent both transitive and intransitive). These LSs reveal that all predicates which select arguments that receive NOR as their case contain a stative predicate in their LS. Activity predicates, in contrast, contain no stative element in their LS. We can generalize further, therefore, and say that the NOR predicates represent an independent class: an unaccusative class. It is important to note that the LSs of the predicates under examination, in and of themselves, do not serve to explain class behavior. The LS associated with each verb class represents a schematic description which serves to make explicit the common behavior of predicates with respect to aktionsart. The semantic and syntactic tests described in this paper represent independent and principled criteria for the identification of the thematic character of a predicate vis-a-vis logical structure. Compared to Levin's (1983) account of split intransitivity in Basque, an RRG account, by deferring to the aktionsart properties of predicates, is able to demonstrate consistencies of behavior for each and every intransitive verb in the language relative to the morphosyntactic phenomena in question. This investigation lends further evidence to the general assertions made by Van Valin regarding the semantic nature of split intransitivity and the value of a semantically based account for explaining the variation of the phenomenon of unaccusativity across languages. On a final note, because this phenomenon can be explained by RRG, it cannot be claimed as evidence against monostratal theories of syntax (like RRG) which make integral use of lexical semantics and semantic roles.

6.0 Tables

6.1

a.	Activity	DO(x[**predicate'** (x)])
b.	State	**predicate'** (x)
c.	Achievement	BECOME **predicate'** (x)
d.	Accomplishment	[DO (x [**predicate'** (x)])CAUSE[BECOME **predicate'** (x)]

6.2 Criterion	States	Achievements	Accomplishments	Activities
1. Occurs with progressive	NO	D: Yes/P: NO	YES	YES
2. Occurs with adverbs like *vigorously, carefully*, etc.	NO	NO D: YES/P: NO	YES	YES
3. Occurs with *X for an hour* *spend an hour Xing*	NO	D: YES/P: NO	YES	YES
4. Occurs with *X in an hour* *take an hour to X*	NO	D: YES/P: NO	YES	NO
5. *X* for an hour entails *X* at all times in the hour	YES	D: NO/P: d.n.a.	NO	YES
6. *Y is Xing* entails *Y has Xed*	d.n.a	D: NO/P: d.n.a.	NO	YES
7. Has inherent causative semantics	NO	NO	YES	NO

6.3

(a)	lan egin	'work'	(b)	izerditu	'sweat'	(c)	galde 'ask'
	jan	'eat'		negar egin	'cry'		erantzun 'answer'
	dantza	'dance'		lo egin	'sleep'		aipatu 'mention'
	egin	'do'		irri egin	'laugh'		erauisi 'murmer'
	idatzen	'write'		eztul egin	'cough'		hitz egin 'talk'
	corridu	'run'		keinu egin	'wink'		didar egin 'shout'
				usin egin	'sneeze'		zin egin 'swear'
(d)	zaunka egin	'bark'	(e)	egon	'be/stay'	(f)	hil 'die'
	marmar egin	'growl'		bizirik	'be alive'		ito 'drown'
				hilda	'be dead'		hasi 'grow'
							hobetu 'improve'
							jaio 'be born'
							esnatu 'wake up'
(g)	amaitu	'end'	(h)	agertu	'happen'	(i)	heldu 'arrive'
	hasi	'begin'		bihertu	'become'		atera 'depart'
							joan 'go'
							etorri 'come'
							itzuli 'return'

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Under the Circumstances (Place, Time, Manner, etc.)

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1. The effort to produce (with Paul Kay) a coherent and complete statement of the construction grammar model has brought me back to many of the same issues that troubled me some thirty years ago.[1] One of these has to do with the proper treatment of adverbial elements, especially of the kind sometimes referred to as circumstantials.

The category of expressions showing up in some linguistic traditions under such names as circumstant, circumstantial, circumstance, goes back, terminologically at least, to a distinction made by the French Slavist, generalist, and typologist, and the founder of formalized dependency grammar, Lucien Tesnière, in his posthumously published Eléments de Syntaxe Structurale (1959). Tesnière distinguished what he called actants and circonstants, which I will render in English as actants and circumstantials. (p. 102) Actants are the parts of a sentence that designate the people and props that are necessarily present in the "little drama" (petit drame) that a verb represents; and the circumstantials are those expressions that correspond to stage directions, specifications of the time and place of the action, etc., for such little dramas. Tesnière identifies the circumstantials as those expressions in a sentence that designate "temps, lieu, manière, etc." (p. 103). This phrase "time, place, manner, etc." has been repeated countless times since then, to characterize what might or might not be seen as a natural class of adverbial notions. The "etc." in the phrase covers a great deal, making the search for coherence difficult, but adverbs of time, place and manner (and maybe one or two other types) do indeed seem to have special properties that invite us to think of them together.

The difference between actants and circumstantials is related, in Tesniére's view, to the notion **valence** (p. 238). The valence of a verb was taken to include just the actants, of which there could be at most three, corresponding more or less to subject, direct object, and indirect object (pp. 111-115). Of the actants there could be only three, but of the circumstantials there could be unlimitedly many.

In John Lyons' book *Semantics*, there is a section dealing with this same contrast where we read the following:

> "the syntactic distinction between nominals and adverbials correlates, though only imperfectly, with the syntactic distinction between the subject or complements of a verb and its various adjuncts. This latter distinction also correlates, though again imperfectly, with a further distinction that is commonly drawn between the valency-roles or participant-roles, and the circumstantial roles associated with a situation. (. . .) If we are describing an action in English, we may tell our interlocutor not only who did what to whom (or what), but also when, where, how or why he did it. (. . .) These circumstances are normally referred to by means of syntactically optional adverbs or adverbials, whereas valency-roles are associated, in what we may take to be the kernel-sentences of English, with nominals (and, in certain instances, place-referring adverbials) functioning as the subjects or complements of the verb." (Lyons 1977, pp. 496-7)

In this passage Lyons identifies a number of important partially-correlated distinctions: the grammatical category distinction between nominals and adverbials; the grammatical role distinction between subject-&-complements on the one hand and adjuncts on the other; and the distinction between valence roles and circumstantial roles, illustrated as the semantically based difference between the who and the what on the one hand, and the when, where, how and why, on the other hand. And lastly, there is the distinction between the obligatory and the optional companions of given verbs.

We can add three more to this list of oppositions. First, there is a traditional distinction between **direct** and **oblique cases** for the familiar case languages; anciently the *casus rectus* was the nominative case and the term *casus obliquus* covered everything else, but there are also traditions in which nominative and accusative are the direct cases, everything else being classified as oblique. Secondly, there is an idea of the structural **core** or **nucleus** of a clause, comprising subject, direct object, indirect object, and directional complements, everything else constituting the **periphery**. And thirdly, in "frame semantics" it has been useful to have a distinction between adverbial elements that provide **frame-internal** information – information that fills in details of the internal structure of an event or process associated with the meaning of the predicator – as opposed to information about the setting or incidental attending circumstances of that event or process, the **frame-external** information. These latter elements have also been referred to as **extra-thematic**.

If we sense that, in spite of a great deal of non-correspondences, there is in some sense a single underlying distinction here, what we have is clearly a kind of **prototype** concept. In this prototype, or idealization, we find that certain components of sentences designate people and things, get expressed as nominals, show up as subjects and objects, get marked by nominative and accusative case in languages that do things like that, express meanings that fit directly into the semantic frame expressed by the verb, and are obligatory accompaniments to the verbs that govern them. The remainder are those parts of sentences that designate "time, place, manner, etc.", that show up as optional adjuncts, and are expressed obliquely, perhaps with the help of such subordinating and role-marking devices as prepositions and postpositions.

But that is the prototype: reality, as noted by Lyons, departs from this prototype in numerous ways. The non-correspondence between the expression of circumstantial meanings and optionality can be illustrated with verbs having obligatory place specifications, such as "live" in the sense 'reside' (1); verbs that require time specifications, such as "last" (2); and verbs that require manner specifications, such as "phrase" (3).

(1) We live in Berlin.
(2) The meeting lasted two hours.
(3) He phrased his question clumsily.

Circumstantial meanings can stand in core grammatical relations to their verbs, as in (4), with "yesterday" as direct object; (5), with "three days" as subject, and (6) with "the room", marking the origin of a movement, as direct object.

(4) I spent yesterday trying to fix the pump.
(5) Three days elapsed before the package arrived.
(6) She left the room hastily.

In fact, for each pairing of the distinctions we are considering – grammatical category, grammatical function, semantic role, optionality etc.– we could readily find examples, across a wide variety of languages, that show that they are not inter-definable.

2. My topic is not circumstance concepts in general, but circumstantial adverbs in languages that express such notions phrasally.[2] In the early days of generative grammar, students looking for research topics were wisely advised, "Whatever you do, stay away from adverbs!". The so-called "UCLA Air Force" grammar (Stockwell, Schachter and Partee, 1973), dedicated to collecting all of the most significant results in transformational grammar of the prededing ten years, apologizes for having very little to say about adverbs, for having only one slot for adverbs in their phrase-structure rules, and for pretty much limiting their discussion of adverbs to positive and negative preverbal adverbs like "often", "sometimes", "seldom", "hardly", "never", and the like.

In addition to a vast non-formalist literature on the functions, meanings and distribution of adverbs and adverbials in English[3], there is now also a considerable body of technical literature on the semantics and grammar of adverbials within the various formal grammar traditions.[4]

A basic sorting of adverbs emerging from all such discussions divides them into classes according to whether they modify verbs, verb-phrases, or sentences: McCawley's parade examples are *completely*, as a verb-modifier, *reluctantly*, as a VP modifier, and *probably*, as a sentence modifier. This appears to be identical to the three-way distinction presented by Bally (1950, pp. 124f) where he presents three types of adverbial modification: **intrinsic**, referring to adverbs which qualify and quantify the meanings of the verbs or adjectives and **extrinsic**, referring to those which provide indications of *place, time, cause, condition, end, means*, etc. To these he opposes a third type, referred to as **modal**, including *certainly, perhaps*, and *not*.

It would appear that the V-modifiers might correspond to manner adverbs, and the VP-modifers correspond to the others. The modal adverbs don't belong under the circumstances. There is a special class of adverbs discussed by Adrienne Lehrer (Lehrer 1975) that includes *stupidly, foolishly, cleverly*, etc. With these, the speaker assesses an actor's actions, sometimes as modal or sentential adverbs and sometimes as manner adverbs. Thus, in the intended meaning of sentence (7) what is judged to be stupid is merely the fact that the speaker answered the letter at all; but in sentence (8), the adverb is taken as characterizing a way of behaving, a manner.

(7) I stupidly answered his letter
(thus complicating my legal position).
(8) You behaved stupidly at the party.

My own first concern with types of adverbs came as a reaction to Chomsky's 1965 *Aspects of the Theory of Syntax*, where we find a tentative phrase-structural base for a transformational grammar of English (1965, p. 102), reproduced as Figure 1

(i) S → NP Predicate-Phrase

(ii) Predicate-Phrase → Aux VP (Place) (Time)

(iii) VP → { *be* Predicate | V { (NP) (Prep-Phrase) (Prep-Phrase) (Manner) | Adj | S' | (*like*) Predicate-Nominal } }

(iv) Prep-Phrase → { Direction | Duration | Place | Frequency | etc. }

(v) V → CS

Figure 1

Problems with this particular set of rules with respect to the claims they make about how particular adverbs get introduced were carefully examined in a famous semi-published paper by Lakoff and Ross, around 1967, one of whose titles was "Why you can't do so into the sink."[5] Lakoff and Ross argued that direct objects, indirect objects, and directionals were properly inside the VP, and that everything else had to be handled with a very different mechanism.

In Chomsky's case it was the notion of subcategorization that put certain kinds of adverbs inside the VP. Adverbs of different types were introduced in different positions – inside and outside the VP node – depending on whether or not they participated in strict subcategorization. By examining the phenomenon of VP-replacement by "do-so", Lakoff and Ross came up with a completely different basis for making such a decision. In the case of manner adverbs in particular, it was from Chomsky's wish to show that certain English verbs were incapable of occurring with manner adverbs that this class of adverbs had to be introduced as structural sisters to the verb; but from the fact that manner adverbs may be external to "do-so" substitution ("and I did so deliberately"), Lakoff and Ross had to provide a means by which they could be external to a VP constituent (at some level).

My own concern with this set of rules was a bit different. I was puzzled by the role, in the formalism, of labels like Place, Time, Manner, Frequency, and the like. An important principle of Chomskyan linguistics from the start was that the grammatical functions of sentence components are secondary, derivative of configurational properties. According to this principle, there is no need to include in the theory of grammar, as theoretical primitives, such notions as **subject** or **object**, since the subject of a sentence is simply that single NP which is an immediate constituent of the sentence, and the direct object is that single NP which is an immediate constituent of the VP. The use of the non-categorial node labels we see in Figure 1 was a recognition, it appeared, that it isn't possible to create enough structural configurations to define all of the structural relations that are needed.

The practice of using semantically motivated labels in rewritings of the category Prep-Phrase brought with it a number of problems. First, it is not the node labeled "Prep-Phrase" which immediately dominates a phrase headed by a preposition, but one of these semantic-function labels; and those prepositional phrases that occurred outside of the immediate environment of the verb (i.e., those

introduced by rule (ii)) would not be dominated by a "Prep-Phrase" node at all. One could rewrite the grammatical category Prep-Phrase as any of several distinct semantically motivated labels, and then allow each of these to be further expanded as a preposition followed by a nominal. Thus, the category symbol Prep-Phrase could be rewritten as Directional, and that in turn could be rewritten as Preposition plus NP, yielding ultimately such expressions as "through its nostrils" or "into the ashtray".

The text surrounding and justifying these rules introduces the role of the **complex symbol** (the CS of rule (v)) and the notion of **strict subcategorization**, relating a verb (or any lexical head) to its partners within a verb phrase. An intransitive verb was simply a verb that could get along all by itself inside its VP; a transitive verb needed the company of a NP; and so on. Since some circumstantial notions do, and some do not, participate in verb subcategorization, this made it necessary to provide two positions for circumstantial adverbs: (i) those which participated in the subcategorization of a verb, the verb's **complements**, and (ii) those which served as **adjuncts** outside of the system of strict subcategorization. If you have doubts about whether some element of a particular sentence is a complement or an adjunct, you simply ask yourself whether it does or doesn't participate in the subcategorization of the verb it's somehow associated with. The reason we find the label Place twice in the formulas, once inside and once outside the VP, is because it is an obligatory associate of some verbs (e.g., *live* as in "Joe lived in London") but is merely an optionally licensed adjunct with others (e.g., *die* as in "Joe died in Paris").

Such talk gives the impression that the notion of subcategorization is itself uncontested. I will raise some questions about that later on.

3. Discussions of the various dependents and companions of verbs involve grammatical functions, structural configurations, morphosyntactic marking, and semantic roles. Linguists have disagreed about which of these sorts of notions should be taken as the starting point for making meaningful generalizations about the structure of sentences in languages. I played around in those days with the idea that the semantic roles should give us the place to start. What we needed to do, I thought, was to understand verbs according to the semantic roles that could be, or had to be, expressed around them, and that we should see an important part of the workings of a grammar as providing the means for giving expression to those entities.

For Chomsky's rules it appeared that we needed semantic labels for everything surrounding a V or a VP except subjects and objects. Since verbs even had to be subcategorized according to their compatibility with particular semantically-typed complements – in particular, place, time, and manner – it was obvious that at some level at least it was necessary to regulate the operation of a grammar by referring to such notional categories. Since, furthermore, everybody knew that subjects and objects could have interestingly different kinds of relations to their verbs as well – some sentences expressed what some actor did, some expressed what some undergoer underwent, or what some experiencer experienced, while others expressed simple states or happenings – I came to the conclusion that it might be possible to construct a grammar in which we started out with semantic-role specifications of all of the arguments of valence-bearing words, not just the adverbial constituents, and then looked for rules that determined how one built up the kinds of structures that had subjects and objects. This, some of you will know, and a few of you will remember, was the origin of **case grammar**, so-called. A

central idea of case grammar was that there was a separate mechanisms for providing syntactic realization for semantic role notions.[6]

Superficially[7], the differences separating Chomsky 1965 from the emerging **generative semantics** model and the case grammar model can be summarized as follows. The generative semanticists limited themselves to primitive phrase-structural configurations, expressing a wide range of argument relations with abstract predicates like *DO*, *BECOME*, *CAUSE*, etc., and less abstract predicates like *IN*, *UNDER*, *DURING*, etc. They had no need to give semantically-motivated labels to nodes in a constituent-structure representation since all such relations were provided lexically, in deep structure.[8]

Case grammar used a large inventory of role names for the semantic roles, dealing with the primary grammatical functions in terms of a level-to-level mapping that arranged for the selection and structuring of subjects and objects. The "cases". in the form of a partially-ordered list, and the ways in which given clusters of them were tied to specific predicators, took the place of selection restrictions, strict subcategorization, as well as devices for licensing of potential circumstantial elements. An undeveloped structural distinction between sentence parts called **proposition** and **modality** were available for one level of scope asymmetry, but in general little thought was given to such problems.

But the Aspects model used a mixed notation, with grammatical-category names for some sentence constituents and semantically motivated labels for others, as seen in the rules copied in Figure 1.

As we have seen, the Aspects grammar introduced adverbs at two different levels; the generative semantics model made it necessary to introduce adverbs one at a time, so to speak, since each one needed a sentence-level constituent as its only argument, in the case of Place and Time adverbials, or as one of its arguments, in the case of Manner adverbials; and the case grammar model distinguished the case inventory, which provided a list of possible semantic role names, from the case frames of individual verbs, thus separating the necessary from the optional complements of the verb. (It was assumed that incompatibilities could be ruled out by semantic considerations.) An embarrassment for generative semantics was that multiple adverbs in a single sentence had to be located in a way that showed asymmetric scope relationships, whether these were semantically justified or not.[9] An embarrassment for case grammar was that there was no obvious structural way to show scope relations between sentence elements when the semantics of the sentence required such relations.

4. Another embarrassment for case grammar was the inability of its practitioners to answer the question of how many such semantically-motivated sentence elements there were, how their differences could be justified, and so on. In considering circumstantials in particular, from a cross-linguistic point of view, there are various questions we need to ask. One is whether it makes sense to look for a universal language-independent set of circumstantial notions. It would be convenient if we could, because that would justify and make respectable certain ways of comparing the expression of circumstantial notions across languages. In Foley's study of the case systems of Papuan languages (New Guinea) he begins by identifyinig a particular set of notions and then lays out the ways in which these notions are reflected in case-marking differences among these languages (Foley 1986, pp.96-99). Foley recognizes the notions **instrumental, cause, location, ablative**, and **allative**, and sorts the languages in the Papuan group according to

the ways in which these notions are encoded: one language encodes all of them with a single case ending, one provides separate case endings for each one, and the others group them morphologically in various combinations. The result of such a survey offers nontrivial suggestions for understanding the nature of certain kinds of linguistic change among these languages.

In creating our list of universal circumstantial categories, we can probably assume that whenever we find one language displaying a particular distinction, we can consider the notions thus distinguished as belonging to our collection. Thus we will wish to make a distinction between frame-internal location and event-setting location from the fact that Korean uses different case postpositions for marking them: the distinction between the location expressions for cooking a chicken in a pot and cooking a chicken on the patio.[10]

On the principle that whenever types of sentence constituents are distinct from each other, you get at most one instance of each type per clause, we might conclude that when we find more than one type in a given sentence, the two should be separate entries in our list rather than being variants of the same type. Thus, with respect to time, we need to distinguish temporal extent from temporal location, as seen in (9).

(9) I worked [for three hours] [yesterday].

Such considerations lead to the discrimination of a wide range of adverbial notions connected with space (simple location, origin, destination or path of movement, distribution, distance, etc.) and time (extent, location, starting point, ending point, frequency, etc.).

If we can demonstrate a clear ambiguity in the interpretation of some circumstantial expression, we conclude that we are dealing with two separate notions, and we might expect them to be realized in distinct ways in some languages. A rule of thumb for understanding the circumstantial concept of Manner is that it is something which answers the question "How?". But actually the word "how" incorporates Means as well as Manner. I like to illustrate the difference between means and manner by referring to a question/answer joke form that was current ten or fifteen years ago, in which the question was something like (10a) and the answer was always (10b).

(10a) How should you lift a python out of a trashbin?
(10b) Very carefully.

The joke turns on hearing the question as asking about the *means* by which one can accomplish this task, and hearing the answer as saying something about the *manner* in which this action should be carried out.

I am convinced that at some level we do indeed need to make all the distinctions that have been discussed, and many more. These distinctions are needed because they figure separately in giving semantic descriptions of verb meanings, because there are frequently clear ordering relations that hold among them, and because they enter into incompatibility relations with each other that are going to require formulation in terms of failed unification.

5. I suggested a while ago that the notion of strict subcategorization is in need of some clarification. Here is an example of a potential problem. Some verbs that

speak of something moving, or being moved, into a place, can be modified by adverbs that give information about the amount of time the thing remains (or is to remain) in that place. Notice the effect of the temporal adverbs in sentences (11) and (12):

(11) She went to Estonia for a year.
(12) We put the wine in the freezer for 30 minutes.

The phrases "for a year" in (11) and "for 30 minutes" in (12) do not give information about the time of the going or the putting, but about the time of remaining at the destination of the going and the putting. What shall we say about these examples? Shall we say that *go* and *put* (and countless other verbs of simple and caused translocational motion) have different senses according to whether or not they welcome a time-extent phrase? Or shall we say that there is a grammar-independent interpretation principle that derives, say, a 'storage' meaning of *put* from a context in which it is modified by a temporal extent adverbial? Is such a permanent or contexted extended sense to be seen as resulting from a kind of event-metonymy, whereby going somewhere is a part of an act of going there to stay, putting something somewhere is a part of an act of keeping it there for a period of time? How does our initial understanding of strict subcategorization help us make these decisions?

With respect to event metonymy, we could consider the (perhaps clearer) case of the verb *write*. Compare sentences (13) and (14).

(13) I've written the final chapter.
(14) I've written a letter to the chancellor.[11]

Writing involves producing written text of some sort, in both of these examples, but in (14) we find a directional adverbial, "to the chancellor". What business does a directional adverbial have modifying a verb that means 'to write'? Is this an optional adjunct, or do we have here a separate entry for *write* that is specialized for letter-writing. The reason this case is clearer, I think is that we can call on a sort of "ambiguity test" to resolve the question. Ordinarily one doesn't simultaneously affirm and negate the same verb in the same sense, but it easy to imagine a harried dissertation-writer who has been reprimanded for neglecting the family back home producing a sentence like (15).

(15) I don't write because I'm too busy writing.

In many cases we can find clear differences of syntactic behavior and semantic scope evidencing clearly different functions for the same adverbial phrase. Consider the following sentences:

(16) They sent people to Siberia for twenty years.
(17) For how many years did they send people to Siberia?
(18) For twenty years they sent people to Siberia.
(19) How many years did they send people to Siberia for?

We can imagine sending someone to Siberia as a form of punishment, the length of the banishment corresponding to the severity of the crime. Sentence (16)

is ambiguous in being able to express either that the punishments in the case being reported involved twenty-year sentences, or that the practice of exiling people to Siberia continued for a twenty-year period. In one of these cases the temporal expression is frame-internal; in the other case it is frame-external. We might wish to say that in the former interpretation, "for twenty years" is a complement (belonging to a class of expressions that might include "for life"), and that in the latter interpretation it is an adjunct. There are certain (imperfect) distributional traits that parallel the difference in status between complement and adjunct.

Sentence (17) is also ambiguous, corresponding to the fact that sentence-initial position for full phrases is available for both complements and adjuncts if the phrases are interrogative.

Sentences (18) and (19), however, are not ambiguous (according to the majority of my informants), and each invites a different interpretation. Sentence (18) is an instance of a topicalized adjunct and hence refers to the length of time during which the practice of sending people to Siberia continued; sentence (19) is an instance of "WH-Extraction", has only the interpretation that the speaker is asking about the terms of the exile, and fits the (imperfect) generalization that while extraction from complements is possible, extraction from adjuncts is not.

Now these observations seem to support these principles, but our question is whether we need to speak of the difference in terms of those principles. After all, sentence (20) and (21) are both acceptable, and considering what was noted earlier about their two verbs, one of them looks like extraction from a complement and other extraction from an adjunct.

(20) What town did he live in?
(21) What town did he die in?

In any case, the simple question of whether a time-span phrase is "optional" for a verb like *send* involves us quickly in a complex net of reasoning. A brute-force way of dealing with such phenomena in my own work just now is to assign the grammatical function **oblique** to the frame-internal circumstantials and **adjunct** to the frame-setting circumstantials and to expect the syntactic consequences to be sensitive to such a distinction, rather than a distinction in structural form.

6. In the Construction Grammar model[12] we have made certain assumptions about the proper way to treat certain classes of adverbs. We assign to each verb (or verb sense) in a language a **valence description**, offered as a set of the argument types that are most tightly associated with the verb's meaning. This set is projected into a similar bit of information structure tied to the verb-phrase, and ultimately to a clause as a whole, which covers all of the licensed elements of the clause, including those required by the head verb, but also including other optional, adverbial elements which are introduced as augments to the valence set that comes pre-packaged with the verb. Since some adverbs appear to modify parts of the structures of semantically complex verbs, anyway, we don't have to assume from the start that the compositional properties of expressions with multiple scopal adverbs have to be acounted for in purely structural terms.

We are in general proposing an essentially flat structure for a verb and almost all of the (non-subject) phrases that can go with it, and that means that we have to do some serious worrying about the arguments others have given in favor of highly structured configurations for adverbs, configurations in which at some

level each adverb takes an entire verb-phrase, or perhaps an entire clause, as one of its arguments. This includes both the "higher predicate" analyses of the generative semanticists, and the unlimitedly nested V-bars of certain other systems.

Those who propose complex structures for positioning adverbs have two kinds of motivations. One of these is to be able to account for certain facts of syntactic mobility: for example, if certain kinds of adverbial phrases are seen as positioned outside of the VP, that makes it easy to understand why they can appear in front of the VP as well as sentence-finally. They have the same structural relation to the rest of the VP in either case. A second motive is to provide for compositional means of interpreting sentences containing more than one adverb, especially for cases in which the two adverbs can have different semantic relations to each other in terms of scope. It's my impression that some such arguments are valid and others are not.

Much of the evidence in arguments about scope is evidence about constituent order, or with the positions in which adverbs can be inserted into a sentence. In considering questions of constituent order, there appear to be certain arbitrary ordering principles, such as the kind which dictates a general preference in English for place indications to precede time indications. Compare (22a) with (22b).

(22a) She worked in the office this morning.
(22b) ?She worked this morning in the office.

The difference here appears to be one of preference rather than grammaticality.

Some problems of the positioning of adverbs appear to be specific to certain words or certain phrase types. In reading through various accounts of adverb positions recently, I was struck by the frequency with which words meaning 'yesterday' figure in such discussions for French, German and English.

In comparing such sentences as (23)-(26),

(23) John soon will leave for Detroit.
(24) *John tomorrow will leave for Detroit.
(25) John recently left for Detroit.
(26) *John yesterday left for Detroit.

McCawley (1983, p. 280) observes an apparently arbitrary positional requirement on the words "tomorrow" and "yesterday". McCawley relates this to a principle according to which PPs do not occur in front of verbs in English (Jackendoff 1977, p. 73). He proposes to fit these facts into that same generalization by declaring "tomorrow" and "yesterday" to be honorary PPs. I think this may not be the best explanation. We noticed that (22b) seemed to be merely dispreferred over (22a); but if the time adverb were "yesterday" our rejection would be stronger, I believe. Notice (27).

(27) *She worked yesterday in the office.

There are no constraints on placing preposition phrases *after* a verb.

Charles Bally (1950, p. 74) finds pragmatic reasons for ordering sentence elements in French based on the special communicational effect of putting something in the accent-bearing sentence-final position. To illustrate this point, he compares (28) with (29).

(28) Je suis allé à Paris *par avion.*
(29) Je suis allé par avion *à Paris.*

In (28) going to Paris is taken for granted and information about the means of travel is being introduced; in (29) the means of transportation is taken for granted and it's the destination that's being emphasized. But then Bally adds that there appears to be a constraint against positioning certain words in accented position, however much you might want to. This is true, for example, of *hier*, 'yesterday':

(30) *Je suis allé à Paris *hier.*

In this case, a decision to classify *hier* as a preposition phrase won't help us: preposition phrases are not blocked in clause-final position.

The Helbig/Buscha grammar of German has a large section on how the negating adverb *nicht* gets positioned in a German sentence relative to various other parts of a VP (1980, pp. 459-467). We learn, for example, that if a temporal adverb is expressed as a preposition phrase, either order is possible.

(31) Er besucht mich am Abend nicht.
(32) Er besucht mich nicht am Abend.

In the case of *gestern*, "yesterday", however, *nicht* precedes: we get (33) but not (34). Here, too, classifying the trouble-maker a preposition phrase won't help.

(33) Er besuchte uns gestern nicht.
(34) *Er besuchte uns nicht gestern.

If we were merely concerned with the positioning of circumstantials, one at a time, within other structures, we would have to recognize both that there are certain generalizations that each language offers, but also that there appear to be numerous arbitrary constraints. But more serious questions arise when we see what happens when we try to put two or more circumstantials in the same sentence and the interpretation varies depending on which comes first.

Semantic scope differences are sometimes claimed to accompany different orderings for adverbs, but to understand the significance of these discussions we have to be clear about the difference between (i) the logical structure of the sentence and (ii) matters of accent and emphasis of the sort suggested a moment ago for French. McCawley sees the following two sentences as justifying stacked or nested structures for English, structures in which the final adverb modifies the entire remainder of the sentence:

(35) I can do it on a typewriter in 10 minutes.
(36) I can do it in ten minutes on a typewriter.

The first version is supposed to suggest that as far as doing it on a typewriter is concerned, all I need is ten minutes; the other is supposed to suggest that as far as doing it in ten minutes is concerned, I'd need a typewriter. But are these differences truly scopal? Clearly both sentences end up claiming that I can do this work within a ten-minute period using a typewriter. We could easily justify a claim about the pragmatics of English sentences that the end of a sentence can serve as

focus position whenever the speaker says something for which the remainder of the sentence alludes to some **context proposition.**[13]

But the same function can be satisfied by other means, not involving order, as well. Thus, an appropriate answer to question (37a) could be (37b), and an appropriate answer to (38a) could be (38b).

(37a) How long will it take if you do it on a typewriter?
(37b) I can do it in TEN MINutes on a TYPEwriter.

(38a) Could you do it in ten minutes?
(38b) I could do it on a TYPEwriter in ten minutes.

What these observations are taken to mean is that here we are not strictly dealing with questions of adverb scope, but of relating, pragmatically, a present utterance to a spoken or understood context proposition. There happen to be these two ways of identifying focused information in English: in sentence-final position, as with McCawley's examples, or internally, with heavy accent, as with my examples.

Some linguists speak of an intuitive notion of relative scope of modification. Zellig Harris issues the principle: "When a verb has two or more adverbs ... on it, each modifies the verb as already modified by the nearer adverbs." (Z. Harris 1982, p. 308) He uses the example shown in (39a), noting that the order can be reversed if interrupted by a comma, as in (39b).

(39a) He spoke quietly later.
(39b) He spoke later, very quietly.

In both cases, of course, his speaking, which took place later than some contextually given reference time, was in a low voice. But voice volume is clearly frame-internal for speaking, and temporal location is frame-external, and it is common to have frame-internal elements follow more closely on the verb than frame-external elements. A similar point can be made regarding preverbal and postverbal adverbs, for which Harris offers the examples (40a) and (40b). (p. 310)

(40a) He frequently drives slowly.
(40b) *He slowly drives frequently.

I am not convinced that the difference between frame internal and frame external elements should be thought of in terms of logical scope. In a sentence like (41), it is not even clear that the more distant element is less integrated into the "talking" frame.

(41) He spoke quietly about his childhood.

The Avery Andrews examples (1983), designed to justify the need for "nested VPs", are more convincing.

(42a) John knocked on the door twice intentionally.
(42b) John knocked on the door intentionally twice.

For these sentences too we could still say that there were in fact two intentional door-knocking events, but that would miss out on an important interpretational difference. The first tells us that John had the intention to perform two door-knocking acts; in the second case, the meaning is that two of the possibly numerous door-knocking events that John took part in were deliberate.

My interpretation of these observations is that we are not merely dealing with a general problem of adverb ordering, or even with any requirement that adverbs in general need to be introduced as modifiers of (potentially nested) V-bars, but rather, that in some cases we have a special construction. It is my impression that the adverb orderings we see in the (42) examples are not merely instances of the left-to-right ordering of elements in a flat structure, but are instead evidence of a special construction allowing further adverbial information to be added at the end of a VP, supported by my feeling (I hope there is more to it than that) that in both cases "comma intonation" is natural between the two adverbs. (Somewhat in the manner of (39b).)

The "special construction" I have just suggested might have exactly the same form as the kind of V-bar modification Andrews has in mind; but the difference is that in the Andrews view, all instances of adverbial modification require such a device; in my view, there are sister-ordering possibilities within a VP for the ordinary cases.

7. I do not find in the behavior of circumstantial adverbs convincing reasons for abandoning a theory in which their appearance in a VP is essentially "flat". For such a theory we need valence sets for verbs, reflecting the core elements of the verbs' frames, and we need mechanisms for augmenting valence sets "in the lexicon" for a large number of regular and perhaps a small number of grammaticized irregular cases, sometimes incorporating circumstantial information as complements.

We need mechanisms for projecting the valence set of a verb into the complement set of a VP, and we need context-sensitive ways of allowing any of a large number of circumstantial adjuncts to be added to sentences. Circumstantial adverbs that directly fit the semantic frame evoked by a verb (the "obliques") will in general precede those that are frame-external (the "adjuncts").

And we need, I think, at least one construction which provides a place for an adverb as a left sister of a VP which will have scope over all of the adverbs in that VP, and possibly one construction which does the same at the end of a VP.

Some ordering principles will recognize the difference between complements and adjuncts, and some will relate to features of discourse.

It seems to me, now at least, that the features that Arnold Zwicky (in his contribution to this volume) has outlined for a properly defined construction grammar are compatible with a theory that allows relatively flat structures for adverbs, at least for the circumstantials. [14]

Notes:

1 Given the occasion at which this paper was read, I hope I can be forgiven for its personal and old-man's-reminiscences tone.

2 There is a class of head-marking languages that express notions of manner, location, destination, etc., morphologically, inside the verb-sentence. On the nature of one such language, and on the typology of means of expressing circumstantial notions, see Talmy 1972, 1985.

3 Representative studies of adverbs (single-word adverbials) are Jacobson (1964) and Greenbaum (1969); perhaps the most complete description of the semantic varieties of adverbials is found in chapter 8, "The semantics and grammar of adverbials", of Quirk et al., (1985) pp. 475-653.

4 Representative studies are Lakoff and Ross (1976), McCawley (1983, 1991), McConnell-Ginet (1982), Thomason and Stalnaker (1982).

5 The paper is reprinted under that title in McCawley (1976). It was printed in Report NSF-17 of the Aiken Computation Laboratory of Harvard University, under its polite title "A criterion for verb phrase constituency".

6 See, e.g., Fillmore (1968, 1969, 1971). Related notions, unknown to me at the time, appear in Gruber (1965). Some scholars believe that current work in theta theory and associated principles of linking show an influence from case grammar.

7 The hedge "superficially" is in recognition of the fact that while the generative semanticists used (at first, anyway) phrase-structural representations of familiar sorts, their motivation was, of course, to start out with what they believed represented the semantic structure of a sentence.

8 Most of the generative semantics work that I paid attention to, when it was all happening, was unpublished. Rather than try to identify the major publications, I refer the reader to the discussions and references in McCawley (1976) and R. Harris (1993).

9 That is, if a sentence had adverbs specifying both spatial and temporal locations, one of them would have to have the other in its scope.

10 Personal communication, Jeong-Woon Park.

11 The structure I have in mind is equivalent to what one would find in "I've written one to the chancellor". In other words, I do not intend "a letter to the chancellor" to be read as a single constituent.

12 Information about the model will eventually become available in Fillmore and Kay (forthcoming) and Kay and Fillmore (forthcoming).

13 On **context proposition** see Fillmore, Kay and O'Connor (1988).

14 There is no doubt that the semantics of grammar will need to provide clear logical scope asymmetries for interactions between negation, quantifiers, and circumstantials. I do not have a ready-made proposal for how such matters are to be handled in a monotonic non-derivational theory.

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Prosody Drives the Syntax: O'odham Rhythm*

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0. Introduction

In this paper, I examine two restrictions on the syntax of Tohono O'odham. I propose a reanalysis of these restrictions as following from prosodic considerations, rather than syntactic ones. When these restrictions are viewed as derived by the prosody, we unify the two cases of distributional facts. In contrast, a syntactic treatment of the restrictions shows them to be arbitrary and unrelated.

Specifically, I will argue that the left edge of utterances in Tohono O'odham prefers an initial trochaic foot. To create this optimal prosodic structure, the prosody manipulates the syntax in two ways: 1) The *g* determiner does not appear initially in an utterance to prevent the sentence from beginning with a nontrochee, and 2) The auxiliary appears in second position to avoid beginning an utterance with a nontrochee. The analysis I propose will make use of the insights offered by Optimality Theory (McCarthy and Prince 1993; Prince and Smolensky 1993). I show that a theory with ranked, violable constraints, such as Optimality Theory, shows us how prosodic and syntactic constraints interact.

The paper is organized as follows. First, I describe the syntactic restrictions. A brief overview of word-level stress in Tohono O'odham follows this section. The third section synthesizes the syntactic and phonological background with a look at the data from the prosodic perspective. I then provide an analysis for the data, after giving background on Optimality Theory. The paper concludes with a discussion of the further repercussions of the analysis presented here.

1. The Syntactic Restrictions

The focus of this paper is on two restrictions on Tohono O'odham syntax. Tohono O'odham (TO; formerly Papago) is a Uto-Aztecan language spoken in southern Arizona. It is a language with free word order, although there are some constraints on where certain elements may or may not appear. The two restrictions relevant for this paper are those placed on the *g* determiner and the auxiliary. Let us now examine the distribution of these elements.

Nouns in TO cannot occur without a determiner, a demonstrative, or a numeral.[1] There is a specific rule pertaining to the *g* determiner.[2] All nouns, even names, must be accompanied by the *g* determiner, except when they occur sentence initially.

The determiner, although written in TO orthography as *g*, consists of an unstressed syllable. This can be seen in the following comparison between the orthography and a broad transcription, taken from Hill and Zepeda (1992: 368):

(1) a. In TO orthography:
'alidagaj g ju:kam
child DET Mexican (male)
'the Mexican man's child'

b. In phonetic transcription:
['álidəgajə g̱ə́ jú^{h}kam]

The phonetic form of the determiner will appear in the same form before a vowel-initial form such as *o'odham*, 'person', as all such forms will begin with a glottal stop as the onset.

Now let us examine the restrictions on the distribution of the *g* determiner, shown in (2):

(2)	a.	Gógs 'o hí:nk. dog AUX barking 'The dog is/was barking.'	(Zepeda 1988: 13)
	b.	Hí:nk 'o g gógs. barking AUX DET dog (same as 2a)	(Zepeda 1988: 13)
	c.	Ó'odham 'o ñéok. person AUX speaking 'The person is/was speaking.'	(Zepeda 1988: 13)
	d.	*G ó'odham 'o ñéok. DET person AUX speaking	(Zepeda 1988: 13)
	e.	Ñéok 'o g o'odham. (same as 2e)	

The first pair of sentences in (2a-b) show the contrast with the noun phrase, *g gógs*, when it appears in initial (2a) and noninitial (2b) position. When the noun phrase is initial, the *g* determiner does not appear in the sentence. However, when the sentence begins with the verb phrase and the noun phrase appears in a noninitial position, the *g* determiner precedes the noun. In the contrast between (2c-d) we see further that an initial noun which is not preceded by the *g* determiner will result in a grammatical sentence (2c), while when the *g* determiner precedes a noun sentence-initially, an ungrammatical sentence results (2d). Note that these variations in word order do not change the sentence's reading with respect to the definiteness or specificity of the noun; crucially the absence of the *g* determiner cannot be due to a definiteness or specificity effect found when the noun is the first element of the sentence. The generalization, then, is that all unmodified nouns must be preceded by the *g* determiner, unless the nouns occur sentence-initially.

Now let us examine the auxiliary and its behavior. As mentioned before, TO is a free word order language. The TO auxiliary carries information about the person and number of the subject, as well as aspectual and other information.[3] Every TO sentence must have an auxiliary, although overt subjects and objects may be dropped from the sentence. Further, the auxiliary is restricted to second position in most sentences. The word order variations that this creates can be seen in (3):

(3)	a.	Bán 'o húhu'id g cú:wĭ. coyote 3AUX chasing DET jackrabbit 'The coyote is/was chasing the jackrabbit.'	(Zepeda 1988: 31)
	b.	Húhu'id 'o g bán g cú:wĭ. (same as (3a))	(Zepeda 1988: 31)
	c.	Bán 'o g cú:wĭ húhu'id. (same as (3a))	(Zepeda 1988: 31)
	d.	Cú:wĭ 'o húhu'id g bán. (same as (3a))	(Zepeda 1988: 31)
	e.	Húhu'id 'o g cú:wĭ g bán. (same as (3a))	(Zepeda 1988: 31)

f. Cú:wĭ 'o g bán húhu'id. (Zepeda 1988: 31)
(same as (3a))
g. *'O g cú:wĭ g bán húhu'id.

The sentences show that canonical word order requires that the auxiliary appear in second position. Note again that these variations in TO ordering all correspond to a single translation. It is also the case that the TO auxiliary follows the first constituent of the sentence. This is evident when a possessed noun phrase occurs sentence-initially, as in this example:

(4) a. 'Áli jé'e 'at o cípk sí'alim. (Zepeda 1988, 75)
child mother 3AUX:PERF FUT working tomorrow
'The child's mother will work tomorrow.'
b. Sí'alim 'at o cípk g 'áli jé'e. (Zepeda 1988, 75)
tomorrow 3AUX:PERF FUT working DET child mother
(same as (4a))

TO requires that constituency be respected in other contexts, such as postpositional phrases, so we can assume that the positioning of the auxiliary after the first constituent of a sentence follows from independent restrictions on constituency found elsewhere in the language.

The necessary generalization for the auxiliary, then, is that it must appear in second position, following the first constituent of the sentence. This generalization is contradicted, however, when we view additional data with the perfective auxiliary in future tense. In such cases, the auxiliary must come first:

(5) a. 'At o cípkanad.
3AUX:PERF FUT working:SG:FUT-IMP
'He will be working.'
b. *O 'at cípkanad.
c. *Cípkanad 'at o.
d. *O cípkanad 'at.

These examples from the future imperfective show us that the auxiliary may come first. Restrictions on the future marker, *o*, (which must precede the verb) will interact with restrictions on the auxiliary (which must appear in second position) to determine word order. The only grammatical possibility for such a sentence is for the auxiliary to appear initially. At this point, there are two possible analyses of the basic position of the auxiliary within the sentence: 1) The auxiliary appears in first position 2) The auxiliary appears in second position. In either case, it is not clear why the syntax should prefer the auxiliary in either first or second position; the restriction on the auxiliary, like that on the *g* determiner, is apparently arbitrary. At this point in the exposition, we will reserve judgement on which is the correct analysis.

This section has demonstrated the behavior of the two syntactic elements in TO that this paper will focus on. I will now provide the phonological background which provides the necessary underpinnings of the prosodic reanalysis.

2. The Phonology

The prosodic reanalysis of the syntactic restrictions necessitates a look at TO stress at the word-level, as word stress is what constructs the prosody of the

utterance. Therefore this section will provide a brief description of primary stress in TO.

In monomorphemic content words, primary stress falls on the initial syllable of the word (Zepeda, 1988). This can be seen in (6):

(6)	a.	ó'odham	'person, O'odham'
	b.	cíkpan	'working'
	c.	hí:nk	'barking'
	d.	gógs	'dog'

In reduplicated words, stress falls on the reduplicant (still the initial syllable). All other prefixes (such as the *ha-*, third person plural object) are unstressed; the stative suffix *s-* will be syllabified with the following material:

(7)	a.	gógs	'dog'
	b.	gógogs	'dogs'
	c.	ñéid	'seeing'
	d.	ñéñeid	'seeing (plural subject)'
	e.	ha-ñéñeid	'seeing them (plural subject, 3pl object)'
	f.	s-dádpk	'smooth (plural)'

Tohono O'odham has relatively short words[4], and monosyllabic words frequently occur in the language. The generalization here is that the word-level phonology of TO prefers trochees.

3. The Data and a Phonology-Syntax Synthesis

This section investigates the effects of the syntactic restrictions from the first section on the stress patterns of TO utterances. To do this, we will reexamine the sentences from the first section, but here we will do so with an eye to what the stress patterns are. To indicate this information, I will align each sentence with a metrical grid, following Hayes (1983), where an "X" indicates lexical stress and "." indicates a syllable without stress. Pay close attention especially to the left edges of utterances, as these edges reveal the effects of the syntactic restrictions.

First, let us examine the stress patterns of sentences which exemplify the distribution of the *g* determiner, as in (8):

(8) a.
X . X
Gógs 'o hí:nk.
dog AUX barking
The dog is/was barking.'

b.
X . . X
Hí:nk 'o g gógs.
barking AUX DET dog

c.
X . . . X
Ó'odham 'o ñéok.
person AUX speaking
'The person is/was speaking.'

d.
. X . . . X
*G ó'odham 'o ñéok.
DET person AUX speaking

e.
X . . X . .
Ñéok 'o g ó'odham.

The grammatical sentences (6a-c,e) begin with the trochaic sequence "X ." and where nouns occur initially (6a,c) the *g* determiner does not appear. However, the ungrammatical sentence, where the noun occurs initially and the *g* determiner is retained, does not begin with a trochaic sequence, but rather an iambic one: ". X".

As we examine the stress patterns of sentences showing the auxiliary's distribution, a similar pattern emerges. Examine these sentences in (9):

(9) a. X . X . . . X .
Bán 'o húhu'id g cú:wĭ.
coyote 3AUX chasing DET jackrabbit
'The coyote is/was chasing the jackrabbit.'

b. X . . . . X . X .
Húhu'id 'o g bán g cú:wĭ.

c. X . . X . X . .
Bán 'o g cú:wĭ húhu'id.

d. X . . X . . . X
Cú:wĭ 'o húhu'id g bán.

e. X . . . . X . . X
Húhu'id 'o g cú:wĭ g bán.

f. X . . . X X . .
Cú:wĭ 'o g bán húhu'id.

g. . . X . X X . .
*'O g cú:wĭ g bán húhu'id.

In the grammatical sentences (9a-f), the auxiliary appears in second position and all sentences begin with a trochaic sequence. However, the ungrammatical sentence in (9g) begins with two unstressed syllables, ". ." and the auxiliary occurs sentence intially. The pattern here is nearly identical to that of the data in (8); grammatical utterances begin with a trochee; ungrammatical sequences do not begin with trochees.

However, the data from the future imperfective does not align easily with this pattern. The grammatical example begins with a nontrochaic sequence:

(10) a. . . X . .
'At o cípkanad.
3AUX:PERF FUT working:SG:FUT-IMP
'He will be working.'

b. . . X . .
*O 'at cípkanad.

c. X . . . . .
*Cípkanad 'at o.

d. . X . . .
*O cípkanad 'at.

The pattern for this data is as follows: in (10a), the grammatical sequence begins with two unstressed syllables and the auxiliary is in first position; in (10b), the ungrammatical sentence begins with two unstressed syllables, but the future marker is separated from the verb; in (10c), the ungrammatical sentence begins with a trochee; however, the verb and the future marker are again broken up; finally, in (10d), the ungrammatical sentence begins with an iamb, although the future marker and the verb are together.

What do the variations in (10) tell us? First, they show that the restrictions on syntax are violable. Second, they show us that it is possible for utterances in TO to begin with a nontrochaic sequence. However, note that the allowed nontrochaic sequence is *not* an iamb. Interestingly, the TO utterance allows what (in general) meter allows: Meter feet may contain stressed or unstressed material in the strong position (S; here the first syllable, as the foot is trochaic), while the weak position (W; here the second syllable) only allows unstressed material and severely restricts when stressed material may occupy the weak position.[5]

Finally, the variations in (10), together with those in (8-9), tell us that the effects of the syntactic restrictions appear to be to avoid the nontrochaic sequences. The *g* determiner, if retained initially, would automatically create an iambic foot, as all nouns begin with initial stress. It is not retained, however, and its absence effectively begins all utterances with a stressed syllable. In the case of the auxiliary, it also does not appear initially, as this would begin the utterance with an unstressed syllable. However, by placing the auxiliary in second position, the prosody has an unstressed syllable at its disposal. Whenever an utterance begins with a monosyllabic content word, the auxiliary provides the unstressed syllable necessary to complete the trochaic foot, as in (9a,c). For longer words, the trochee will be completed word-internally, as in (9b), and the unstressed syllable provided by the second position auxiliary will not be necessary. Thus the auxiliary appears to act as a type of buffer, providing an unstressed syllable should it be necessary, given that TO often has monosyllabic words. Under the prosodic account, we now have an answer to why the auxiliary must appear at the left edge of an utterance. The prosody needs an unstressed syllable at the left edge to complete the trochaic foot. The second position auxiliary now has a principled account.

The behavior of both the *g* determiner and the auxiliary reveals that TO prosody plays a strong role in shaping the surface structure of TO utterances. The conclusion from the data in this section is that the syntactic restrictions have prosodic effects on the left edges of utterances. In Section 5, I will provide an analysis for the data which synthesizes these generalizations under the auspice of creating the optimal O'odham prosodic structure.

4. Background on Optimality Theory

Recent work in phonology and prosodic morphology has focused on the theoretical framework provided by Optimality Theory (henceforth OT; McCarthy and Prince 1993a,b, Prince and Smolensky 1993). OT argues for a nonderivational, output oriented approach. The centerpiece for this theory is the reliance on constraints; OT is based on the notion that constraints are both violable and ranked. The ranking of constraints is crucial, as they reveal the optimal candidate of all possible output candidates. The evaluation of candidate outputs, as well as constraint ranking and violability, is shown below.

For this chart, two constraints are relevant:

(11) **-COD**
Syllables do not have codas.

(12) **EDGEMOST (ψ ; E; D)**
The item ψ is situated at the edge E of domain D.

The chart below exemplifies the Tagalog prefix /um/, which appears on verbs. The column beneath candidates representes a sample of the candidate set of outputs generated for evaluation; the other two columns represent the constraints relevant for the /um/ prefixation. The asterisk represents the violation of a constraint; while the exclamation point signals where in the evaluation the candidate is rejected. The arrow indicates which output is chosen by the constraints as the optimal output. Note also that under EDGEMOST, the "#" is an informal notation to indicate the distance from the left edge of the word to where the /um/ appears. Finally, shaded boxes represent those which are irrelevant in determining the crucial violations. The evaluation is as follows :

(13) Evaluations of /um + gradwet/ (Prince and Smolensky 1993, 36)

Candidates	-COD	EDGEMOST (um, L)
.UM.grad.wet.	***!	#0
.gUM.rad.wet	***!	#g
→ .grU.Mad.wet.	**	#gr
.gra.UM.dwet.	**	#gra !
.gra.dUM.wet.	**	#gra ! d
.grad.w...UM...	**	#gra ! dw...

By reversing the ranking of the constraints, we do not correctly predict the optimal candidate for output. Finally, note that under OT, only one optimal candidate is allowed. Ties are settled by descending down the constraint hierarchy to lower-ranked constraints to determine which output is the optimal one.

While OT has not been applied to prosody, the advantages of doing so are clear. First, this will allow us to capture the interactions between phonology and syntax by interleaving the two. Second, we have seen that restrictions in TO are not inviolable; rather, violations may occur, but only under certain contexts.

5. The Analysis

Let us review briefly the facts. First, the *g* determiner is always dropped sentence-initially, changing the left edge of the phonology of an utterance from an iambic sequence into a trochee. Second, the auxiliary appears in either first or second position. Second position AUX results in an initial trochee, with the unstressed AUX often completing the trochaic foot. It appears in first position when other word order possiblities (specifically here involving the future marker) are disallowed because they break up the future marker and the verb or because they create an iambic sequence sentence-initially. These facts mean that because of the phonological structure and size of O'odham words (initial stress, tendency toward monosyllabic words), an initial auxiliary or *g* determiner would result in an initial iamb. The only exception will be when the auxiliary is followed by an unstressed syllable, as in the future imperfective. In fact, we see that it is in the future imperfective where the AUX comes sentence-initially.

The similar behavior of the *g* determiner and the AUX suggest that the basic position of the AUX within an utterance is sentence-initial. However, unlike the *g* determiner, the AUX contains information crucial to the sentence, and therefore cannot be absent from the utterance. Here is where the asymmetry between the

two becomes clear. Both create illicit prosodic structure at left-edges; the *g* determiner is deleted, while the AUX appears in second position. Second position guarantees an unstressed syllable to complete the trochee, as well as places the AUX as close to the left-edge of the utterance as possible. These syntactic manipulations are the result of prosodic demands.

The question we are now faced with is how to capture these strategies of O'odham rhythm. Prosodic analyses standardly rely on the Prosodic Hierarchy (as in Hayes 1989) and its categories to formulate rules for the interaction of elements in domains larger than the word. The Prosodic Hierarchy will allow the restriction of only the left edge of an utterance. However, the violable behavior of restrictions in TO prosody is difficult to capture in a rule-based approach. Therefore, we shall draw upon the insights of the Prosodic Hierarchy, but formalize the analysis within an approach that can capture these interactions in TO prosody: Optimality Theory.

The prosody guides the syntax into creating trochees (and avoiding nontrochees) at the left edges of utterances. We wish to rule out all nontrochaic feet (so * . . and * . X). This can be formalized by using the parameters provided by Generalized Alignment (GA; McCarthy and Prince 1993b); we previously saw a specific instance of GA as *EDGEMOST (um, L)*. Generalized Alignment "demands that a designated edge of each prosodic or morphological constituent of type Cat1 coincide with a designated edge of some other prosodic or morphological constituent Cat2" (GA, 2). The following constraint will effectively check each utterance to ensure it begins with a trochaic foot.

(15) **Trochee Constraint**
Align (Foot, Left, Utterance, Left)

We further know that each noun phrase must be preceded by a *g* determiner (save sentence-initially). Although this constraints is syntactic, it behaves in a manner similar to prefixes. Specifically, we can consider that the *g* determiner is "prefixed" onto the left edge of the noun phrase. Following OT, the restriction is formalized as follows:

(16) ***G* Constraint**
Edgemost (*g*, Left, Noun Phrase)

The restriction on the auxiliary's positioning in the sentence is prosodic; the prosody demands that the auxiliary appear on the left edge to supply the prosody with a movable unstressed element. The basic positioning of the auxiliary is initially; it is the interaction of this prosodic consideration with other constraints which derives second position aux. Note that there is an additional benefit of analyzing the auxiliary as a first position element; it never appears in third or final position. The preference is clearly for the auxiliary to be as leftmost as possible. This constraint is formalized here:

(17) AUX Constraint
Edgemost (AUX, Left, Utterance)

How do these constraints rank with respect to each other? We have seen that the preference for trochees will force the AUX into second position, as well as "deleting" the *g* determiner sentence-initially. The Trochee Constraint will thus

be a higher constraint than the other two. The *G* and the AUX constraints cannot be ranked with respect to each other (indicated by the dotted line separating them). Here is the evaluation of the first set of sentences:

(18) Evaluations of *G* Determiner Sentences

Candidates	Trochee	AUX	*G*
→a. Gógs 'o hí:nk		*	*
→b. Hí:nk 'o g gógs.		*	
→c. Ó'odham 'o ñéok.		*	*
d. *G ó'odham 'o ñéok.	* !	*	
→e. Néok 'o g ó'odham		*	

Two problems arise.[6] First, OT allows only one optimal candidate, but there are three optimal candidates (none is more preferred than the other). A language such as O'odham, which has free word order, clearly ranks several candidates as optimal, rather than only one. Second, the optimal candidates differ in whether they violate both the AUX and *G* constraints, or only one. These problems require that we modify Optimality Theory when it is applied to prosodic domains. The two problems can be resolved if we allow that prosody (and, presumably, syntax) judges all candidates equal at the point of first violation. As the AUX and *G* constraints are unranked with respect to each other, all that is needed is a violation on either one of the constraints; the second violation is "free" if each constraint is violated. Therefore, given two sentences, one which violates only AUX, one which violates only *G*, the two candidates will be ranked equally. Let us explore this further by examining some of the candidates representing the auxiliary's distribution:

(19) Evaluations of AUX Sentences

Candidates	Trochee	AUX	*G*
→a. Bán 'o húhu'id g cú:wĭ.		*	*
→b. Húhu'id 'o g bán g cú:wĭ.		*	
→c. Bán 'o g cú:wĭ húhu'id.		*	*
→d. Cú:wĭ 'o húhu'id g bán.		*	*
→e. Húhu'id 'o g cú:wĭ g bán		*	
→f. Cú:wĭ 'o g bán húhu'id.		*	*
g. * 'O g cú:wĭ g bán húhu'id.	* !		
h. * 'O húhu'id g cú:wĭ g bán.	* !		

Exactly as we would expect, based on the previous evaluations, where the auxiliary appears first (19g-h), a prosodic violation occurs, so that we must now evaluate the remaining candidates with respect to the next constraint. These candidates (19a-f) are all equal at the first violation of one of the constraints. What, then, of the interactions of the prosody with the restrictions placed on the future marker? Here again, we formalize the future marker as if it were a "prefix" onto the verb, as in (20):

(20) ***O* Constraint**
Edgemost (*o*, Left, Verb)

This constraint must outrank the others, as we saw that in the future imperfective, nonoptimal prosody will be created. The tableau evaluating the candidate outputs is shown below:

(21) Evaluations of the *O* Future Marker

Candidates	*O*	Trochee	AUX	*G*
→a. 'At o cípkanad.		*	*	
b.*O 'at cípkanad.	* !	*	*	
c. *Cípkanad 'at o.	* !	*	*	
d. *O cípkanad 'at.		*	** !	

Note that there are two asterisks marking the AUX column. This parallels the example of Tagalog infixation, where the prefixal infix violates EDGEMOST (*um*, L) with each successive segment that separates the prefix from the left edge of the word. Each successive constituent which separates the AUX from the left edge will accumulate as violations of the AUX constraint. (It also appears to be the case that among nontrochaic sequences, two unstressed syllables ". ." are preferred over iambs " . X".)[7]

6. Conclusions

In this paper, I have argued for the prosodic reanalysis of syntactic restrictions in Tohono O'odham. Specifically, I have made these four points: 1) The *g* determiner does not appear sentence-initially because it would begin an utterance with an illicit nontrochaic sequence. 2) The TO auxiliary is a first position element. 3) The auxiliary appears in second position because it would begin an utterance with an illicit nontrochaic sequence. 4) The preference of utterance prosody in Tohono O'odham is for trochees.

In arguing for this reanalysis, I have made a number of theoretical points. First, prosody may be interleaved with the syntax, such that prosody drives the syntax (or syntax curtails the prosody). For Tohono O'odham, we saw specifically that the behavior and restrictions on the determiner and the auxiliary reflects how the prosody may manipulate the syntax. Further, I showed that violations of prosodic constraints reflect how certain syntactic constraints may outrank prosodic ones. Second, the use of Optimality Theory as the framework for the current analaysis allows the mixed dominance relations between syntax and prosody. Third, I showed that for Tohono O'odham, with its free word order, an optimal-theoretic account of the prosody-syntax interface must allow for multiple optimal candidates.

In conclusion, there are further repercussions of this work in two areas. First, the prosody of O'odham parallels both words and song meter (Fitzgerald, in submission) in preferring trochees. Second, Optimality Theory may be extended to larger prosodic structures, here utterances, and the prosodic interface with syntax. Finally, the formulation of syntactic constraints in terms of Generalized Alignment is also an innovation for both Optimality Theory and syntactic theory.

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[1]Nouns in postpositional and possessive phrases act slightly differently.

[2]The *g* determiner may correspond to either a definite or indefinite reading. It appears to have no semantic effect.

[3]For example, the reportative suffix, *s`*, may appear on the auxiliary.

[4]In fact, the short length of words is viewed as a distinguishing trait between Tohono O'odham and 'Akimel O'odham (formerly Pima), which allows longer words with more morphemes, according to Ofelia Zepeda (p.c.).

[5]The analysis presented here is also using meter feet, rather than stress feet. This means that feet are binary trees with a strong and weak position. The ordering of these two positions is where an iamb and a trochee differ.

[6]There is a third problem; the constraint hierarchy as formulated will consider the following ungrammatical sentence, where a *g* determiner is dropped noninitially, as optimal output:

*Ñéɔk 'o ó'odham.

The sentence will incur one violation each of AUX and *G*, and thus rank equally with (18e). I suggest that constraint violations "cost more" when they are not motivated by satisfying a higher constraint.

[7]One apparent exception to this is found in prefixed forms; such items as nouns with possessive prefixes, or verbs with object prefixes, will create an initial iambic sequence. The exception can be explained if we assume that the prosody can only manipulate syntax; morphology resists these manipulations.

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Grammatical Functions in Case Languages: Subjecthood in Czech*

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Case languages tend to resist straightforward treatment with respect to the standard inventory of grammatical functions (GF) in grammatical theories in which functional categories such as subject, object, etc. are taken as central to describing the relationship between a predicate and its arguments. One difficulty concerns the mapping between GFs and morphological cases, which often involves one-to-many relationships, thus making the occurrence of a significant number of case forms unpredictable. Moreover, certain constructions make it difficult to even identify GFs unambiguously. This problem is usually attributed to the discrepancy between a case form and the syntactic behavior of a particular argument, but often has more to do with theory-internal assumptions which may be in conflict with real data. Both problems raise the question of case assignment principles and of what role, if any, can be attributed to GFs in formulating those principles.

Assuming that a proper representation must include the level of morphological cases (formal expressions of arguments, at least in non-configurational languages) and the level of semantic roles (SR -- abstractions of conceptual structure needed for independent reasons), we can ask whether the additional level of abstract grammatical categories such as GFs is also necessary. With respect to case assignment, there are two options, both of which weaken the role of GFs:

(i) Case is an expression of GF, as practiced for example in LFG. `Unexpected' mappings either must be stipulated as unmotivated links between a GF and case, or the level of GFs is essentially left out in favor of linking the case directly to a particular SR (Neidle 1982). In either case, a large set of data must be treated as exceptions and in the latter approach, GFs become irrelevant for those data.

(ii) Case is an expression of SR. Current approaches tend to either posit correlations between cases and SRs (Comrie 1981, Bhat 1991) or outright equate the two (Croft 1991); either way, GFs become superfluous in stating the rules of case assignment.

Schematically, the two kinds of representation could be summarized as follows:

(1) a. SR — GF — case b. SR (=case) — GF

Based on the empirical findings presented in this paper, I will propose a version of the latter approach. Specifically, I examine the issue of subject identification in Czech, focusing on predicates which are associated with NPs of dubious functional status.

Czech has been traditionally treated as a subject-prominent language in the sense of Li & Thompson (1976); most sentences contain a nominative NP which agrees in number and gender with the verb[1] and otherwise shows subject-like behavior (reflexive binding, target of equi NP deletion, etc.). But Czech is also known for a variety of truly subjectless sentences, which have two sources: syntactic and lexical. The syntactic subjectlessness is associated with certain modal

constructions, but most commonly with reflexive and passive constructions based on one-place predicates, such as *tancovat* `dance' in (2a). Lexically motivated subjectlessness is most obviously represented by numerous zero-valent predicates, expressing atmospheric states or processes (2b):

(2) a. Tancovalo se až do rána.
dance-Ps.3sg.n Rf till into morning-G
`Dancing was going on till the morning.

b. Zahřmělo.[2]
thunder-Ps.3sg.n
'[It] thundered."

But there are also a number of predicates which take one or more arguments, and yet it is not clear whether any of them can or should be designated as the grammatical subject. Let us start with one-place predicates:

(3) a. Tobě zřejmě přeskočilo!
you-D apparently jump.over-Ps.3sg.n
`You've got to be crazy!'

b. Ve mně vřelo.
in I-L boil-Ps.3sg.n
`I seethed [with anger].'

c. Pářilo se z lesů.
vapor-Ps.3sg.n Rf from forest-G.pl
`Vapor was rising from the forest.'

These predicates are all non-agentive and fall into two semantic classes: (i) The experiential predicates (such as *ulevilo se* `feel relief', *přitížilo se* `feel worse', *otrnulo* `regain confidence', *přeskočilo* `go crazy', etc.) express states related to a sentient experiencer that is conceptualized as a passive recipient of the state. The single argument is marked predictably by the dative.[3] (ii) The locative predicates express a condition relative to a location, which may be static (the locative role) or may mark the source or the target of the condition. The single argument is thus always marked by a prepositional phrase, either with the locative case (3b) or prepositional genitive (3c), depending on the semantic role associated with the argument.

The question now is what grammatical function should be assigned to the single argument. The Subject Condition as stated for LFG (Bresnan & Kanerva 1989) would force us to assign it the subject function. However, if we apply some of the traditional tests, the subject status of the NPs comes into serious question:

1. An obvious problem is the *case form*. If the form normally associated with subjects is the nominative case, then these predicates fail the coding test. As a consequence of the case form, there is no grammatical agreement between the single argument and the verb; notice that the verbs in (3) are in the impersonal, third pers. sg. neuter form, just like in the subjectless sentences in (2). The lack of agreement also results in prohibiting the NP from being dropped. And yet, it is the property of Czech subjects that they can be omitted.

2. A common behavioral test is provided by the binding conditions on *reflexive pronouns*, which should be controlled by the subject. Specifically with these data, we should be concerned with the distribution of the possessive pronoun *svůj* `self's'. In Czech, the relationship between the possessor and the possessed thing can be expressed either by a reflexive (*svůj* `self's') or non-reflexive (*jeho* `his') pronoun, depending on the form of the possessor. The use of the reflexive is required with antecedents in the nominative case, as shown below:

(4) Petr po *jeho/svém vítězství uspořádal oslavu.
Peter-N after *his/self's victory-L organize-Ps.3sg.m celebration-A.sg.f
`Peter$_i$ threw a big party after his$_i$ victory.'

In (4), the non-reflexive pronoun is prohibited if the intended reading is for *Peter* and *his* to be coreferential. But if the possessor is not in the nominative, only the non-reflexive pronoun is possible, with the necessary ambiguity about its antecedent:

(5) Petrovi po jeho/*svém nečekaném vítězství všichni blahopřáli.
Peter-D after his/*self's unexpected-L victory-L all-N.pl.m congratulate-Ps.3pl.m
`Everybody congratulated Peter$_i$ after his$_{i,j}$ unexpected victory.'

Here the antecedent is in the dative, which precludes the use of the reflexive. The sentence has two readings: the possessor is either *Peter* or some other entity.

This formal condition on the distribution of *svůj* vs. *jeho* predicts that the dative and the prepositional phrase with the verbs in (3) should also prohibit the use of the reflexive pronoun, and that indeed is the case:

(6) Petrovi$_i$ se po jeho$_{i,j}$/*svém nečekaném vítězství řádně ulevilo.
Peter-D Rf after his/*self's unexpected-L victory-L very get.relieved-Ps.3sg.n
`Peter$_i$ felt a great relief after his$_{i,j}$ unexpected victory.'[4]

3. Another behavioral test is *equi NP deletion.* Although Czech does have instances of both subject- and object-control equi constructions, this kind of embedding is difficult to use successfully to test the subjecthood of the arguments in question because of semantic incompatibility. Czech is one of the languages where the target of equi NP deletion is expected to have a certain amount of control, to be agentive (as Comrie 1984 has shown for Russian), which clashes with the spontaneous, uncontrolled nature of the predicates exemplified in (3). It is not possible to try/be able/be obliged/etc. to undergo the experiences or states of that kind. Similarly, it is not possible to order/allow/advise anybody to undergo them.

The only semantically plausible use of an equi-like verb would involve the verb *vidět* `see', and with telling results with respect to the subjecthood of the target arguments. In general, the verbal complement of *vidět* `see' can be either an equi-construction, illustrated in (7a), or a finite subordinate clause, shown in (7b):

(7) a. Už jsem viděla Petra běžet.
already Aux.1sg see-Ppl.sg.f Peter-A run-Inf
`I have seen Peter run.'

b. Už jsem viděla, jak Petr běží.
already Aux.1sg see-Ppl.sg.f as Peter-N run-Pr.3sg
`I have seen Peter run.'

By comparing these two sentences, we can see that the target of equi NP deletion (*Petr*) is the argument that is normally coded in the nominative case (subject). In contrast, when the embedded verb is one of the experiential (8) or locative (9) predicates, only the finite clause is acceptable:

(8) a. *Viděla jsem Petrovi najednou přeskočit.
see-Ppl.sg.f Aux.1sg Peter-D suddenly jump.over-Inf
'I have seen Peter suddenly go nuts.'

b. Viděla jsem, jak Petrovi najednou přeskočilo.
see-Ppl.sg.f Aux.1sg as Peter-D suddenly jump.over-Ps.3sg.n
'I have seen Peter suddenly go nuts.'

(9) a. *Viděla jsem pářit se z lesů.
see-Ppl.sg.f Aux.1sg vapor-Inf Rf from forest-G.pl
'I saw vapor rise from the forest.'

b. Viděla jsem, jak se páří z lesů.
see-Ppl.sg.f Aux.1sg as Rf vapor-Pr.3sg from forest-G.pl
'I saw vapor rise from the forest.'

Neither the dative NP *Petrovi* in (8), nor the prepositional phrase *z lesů* in (9) can be the target of subject-control equi NP deletion. We thus must conclude that as far as the equi operation is concerned (and to the extent that it can be used with these predicates at all), the arguments in question do not behave like subjects.

4. Quite interestingly, the most important behavioral test -- *raising* -- is not available because Czech does not allow raising of any kind. The only embedding strategy permitted with raising verbs is a finite subordinate clause, which is perhaps a telling typological property of the language. I would suggest that the very absence of raising constructions may be an important characteristic with respect to the (in)significance of subjecthood in the grammar of Czech.

To sum up, both the coding and behavioral tests clearly rule out the single argument of the above verbs as grammatical subjects.

Additional complications with subject identification arise with predicates that have two obligatory arguments neither of which is marked by the nominative.[5] One class of such predicates can be described as a variation on the one-place predicates discussed above, reporting spontaneously occurring experiences located in a particular body part (sometimes expressed metaphorically); the experiencer is the body part's possessor:

(10) a. Vyschlo mu v krku. b. Straší mu ve věži.
dry.up-Ps.3sg.n he-D in throat-L haunt-Pr.3sg he-D in tower-L
'His throat got all dry.' 'He's gone nuts.'

The semantic valence of these verbs (*znít* 'sound', *strašit* 'act like an apparition', *svítit* 'glow', etc.) can be described as <Exp, {Loc, So, Go}> and the case marking thus follows general case assignment principles. It is also important to note that the 'raising' of the possessor is obligatory. The sentences in (10) cannot be paraphrased with a possessive pronoun attached to the locative phrase:

(11) a. *V jeho krku vyschlo. b. *V jeho věži straší.
in his throat-L dry.up-Ps.3sg in his tower-L haunts-Pr.3sg

Again, according to the Subject Condition, one of these two arguments must be mapped on the subject function. The mapping would be presumably predicted by the thematic hierarchy, on which experiencers rank higher than locatives and therefore the experiencer argument should be the subject. However, when we apply

the available tests, we again find that the experiencer NP does not possess any characteristics associated with subjects in Czech. To the extent that we can construct a context in which it is possible to use a possessive phrase coreferential with the experiencer, the experiencer NP can be shown not to behave like a subject:

(12) Při každém jeho/*svém slově mu zasvítilo v očích.
with every his/*self's word-L.sg he-D light.up-Ps.3sg.n in eyes-L.pl
`With every word $he_{i,j}$ uttered, there was a flicker in his_i eyes.'

The patterning is the same as with the one-place predicates, namely the reflexive pronoun cannot be used with the dative NP. And to turn for a solution to the locative argument does not help either. Even if we somehow reconcile the blatant violation of the thematic hierarchy, the locative PP does not pass the subject tests any better than the dative.[6]

The application of the equi test also results in a failure to select either argument as the subject; only the subordinate clause (13c) is possible:

(13) a. *Viděla jsem mu zasvítit v očích.
see-Ppl.sg.f Aux.1sg he-D light.up-Inf in eyes-L
`I saw his eyes flicker.'

b. *Viděla jsem mu zasvítit oči.
see-Ppl.sg.f Aux.1sg he-D light.up-Inf eyes-A
`I saw his eyes flicker.'

c. Viděla jsem, jak mu zasvítilo v očích.
see-Ppl.sg.f Aux.1sg as he-D light.up-Ps.3sg.n in eyes-L
`I saw his eyes flicker.'

And, of course, neither argument can be the subject in terms of coding: there is no subject-verb agreement. Thus the only conclusion we can draw from the facts is that neither argument can be assigned the subject function in any motivated way.

A different kind of situation is presented by a set of two-place predicates that permit three different case patterns (the corresponding case combinations are listed to the right of the data):

(14) a. V domě páchla marihuana. Loc - Nom
in house-L smell-Ps.3sg.f marijuana-N.sg.f
`Marijuana smelled in the house.'

b. V domě páchlo marihuanou. Loc - Ins
in house-L smell-Ps.3sg.n marijuana-I.sg.f
`There was the smell of marijuana in the house.'

c. (Celý) dům páchl marihuanou. Nom - Ins
whole house-N.sg.m smell-Ps.3sg.m marijuana-I.sg.f
`The (whole) house smelled of marijuana.'

This set includes verbs such as *hemžit se* `swarm', verbs of smelling, and verbs expressing intense coloring, equivalent to English expressions such as *The hill was yellow with daffodils*.

As the English translations show, the alternate patterns are not in free variation; the differences in case marking correspond to subtle differences in

meaning. Sentence (14a) emphasizes the second argument (marijuana) as the participant directly responsible for the resulting state. For this sentence to be felicitous, it must be true that somebody is currently smoking marijuana in the house. In contrast, when this argument is formally `demoted' into the instrumental case (14b), its prominence is lost. In fact, the implication of (14b) is that there need not even be any marijuana in the house, let alone a smoker actively producing marijuana smoke. The version in (14c) is a rather subtle variation on (14b): while the latter has a certain existential quality, reporting a state (smell of marijuana) that exists in a particular location (house), the former presents the location as an entity to which the state is attributed as one of its characteristic properties. In fact, (14c) implies that the house itself exudes the smell, having been thoroughly steeped in it; that is also why the modifier *celý* `whole' makes the sentence pragmatically more natural.

Assuming that the presence of a nominative NP in (14a) and (14c) makes subject identification unproblematic, let us suppose that these predicates subcategorize for a subject and an oblique function. We simply need to posit two different linking rules in order to account for the variation in case marking. But what would be the functional status of the arguments in (14b)? The case con-figuration in (14b) is semantically distinct from that in the other two sentences and this fact would necessarily be lost if we simply assigned subjecthood to one of the arguments. Moreover, such an assignment would have to be completely arbitrary since neither case form can have any subject properties. If they did, there would presumably be no reason to code them in non-nominative forms, since the nominative coding obviously is available.[7] The only solution would be mapping them onto two oblique functions, which however does not really address the case marking. And since each case pattern is associated with a distinct meaning, some motivation for the case assignment should be established. I suggest to turn to the semantics of these predicates.

With some degree of imagination, their semantic valence could be perhaps specified as <Loc, Cause>, where `Cause' should be understood as a generic substitute for initiators of states or actions.[8] The case marking then becomes quite naturally motivated by the semantic roles. Czech expresses frame-internal locatives either by a locative PP or a nominative, with the subtle distinction in interpretation observed between (14a,b) on the one hand and (14c) on the other. Cause-like arguments also are associated with multiple forms: primary causes (the ones presented as being in charge, so to speak) are marked by the nominative, whereas secondary or demoted causes are marked most typically by the instrumental, less commonly by certain prepositional phrases. The differences in interpretation of the sentences in (14) are again consistent with the different coding of the cause argument. The information crucial for case assignment thus comes from the level of semantic roles rather than the abstract functional categories which after all are useful precisely in those cases where semantic distinctions have been neutralized.

Finally, compared to all these data, which involve sentences without any nominative NP, it is quite unproblematic to analyze sentences such as (15) below, which contain a dative experiencer but also a nominative NP:

(15) Petrovi se nová pracovna líbila.
Peter-D Rf new-N.sg.f study-N.sg.f appeal-Ps.3sg.f
`Peter liked [his] new study.' (lit. '[his] new study appealed to Peter')

This configuration of case forms and semantic roles (usually described as <Exp, Stim>) is quite popular in the relevant literature concerning other languages (Sridhar 1979, Mohanan 1990, van Valin 1991), as an example of questionable subjects. It is a fairly straightforward issue in Czech, which uses this form with a handful of predicates of liking (*líbit se* `appeal', *chutnat* `appeal gustatorily', *vyhovovat* `suit') and the verb *dařit se* `be successful'.

Sentences of this kind are usually taken as examples of dative (or `quirky') subject constructions, based on the behavioral properties of the dative NP, rather than on the formal subject properties of the nominative. However, the dative in this Czech sentence shows no subject behavior. For example, it cannot bind the reflexive possessive (see (16)), while the nominative must (see (17)):

(16) Po celou dobu jeho$_{i,j}$/*svénemoci Petrovi$_i$ nic nechutnalo.
for whole time-A his/*self's illness-G Peter-D nothing-N.n Ng-appeal-Ps.3sg.n
`Throughout his$_{i,j}$ illness, Peter$_i$ didn't like [to eat] any food.'

(17) Dana se ve svém/*jejím novém účesu všem líbila.
Dana-N.f Rf in self's/*her new hairdo-L all-D.pl appeal-Ps.3sg.f
`Everybody liked Dana's new hairdo.' (lit. `Dana in her new hairdo')

Also the equi NP deletion test works against the dative and in favor of the nominative with respect to subjecthood. In the following subject-control construction, the target of deletion is the argument that takes the nominative (*Dana*):

(18) Dana se chtěla zalíbit každému.
Dana-N.f Rf want-Ps.3sg.f appeal-Inf everybody-D
`Dana wanted everybody to like her.' (lit. `Dana wanted to be appealing to everybody')

In contrast, the experiencer dative cannot become the target, unless we use a different verb, such as *oblíbit si* `[come to] like', which implies more active, deliberate involvement on the part of the experiencer participant, and thus framing this participant as more of an agent. Consequently, the equivalent of the experiencer with *líbit se* `be appealing' is marked by the nominative as shown in (19a) and it can become the target of equi NP deletion (19b):

(19) a. Každý si Danu oblíbil.
everybody-N.sg.m Rf Dana-A like-Ps.3sg.m
`Everybody liked Dana.'

b. Každý se snažil si Danu oblíbit.
everybody-N.sg.m Rf try-Ps.3sg.m Rf Dana-A like-Inf
`Everybody wanted to like Dana.' (...but she was a difficult person)

Once again, there seems to be no basis for analyzing the dative experiencer as the subject, regardless of our expectations based on English, where the experiencer maps onto the grammatical subject.

Given all these facts, what approach should one take to determining the functional status of all the questionable NPs? There are essentially two alternatives. By strict adherence to the Subject Condition as formulated in LFG, we would have to

assume that all these constituents are subjects after all. But such a solution would be very unattractive for several reasons:

(i) The notion of grammatical subject in Czech would become rather difficult to define. Since we would be adding constituents that do not behave like other subjects in the language, it would be practically impossible to find a property that would hold them all together as representing a single coherent notion. Needless to say, the diverse coding (nominative, dative, instrumental, and various prepositional phrases and adverbial expressions) would not be of much help either.

(ii) If we opted for a dative subject with the *líbit se* type, we would be ignoring the fact that the valence contains a much better candidate for subjecthood, both in terms of coding and behavior. Furthermore, it would become inexplicable why some arguments marked by the nominative are subjects while others are not. The semantic valence alone could hardly be a factor, since there are other verbs with the same configuration of semantic roles which code the stimulus argument as the object and the experiencer as a nominative subject (e.g. *vidět* `see', *slyšet* `hear').

(iii) As a corollary to (ii), the dative-subject analysis of the *líbit se* type would also complicate the linking rules responsible for the assignment of objects, since it is not a common property of the Czech objects that they appear in the nominative.

(iv) As a concern of more general nature, the introduction of oblique subjects would also have some undesirable consequences for the case assignment principles in the language. Czech exhibits quite consistent correlations between semantic roles and morphological cases, and particularly in oblique cases such as the dative, instrumental, and various prepositional phrases with locative meanings. The use of a specific case form in all of the oblique subjects is entirely predictable from the semantic roles associated with the arguments. By stipulating that the case is just a `quirky' form of a subject, this semantic relationship would be severed and the form treated as unmotivated. This clearly is not in keeping with the nature of the language.

(v) Finally, it is unclear why we should insist on maintaining that the predicates in question have a subject in spite of all the evidence to the contrary, since Czech evidently tolerates the absence of grammatical subjects in other cases. Recall the subjectless sentences in (2).

This rather brute force solution could be softened by adding a link between the semantic roles and the cases, following Neidle's (1982) proposal for certain Russian data. But the very need to take such a step amounts to acknowledging that the abstract functional level is meaningless in these cases.

The alternative, then, to declaring subjecthood by *fiat* would be to leave the predicates that do not take any nominative subjectless, and in the *líbit se* type to assign subjecthood to the stimulus argument. The arguments in question would thus map onto various oblique functions. But the oblique function in itself carries very little information of any value, unless it also specifies a particular semantic role it is linked to. And this very property of the obliques essentially reduces the representation to two levels only -- the semantic roles and the cases. The oblique function can thus be easily eliminated as an essentially superfluous mediator between two levels (semantic roles and case forms) that in fact do not need any mediation.

The minimum conclusion we can draw from all this is two-fold: (i) morphological cases in Czech cannot be just expressions of grammatical functions, as is assumed in representations of the type in (1a), and (ii) the Subject Condition cannot be a factor in evaluating the well-formedness of a large number of Czech sentences.[9]

The question is what else we can do with this finding. We can of course leave it at that -- this alone creates enough problems for stating well-formedness conditions for the language as a whole. But we can also take it as a basis for advancing the hypothesis that the grammar of Czech may not employ the notion of grammatical subject as a necessary category. There is certainly some evidence from other processes in the language that this might be so (agent-demoting constructions, equi NP deletion, general case assignment principles, etc. which are all sensitive to the information provided by the semantic valence), and it would not be merely a quirk of Czech, either; it has been suggested for other languages as well (LaPolla 1990, Bhat 1991). More research is required in order to really answer this question in all its complexity, but the data discussed in this paper justify at least a tentative suggestion that adequate representation of the Czech sentence might be structured along the following lines:

(20) semantic roles
|
case
|
(GF)

Specifically, the level of grammatical functions may not be central to the organization of any Czech sentence, although it perhaps can be tagged on as an optional level of description (indicated by the dotted line and parentheses in (20) above) for formulating certain general typological statements.

Footnotes:

* I am grateful especially to Chuck Fillmore, Knud Lambrecht, and Alan Timberlake for helpful discussions and suggestions.

[1] The subject NP may not be always present, though, because Czech is a PRO-drop language.

[2] I will be using the following abbreviations: N-nominative, G-genitive, D-dative, A-accusative, L-locative, I-instrumental, sg-singular, pl-plural, m-masculine, f-feminine, n-neuter, Ps-past, Pr-present, Ppl-past participle, Aux-auxiliary, Inf-infinitive, Rf-reflexive, Ng-negative.

[3] Czech uses the prepositionless dative to mark recipients, both in the literal and figurative sense.

[4] It should be pointed out, however, that the use of any possessive pronoun (non-reflexive or reflexive) in these sentences is redundant and therefore somewhat artificial. The most neutral expression of coreferentiality within a clause is the absence of any pronoun. For example, the more neutral equivalent to (6) is *Petrovi se po Ø nečekaném vítězství řádně ulevilo*, without any pronoun, and it is unambiguously interpreted as `Peter$_i$ felt a great relief after his$_{i,*j}$ unexpected victory'.

[5] I will ignore expressions such as *Otce píchalo u srdce* `Father had a chest pain' and *Helenu polilo horkem* `Helen got all flushed', which involve case patterns Acc-PP and Acc-Ins, respectively. They both can be traced to deagentive constructions which demote the agent argument (subject) without promoting the patient.

[6] It is in fact impossible to construct a sentence in which the reflexive could have the locative as its antecedent. The referent of this argument is always a body part which

is not easily cast in the role of a possessor of anything. Yet the possessive relationship is essential in this test.

[7] The locative/nominative alternation in (14a,b) vs. (14c) clearly belongs to the type of alternation that is frequently associated with the difference between a partitive vs. holistic reading, respectively, as argued by Anderson (1971). And it is interesting to note that he explicitly correlates the oblique form with non-subjects.

[8] If we wanted to use the standard inventory of semantic roles, Cause would correspond to agents (for verbs like *hemžit se*) and causes/sources/stimuli (for verbs like *vonět* `give off a fragrance'). In either case, what I have in mind is a participant held somehow responsible for the action or state.

[9] In fact, this conclusion also affects theories that do not work with the traditional notion of subject as such. The facts presented in this paper pose problems for any framework that operates on the assumption that every sentence must have a privileged argument, whether it is the `external argument' in a GB-style analysis, i.e. the highest structural position subject to the Extended Projection Principle (Williams 1981), or RRG's `syntactic pivot' as a privileged function (van Valin 1991). With respect to the Czech data, it is not clear which of the arguments in question could be the privileged or external arguments and on what basis these notions should be applied in the first place.

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A Family of Constructions: Japanese TEMO and Other Concessive Conditionals

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1. Introduction*

This paper explores several non-basic variants of the Japanese Concessive Conditional Construction ('C.C.C.') in TEMO (roughly, 'even-if') — variants which show clear differences, yet partake in an overall commonality, as will be demonstrated in this paper. This variable behavior, neither completely arbitrary nor completely predictable, is nonetheless highly *motivated* by the semantics and pragmatics of concessive conditionality. I propose to treat these motivated variations as *a family of constructions*. This approach not only lets us describe insightfully how the 'base' TEMO construction extends to a whole family, but is necessary to account for the differences between Japanese TEMO and its English counterpart EVEN-IF.

The basic TEMO concessive conditional construction is illustrated in (1):

(1) subordinate clause-TEMO (DEMO), main clause
(1a) ***syoo syoo yoozi ga attemo,*** *kite kudasai.*
a little 'have business' TEMO, please come
Lit. Even if you have a few errands to run, please come.

In earlier work, I have described a variety of uses of this construction (Fujii 1989, 1990a, 1990b); for a schematic summary of this, see the figure in Section 3.4. One of the major issues has been the question of how to account for these variant uses, and for their syntactic and semantic interrelationships. This paper will focus on three formally idiomatic concessive conditional constructions, clarifying the semantic motivation for the formally idiomatic variants.

At the outset I must issue a disclaimer regarding the term 'concessive conditional'. The term will be taken here simply as a label. The Japanese TEMO construction and the English EVEN IF construction can both express what we normally and conventionally categorize, and refer to, as 'concessive conditionals'. But it is in fact not at all clear what it is that we are categorizing as 'concessive conditionals'. The analysis presented here is thus an attempt to clarify the key notions involved in this putative semantic category and its internal structure. In our current discussion, we adopt the conventional label 'concessive conditionals' to refer to a category of a complex nature, avoiding a longer yet perhaps more accurate term such as 'paradoxical unconditional concessive conditionals'.[1]

One of the notions crucial to an understanding of 'concessive conditional' — one not readily apparent from the term itself — is that of **unconditionality**: the speaker, either implicitly or explicitly, communicates the idea that the consequent of the sentence holds true unconditionally, and in fact often intends to *assert* the consequent unconditionally. This property is prominent throughout my analysis.

2. Scalar-based concessive conditionals and three basic semantic components which they evoke

Both the TEMO and EVEN-IF constructions imply the unconditional truth of their consequent. As discussed in Fujii (1989, 1990a), this can be done by *a*

fortiori logic, with the antecedent presenting an extreme case and evoking a scalar entailment. To see how this rhetorical reasoning works, consider sentences (3a) through (3c).

(3) **Scalar-based C.C.C**

(3a) *uti no ko wa* ***osyoogatu ni nattemo*** *kaette konai.*
my children TOP New Year's Day DAT become TEMO not come home
Even when New Year's Day comes, my children still would not come home.

(3b) ***tenti ga hikkuri kaettemo,*** *kore dake wa y uzurenai.*
heaven-earth NOM turn over TEMO, this at least TOP give up POT NEG
Lit. Even if heaven and earth got reversed, I still could not give this up in the least.
By no means can I in the least give this up.

(3c) Even if the earth opened up and swallowed me, I wouldn't do what you asked me.

When we intend to present a conclusion forcefully, one way we can do so is to initially posit a condition that is normally less likely to lead to the intended conclusion, and note that — paradoxically — the conclusion holds anyway. Doing this yields, *a fortiori*, a stronger emphasis on the absoluteness of the conclusion, i.e., of the assertion or other speech act presented in the consequent.

The stated antecedent in this type of argument is the event or state least (or less) likely to lead to the stated consequent. This does not necessarily mean that the event or state expressed in the antecedent is independently least likely to be true in the real world. But in some concessive conditionals that are used to present a strong argument for the unconditionality of the consequent, the antecedent does in fact express an event or state that is very unlikely to be true, or is simply impossible, in the real world, as seen in (3b) and (3c).

The table in (4) lists the three semantic components that are evoked by this type of concessive conditional; in this scalar-based use, these three components co-occur as a chain of reasoning.

(4)

Property A: Reference to **an end point of scalar entailment in an evoked scalar model**: P (the antecedent) refers to an 'end point' which sets up either an upper or a lower boundary for a subset of scalar entailment. The antecedent refers to a case that is least likely (or less likely than the alternative) to lead to the stated consequent (Q). The subset contains points that are less likely than P to lead to the *expected* consequent ~Q (or, that are more likely than P to lead to the *stated* consequent Q).

Property B: **Paradoxicality**: The truth of **Q (the consequent)** is unexpected, given the truth of P and given prior beliefs assumed by the speaker to be shared by the hearer. Cf. 'counter expectation', 'a "despite" relationship', etc.

Property C: **Unconditionality**: **Q (the consequent)** holds true unconditionally (regardless of P or ~P) within the specific frame evoked by the utterance.

[cf. Fujii (1990)]

3. Variations of the TEMO construction: other ways of conveying 'complete coverage' of the condition and unconditionality of the consequent.

With the Japanese TEMO construction, however, there are other ways of conveying 'complete coverage' of the condition and unconditionality of the consequent. In Section 3, I will discuss three idiomatic variants of the TEMO construction, involving different means of deriving unconditionality of the consequent. These subconstructions are represented by the three large circles at the bottom of the figure shown in Section 3.4.

3.1. Alternative Concessive Conditionals

One way Japanese can make use of the TEMO construction is to express two or more specified alternatives that lead to the same consequent. I will call this the 'Alternative Concessive Conditional Construction' (Alternative C. C. C.)[2].

Alternative Concessive Conditional Construction:
Unconditionality by appealing to stated alternatives leading to the same consequence

The alternative C.C.C. has two subtypes. The first, represented by (5a) through (10), is what I will call the '***Opposed Alternatives*** **C.C.C.**', wherein the antecedent explicitly states both of the opposed possibilities as a dichotomous opposition.

Opposed Alternatives Concessive Conditional Construction:
P -temo ~P -temo Q
Unconditionality by appealing to P and ~P, both of which lead to the same Q

(5a) *Benkyoo sitemo sinakutemo doose dame daroo.*
study do TEMO do-NEG TEMO anyway bad MOD
Lit. Whether (I) study or do not study, it will be bad anyway.
It won't work (I won't make it), whether I study or not.

(5a') *Benkyoo sitemo doose dame daroo.*
study do TEMO anyway bad MOD
Lit. Even if (I) study, it will be bad (it won't work) anyway.

For example, in (5a), the antecedent presents the possibilities of both 'studying' and 'not studying'. An equivalent sentence containing only the first possibility 'studying' (5a') could also imply the unconditional truth of the consequent, but in a less explicit way. By adding the opposite possibility 'not studying' in (5a), the unconditionality is expressed more directly and thus more strongly, inasmuch as these two binary alternatives cover all possibilities in the relevant universe.

(5b) *Benkyoo sitemo sinakutemo* ***onazi*** *daroo.*
study do TEMO do-NEG TEMO **same** MOD
Lit. Whether (I) study or do not study, it will be the same.
It will be the same, whether or not I study.

(6) *Okesyoo sitemo sinakutemo* *doose* ***onazina n*** *dakara,*
make-up do TEMO do-NEG TEMO anyway same N because

suru dake *muda desyo.* <from T.V. drama>
do to the degree useless

Because it makes no difference whether you wear make-up or not, it's useless to do so.

(5b) and (6) show that the consequent clause can be made to assert the unconditionality even more explicitly by using such predicates as ***onazi*** *daroo,* meaning '(it) would be the same'. The consequent in these sentences literally states that the conclusion (or the result) would be the same whether P or not P was true. The exact real-world *content* of the conclusion is left unstated.[3]

The opposed alternatives presented in the antecedent clause can consist either of a term and its grammatical negation, as in (5a) through (6) above, or of semantically opposite expressions, as in (7) through (10) below.

(7) ***Naitemo warattemo*** *happyoo* *made* *ato itiniti da.*
cry TEMO **laugh** TEMO announcement until one-day

Whether (you) cry or laugh, there is only one day before the announcement.

(8) *Saikin* ***netemo*** ***sametemo*** *kurarinetto .. kurarinetto ...*
recently **sleep** TEMO **wake up** TEMO clarinet clarinet

Fumi wa kurarinetto no koto de *atama ga* *ippaina n' dakara.* <a letter>
Kumi TOP clarinet with head NOM be filled N because

Lit. Whether (she) sleeps or wakes up, clarinet ... clarinet ... recently Kumi has nothing but clarinet in her head.
Recently Kumi thinks about nothing but the clarinet, whether she is asleep or awake.

(9) ***Semetemo*** ***mamottemo*** *kare`wa* *yappai* *uti no nanbaa wan da.*
offense TEMO **defense** TEMO he TOP still our number one

Lit. Whether (he) plays offense or defense, he is number one on our team.
On our team, he is the best in both offense and defense.

In (7), *naku* (cry) and *warau* (laugh) are presented as opposed alternatives, both resulting in the same conclusion expressed in the consequent clause. In (8), the pair *neru* (sleep) and *sameru* (awake) is used to indicate 'all the time', or 'day and night'. Such pairs of opposite expressions (*naitemo warattemo, netemo sametemo, semetemo mamottemo, ositemo hiitemo)* are often collocated, making each of the bipartite antecedents a highly idiomatic fixed expression.

As shown in (10), unlike examples (7-9), the bipartite antecedent may repeat the identical verb and express the oppositeness via some other element in the clause:

(10) *Kono oobo-kikan tyuu nara,* ***hayaku*** ***dasitemo***
this application-period within IF, **early** (Adv) mail TEMO

osoku ***dasitemo*** *toosen kakuritu wa* *mattaku onazi desu.*
late mail TEMO lottery-winning probability TOP completely the same

Lit. If (it is) within this application period, whether (you) mail (it) early or late, the probability of winning the lottery will be absolutely the same.
It won't make any difference to your chances of winning the lottery whether you mail (it) earlier or later within the application period.

The two parts of the antecedent in (10) repeat the same verb *dasu* (mail), with the contrastive adverbs *hayaku* (early) and *osoku* (late); here again, both the conditions *hayaku dasu* (mail early) and *osoku dasu* (mail late) bring about the same result, the identical probability of winning the prize.

The second type of alternative C.C.C. I will call the '***Listed Alternatives* C.C.C.**', as illustrated in (11) through (13).

Listed-Alternatives Concessive Conditional Construction:
P1 -temo P2 -temo (P3 -temo P4 -temo ...), Q
Unconditionality by appealing to a set of representative alternatives P1, P2, (P3, P4 ...), all leading to the same Q

(11) ***denwa o sitemo tegami o dasitemo*** *tittomo aiteni sitekurenai si ...*
call up TEMO send a letter TEMO 'not respond at all'
(He) pays no attention whether I call him or write to him. <a letter>

(12) *Take wa mada mada kodomo dakara,* *ittan* *nereba,*
Take TOP still child because once fall asleep IF

syoosyoo urusakusitemo, tataitemo tunettemo,
to some degree make noise TEMO hit TEMO pinch TEMO,

okinai kara *daizyoobu.* <conversation>
wake-up-NEG because, all right

Lit. Since Take is still a child, once he falls asleep, whether (we) make some noise or hit or pinch (him), he won't wake up, so it's all right.

(13) ***wasuremono o sitemo, neboo site tikoku sisoo ni nattemo,***
forget to bring something TEMO oversleep and be already late for school TEMO

itumo hasitte *san-pun* *kakaranakatta kara*
always run three minutes take-NEG-PAST because
<a 9-year-old child's letter>

Because whenever I forgot something or overslept and thought I was going to be late for school, it did not take even three minutes for me to run there.

The stated alternatives here, which are not necessarily set off in sharp contrast against one another, are representative cases that the speaker presents in order to evoke some fuller range of possible conditions, and to assert the consistency of the same result within a relevant set of situations — not only under the several explicitly stated conditions, but under all possibilities within the evoked larger set. In (11), for example, by giving the two cases *denwa o sitemo tegami o dasitemo* (whether I call or write to him), the speaker implies the whole gamut of relevant cases, thus explaining that, no matter what means he used, the result was the same. The stated alternatives are considered to be *representative* of the relevant set of conditions; they evoke the full set without literally stating it. To emphasize this notion of implicitly *complete coverage*, the list of the alternatives can be longer than two (as in 12), and in fact the speaker can go on adding any number of alternatives, each taking the ending TEMO, with every additional alternative

mutually and cumulatively supporting the absoluteness of the idea expressed in the consequent.

3.2. Universal Concessive Conditionals

In another variation, the Universal Concessive Conditional Construction (Universal C.C.C.)[4], complete coverage is asserted via universal quantification — *any* value of the indeterminate pronoun (WH-variable). As shown in (14a) through (14d), in Japanese, indeterminate pronouns[5] (Wh-words) such as DARE (who), DOKO (where), NANI (what), ITU (when), IKURA (how much), and DONNANI (how) often participate in the TEMO construction, presenting non-specific, 'free-choice' situations for the antecedent.

Universal Concessive Conditional Construction
Wh- P -temo, Q
Unconditionality by appealing to any number of values (any value at all) for the variable in the condition, all leading to the same consequence

Using DARE (who):

(14a) ***DARE*** *ga* *yatte-mitemo* *dekinai* *daroo.*
who NOM do-try TEMO cannot do MOD
No matter who tries it, (s)he will not be able to do it.
Whoever tries it will not be able to do it.

Using DOKO (where):

(14b) ***DOKO*** *o* *sagasitemo* *mitukaranai* *yo.*
where ACC look TEMO find-NEG PART
No matter where you look, you won't find it.

Using NANI (what):

(14c) *Uti no bosu wa* ***NANI*** *ga attemo* *doozinai.*
my boss TOP **what** NOM happen TEMO get upset (moved)-NEG
No matter what happens, my boss won't get upset.

Using DONNANI (how/what way):

(14d) ***DONNANI*** *benkyoo sitemo* *siken ni wa* *gookaku sinai* *daroo.*
how much study TEMO exam-DAT-TOP pass-NEG MOD
No matter how (hard) I study, I won't pass the exam.

The antecedent of (14d), with DONNANI, means 'No matter how hard I study'; the utterance as a whole asserts that, within the relevant universe evoked by the antecedent, the degree to which the subject studies (or the manner in which s/he studies) will make no difference to the result described in the consequent clause, that is, 'won't pass the exam.' Here again, unconditionality is expressed without referring to a specific extreme case. Instead, unconditionality is here asserted by appealing to any value of the variable expressed by the indeterminate pronoun in the antecedent, all of which lead to the same consequence. Precisely this is characteristic of Universal C.C.C.s: the antecedent, instead of specifying any particular exemplar, applies to any value of the variable within the frame evoked by the antecedent, thereby effecting complete coverage of the relevant conditions. All such conditions imply the same results. This is again a very strong way of presenting an unconditional consequent.

An important characteristic of the Universal C.C.C. in Japanese is the close conceptual and grammatical link between it and the Japanese universal quantification construction. The Japanese expression for 'EVERY' is comprised of a Wh-word and the particle MO or DEMO, as shown in (15).

(15) Universal quantification construction using *NANI* (what):

Universal Affirmation	Universal Negation
* **Nani mo** sitte iru. what MO know ASP	**Nani mo** siranai. what MO know NEG (The subject) knows **nothing**.
Nani (Nan') demo sitte iru. what DEMO know ASP (The subject) knows **everything**.	* **Nani (Nan') demo** siranai. what DEMO know NEG

For example, *nani demo* in ***nani demo sitte iru*** (15, left column, second row) indicates universal affirmation (everything), while *nani mo* in the negative sentence *nani mo siranai* expresses universal negation (15, right column, first row). We cannot go into detail here, but for our purposes, it will be sufficient to note that the basic semantics of the universal quantification construction is compatible with the unconditional meaning and absolute assertion associated with the Universal Concessive Conditional Clause-linking Construction. Both constructions express complete affirmation or complete negation by appealing to free-choice variables expressed by indeterminate pronouns (Wh-words). Another commonality, which is also crucial for expressing the unconditional meaning, is the existence of the particle MO in both constructions.[6]

3.3. Reduplicative Concessive Conditionals

A third idiomatic construction using TEMO, which I will call the Reduplicative Concessive Conditional Construction (Reduplicative C.C.C.)[7], reduplicates the verb (or verb phrase) in the antecedent, as illustrated in (16):

(16) *denwa o* ***kaketemo kaketemo*** *tuuzimasen.* <from a letter>
telephone ACC call TEMO call TEMO connect-NEG
I never reach him no matter how often I call him.

This construction demonstrates yet another way to emphasize the unconditionality of the truth of the consequent: the repetition of the same idea by repeating the same verb (phrase) in the antecedent. Such repetition indicates either that the same action was repeated over and over indefinitely (e.g., 16 and 17), or that the state expressed by the verb lasted indefinitely (e.g., 18 and 19).

(17) ***sikattemo sikattemo*** *yappari hahaoya wa hahaoya.*
scold TEMO scold still mother TOP mother
No matter how many times (I) scold (them), the mother is the mother (I'm still the mother). <from a letter>

(18) ***Musi saretemo musi saretemo,*** *zitto gaman site egao de kaesu sika nai.*
ignore PASS TEMO ignore PASS TEMO quietly persevere smile back only
No matter how long I'm ignored (by her), I will just bear it and smile back.
<T.V. drama>

(19) ***Mattemo mattemo*** *X-san wa* *tootoo arawarenakatta.*
wait TEMO wait TEMO Ms. X TOP after all 'did not show up'
Even though I waited for a long time, Ms. X did not show up.

Regardless of the multiply repeated action or the indefinitely prolonged state, the conclusion never changes. The construction as a whole thus asserts that such repeated actions or prolonged states invariably bring about the same result, thereby implying its absoluteness. To be sure, the regular construction consisting of a single TEMO clause (e.g., 16b) would also suffice to express a similar idea, drawing on the paradoxicality factor involved in the antecedent-consequent contingency relationship characteristic of TEMO.

(16b) *denwa o* ***kaketemo*** *tuuzimasen.* cf. (16)
telephone ACC call TEMO connect-NEG
I never reach him even though I call him.

But repeating the verb in the antecedent emphasizes the factors of persistence and thoroughness, thus in turn amplifying the unconditional force of the whole utterance.

One characteristic specific to the Reduplicative C.C.C. is that this pattern normally occurs with a **non-hypothetical** situation (or *realis* antecedent), where the speaker believes in the truth of the antecedent. More specifically, it is commonest for this construction to be used in describing either past events or habitual events. In this respect, this construction differs from the basic TEMO construction and the other two patterns just discussed (Alternative C.C.C. and Universal C.C.C.), which do not show an automatic *realis* bias. Of course, these other TEMO constructions can be used for past specific events, but unlike the Reduplicative C.C.C., realis is *not* more typical than irrealis with these other types.

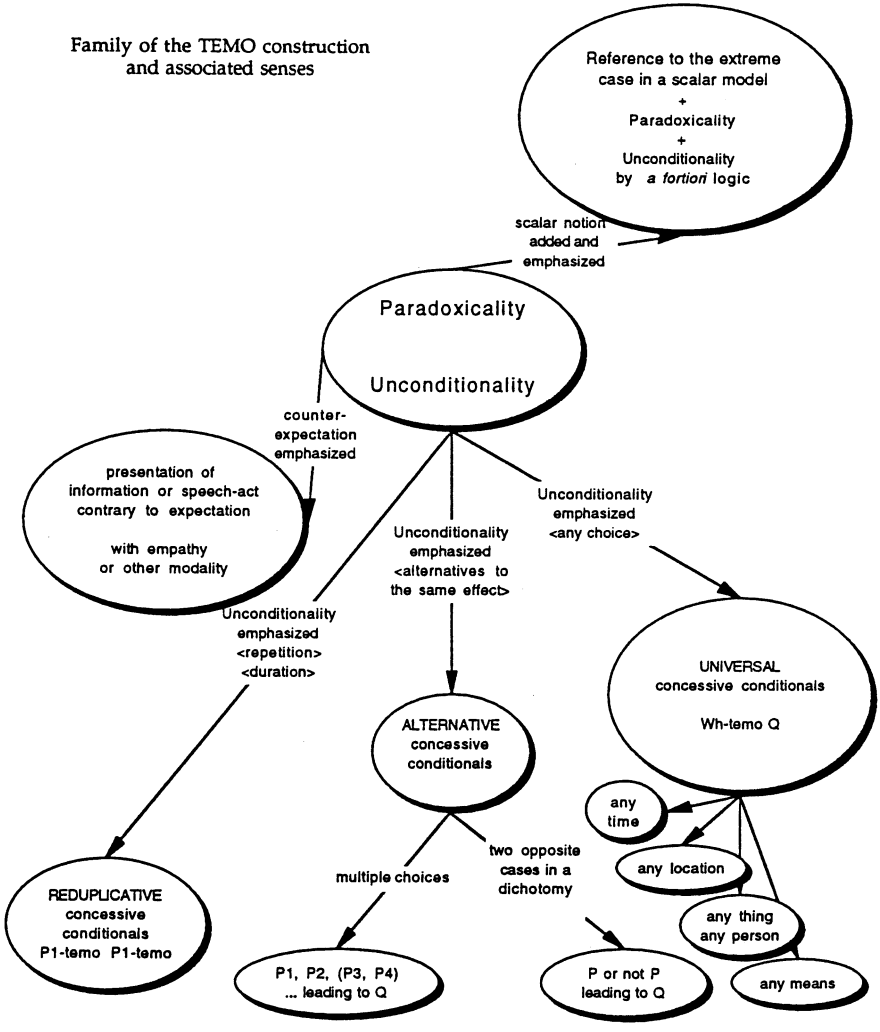
3.4. Synthesis

Formally, all the variations presented thus far (the Alternative, Universal, and Reduplicative C.C.C.s) stem from the base TEMO construction. At the same time, however, they involve special idiomatic combinations of forms (P temo ~ P temo Q; P1 temo P2 temo (P3 temo ...) Q; Wh-temo Q; P<V-temo V-temo> Q) and appeal to particular grammatical devices (such as coordination, indeterminate pronouns, and verb reduplication) which are not part of the base TEMO construction. Though not discussed fully in this paper, each variation also has its own specific different set of additional syntactic and semantic constraints.

Functionally, these variant constructions all assert that the consequent holds true unconditionally within the relevant universe, and all of them are therefore used to emphasize the speech act that is presented in the main clause. This function is consistent with the sense of unconditionality essential to the base TEMO construction itself. And in all the variant subtypes, unconditionality of the consequent emerges as the result of the *complete coverage*, in the antecedent, of all possibilities in the relevant universe. The crucial point here is the fact that the unconditionality is derived without appealing to scalar implications. This contrasts sharply with the English EVEN IF construction, and with the scalar-based use of the TEMO construction discussed earlier in Section 2.

These variant constructions differ from one another in the means by which they convey exhaustiveness in the antecedent and unconditionality in the consequent — whether by appealing to binary or multiple representative alternatives all leading to the same conclusion (Alternative C.C.C.), by appealing to universal

Family of the TEMO construction
and associated senses



[excerpt from Chapter 5, Fujii (1993)]

quantification as applied to some variable within the antecedent (Universal C.C.C.), or by appealing to repeated actions (or prolonged states of affairs) that turn out to have no effect on the result (Reduplicative C.C.C).

4. The variations as found with other concessive conditional constructions

Next, Section 4 briefly presents other concessive conditional constructions featuring different clause-linking morphemes besides TEMO, and shows that the same three variations are available for other concessive conditional constructions — but *not uniformly*. The base constructions and clause-linking morphemes considered here are listed in (20):

(20) Concessive conditional constructions featuring clause-linkers other than TEMO:

S1 (V-oo) TOMO, S2.	[1]
S1 (V-oo) TO, S2.	[2]
S1 (V-oo) GA, S2.	[3]
S1 (*izen*-form) DOMO, S2.	[4]
S1 (*izen*-form), S2.	[5]
S1 (-ta) TOKORO-DE, S2.	[6]
S1 -TATTE, S2.	[7]
S1 (V-tara V-TADE), S2.	[8]

The first three constructions in the above list take the special verb-ending '*-oo*', followed by a clause-linking morpheme — either TOMO, TO, or GA. Constructions [4] and [5] take one of the Classical Japanese verb conjugation form called the ***izen*-form**, either with or without the clause-linking morpheme DOMO, the classical Japanese counterpart of TEMO.

A few representative examples of clause-linking constructions in combination with the three variations (where available) are shown in (21) – (23).

(21)

(21a) **S1 (V-oo) TO, S2.** [2] **[Alternative C.C.C.]**
S1(V1-oo TO V2-oo TO), S2
Nakoo to wamekoo to watasi no sitta koto de wa nai.
cry TO scream TO I NOM know matter TOP NEG
Whether (he) cries or screams, I don't care.

(21b) **S1 (V-oo) TO, S2.** [2] **[Universal C.C.C.]** S1 (Wh- V-oo) TO, S2
Donnani ame ga huroo to ikimasu.
how much rain NOM fall TO go
No matter how much it rains, I will go.

(22) **S1 (*izen*-form) DOMO, S2.** [4] **[Reduplicative C.C.C.]**

Ikedomo ikedomo mieru no wa noppara to tihei-sen dake ...
go DOMO go DOMO see NOM TOP open field and land horizon only

kuruma ga kosyoo demo sitara doo siyoo ka to huanni natta yo.
car NOM be broken IF how do Q QUO uneasy become PAST PAR

We drove and drove, but all we could see was the open field and the horizon; we began to feel uneasy, thinking, 'What if the car broke down?'

(23) **S1 (bare *izen*-form), S2. [5] [Alternative C.C.C.]**
S1(V1-*izen* V2-*izen*), S2

Gakkoo de are katei de are *iwayuru* *kanri o*
school be-IZEN home be-IZEN so-called control ACC

ukenaide sumu ningen o sodateru no ga kyooiku na noni.
'can do without receiving' people ACC nurture N NOM education though

'Whether it's at school or in the home, education should nurture people who don't have to be controlled.'[8] <Newspaper article>

Space does not allow us here to exhaust all the possible constructions using these linkages. Instead, refer to the table in (24), which summarizes the possibilities of occurrence of the Alternative, Universal, and Reduplicative C.C.C.s for each linkage. The table shows that these variations are indeed available with non-TEMO concessive conditional linking constructions, but that they are not available uniformly with all of them.

(24) Summary of the Alternative, Universal, and Reduplicative C.C.C. as found with other (non-TEMO) linkages

Construction	Regular (base)	Alternative	Universal	Reduplicative
S1-TEMO S2 [0]	YES	YES	YES	YES
S1-oo TOMO S2 [1]	POSSIBLY	POSSIBLY	YES	NO
S1-oo TO S2 [2]	POSSIBLY	YES (frequent)	(YES)	NO
S1-oo GA S2 [3]	POSSIBLY	YES (frequent)	YES	NO
"izen-form" DOMO [4]	YES (special)	POSSIBLY	POSSIBLY	YES (frequent)
"izen-form" (bare) [5]	YES (limited)	YES	NO	NO
S1 -TA TOKORO DE S2 [6]	YES	NO	(YES)	NO
S1-TATTE S2 [7]	YES	(YES)	YES	NO
S1(V-TARA V-TADE) S2 [8]	YES (limited)	(yes, in a very special sense)	NO	NO

The fact that the Alternative, Universal, and Reduplicative C.C.C.s are all possible with non-TEMO linking constructions (i.e., with at least one construction, and often with more than one) is evidence that these variations are not completely arbitrary and unmotivated. Without some sort of reasonable motivation, these three variations would not recur as a group in several constructions involving different linking morphemes. Recall that all of these variant constructions function, in various ways, to assert the unconditional truth of the consequent (what is expressed in the consequent clause). This function is integral to, and based on, the semantics of concessive conditionals, as discussed under the rubric of 'Unconditionality'. But this function of unconditionality is not restricted just to TEMO concessive conditionals; hence it can motivate the occurrence of these same constructional variations for a *variety* of different concessive conditional constructions featuring different linking morphemes. More importantly, all of this argues that these variants are subtypes (subconstructions) of concessive conditional constructions *in general*, rather than quirks of TEMO.

However, the various C.C.C.s are not equally available to all nine clause-linkage types; this forces each subconstruction to be listed and described separately

for each linkage type. Moreover, the detailed distribution of these variations can only be attributed to the formal idiomatic nature of each linking construction, something which is not totally predictable.

5. Semantic mismatch[9]

The final point to be made is that the TEMO construction and the English EVEN-IF construction are not semantically congruent. For the Opposed Alternative C.C.C., English uses, not EVEN-IF, but a subordinate clause headed by WHETHER (OR NOT); for the Universal C.C.C., English uses WH-EVER or NO MATTER WH-. This is only part of the broad divergence between the radial categories of TEMO and EVEN-IF, differences involving (first) the selection of central cases, and (second) the way each extends to a family of constructions. Scalar notions are intrinsic to the EVEN-IF construction; with TEMO, they are possible but nonessential. The central case of the EVEN-IF construction involves not only scalarity but also unconditionality and paradoxicality; the latter two, however, are parasitic on scalarity, via a chain of reasoning. By contrast, it is precisely the notions of unconditionality and paradoxicality (and not scalarity) that are central to the base TEMO construction, although again all three commonly cooccur. This difference in choice of central cases has far-reaching consequences for the ways each construction expands to a family of constructions, and shows why TEMO allows variant constructions that are impossible with EVEN-IF.

6. Conclusions

This paper has explored several formal and semantic variations of the TEMO construction. These formal idiomatic variants show clear differences, but the overall phenomenon and its variations are highly motivated by the 'unconditional' semantics and pragmatics of concessive conditionality. Significantly, these variations — Alternative, Universal, and Reduplicative C.C.C.s — are not specific to TEMO but have near-exact analogues with seven other (non-TEMO) concessive conditional clause-linkers, arguing that these variants are subtypes (subconstructions) of C.C.C.s in general rather than special quirks of TEMO. In fact, the full range of uses of the various TEMO constructions, each bearing a different set of formal constraints and each highlighting subtly distinct yet related senses, cannot be described by a single abstract meaning or set of necessary and sufficient conditions. Only a constructional approach can do justice to the full richness of the TEMO constructions, or explain the interesting non-synonymy between TEMO and EVEN IF.

Footnotes

* This paper is a synopsis of two sections of Chapter 5 ("Polysemy and Radial Categories") of my dissertation (Fujii 1993). I have benefited from comments on the chapter from Charles J. Fillmore and Orin Gensler, and on my earlier paper in BLS 1989 (Fujii 1989) from Susan Ervin-Tripp, Yutaka Hayashi, Yoshiko Matsumoto, Laura Michaelis, Janet Shibamoto, Eve Sweetser, and participants in the 1988-89 Japanese Linguistics seminar at U.C. Berkeley.

[1] For more discussion of semantics of concessive conditionals, see (*inter alia*) Fillmore (1987), König (1986), Harris (1988), König & Van der Auwera (1988), Nikiforidou (1990), Sweetser (1990), and Fujii (1993).

[2] As in Fujii (1989), I adopt the term **'alternative'** used by Quirk et al. (1972) and Quirk et al. (1985). Their original term — which they apply to the English 'whether X or Y' construction — is 'ALTERNATIVE CONDITIONAL-CONCESSIVE'. In Fujii (1989), I used the term 'alternative concessive conditional' to refer to the same subtype of the TEMO construction as that at issue here, but did not further subclassify the type into the two variants discussed below.

[3] See Fujii (1990b) for discussion of this type of consequent clause. These are cases of what I refer to as 'integrated concessive conditionals'.

[4] The original term in Quirk et al. (1985) and Quirk et al. (1972) is UNIVERSAL CONDITIONAL-CONCESSIVE. I refer to these in Fujii (1989) as 'non-specific concessive conditionals' as well as 'universal concessive conditionals'.

[5] These 'Wh-words' are interrogative words used to construct questions. But they can also be used to express *'EVERY'* (e.g. *dare mo*, 'everybody') and *'SOME'* (e.g. *dare ka*, 'somebody') when bound by the particle *mo* or *ka*. (For details see, for example, Fukushima 1991 and Kawashima 1993.) Following Kuroda (1965) I use the term 'indeterminate pronouns', or more simply 'Wh-words' (or 'Wh'), to refer to these words (e.g., DARE, DOKO, etc.).

[6] The semantics of MO in this connection is discussed in Section 5.2.7, Chapter 5, of Fujii (1993).

[7] Along with other constructions utilizing verb reduplication, Okamoto (1991) discusses this particular use of the TEMO construction and analyzes the regularity and irregularity involved in this verb reduplicative construction.

[8] The English version of (24) is taken, without change, from a published translation of the Japanese.

[9] Space does not permit the full discussion of this topic in this paper.

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Discourse deixis and information tracking[1]

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I. Introduction

Discourse deictics include those "elements which indicate or otherwise refer to some portion or aspect of the ongoing discourse" (Fillmore 1975:70). Directional discourse deictics reference parts of the linguistic text, which is alternatively envisioned either as a spatial entity with inherent directional properties, or as a temporal line which progresses through time. In Russian an additional set of discourse deictics, comprised of both presentative-demonstrative deictics and a number of the so-called modal or discourse particles, functions on the propositional level.

In order to describe the use and distribution of these discourse deictics, it will be useful to have some sort of model of the discourse. Here I will follow Fillmore's (1984:139-140) suggestions, with the addition of *background knowledge* as an integral component. The term *discourse* will be used to refer to the combination of at least the following parts:

1. the *linguistic text*, and the surrounding co-text;
2. the *text setting*, the world the text is in;
3. the *text content*, the world the text is about;
4. *background knowledge*, real-world knowledge that is shared, or presupposed to be shared, by the discourse participants. This kind of knowledge is to be distinguished from the text content, which is created by the text. That is, it is not linguistically evoked or inferrable (as defined by Prince 1981) from the text.

It is important to keep in mind that as the discourse progress, the relative saliency of referents changes. The deictic frame of reference (Hanks 1993, 1990) of the discourse is constantly in flux. What discourse deictics do is track the ever-changing information status of the discourse elements and simultaneously function to provide links between the text, the text setting, the text content and the background knowledge.

2. Directional discourse deictics

The most straightforward and best understood of the discourse deictics are spatio-temporal deictics. By and large, these reference parts or chunks of the linguistic text and, by virtue of such referencing, index the text content. Fleischman 1991 shows that in English and French there is a high correlation between spatial textual mappings and written language, and temporal textual mappings and spoken language. This holds for Russian as well: spatial textual deictics belong almost exclusively to the area of written language. They are found only in highly stylized speech, usually where a prepared, written text is read (e.g. a formal talk or presentation). When spatial deictics are used, the text is envisioned as a physical entity with spatial dimension, which is probably a direct reflection of the spatial dimensions of a written page. This usage, which is fairly straightforward and well-known, is illustrated example (1), where *vyše* 'higher' in line 1 serves to reference prior text:

(1) Rabinovič 1991: 290

1. *Privedennoe **vyše** sravnenie "ščegol'skogo narečija" so*
cited above comparison "fancy speech" with

2. *"sladkojazyčiem" dostatočno nagljadno illjustriruet različie meždu*
"sweet dialect" sufficiently clearly illustrates distinction between

3. *žargonom i ljubim drugim dialektom (daže i social'nym) imenno vvidu*
jargon and any other dialect even social specifically in view

4. *ix značitel'nogo zvukogo sxodtsva.*
their significant sound similarity

'The comparison, cited above, of the "fancy speech" with "sweet" sufficiently clearly illustrates the distinction between jargon and any other dialect (including even social dialects) specfically with respect to their similar phonological systems'

Example (2) shows analogous use of a temporal deictic, *do six por* 'up until now', again used to reference prior text:

(2) Levinton 1991:219

1. ***Do six por** my kasalis' tokl'ko paradigmatičeskoj osi svad'by,*
Up until now we touched on only paradigmatic axis wedding

2. *no ta že binarnost' projavlajets i v sintagmatike.*
but same binariness appears also in syntagmatics

'Up until now we have touched on only the paradigmatic axis of the wedding, but that same binariness appears in the syntagmatics as well'

The mechanism underlying the use of directional deictics is relatively clear: the linguistic text, creates content (and context) and when that text is referenced, the underlying content is referenced as well. Thus in example (2), by indexing the text which occurred prior to line 1, the author indexes his argumentation. What is interesting, in Russian at least, is that these spatial and temporal deictics are often accompanied by a paraphrase or synopsis of the referenced text. This suggests that they function to serve global coherence. In both examples (1) and (2), the directional deictics occur at topic transition points. That is, in each case they appear in statements briefly summarizing a previous topic, and move from this topic to a new topic which is still thematically related to the first topic. Here the deictics link these two topics so that the one topic seems to naturally flow into the next.

Directional deictics locate the current talk with respect to prior or upcoming speech and so in this respect are "signposts" to the addressee as Kurzon 1985, calls them. This point is particularly clearly illustrated in example (3), where the temporal deictic used to signal temporal progression of the discourse is the adverb *potom* 'then' in line (3). It is used metalinguistically to mark a point in the narration:[2]

(3) Irina, explaining why it is worthwhile to travel to the Far East:

1. *Poètmu tam oćen' raznoobraznaja priroda i oćen'/*
therefore there very varied nature and very

2. *oćen' interesno/ VOT//*
very interesting VOT

3. *NU* ***potom,*** *tam ran'še bylo vse vremja zakryto*
NU then there before was all time closed

'Therefore the nature there is very diverse and it's very good, very interesting. And **then** it used to always be closed [to foreigners] there'

This example provides a clear illustration of the differences between discourse deixis and deictic reference in the broader sense, For example, *tam* 'there' in lines (1) and (3) references a real-world geographic location outside of the text – the Far East. This reference is in contrast to that of *potom* 'then' in line (3), which unambiguously indicates the temporal representation of the ongoing discourse as talk that moves through time. It locates the current talk as following the talk which had occurred. Thus *potom* references a point in the temporal line of the narrative itself, and can be juxtaposed to the temporal adverbial *ran'še* 'formerly' which indexes a point in time relative to the moment of utterance.

Notice that the adverb *potom* in line 3 comes after a topic change in the narration; the speaker has concluded the discussion of nature in the Far East and continues listing her reasons for encouraging people to travel there. (These topic changes are further marked by the particles VOT in line 2 and NU in line 3; I will return to this in a moment.) The deictic *potom* here signals a sequencing in the speaker's argumentation, not a sequence of real-world events.

This use of *potom* serves to make the text locally cohesive, making for a smooth transition from topic to topic. Furthermore, it is a signal to the addressees to help them locate the current subtopic (the fact that the Far East used to be closed but is now open to foreigners) within the overall framework of this listing of reasons to go to the Far East.

3. Opening and closing topical units

A number of discourse deictics serve to signal changes in the topical structure of the discourse. There are a variety of ways of tracking topical structure in Russian: for example, Nichols 1984 shows the use of zero-anaphora to track the discourse topic (which she calls literary theme). Repetition of previous utterances can serve to reestablish a local topic, or to close a topic.

Discourse deixis is involved in tracking changes in topical structure at three levels: (1) at the level of the superordinate (discourse) topic, deictics are used to signal the openings and closings of topical units; (2) they signal the openings of subtopical units which are thematically related to the larger discourse topic; and (3) discourse deictics further track sentential-level topics, where they may signal a continuing topic or specify a particular topic. Just as spatio-temporal discourse deictics track the ongoing flow of linguistic text, other discourse deictics track the ongoing flow of the text content.

Just how transitions in topic are negotiated is extremely important in terms of global coherence and local cohesion. Topic changes essentially segment the text. In spoken Russian, the openings and closings of topical units (as defined in Schegloff and Sacks 1973) are marked with striking consistency, although there are a number of different devices used to mark them. Among the most frequent are the particles DA, NU, TAK and VOT. These particles are distinguished by the fact that they usually have no lexical meaning, are non-elicitable and do not affect truth conditions (see Arndt 1960:326; Nikolaeva 1985; Rathmayr 1985). The closest analogue is the German Modalpartikeln; they are similar to what in English Schiffrin (1987) calls *discourse markers* but differ both syntactically and pragmatically (see Abraham 1991:4-5; König 1991:201, fn. 6). The meaning of the Russian particles would normally be conveyed in English by such prosodic means as intonation and heavy stress, tag questions, periphrastic verbal constructions such as 'go and VERB' (Bublitz 1978). The distribution of these Russian particles can best be explained in terms of their discourse functions; for this reason, they are not glossed in the examples.

Just as with directional deictics, the actual devices used to mark changes in topical structure differ in spoken and written language. The use of particles as discourse deictics to mark openings and closings is largely limited to spoken Russian; in this section I will focus on the use of such particles. These essentially bracket topical units. The particle NU, which appeared in line 3 of example (3), is one of the most frequent openings in colloquial Russian. In this same example the preceding topical unit was closed by the particle VOT in line (2) which was followed by a pause.

VOT is of particular interest. Outside of its discourse functions, VOT is a presentative deictic and in this is similar to French *voici* and *voilà*. In its discourse functions, two types of VOT as text deictics can be distinguished. VOT-1 is uttered with high, level intonation and is not followed by a pause. It is used to introduce the beginning of a new discourse topic or subtopic. In contrast, VOT-2 is pronounced with falling intonation and is followed by a pause. It marks topic closings. Thus it was VOT-2 which was found in example (3), line 2, where it closes the topical unit on "nature in the Far East."

Example (4) illustrates the use of VOT-1 as an opening.[3]

(4) My husband the architect (from Zemskaja and Kapanadze 1978: 113)

1. M. *Da// Volosy u menja byli očen' xorošie//*
   yes hair by me were very good

2. K. *Kakoj...cvet volos? Pepel'nye u vas (byli)? Ili temnee/ rusye*?
   what color of hair ash by you (were) or darker brown

3. M. *Net// **VOT** kak u moej dočki//*
   no VOT as by my daughter

4. K. *A-a// Da-da- da- da// zolotistye*
   a-a yes yes yes yes golden

5. M. *Zolotistye*
   golden

[pause]

6. M. ***VOT*** *moj muž.. Moj muž byl arxitektor// I on skazal* [...]
VOT my husband my husband was architect and he said

In the first five lines, the speakers discuss M's hair color while looking at a picture of her when she was young; they are included to illustrate just how different this first topic is. This topic is closed in line 5 with repetition of the last word of line 4, *zolotistye* 'golden' and followed by a pause. (Repetition is another frequent closing in Russian discourse.) The pause following the repetition is a clear boundary between topics. A brand new discourse topic is introduced in line 6, as signaled by VOT-1. This new topic is introduced by VOT-1 and a nominative NP *moj muž* 'my husband'.[4] It is then repeated in the nominative again as the subject of the sentence *moj muž byl arxitektor* 'my husband was an architect', which is again followed by a pause.

An examination of larger chunks of spoken Russian reveals a consistent segmentation of the discourse into topical units. The openings and closings of nearly every superordinate topic are marked. Example (5), an excerpt from an hour-long conversation, illustrates some of the complexities involved in opening and closing topical units in actual discourse, where the topic is jointly negotiated by the two speakers, Lena and Irina:

(5) discussion of the current visa situation, in response to the question if I, as a foreigner, need a visa to go to the Baltic States:

1 L: *V Pribaltiku/ [navernoe]*
to Baltic probably

2 I: *[V Pribaltiku] navernjaka /*
to Baltic probably

3 ***A VOT*** *meždu respublikami SNG/ tam nekotorye tol'ko gosudarstva*
A VOT between republics CIS there several only states

4 *trebujut vizu/ počemu oni tam i den'gi vot berut//*
demand visa because they there emph. money vot take

5 ***VOT*** *už vzjat' Uzbekistan/ naprimer/ trebujut vizu/*
VOT emph. to take Uzbekistan for example demand visa

6 *xotja mnogie tuda v"ezžajut bez vsjakix viz//*
although many there enter without any visa

7 *Nekotorye=*
Some

8 L: *=**NU**=*
NU

9 I: *=Navernoe / [kto-to ??????????????]*
probably someone

10 L: *[NU / tuda poka ešče] možno*
NU there now still possible

11 *bez viz v obščem-to [?????????*
without visa in general

12 I: *[NU / v byvšye respubliki] / da/ poka ešče//*
NU to former republics yes now still

13 ***VOT** [mne skazali]*
VOT me said(3rd pl.)

14 L: *[mesjaca čerez dva]/ my ne znaem=*
months in two we neg know

15 I: *=**VOT** Ukraina/ naprimer /*
VOT Ukraine for example

16 *i Uzbekistan/ točno trebujut vizu*
and Uzbekistan definitely demand visa

'L: To go to the Baltic, probably
I: To the Baltic, probably, but VOT between the republics of the CIS, only some states demand a visa, because they get money for it. VOT take Uzbekistan, for example, they demand a visa, although many people go there without one. Some=
L: =NU
I: =Probably [someone
L: [NU for now you can still go there without a visa in general[????
I: [NU, to go to the former republics yes, for now//
VOT [I was told
L: [in two months we don't know=
I: =VOT Ukraine for example, and Uzbekistan as well, they definitely demand a visa'

Line 2 repeats line 1, overlapping it and closing the topic of the Baltic. In line 3 a new topic (the republics of the CIS) is opened with A VOT-1; its closure is seen at the end of line 4 with a longer pause. A subset of this topic, Uzbekistan, is opened in line 5, again marked by VOT-1. In lines 8 and 10 Lena tries to get the floor, beginning her turn and potentially a new topic with the particle NU, which was also seen in example (2) to signal the beginning of a new topic. In line 12, Irina similarly begins a turn with the particle NU, overlapping with Lena and closing her turn by repeating part of line 10 (*poka ešče* 'now still'), and opening in line 13 with

VOT-1. The closing strategy can be judged unsuccessful by the overlap in lines 13 and 14, which ends in 15 when Irina opens another topical unit, the situation in Ukraine.

In sum, four lines begin with VOT and three with the particle NU. VOT-1 (with high level intonation) introduces a topic unit and VOT-2 with falling intonation closes a topic. Thus both the particle and the intonation serve as brackets around a topic unit.

4. Sentential level topic: tracked by *-TO*

The particle -TO can be used to track changes in the sentential-level topic when it is still related to the more global discourse topic. It is a clitic, etymologically related to the Modern Russian demonstrative pronouns *èto* 'this' and *to* 'that'. The linguistic marking of topic/comment structure in Russian is extremely complicated, with word order and intonation probably the two single most clear indicators of sentential-level topic (Yokoyama 1986). The particle -TO establishes a topic frame, signaling the selection of one of a number of potential topics as the local-level topic. It occurs with this function in both spoken and written discourse, as illustrated in examples (6) and (7).

In example (6), prior to line 2 the discussion had been about crime in the US and in Russia, contrasting the situation in the two countries. (This conversation was recorded in Moscow):

(6) Tanja asks about crime in Moscow as compared to the US:

1 L: *V N'ju-Jorke ne to čto ja bojus' xodit' po ulice, no /*
in New York neg that I fear to walk along street but

2 T: *Net, NU u nas-**TO***
no NU by us-to

3 *v centre ešče osveščaetsja*
in center still is lit

4 *A VOT na okrainax*
A VOT in outskirts

5 *VOT krajnie rajony Moskvy novostrojki,*
VOT edge regions of Moscow new buildings

6 *ix nazyvajut spal'nymi rajonami*
them call (3rd pl) sleeping regions

L: 'It's not that I'm afraid to walk along the street in New York, but
T: No, NU but here-TO, the center [of town] is still lit, but on the outskirts, on the outer regions of Moscow, the newly built areas, they're called sleeping regions'

The particle -TO in line 2 specifies Moscow as the current topic; it establishes the topical frame to which the remaining utterances are predicated. The preceding context established a number of potential local topics, such as the US, Russia, New York or Moscow. -TO denotes the local-level topic as selected from a previously established set of potential topics Example (7), from a written text, demonstrates a similar use of -TO:

(7) Strugackij and Strugackij 1992:30

1 *U menja bylo neskol'ko voprosov k kotu Vasiliju, da i rusalka, živuščaja*
by me were several questions to cat Vasilij and mermaid living

2 *na dube, predstavljala opredelennyj interes, xotja vremenami mne*
on oak presented particular interest although at times to me

3 *kazalos', čto ona-to mne vse-taki prisnilas'. Ja ničego ne imeju protiv*
seemed that she-TO to me still dreamed I nothing neg have against

4 *rusalok, no ne predstavljaju sebe, kak oni mogut lazit' po derev'jam*
mermaids but neg imagine to self how they can climb around trees

'I had several questions for the cat Vasilij and the mermaid, who was living in the oak tree, was of particular interest, although at times it seemed to me, that I was nonetheless dreaming her up. I have nothing against mermaids, but I can't imagine how they can climb around in trees'

In the immediately preceding text two potential topics are introduced: the cat Vasilij and the mermaid. This example provides an especially clear illustration of the use of -TO because it is arguably syntactically unmotivated. Pronominal reference here is unambiguous. Here it is a clitic on the pronoun *ona* 'she', whose referent, *rusalka* 'mermaid', is morphologically feminine, while *kot* 'cat' is masculine. In line 1 of this excerpt, both the cat and the mermaid are introduced as possible future topics. In line 3 the mermaid is selected as topic for lines 3 and 4. What -TO does is mark the saliency of a given referent in terms of local-level topic; its use signals selection of that topic from a set of possible topics.

5. *VED'*: Indexing background knowledge

The particle VED' is used to reference background knowledge which the speaker assumes is shared but is not currently in the discourse. Prior to its introduction with VED', this "content" or knowledge has not been linguistically introduced or invoked in the discourse, and it is not inferrable. Similarly, it is new in that sense where new contrasts with given, as defined by Chafe 1971, where given is that knowledge or information which the speaker assumes is in the hearer's consciousness. That is to say that this background knowledge is assumed by the speaker to be shared by the hearer but not in his or her consciousness. In contrast to the other modal particles which I have discussed here, *ved'* retains some lexical value, etymologically it is the imperative of the verb OR *vědě*, related to the IE

perfect 'I saw', as in Latin *vidi*, with the interpretation of the perfect 'I saw' as having resultative or evidential meaning, 'I saw therefore I know'.

In the first ten lines of the following example, somewhat abridged here, the speaker discusses a small town outside of Moscow which seems to be unaffected by the recent economic and political upheavals. In line 11 Maksim begins to argue with her. VED' serves to signal that his utterance is topically relevant and that the existence of these commercial stands is known, although not previously introduced into the discourse, and indisputable. Here it provides for a thematically smooth transition between turns, where there are no obvious lexical or other cohesive ties:

(8) Tanja discussing her parents' town:

1 T: *U nix ne došlo ni putč, ni pere- VOT èto VOT/*
by them neg come neg putsch neg pere- VOT this VOT

2 *antialkogol'nye zakony, ni / vybory tam //*
anti-alcohol laws neg elections there

[omitted approximately 6 lines describing the town]

10 *tak čto vse otnositel'no=*
so that everything relatively

11 M: *=no VED' i tam že pojavilis' kommerčeskie palatki* [???
but VED' emph. there emph. appeared commercial stands

12 T: [*da, da*
yes yes

T: '[Nothing has changed there.] There's been no putsch, no pere- VOT this VOT, no anti-alcohol laws, no election.[...] So that everything is relatively=

M: =but VED' commercial stands have appeared there, right? [??

T: [yes yes'

In examples like (8) VED' serves several discourse functions. It references knowledge that the speaker presupposes to be known or shared by the interlocutor but has not been linguistically invoked in the discourse. Furthermore, it serves coherence relations in that its use asserts that this knowledge is relevant to the discourse topic, and in this is in compliance with the Gricean maxim of relevance (Grice 1975).

6. *VOT* for exophoric reference

Lastly, certain deictics are used exophorically, to index entities in the physical environment, the text setting. In this, they provide links between that setting and the linguistic text and text content. This is illustrated in (9), where VOT functions as a presentative demonstrative deictic. In both lines 1 and 2 the indexical

function of VOT is clear as its utterance is accompanied by a physical gesture, pointing to the parts of the text setting which are being referenced:

(9) looking at a picture of a boy, describing his boots

1 *takie sapogi možno do samogo **VOT*** (points to own leg) *verxa odet'*
such boots possible to very VOT top put on

2 *Oni tak **VOT** imenno **VOT*** (points to picture) *tak odevajutsja i snimajutsja*
they so VOT exactly VOT so put on and take off

'This kind of boots can be put on to the very top of your calves. They are put on and taken off exactly this way'

Here the verbal and physical gestures combine to incorporate the picture and the speaker himself into the discourse. Although exophoric reference is not textually cohesive (Halliday and Hasan 1976:18), it is important in terms of discourse coherence because it anchors the linguistic text to the text setting.

7. Conclusion

A variety of linguistic devices function as discourse deictics in Russian. Spatial and temporal prepositions and adverbs provide the basis for directional discourse deictics, which reference the linguistic text as if it had either spatial dimensions or temporal properties. The discourse These deictics serve to link the linguistic text with the text content and the text setting, and to reference background (or unused but accessible) knowledge. By signaling the saliency of a referent, discourse deictics function to foreground that referent, making it the figure against the background of the text. At a local, sentential level they mark topic-comment structure, thereby serving local cohesive ties. At the discourse level, they signal saliency of referent and foreground and background relations. Furthermore, they create coherence on a global level by signaling boundaries (openings and closings) of topical units and by tracking the sentential-level topic. These deictics are also used to index background knowledge, bringing it into the discourse. In this, they serve local cohesive relations and help maintain global coherence.

NOTES

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[2]Here and throughout the following transcription system is used:
= no pause between utterances ???- unintelligible
underlining - increased volume [overlap

/ short unmeasured pause // longer unmeasured pause

All examples are taken from my fieldnotes, unless otherwise marked.

[3]This example comes from a collection of published texts; the pause between lines 5 and 6 is unmeasured but longer than a pause marked //, as at the end of line 3.

[4]This is an instance of what Chafe 1976:51 calls a *topic as a premature subject.*. Such topics are frequently found in colloquial Russian speech.

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A Third-Sex Subversion of a Two-Gender System*

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The *hijṛās* occupy a precarious position in the Indian social matrix, as their ambiguous gender identity provokes conflicting feelings of respect, ridicule, and contempt. Often discussed as a "third sex" by anthropologists, most of India's hijṛās were raised as boys before taking up residence in one of the many hijṛā communities which extend to almost every region of India. Since the late 1980's, a number of European and American cultural theorists (e.g., Nanda 1990, 1993, 1994; Bullough and Bullough 1993) have pointed to the visibility of the hijṛā in Indian society in order to articulate the cultural possibility of a more liberating, non-dichotomous organization of gender. Yet the lifestories of the Hindi-speaking hijṛās I interviewed in Banaras with Veronica O'Donovan during 1993 reflect a very different reality from that suggested by Nanda—a reality based on familial rejection, cultural isolation, and societal neglect. When the hijṛā lifestyle is discussed with respect to this contemporary reality instead of historical or mythical representation,[1] their identification as a uniquely situated third sex becomes much more complicated. In their narratives, the hijṛās seem to view themselves not as the title of Nanda's (1990) book *Neither Man nor Woman* suggests, but rather as "deficiently" masculine and "incompletely" feminine. It may be liberating to believe in the existence of an alternative gender which is not limited by societal expectations, but even the hijṛā must create self-identity by resisting and subverting a very real and oppressive gender dichotomy—a dichotomy that becomes very apparent in the hijṛās' own use of feminine and masculine speech.

Although anthropologists and sociologists have alluded to the hijṛās' unusual speaking styles in their research (Freeman 1979; Lynton and Rajan 1974; Nanda 1990), no one has attempted to analyze the hijṛās' speech patterns from any sort of linguistic perspective. Lynton and Rajan (1974) remark that the Hindustani-speaking hijṛās they interviewed "use 'he' and 'she', 'him' and 'her', indiscriminately" (p. 192)—a misleading statement since gender is marked not on pronouns, but on verbs and adjectives.[2] Similarly Nanda (1990), in the introduction to her ethnography published almost two decades later, explains somewhat simplistically that "Indian languages have three kinds of gender pronouns: masculine, feminine, and a formal, gender-neutral form" (preface, xxii). Nanda interviewed hijṛās from a variety of different linguistic communities, her conversations mediated by translators in Gujarati, Hindi, and Panjabi. Like Lynton and Rajan before her, she asserts that there is no apparent reason for the hijṛās' alternations between these feminine and masculine forms, claiming that the choice of gender is completely arbitrary. But in defining all "Indian languages" as having three kinds of gender pronouns, Nanda makes a gross generalization, especially since India hosts well over 2,000 languages and dialects within its borders from a variety of language families. My reason for mentioning these incorrect synopses of linguistic gender in

previous research on the hijṛās is not to dismiss such studies as invalid, but rather to illustrate how anthropological fieldwork can be enhanced by an increased awareness of, and attentiveness to, linguistic phenomena. Nanda's work in particular, as the first ethnography to take the hijṛās' own lifestories as primary, is an essential contribution to anthropological research. Yet her study would have been even more informative had she approached the hijṛās' life narratives from a linguistic perspective as well as an anthropological one.

Although the three Hindi-speaking communities O'Donovan and I spent time with in Banaras are isolated from one another both physically and ideologically, patterns of gesture and speech occur and reoccur. Constrained by a linguistic system which allows for only two morphological genders, Hindi-speaking hijṛās, when uttering phrases that are self-referential, must gender themselves as either feminine or masculine. In contrast to the assertions made by Lynton and Rajan (1974) and Nanda (1990), I found that the hijṛās, in their daily interactions, alternate between feminine and masculine speech in order to express relations of power—alternations that reflect hierarchical orderings of power in the dualistic gender system that excludes them. Their use of language reflects a lifestyle that is constantly self-defining, as they study, imitate, and parody dichotomous constructions of gender in an effort to gender themselves. Since verbs and adjectives in Hindi are marked for feminine and masculine gender, with verbs being marked in all three persons, the hijṛās' attempts at alternating constructions of female and male selves becomes apparent in quite basic choices of feminine and masculine verb and adjective forms.

The alternation between feminine and masculine self-reference in Hindi is quite easy to discern linguistically. The past tense of the verb *honā* 'to be', for instance, is realized as *thā* with masculine singular subjects, *the* with masculine plural subjects, *thī* with feminine singular subjects, and *thĩ̄* with feminine plural subjects.

TABLE 1. *Past tense forms of* honā *'be, become'*

	Masculine	*Feminine*	*English translation*
Sg. 1	*maĩ thā*	*maĩ thī*	I was
Sg. 2	*tū thā*	*tū thī*	you (intimate) were
Sg. 3	*vah thā*	*vah thī*	he was/she was
Pl. 1	*ham the*	*ham thĩ̄*	we were
Pl. 2	*tum the*	*tum thĩ̄*	you (familiar) were
Pl. 3	*ve/ap the*	*ve/ap thĩ̄*	they/you (formal) were

The habitual, progressive, and intransitive perfective verb forms in Hindi similarly show gender concord with the subject. These three aspectual tenses are formed by the addition of suffixes and verbal auxiliaries to the verb stem: aspect is indicated through the addition of explicit markers of various kinds to the stem; tense is indicated through the presence of one of the basic forms of *honā* 'to be' (i.e., present, past, presumptive, subjunctive). Again, the appearance of one of the vowels *-ā*, *-e*, *-ī*, or *-ĩ̄* signals the number (singular vs. plural) and gender (feminine vs. masculine) of the subject of the verb.

TABLE 2. *Selected examples of first person verbal marking with* jānā *'to go'*

Verb tense	*1st person masculine*	*1st person feminine*	*English translation*
Future	*maī jāũgā*	*maī jāũgī*	I will go
Past	*maī gayā*	*maī gayī*	I went
Present Habitual	*maī jātā hũ*	*maī jātī hũ*	I go
Past Habitual	*maī jātā thā*	*maī jātī thī*	I used to go
Present Progressive	*maī jā rahā hũ*	*maī jā rahī hũ*	I am going
Past Progressive	*maī jā rahā thā*	*maī jā rahī thī*	I was going
Simple Perfective	*maī gayā*	*maī gayī*	I went
Present Perfective	*maī gayā hũ*	*maī gayī hũ*	I have gone
Past Perfective	*maī gayā thā*	*maī gayā thī*	I had gone

Inflecting adjectives also agree with the nouns they modify in gender, number, and case, with *-ā* or *-e* agreeing with masculine nouns and *-ī* with feminine nouns.[3] Moreover, inflecting postpositions agree with the gender of the head noun, so that, for example, the postposition translated into English as 'of' will appear as *kā* when modifying a singular masculine noun, *ke* when modifying a plural masculine noun, and *kī* when modifying a singular or plural feminine noun. The hijṛās' varied use of these forms, as well as their varied use of first, second, and third person verbal forms, reflects a unique dual-gender position in a society that views them as neither fully feminine nor fully masculine.

Since the majority of hijṛās are raised as boys, they must learn how to project a new gender identity when they adopt the hijṛā lifestyle—an identity which distances itself from masculine representations in its appropriation of feminine dress, social roles, gesture, and language. These appropriations often become self-conscious emblems of gender construction in the hijṛās' narratives. Sunita, for instance, who although once associated with a hijṛā community in Banaras now lives outside of the city with a male companion,[4] views gender as something to be put on in the way one would put on a *sāṛī* (a dress traditionally worn by Indian women), an investiture which eventually leads to the acquisition of women's language:

(2) When I have put on a *sāṛī*, then I have to act like it. If I walk around like a man, then what's the advantage to wearing a *sāṛī*? When I've put on a *sāṛī*, grown out my hair, and put on earrings, I've become a woman so I will live as a woman. Emotions inside mean nothing. When I wear a *sāṛī*, I am a woman only. I walk like a woman. I laugh like a woman. Those who come here to be hijṛās--those who understand everything about themselves--will begin to dance and sing. Then everything happens. Whoever knows his heart will feel at home. Whoever doesn't know his heart won't think right. If she wears a *sāṛī*, then she has turned into a woman. It is then that she will speak in the feminine.

Sunita continues this discussion by explaining that when she looks like a woman, she correspondingly walks, laughs, and talks like one, employing feminine-marked verb forms like those mentioned in excerpt (3) below, among them *khātī*^{f} *hũ* 'I eat^{f}' and *jātī*^{f} *hũ* 'I go^{f}'.[5] Alternatively, she explains that when she wears a *kurtā* or *lũṅgī*, both of which are clothes traditionally worn by North Indian men, she speaks as a man, employing masculine-marked verb forms like *khātā*^{m} *hũ* 'I eat^{m}'

and *jātā*^{m} *hū̃* 'I walk^{m}':

(3) *ādmī kā bāt karnā hogā, to mẽ sāṛī pahan nahī̃ lū̃gī*^{f}*/... jab sāṛī pahan lū̃gī*^{f}*, ham mẽ se to aurat kā bāt hogā, ... jab sāṛī nahī̃ pahan lū̃gī*^{f}*, *tab mard kā bāt// ... hā̃/ jaise mẽ luṅgī kurtā pahan lū̃gī*^{f}*, ... tab "khātā*^{m} *hū̃," "jātā*^{m} *hū̃," hote haī/ ... sāṛī pahankar aurat vālā boltī*^{f} *hū̃, "khātī*^{f} *hū̃," "jātī*^{f} *hū̃"// ... kuch nahī̃ diqqat hotī hai, ... to jo jāntā hai to jāntā hī hai na? ... to jāntā hī hai, ... ki hijṛā hai/... abhī sāṛī pahan liyā abhī lūṅgī kurtā pahan liyā to mard kī tarah mardānā ho gayā//*

If I'm going to have a conversation with a man, then I won't wear^{f} a *sāṛī*. When I wear^{f} a *sāṛī*, then among us the conversation will be in the feminine; when I don't wear^{f} a *sāṛī*, *then it's men's conversation, yes. For example, if I wear^{f} a *lūṅgī-kurtā* [dress and shirt worn by North Indian men], then it's like, "I eat^{m}," "I go^{m}." [But] when wearing a *sāṛī*, I speak^{f} like a woman, "I eat^{f}," "I go^{f}." It's not difficult. He who knows just knows, right? He just knows that he's a hijṛā. Now he's put on a *sāṛī*, now he's put on a *lūṅgī-kurtā*, so he's become masculine like a man.

Yet even though Sunita describes the acquirement of feminine speech as an unconscious process which merely coincides with the decision to wear a *sāṛī*, she is critically aware of the social meanings attached to her linguistic choices. In her conversations with us, Sunita almost always referred to herself in the first person feminine, yet she adamantly explained that her choice of linguistic gender is variable, and moreover, that this choice is intimately bound up with the role she decides to play in an interaction. It is when she wears men's clothes, she later elaborates, that she gives orders to her housemates or speaks more formally with a non-hijṛā man, using the polite form of the imperative. This style of speaking is at odds with the self she presents when she cooks breakfast or dinner in the kitchen, an activity which prompts her to chat casually with other hijṛās and neighborhood women in feminine speech, using intimate and familiar forms of the imperative.

Sunita's choice of language, then, is contingent not only upon the social role she is performing at the moment, but also upon the addressee, whose gender calls for an appropriate level of politeness. She is highly aware of the fact that her speech changes with the gender of the hearer, explaining in excerpt (4) that when she converses with a woman she speaks as a woman; when she converses with a man she speaks as a man.[6]

(4) *mujh ko koī bāt nahī̃ lagtā hai/ maī aurat jaisī boltī*^{f} *hū̃, ... ādmī se ādmī jaisā bāt kartī*^{f} *hū̃, ... *jo jaisā miltā hai us se vaisā hī bāt kartī hū̃// ... jaise koī ā gayā to kahtā hai* [in rapid speech, falling intonation], *"kyā bāt hai"// ...*

It's just not a big deal to me. I speak^{f} like a woman, [but]with a man I speak^{f} like a man. I speak^{f} just like the person I meet. For example, if someone [a man] just came over then it would be like [in rapid speech, falling intonation], "What's the problem?"

jaise hamāre ghar par koī ā gayā, to us se mẽ aur khānā na banũgī^{f}*, ki* [in slow speech, rising intonation] *"maĩ jā rahī*^{f} *hũ̃," "maĩ khā rahī*^{f} *hũ̃,"... na?*	For example, if someone came to my house and I [didn't want to] cook^{f} any more food for him, then it's like [in slow speech, rising intonation], "I am going^{f}," "I am eating^{f}." Right?

By the end of the passage, however, it becomes clear that when Sunita claims, "I speak just like the person I meet," she actually means that she makes her speech correspond to the level of intimacy she feels with the addressee. If a male stranger comes by her house uninvited, then using rapid speech and falling intonation, Sunita will respond *kyā bāt hai* 'what's the matter?'—a response which for her represents "men's language." Yet if the male visitor is someone she is intimate with, and even more importantly, if he is someone who wants her to perform a task that she does not want to perform, then she will employ feminine-marked phrases like *maĩ jā rahī*^{f} *hũ̃* 'I am going', *maĩ khā rahī*^{f} *hũ̃* 'I am eating', using slow speech and rising intonation. Sunita later comments that she employs the latter, more-feminine style primarily in her conversations with male friends, who allow her to become fully feminine. By assuming what she refers to as a submissive and coquettish posture, she is able to have *hā hā hī hī*—an interjection which connotes pleasure, laughter, and flirtation.

The acquisition of a feminine persona is not an easy transition for all hijṛās, nor is the female/male gender construction as clearly delineated as it is for Sunita in her narratives. Priya, a hijṛā from one of the hijṛā communities in Banaras, wrestles with the symbolic import of feminine and masculine speech in her everyday interactions. Unlike the other hijṛās we interviewed, Priya leads a quiet and secluded life away from her group, seeing her fellow hijṛās only during their morning song and dance performances. In the home she shares with a small family, she dresses and speaks only as a man so that her housemates will feel comfortable with her presence, her femininity visible only in her topknot, earrings, nose ring, and understated eye make-up. Priya spent the first sixteen years of her life as a boy, yet never felt wholly comfortable with this role, ultimately deciding to undergo castration so as to adopt the hijṛā lifestyle. Since she had spent most of her boyhood adhering to male roles and representations, this transition was not an easy or fluid one. She explains in excerpt (5) that the acquisition of women's speech in particular was a long and laborious process, so much so that it eventually interfered with her status as a hijṛā since group members "always and only speak as women when together." Her hijṛā peers, for instance, aware of the trouble she was having from the outset, would jokingly refer to her as *bhaīyā* 'brother' or *cācā* 'uncle', designations which brought her great grief:

(5)	*ghar mẽ, to ... mardānā pahle the*^{m}*/ to mardānā bolī bolte-bolte*^{m} *haī/ ... jab hijṛā ko jānā paṛtā hai to parivartan karnā paṛtā hai,*	[Hijṛās] were^{m} masculine before, so in the home they are always speaking^{m} in the masculine. When the hijṛā has to leave, he has to make a change.

vahī̃ to bole^{m} na beṭā/... jab ghar se āyā^{m}, ... jab ghar se ayā^{m}, to ghar kī bolī mardānā to mẽ, to mardānā bolī bolā^{m}/ ... bhaīyā ko bhaīyā bol rahe haī, cācā ko cācā bol rahe^{m} haī/ ... aise bol rahe^{m} haī// to usko parivartan karne mẽ ṭāīm to lagta hī hai/ ... to usko parivartan karne mẽ ṭāīm lagta hai// bolte-bolte bolte-bolte, ... ādat ho gayī--... sat-chah mahīne mẽ//	Here they didn't speak^{m} like boys. When I left^{m} home- when I left^{m} home, my speech at home was masculine so I spoke^{m} masculine. Everybody was calling^{m} me *bhaīyā* 'brother', *bhāīyā*, they were calling^{m} me *cācā* 'paternal uncle', *cācā*, they were speaking^{m} like that. So it took a lot of time to make a change, it took time to make a change. But after speaking and speaking for a very long time, it eventually became a habit--in about six or seven months.

Priya's transition from male to female speech, then, was a highly conscious process, one that required several months of practice (or in Priya's own words *bolte-bolte bolte-bolte* 'speaking and speaking, speaking and speaking') before it *ādat ho gayī* 'became a habit'. It is interesting to note that Priya, unlike Sunita, consistently employs the masculine first-person singular, using masculine-marked verbs like *āyā*^{m} 'came', instead of the feminine counterpart *āyī*^{f}.

Throughout her conversations with us, Priya emphasized again and again how necessary it is for hijṛās to achieve fluency in women's language. Indeed, the use of feminine speech is so expected within the hijṛā community that the use of masculine reference will provoke angry retaliation. Priya adds in excerpt (6) that hijṛās "even give curses like women"—meaning that they refrain from using those curses which involve negative reference to the addressee's mother or sister:

(6)	*nahī̃/ banāras mẽ nahī̃ haī/ .. banāras mẽ koī mardānā janānā--koī pasand nahī̃ kartā haī/ ... mardānā kah do to jhagṛā kar lẽgī^{f} / .. apne logõ mẽ to bolẽgī^{f} to aurat jaisā/ ... gālī bhī dẽgī^{f}, to aūrat jaisā/ ... mardānā gālī nahī̃ dete^{m} haī hijṛā/ .. auratõ jaisā/ abhī nahī̃ kahẽngī^{f} "terī mā̃ kī," "terī bahan kī," nahī̃ kahẽngī^{f}/ ... ye gālī nahī̃ dẽngī^{f}/ ... auratõ kī tarah// ... mardānā log kahte^{m} haī, "terī mā̃ kī," "terī bahan kī"/ ... "vo salī" ādi, ... ye .. "vo choṭā sālā," .. uṭāẽgī^{f} vo nahī̃ //*	No, it's not that way in Banaras. In Banaras, no one--no one likes to be known as a man. Address someone in the masculine and we'll^{f} fight. Among ourselves we speak^{f} like women. We even give^{f} curses like women. Hijṛās don't give^{m} curses like men, but like women. So we will never say^{f} "your mother's..." or "your sister's... ," we won't say them. We won't give^{f} these curses. [We curse] like women. Men say^{m} "your mother's... ," "your sister's...," "she's a *sālī*" ['wife's sister'; a term of abuse directed to women], etc, these kinds, "he's a little *sālā*" ['wife's brother'; a term of abuse directed to men]. We won't say^{f} that.

It is interesting that when Priya includes herself as a member of the hijṛā community and speaks in the first-person plural, her self-reference switches from the masculine to the feminine. When explaining how she and the other hijṛās in her community

curse, for instance, she employs feminine-marked future forms, among them *jhagṛa kar lẽgīf* 'we will fightf', *bolẽgīf* 'we will speakf', *gālī bhī dẽgīf* 'we will givef curses', *kahẽgīf* 'we will sayf'. Although she identifies herself as masculine when referring to herself independently of other hijṛās, she constructs herself as feminine when viewing herself as part of the larger community, a community which aggressively identifies itself as feminine. This is perhaps related to the fact that she almost always refers to hijṛās collectively in the feminine. In excerpt (5) she used the masculine, but her choice of gender there seems to be determined by the term *hijṛā* itself, a noun which is grammatically masculine and which acts as the understood subject in most of her sentences.

The antipathy towards masculine linguistic forms which Priya alludes to in excerpt (6) is also reflected in the hijṛā naming system. When a new member enters the hijṛā community, she is given a woman's name to replace the name of her former, more male self. The hijṛās are discouraged from referring to each other with these remnants of their previous lives, yet tellingly, they often employ them in disputes. If a hijṛā is in a fierce argument with another member of her community, one of the most incisive insults she can give is to question her addressee's femininity by using her male name. This is perhaps symptomatic of the fact that hijṛās are intensely aware of how they are perceived, not only by their peers, but by other Indians as well. Sunita, for example, is critically aware of how she is addressed when outside of her home. While many men encounter her on the street by using the intimate imperative *cal haṭ*, a form which, when used between strangers, translates rudely as 'move it', she claims that others use the polite form *cal jāīe* or 'please move'. It is this latter group of people, she says, who are most likely to address her in the feminine form in public, an address which for her symbolizes respect.

Priya is also aware of the social meanings attached to her use of language, so much so that she hides her female speech and mannerisms while at home with her landlord's family, giving us glimpses of it only when she relays group interactions. In contrast to Sunita, then, who sees language as something which can be used to enhance the performance of a gender role, Priya sees language as a deeply personal matter. When explaining the structure of her own hijṛā community, she carefully frames her discussion in terms of father/son relationships, perhaps in an effort to make her explanation more acceptable to outsiders. When she describes why hijṛās like herself have chosen to live apart from the community, she compares the leader of the group to a father and its members to sons, explaining that "when families have several children, some sons live with their father, others live apart from him." She maintains this use of masculine kinship terms, however, only when speaking in the third person about other hijṛās from the adopted standpoint of an outsider. When she mimics her own interactions with other hijṛās in the community, especially when using first or second person to do so, she shifts to feminine speech. At a number of points in her conversations with us, Priya pointed out that the speech she was using was very different from the speech she would use in the hijṛā

community. When we questioned this claim, she produced as evidence a number of sample conversations that might occur among in-group members, employing feminine marking on first and second person verbs:

(7) *to ham logõ mẽ cācā vagairah nahĩ, kahte hai/ na, ki apne se mausī, mausī, kahẽgī*^{f}*/ ... mausī kahẽgī*^{f}*/ ... apne guru ko guru bolẽgī*^{f}*/ ... musalmān log rahẽgī*^{f} *to bolẽgī*^{f}*, khālā, ... khālā guru, ... aise ham hī bāt kartĩ haī// ... zyādātar se strīlĩg calta hai/ is mẽ/ ... strīlĩg, ... auratõ kī bātcīt is se caltī hai// ... jab sath-sath rahatī*^{f} *haī, to hameśā strīlĩg mẽ bāt kartī*^{f} *haĩ/ ... abhī ki vo ā jāẽngī*^{f}*, to ham isī kapṛe mẽ haĩ, magar bāt vahĩ hogā/ ... "kyõ gayī*^{f} *thī*^{f}*," "kahā̃ thī*^{f}*," "kya kar rahī*^{f} *thī*^{f}*," "kahā̃ gayī*^{f} *thī*^{f}*," ... "to badhāī kyũ nahĩ āyī," "khānā khāogī*^{f}*,"/ ... āpas mẽ ham log aise hī boltī haī, "maī kar rahī*^{f} *hũ̃," "maī jā rahī*^{f} *hũ̃," "maī khā rahī*^{f} *hũ̃"//*

So among ourselves *cācā* 'paternal uncle', etc., isn't said, we call^{f} ourselves *mausī* 'maternal aunt', *mausī*, we say^{f} *maũsī*. We call^{f} our *guru guru*. If Muslim people are present^{f}, they'll say *khālā*^{f} 'maternal aunt' [an urdu term], *khālā guru*. This is the way we talk^{f}. Mostly it's in the feminine--in the feminine. It's like the conversation of women. When we're^{f} together, we always talk^{f} in the feminine. If someone [a fellow hijṛā] were to come here right now, I'd be in these clothes [*lũṅgī, kurtā*], but our conversation would be like this: "Why had^{f} you [intimate] gone^{f}?" "Where were^{f} you [intimate]?" "What were you [intimate] doing^{f}?" "Why didn't the *badhāī* [expected payment for a performance] come?" "Will you [familiar] eat^{f}?" With each other we speak^{f} like this: "I am doing^{f}," "I am going^{f}," "I am eating^{f}."

Although Priya referred to her guru as *dādā* 'paternal grandfather' in the beginning of one conversation with us, she later refers to her guru as *dādī* 'paternal grandmother' when she reconstructs a group interaction which revolved around her, describing her by using feminine-marked adjectives.

In light of both Priya's and Sunita's clearly articulated reflections on their alternating uses of feminine and masculine speech, it is interesting that Aruna, the leader of a second Banaras community, adamantly insists that hijṛās never speak as men. Like Priya, Aruna creates a number of feminine-marked phrases as examples of hijṛā speech, together with a number of intimate second person imperatives, such as *tū khā le* 'you [intimate] eat!' and *tū pakā le* 'you [intimate] cook!' Since imperatives in Hindi are not marked for gender, Aruna's inclusion of these forms as examples of feminine speech works to support Sunita's claim that intimacy and familiarity is normally associated with women's language:

(8) *hã̃/ hameśā auratõ kī bolī boltī*^{f} *haĩ kabhī bhī ādmī ke jaisā nahĩ boltī*^{f} *haĩ/ ... jaise, "maĩ jā rahī*^{f} *hũ̃ jī" "jā rahī*^{f} *bahan," "tū khā le," "tū pakā le," "maĩ abhī ā rahī*^{f} *hũ̃"//*

Yes, we always speak^{f} women's speech. We never ever speak^{f} like a man. It's like, "I'm going^{f}," "sister is going^{f}," "you [intimate] eat!" "you [intimate] cook!" "I'm coming^{f} now."

Aruna usually makes linguistic claims like those in (8), however, only after issuing a stream of assertions which might be said to constitute the hijṛā 'party line', namely, that hijṛās never have castration operations, never have relations with men, never take on new names, and never speak as men. Aruna, who has a high-profile in her district of Banaras, is very aware of how her own self-presentation affects societal opinion, especially in light of the recent increase of anti-hijṛā violence in northern India; she is more interested than the other hijṛās in projecting a self that conforms to societal expectations—a self that is both ascetically motivated and anatomically determined. Although studies by Indian journalists and sociologists (e.g., Mitra 1983; Sharma 1989; Singh 1982) have worked to dispel the cultural myth that hijṛās are born as hermaphrodites, reporting in-depth about the life-threatening testicle and penis castrations that hijṛās endure, a large portion of Indian society still clings to the belief that all hijṛas were born with ambiguous sex organs. Aruna's insistence that the hijṛās have always had feminine names and have never spoken in the masculine serves to support this perception, affirming a cultural belief that the hijṛā lifestyle is not socially constructed, but rather something that begins at (or before) birth.

Most of the hijṛās we interviewed, with the exception of Priya who became a hijṛā as an adult, primarily employ feminine marked verbs when speaking in the first person or when speaking to other hijṛās in the second person. When using the third person to refer to other hijṛās, however, the hijṛās are much less consistent, their choice of marking dependent on the relative social status of the referent in question. When the hijṛās speak in the third person and express distance from the referent, particularly when the referent is perceived as either a superior or a subordinate, they tend to make greater use of the masculine; in contrast, when the hijṛās express solidarity or familiarity with the referent, they tend to make greater use of the feminine. In excerpt (9) below, for example, Sunita explains how the most well-known hijṛās in Banaras, namely Idu, Shanti, and Shabdana, came to be so important within the hijṛā community. When describing how hijṛās reach positions of power in the hijṛā network, and how she herself will someday aquire a position of power, Sunita switches back and forth between feminine and masculine reference. Hijṛās rely not only upon their own internal systems of law and order, but also upon elaborate familial structures which delegate various feminine roles to different members of the group, among them *dādī* 'paternal grandmother', *nānī* 'maternal grandmother', *mausī* 'mother's sister', *cācī* 'uncle's wife', and *bahin* 'sister'. Fundamental to this system is the guru-disciple relationship, which Sunita describes using only masculine terminology: she uses the masculine *dādā* 'paternal grandfather' and the masculine *celā* 'male disciple' instead of the feminine *dādī* 'paternal grandmother' or feminine *celī* 'female disciple'. Although Sunita sometimes employs feminine marking on the verb when referring to Idu, Shanti, and Shabdana, particularly in the first few lines of the following excerpt below when the three of them act as subjects of a particular action, she consistently employs the masculine kinship term *dādā* when relating their social status:

(9) *ye log banāras kā-- pahle-pahle banāras mẽ va*hī log thẽ*m*// ... ve log thī̃*f*, ve log mā̃gtī*f* thī̃*f*, khātī*f* thī̃*f*, ... to ... uske bād, jab itnā hijṛā āyā*m*, ... vo celā banātī*f* gayī, vo uskā*m* celā*m*, vo uskā*m* celā*m*, vo uskā*m* celā*m*, vo uskā*m* celā*m*, tar par tar tar par tar, ... ātā gayā/ ... tab nān[ā]*m* guru ban gaye*m*/ dād[ā]*m* guru ban gaye*m*, ... isī tarah/ ham log kā ek kõṭeśan hotā hai/ ... ham log kā bātcīt alag hotā hai/ ... hā̃/ jaise [in a soft voice] celā*m*/ ... nātī*m* parnātī*m*, ... hā̃ ... (?) sabhī log kahte haĩ, par ham logõ mẽ celā*m* hotā*m* hai/ ... dād[ā]*m* guru hotā*m* hai, pardād[ā]*m* guru hotā*m* hai, ... maīyā*f* hotī*f* haĩ, ... is tarah kā hotā hai/ jahā̃ bhi baṛā admī*m* rahtā*m* hai, isī tarah kahā jātā hai// baṛe logõ ko// ... maī yahā̃ kā*m* mālkin*f* hū̃, ... ab hamẽ koī āyegā*m* to uskā celā to hamārā*m* celā*m* ho jāyegā*m* ... ab phir dūsrā*m* āyegā*m*, to usko usko celā*m* kārā dū̃gī*f*, to maī dādī*f* ban jaū̃gī*f*, ... tab merā *hī nām rahegā, ... purānī*f* to maī ho gayī*f*, to merā nām usī tarah jaise vahā̃ purānī*f* ho gayī*f* to un logõ kā nām hai, ... mālkin*f* hai//

These people from*m* Banaras-- the very same people [Idu, Shanti, and Shabdana] were*m* in Banaras a long, long time ago. They were*f* here, they were*f* begging*f*, they were*f* eating*f*. Then after a while, when so many hijṛās came*m*, she [Idu] made*f* [someone] a *celā*m 'disciple', then he [made someone] his *celā*m, he [made someone] his *celā*m, he [made someone] his *celā*m, he [made someone] his *celā*m, and so on and so on it continued. Then they [Idu, Shanti, and Shabdana] became*m* a *nān[a]*m 'maternal grandfather' *guru*, then they became*m* a *dād[ā]*m 'paternal grandfather' *guru*. This is the way our system works. We have different words, yes, like [in a soft voice] *celā*m, 'disciple', *nātī*m 'grandson', *parnātī*m 'great grandson'. Everyone says [?], but among us it's *celā*m, it's *dād[ā]*m *guru*, it's *pardād[ā]*m 'paternal great grandfather' *guru*, it's *maīyā*f 'mother' [respectful]. Wherever an important person lives*m*, this is what is said--for important people. At this house I'm the *mālkin*f 'landlady'. If someone comes*m* to me now, then his *celā* will become*m* my *celā*m. If someone else comes*m* and I make*f* him his *celā*m, then I'll become*f* a *dādī*f 'paternal grandmother'. Then *even I will have a title, but only when I've become*f* old*f*. So in the same way that I'll have a name when I get*f* old*f*, those people have a name. [Now] it's *mālkin*f.

It is interesting that at the end of the passage, when Sunita imagines herself in the same position of power as these three elders, she refers to her future self with the feminine kinship term *dādī*. This shift indicates that Sunita feels obligated to use the masculine when signaling respect for, or distant from, the referent in question—an employment which is of course unnecessary when she refers to herself.

A different sort of distancing by use of the masculine gender occurs whenever Sunita refers to Muslim hijṛās, with whom, as a Hindu, she feels somewhat at odds. Although Muslims and Hindu hijṛās often live together harmoniously in the same communities—an arrangement rarely found in mainstream Banaras where the tension between Muslims and Hindus is quite pervasive—Sunita seems to feel

somewhat threatened by Muslim hijṛās, as they hold powerful positions within the Banaras hijṛā network, and indeed, throughout all of northern India. The distance Sunita feels towards Muslim hijṛās is reflected in her use of the singular *musalmān*, itself considered masculine, and in her employment of third person masculine-marked verb forms when Muslim hijṛās act as subjects, as in the short narrative reproduced in (10):

(10) *maĩ hindū hũ̃, to apnā hindū kā kām kartī, jo musalmān hai, vah apnā musalmān kā kām kartā*^{m} *hai, apnā dharm nibhātā*^{m} *hai, maĩ apnā dharm nibhātī*^{f} *hũ̃//*

I'm Hindu so I practice^{f} my Hindu customs, he who is Muslim practices^{m} Muslim customs. He performs^{m} his *dharm*, I perform^{f} my *dharm*.

This passage invites comparison with Priya's reference to Muslims in excerpt (7) above: *musalmān log rahẽgī*^{f}, *to bolẽgī*^{f}, *khālā, khālā guru* 'If Muslim people are present^{f}, they'll say^{f} *khālā*^{f} 'maternal aunt' [an urdu term], *khālā guru*'. Priya not only pluralizes the masculine *musalmān* to *musalmān log* 'Muslim people' so as to include the feminine, she also employs feminine-marked verb forms like *rahẽgī*^{f} and *bolẽgī*^{f}. Sunita's use of the third-person masculine in (10), then, perhaps reflects her own opininion that Muslims are below her on the social hierarchy, evidenced in her insistence throughout her interviews with us that Hindu hijṛās existed long before Muslim hijṛās, and moreover, that it is only hijṛās from low caste backgrounds who convert to Islam and eat meat.

A comparable instance of such distancing can be found in Aruna's references to Sunita. After a fairly serious argument with Aruna, Sunita left Aruna's community in Banaras and went to live with a male partner in a neighboring village outside the city. In a manner consistent with her claims, Aruna almost always uses feminine forms when referring to other hijṛās; yet when she refers to Sunita, who apparently insulted her authority as *mālkin* of her community, Aruna uses the masculine. Two examples of this employment are reproduced in excerpt (11):

(11) *bacpan se yahĩ kā*^{m} *hai/ ... ab jākar* [a neighboring village] *mẽ rah rahā*^{m} *hai/ ... merā jajmānī hai, to maĩ un logõ ko de detī hũ̃//*

He [Sunita] has been^{m} here since childhood, [but] now he left and is living^{m} in [a neighboring village]. It's the home of my patron, but I gave him away to those people.

Through the use of masculine-marked postpositions like *kā*^{m} 'of^{m}' and masculine-marked verb forms like *rah rahā*^{m} *hai* 'he is living^{m}', Aruna is perhaps signaling that Sunita is not only estranged from her, but also inferior to her.

An interesting kind of masculine self-reference sometimes occurs when the hijṛās refer to themselves as boys or tell of their childhood. As mentioned earlier, Aruna rarely employs masculine first person verbs, yet at two points in the telling of her lifestory—when she was recalling her past and explaining how she came to

realize that she was a hijṛā—Aruna does in fact employ the first-person masculine, as reproduced in (12):

(12) *hā̃/ maĩ bolī*^{f} *ki paṭna mẽ rahne se merā to beizzatī hogā/ merā ghar vālõ kī maĩ aisā dūr calī*^{f} *jāū̃, ki logõ mẽ beizzatī nahī̃ hogā/ ... koī log pūchẽnge, kahẽge, to kah dẽnge kī pānī mẽ ṛūbkar mar gayī*^{f}*/ ... merā gaṅgā jī ke kināre ghar thā, merā mā-bāp bolā ki "calo/ ... jāne do/ isko acchā lagegā"// ... to maĩ gyārah baje rāt ko āyā*^{m} *... apne ghar se/ ... maĩ apne guru ke yahā̃ pā̃c sāl se baiṭā*^{m} *huā*^{m}*//*

I told^{f} them that dishonor would come from my living at home. I would go^{f} so far away from the people at home that there would be no dishonor among them. If some people would ask them [about me]--would talk--they should say that I drowned in the water and died^{f}. My house was on the bank of the Ganges. My mom and dad said, "Come on, let him go, it will be okay." So at 11:00 at night, I left^{m} home. I was^{m} sitting^{m} at the house of my guru at five years of age.

During this short narrative, Aruna moves from feminine self-reference in the first line to masculine self-reference in the last two lines, shifting directly after she reproduces a childhood interaction between herself and her parents. Nanda (1990) alludes to similar linguistic shifts in the preface to her own ethnography when she explains her translation techniques, remarking that she translates pronouns which refer to the hijṛās as feminine, unless "referring to the hijṛā in the past, when he considered himself a male" (xviii, preface). The linguistic shift in the above excerpt perhaps reflects the fact that Aruna, like many of the other hijṛās we interviewed, has what might be called a discontinuous gender identity—an identity which gradually changed from masculine to feminine after arrival in the hijṛā community. As in the previous two examples, the hijṛā's use of masculine marking in this case might reflect her own distancing from her previous self, a self that continuously provides an unpleasant reminder that her femininity is appropriated instead of genuine.

The four hijṛās who make up a third community in Banaras, all born into Hindu families who ostracized them, have now adopted the religious practices of the Muslim families they live with—families who in many ways suffer a similar marginalization as residents of a city that is thought of throughout North India as the "holy Hindu city." The 80 year old Chandra is the *dādā* of the group, and after 69 years of speaking like a woman, we rarely heard her use any masculine speech. The third time we visited her, however, Chandra's favorite disciple had fled back to her own village after a serious financial scuffle with another community member. Chandra was feeling intense rage at the cause of this dispute, as well as deep grief for her loss. Wailing *merā beṭā, merā beṭā* 'my son, my son' and clapping in anger, Chandra screamed about the punishment that the hijṛā who precipitated the fight would receive, venting her anger entirely through use of the masculine first and third person. It would seem that for the hijṛās, as Priya suggests in excerpt (6), anger is an emotion which is best expressed in the masculine. Perhaps rage is a gut-level reaction that recalls the masculine forms that the hijṛā produced prior to her

entry into the community, or perhaps masculine forms are simply a dramatic and forceful tool for venting such rage. Regardless of the reason, the hijṛā is clearly aware of the social meanings such forms convey.

I would like to conclude this article by suggesting that such gendered negotiations, although perhaps particularly overt in the Hindi-speaking hijṛā community, are not unique to alternative gender identities; rather, women and men of all communities manipulate cultural expectations of femininity and masculinity in order to establish varying positions of power. Yet the structure of these manipulations is influenced by, and indeed sometimes determined by, societal ideologies of femininity and masculinity. While the Banaras hijṛās challenge such ideologies in their conflicting employments of masculine and feminine speech, their employment of linguistic gender is nevertheless influenced by a very traditional and dichotomous notion of gender. While they tend to make greater use of the masculine when conducting business, giving orders, speaking with men, or signaling distance from the referent, they are more likely to employ the feminine when requesting, cooking, flirting, speaking with other women, or expressing intimacy and solidarity. Occupying an ambiguously-situated position in a society that has marginalized them, hijṛās are perhaps more attentive to these linguistic ideologies than their non-hijṛā peers, enacting and contesting them in their everday projections of self.

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NOTES

1. For more extensive discussions of transsexuality in Indian tradition and mythology, see Goldman (1993), Nanda (1990), and O'Flaherty (1973, 1980).

2. The term *Hindustani*, although seldom used today, refers to one of the lingua francas which developed during the last two centuries as a result of increased trade and pilgrimages between linguistically disparate regions. Although for the British administration the terms *Hindustani* and *Urdu* were essentially synonymous, Indian speakers distinguished Hindustani from Urdu as a more colloquial and less refined language.

3. More precisely, masculine forms of inflecting adjectives end in *-ā* in the singular direct and *-e* in the singular oblique, plural direct, and plural oblique cases; the feminine forms always end in *-ī*, whether singular or plural, direct or oblique.

4. I have chosen pseudonyms for all of the hijṛās appearing in this article and have avoided giving the names of the three hijṛā communities we researched to preserve their anonymity. I have also chosen to use 'her' and 'she' to refer to the hijṛās since they prefer to be referred to and addressed

in the feminine. (It is interesting to note that when Indian journalists are sympathetic to the hijṛās they tend to refer to them in the feminine, but when unsympathetic they use the masculine.)

5. The superscripted *f* and *m* in the Hindi transcriptions and English translations stand for feminine and masculine marking, respectively. Other transcription conventions I have used include:

,	rising intonation, signaling more to come	< >	pauses of one second or more, measured
/	falling intonation, signaling more to come	*	syllabic emphasis
//	falling intonation, signaling conclusion	- -	false start
..	pauses of less than .5 second	" "	embedded quotation
...	pauses of more than .5 second, unmeasured	[ ]	extra-linguistic commentary

I have tried to transcribe each of the Hindi passages *as spoken*, maintaining any anomalies in gender agreement which occurred in the interviews. In excerpt (3), for instance, there are a number of markings which are inconsistent with standard Hindi, such as when Sunita treats the feminine noun *bāt* 'conversation' as masculine, modifying it with the postposition $kā^m$ instead of $kī^f$. These agreement inconsistencies are related to the fact that many of the hijṛās we interviewed spoke a number of languages and dialects, the most common of these being Northern Bhojpuri. Like Hindi, Bhojpuri features gender-marking in all three persons of the verb, although the distribution of these markings and their phonological realizations are quite different. I plan to discuss gender inconsistencies like those in excerpt (3), together with the hijṛās use of Bhojpuri, in a subsequent article.

6. Interestingly, Sunita's claim here parallels an earlier claim that she made when we asked her about her use of Bhojpuri as compared to Hindi. "When I speak with a Bhojpuri speaker I speak Bhojpuri," she explained. "When I speak with a Hindi speaker I speak Hindi."

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Parameters in the Syntax of Clitics

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0. Introduction

In this paper it will be argued that cliticization is a two-step process as in (1), consisting of movement of the maximal projection containing the clitic (DP) to a position where it receives case, and subsequent movement of the head of the moved projection (D^0) to an appropriate host, the highest functional head in the extended projection of V that is available to the clitic without violating the ECP.[1]

(1) $\ldots D^0_i + AGR \ldots [_{DP}\ t_i\ ]_j \ldots t_j \ldots$

The distance over which the clitic can move is determined by the distance over which the verb raises, which in turn is determined by lexical features on the heads in its extended projection (Pollock 1989, Chomsky 1991). The verb voids intermediate barriers, thus enabling the clitic to reach an appropriate host by means of head movement. Under this scenario parametrization of clitic movement is a side effect of parameters in the syntax of verbs.

1. Cliticization as Movement

Cliticization in Romance has a number of properties in common with instances of movement that involve maximal projections, thus supporting the hypothesis that syntactic movement is involved: clitics can move long-distance (2a), they obey the SSC (2b), they cannot strand a preposition (2c), they cannot move out of an NP if there is an overt possessor present (2d), and they trigger past participle agreement (2e), as illustrated with the following sentences from French.

(2) a. Jean les a entendu réciter par Paul
Jean them has heard recite by Paul

b. * Jean les a entendu Paul réciter
Jean them has heard Paul recite

c. * Paul lui a voté pour
Paul him has voted for

d. Paul en a vu une/*ma photo
Paul thereof has seen a/my picture

e. Christina les a peintes
Christina them has painted-AGR

Especially past participle agreement, a process associated with specifier-head agreement between the participle and a moved object NP which moves through its specifier (Chomsky 1991), shows that an analysis of cliticization solely in terms of head movement, as proposed by Kayne (1989, 1991) is insufficient (see also the discussion of ECM-verbs in section 5 below).

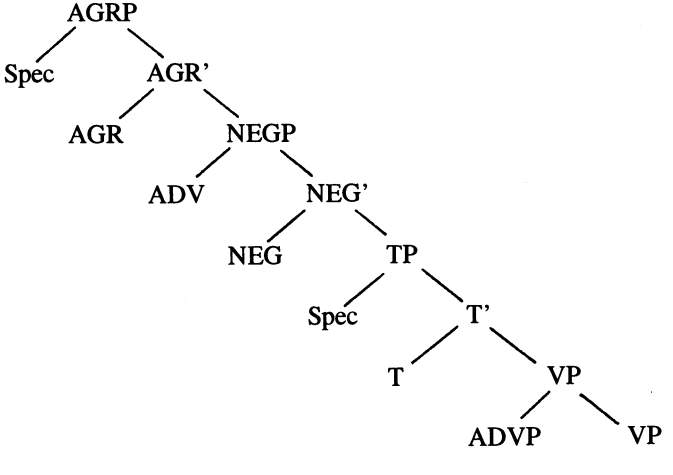
2. The Blocking Nature of Heads

The traditional arguments in favor of an analysis of clitic movement as an instance of head movement concentrate on the blocking effect of other heads, especially complementizers and negation. Upon closer scrutiny, however, the evidence turns out to be not very strong. Kayne (1989) gives examples like the following to illustrate the blocking effect of negation:

(3) a. Gianni non li vuole vedere
Gianni not them wants to see
b. * Gianni li vuole non vedere
Gianni them wants not to see

Whereas in (3a) the clitic can climb, because it does not have to cross negation, according to Kayne, such climbing is excluded in (3b), apparently because the clitic crosses negation. Italian infinitives, however, unlike their French counterparts, move all the way to AGR, appearing in a position preceding the base position of negation. The relative positions of functional heads in the extended projection of V in Romance is given below (Belletti 1992):

(4)



As the following sentences show, the infinitival verb must occur in a position preceding the negative adverb *più*, which indicates the base position of negation. The negative clitic *non* precedes the verb, because it must adjoin to an approriate host at s-structure.[2]

(5) a. * Per non più mangiare
for not anymore eat
b. Per non mangiare più
for not to eat anymore

When a pronominal clitic and the negative clitic appear together, the former is always internal to the latter with respect to the verb, as can be seen in (3a) above, i.e. the relative order is: negative clitic - pronominal clitic - verb. If this reflects the order of derivation, it means that the pronominal clitic has attached to the verb in its surface position before the negative clitic has. This means that the verb and the clitic must both have moved over the base position of negation when it was still occupied by the negative clitic. This, in turn, means that negation cannot by definition have a blocking effect for movement of pronominal clitics: the facts in (3) need to receive an alternative explanation (see section 6 below).

The blocking effect of an overt complementizer Kayne (1989) illustrates with the following contrast, once again from Italian:

(6) a. * Gianni li vuole che Maria veda
Gianni them wants that Maria see-SUBJ
b. Non ti saprei che dire
not you know-1S what to say

These examples seem to show that an overt complementizer blocks clitic climbing, whereas the presence of a wh-phrase in the specifier of COMP does not. It should be noticed that the contrast is only apparent: the (b)-sentence is marginal at best; the sentence is only acceptable with a second person dative clitic, but degrades with other clitics, presence of the negation on the matrix verb is a prerequisite, and only *sapere* can occur as matrix verb (see Moore 1991 for discussion of parallel facts in Spanish).

In general, though, intervening heads do not seem to have a blocking effect on clitic movement, as the following examples, where clitic movement takes place over a quantifier and a main verb, and an adjective and a copula, respectively, show:

(7) a. Christine en a lu deux
Christine thereof has read two

b. Paul leur est resté fidèle
Paul them is remained faithful

The fact that only a small subset of heads, viz. negation in multi-clausal structures, complementizers and other clitics (see section 6 below), block clitic movement needs to be explained. Another fact that needs to be explained is that clitics can escape L-barriers under certain conditions. In clitic climbing structures, the embedded verb raises over a certain distance, clearing the way for the clitic, because it voids barriers on its way, by lexicalizing functional heads; but since the verb never raises further than AGR, AGRP will by definition retain its barrierhood: it is governed by C, which does not L-mark it. The next section will deal with this problem.

3. L-Barriers and Specifiers

The notion of L-marking is defined as follows by Chomsky (1986: 24):

(8) Where α is a lexical category, α L-marks β iff β agrees with the head of γ that is θ-governed by α

The notion of agreement in this definition is motivated by a contrast in the acceptability of extraction from subjects: as the following cases from Spanish show, extraction from a subject in its base position gives a worse result than extraction from a subject that occupies the specifier position of the embedded CP. The only difference is that the CP is L-marked by the matrix verb, whereas the IP is not L-marked by C, so the difference must be explained in terms of precisely this difference in structure.

(9) a. * Esta es la autora [de la que]$_i$ [$_{IP}$ [varias traducciones t_i] han ganado premios internacionales]
This is the author by whom several translations have won international awards

b. [De qué autora]$_i$ no sabes [$_{CP}$ [qué traducciones t_i] han ganado premios internacionales
By what author don't you know what translations have won international awards

Unlike what has been proposed by Sternefeld (1991), the PP *de qué autora* cannot be interpreted as an independent satellite of the matrix verb; it must be interpreted as part of the subject. It can never remain in situ, while the embedded subject is moved, for instance:

(10) * Qué traducciones$_i$ no sabes de qué autora [t_i han ganado premios internacionales
Which translations don't you know by which author have won international awards

Specifier-head agreement is the only mechanism available to account for these facts. The following facts also support such an analysis (cf. Torrego 1988). As (11b) shows, *cuántos* cannot move over a wh-element. This means that in (11a) it cannot have moved out of the object position, but must have moved along to the specifier of the embedded CP as part of the questioned object.

(11) a. Cuántos$_i$ no sabes [$_{CP}$ [t_i de qué autora]$_j$ [$_{IP}$ mandar t_j]]
How many don't you know of what author to send
b. * Cuántos$_i$ no sabes si leíste [t_i de esos] el año pasado
How many don't you know whether you read of those last year

An alternative derivation, whereby *cuántos* has moved to the matrix clause before the object has been moved to the specifier of the embedded CP is ruled out for independent reasons, since under such a derivation the intermediate trace of the former would be covered up by the latter, and hence be irrecoverable, resulting in an illicit representation.

4. Clitic Climbing and Vacuous Movement

The fact that specifier positions of L-marked maximal projections are indirectly L-marked via specifier-head agreement, can also explain whether or not a language has clitic climbing. Consider the following well-known contrast between French and Italian: though these languages are closely related, clitic climbing in so-called restructuring contexts is possible in Italian but not in French.

(12) a. * Jean les veut voir
Jean them wants to see
b. Gianni li vuole vedere
Gianni them wants to see

This difference correlates with another difference between the two languages, viz. the distance over which infinitival verbs raise: as mentioned before, Italian infinitivals raise all the way to AGR; French infinitivals, on the other hand, can optionally raise to T, but no higher, as illustrated in the following examples, where the verb must follow the negative adverb (compare the sentences in (5) above):

(13) a. Ne pas comprendre l'italien
NEG not to understand Italian
b. * Ne comprendre pas l'italien
NEG to understand not Italian

This correlation between the distance over which the verb raises and the presence or absence of clitic climbing also holds in older stages of Romance (see Haverkort 1993), as illustrated by the following Old French sentences: the clitic can climb, and the infinitival raises to AGR, preceding the negative adverb.[3]

(14) a. Je la voudrai marier bien
I her want-FUT marry gladly
b. Car elle commencea à ne le chercher pas
because she started to NEG her to look for not

As a consequence of this difference in the distance over which the verb moves, a different number of barriers intervenes between the clitic in the embedded clause and the matrix AGR in Old French and Italian, and Modern French, respectively (barriers indicated in boldface):

(15) a. V $[_{CP}$ Spec $[_{C'}$ C $[_{\mathbf{AGRP}}$ NP $[_{AGR'}$ V+T+AGR $[_{TP}$ Spec $[_{T'}$ *t* $[_{VP}$ *t* clitic ...
b. V $[_{CP}$ Spec $[_{C'}$ C $[_{\mathbf{AGRP}}$ NP $[_{AGR'}$ AGR $[_{\mathbf{TP}}$ Spec $[_{T'}$ V+T $[_{VP}$ *t* clitic ...

In Italian and Old French, there is only one barrier intervening between the clitic in the embedded clause and its potential matrix host, viz. AGR; barrierhood of VP and TP has been voided by verb raising to AGR. The embedded CP is L-marked by the matrix verb, which selects it and assigns it a thematic role, so it is not a barrier. Under the definition of L-marking given in the preceding section, L-marking extends over the specifier of the CP, under specifier-head agreement. Thus, if the AGRP is vacuously moved into the specifier of CP, its barrierhood can be voided.

In Modern French, on the other hand, two barriers are intervening, since the verb has not raised further than T: AGRP and TP. Similar movement of AGRP to the specifier of CP is possible; that way, the barrierhood of AGRP is voided, but TP retains its barrierhood. Vacuous movement of TP into the specifier of AGRP does not have the desired effect: since C is by definition not an L-marking category: it is not lexical, and in this context it is not lexicalized by the verb. Consequently, the clitic cannot move out of the embedded clause, since then it would violate the ECP.

Vacuous movement of the barrier that contains the clitic to an L-marked specifier position accounts immediately for the marginal status of sentence (6b) above, and for the generally very degraded status of cases where a clitic climbs over a wh-phrase: the specifier of the embedded CP is occupied by the wh-phrase, and therefore not available as a landing site for the moved barrier; thus barrierhood cannot be voided by this mechanism when a wh-phrase is present.

5. A Dual Chain Analysis

An analysis along these lines predicts that clitic climbing should be possible in Modern French in cases where the infinitival complement is not a full-fledged clause. The complements of ECM-verbs, which select an AGRP instead of a full CP, are a case in point. As the following examples show, the subject of the complement of an ECM-verb can get assigned accusative case by the matrix verb, indicative of the fact that this verb is in a government relation with the specifier of AGRP (not surprisingly, since it selects and hence L-marks AGRP, and via specifier-head agreement L-marking is extended to the specifier of AGRP).

(16) a. Jean a entendu Paul réciter le poème
Jean has heard Paul recite the poem
b. Jean l'a entendu réciter le poème
Jean him has heard recite the poem

Since there is no barrier intervening between the position where the maximal projection containing the clitic gets case and the matrix AGR (after the matrix verb has raised), the subject clitic can climb from the specifier of AGRP (as in (16b)). Since nothing is blocking it, it must even climb, as the ungrammaticality of the following example shows.

(17) * Jean a entendu le réciter le poème
Jean has heard him recite the poem

The idea that clitic movement proceeds in two distinct steps, the first involving movement of the whole DP containing the clitic to a position where it receives case (the specifier of AGRP in the above examples), the second subsequent head movement to an appropriate host position, predicts that climbing of the object clitic should be impossible. This is corroborated by the facts:

(18) a. * Jean l'a entendu Paul réciter
Jean it has heard Paul recite
b. * Jean le l'a entendu réciter
Jean him it heard recite

The infinitival verb can raise to T, but no higher. This means that TP remains a barrier, unless its barrierhood can be voided somehow. Vacuous movement of the TP barrier into the specifier of AGRP is excluded in these cases, in view of the fact that that position is occupied by the subject DP; it is the position where the latter receives accusative case. The DP containing the object clitic gets accusative case in a position that is dominated by TP; hence, a barrier intervenes between the clitic and a potential matrix host, and the object clitic is forced to find a functional head in the embedded clause as its host.

Interestingly, the subject of an ECM-complement can also get dative or oblique case from a preposition; in that case, it does not occupy the specifier of AGRP, but occurs in post-VP position. The analysis proposed here predicts that in exactly those contexts, object clitics should be able to climb: the barrierhood of TP can be voided by moving it into the vacant specifier of AGRP, and consequently no barriers intervene between the object clitic and the matrix AGR (after the matrix verb has raised), forcing the object clitic to climb. The facts bear this prediction out:

(19) a. Jean l'a entendu réciter à/par Paul
Jean it has heard recite by Paul
b. Jean le lui a entendu réciter
Jean it him has heard recite

As the following sentences show, if both DPs are realized as clitics, they must both climb, since no barriers intervene between either one of them and the functional head in the matrix clause that acts as host position, i.e. AGR.

(20) a. * Jean l'a entendu lui réciter
Jean it has heard him recite
b. * Jean lui a entendu le réciter
Jean him has heard it recite

6. Adjunction and Substitution of Heads

The obligatory climbing together of the clitics can also be explained in terms of Relativized Minimality: both processes of cliticization are instances of adjunction, so in terms of Relativized Minimality, one clitic acts as a closer governor for the trace of the other, leading to an ECP-violation. As the following abstract representations show, the only configurations that are allowed in terms of Relativized Minimality are ones where the chains of the two clitics do not overlap, or ones where the two clitics are adjoined to the same head and therefore are not in an asymmetric c-command configuration with respect of each other.

(21) a. ... clitic$_i$ ... t_i ... clitic$_j$ ... t_j
b. ... clitic$_i$+clitic$_j$+AGR ... t_i t_j ...
c. * ... clitic$_i$+AGR ... clitic$_j$+AGR ... t_i t_j ...

Similar facts have been brought up by Aissen & Perlmutter (1983) in their discussion of clause reduction in Spanish:

(22) a. Quiero permitir-te hacer-lo
(I) want to allow you to do it
b. Quiero permitir-te-lo hacer
(I) want to allow you it to do
c. Te lo quiero permitir hacer
you it (I) want to allow to do
d. Te quiero permitir hacer-lo
you (I) want to allow to do it
e. * Te quiero permitir-lo hacer
you (I) want to allow it to do

Intermediate clitic traces do not exist, under the assumption that clitic move to the highest accessible host in one big swoop; barriers are voided by movement of the verb or via specifier head agreement (vacuous movement of the barrier into the specifier of an L-marked category). The verb and its intermediate traces in the head positions in its extended projection do not create a minimality barrier for the clitic traces in terms of Relativized Minimality, since verb movement is an instance of substitution, not adjunction, like cliticization. Thus two types of heads and head movement can be distinguished, on a par with A- and A-bar movement.

The problem noticed in the discussion above with regard to the blocking status of negation can be explained along similar lines. In sentences where the pronominal clitic ends up adjoined to the same head as the negative clitic, no Relativized Minimality violation arises (see (3a) above). In multi-clausal contexts, though, where the pronominal clitic climbs, but the negative clitic remains in the embedded clause, a context where Relativized Minimality is violated does arise: the negative clitic blocks the pronominal clitic from antecedent governing its trace, because it is a closer potential governor, since both instances of cliticization involve adjunction (see (3b)).

7. The Interplay of Syntactic and Lexical Factors

Clitic climbing is a process that is restricted by syntactic properties of specific languages, such as the distance over which the verb moves in the analysis sketched here, but there are also lexical factors at play: even in languages like

Italian that allow clitic climbing, there are restrictions, in that only a subset of verbs allows the clitic to leave its own clause. The analysis which makes use of vacuous movement of the barrier that contains the clitic into the specifier of an L-marked category allows a unification of these two factors.

Because clitic climbing by definition involves movement of a barrier into the specifier of the verb allowing the clitic to climb, licensing of the process can be expressed in terms of selection: the relevant verbs select for a CP with a specific agreement feature, μ, and some extension of the wh-criterion (Rizzi 1991) applies,[4] which requires agreement between the C and its specifier, forcing movement of AGRP into the specifier position of the embedded CP with appropriate matrix verbs.[5]

(23) **μ-criterion**

a. A μ-operator must be in a specifier-head relation with an $X^0[+\mu]$

b. An $X^0[+\mu]$ must be in a specifier-head relation with a μ-operator

Under this scenario, nothing would rule out vacuous movement in languages like French, where clitic climbing with so-called restructuring verbs is not allowed, in principle; the retained barrierhood of TP (due, in turn, to the fact that the verb has not raised beyond T) prevents the clitic from climbing under that perspective.

In terms of historical development, though, the class of verbs that allow clitic climbing decreases gradually (Galet 1971): even though syntactically the option of clitic climbing might still be open, in the sense that the verb still raises to the highest functional head in the clause, only leaving one barrier between the clitic and the matrix host, that barrier can never be voided, because vacuous movement into an L-marked specifier position is not licensed by the matrix verb, due to the absence of μ-selection.[6]

8. Conclusion

The approach to cliticization sketched in this paper has the advantage that no distinct parameters need to be invoked for the syntax of clitics. Different behaviors across languages are due to independently motivated differences in the syntax of verbs, which in turn are due to lexical features on the functional heads in their extended projection ($\pm$opaque or $\pm$strong, cf. Pollock 1989, Chomsky 1991), which license verb raising or do not. Schematically:

(24) features on AGR and T
↓
distance over which V raises
↓
distance over which clitics can move

In line with recent proposals in the literature, parametrization can thus be constrained to lexical features on functional heads, strongly restricting the power of parameters (cf. Ouhalla 1991).

Notes

1. In the Germanic languages, the second step involves movement of a maximal projection, too, unlike in Romance (Haverkort 1994).

2. Contrary to claims by Zanuttini (1991), Italian *non*, like its French counterpart, behaves as a clitic in a number of respects, adjoining to an appropriate host at s-structure. As the following example indicates, it moves along with the verb in instances of subject-verb inversion:

   (i) Suppongo non essere la situazione suscettibile ...
   suppose-1S NEG to be the situation susceptible ...

3. The loss of clitic climbing in 17th century French is also linked up with the simultaneous loss of V-raising to AGR in infinitival sentences (see Haverkort 1993).

4. The relevant bijective specifier-head agreement has already been extended in the literature to NEG, cf. Haegeman (1991).

5. This approach also provides an account of the impossibility of clitic climbing over an overt complementizer: the feature $[+\mu]$ is only compatible with empty finite complementizers.

6. This observation can help account for the fact that clitic climbing in French is impossible, even when the embedded infinitival verb has raised all the way to AGR, as with *avoir* (to have) and *être* (to be): in these cases, the final barrier cannot be voided because vacuous movement of it into the specifier of CP is not licensed. ECM-verbs on the other hand, have retained this licensing feature.

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Discourse Functions of Demonstrative Deixis in Tamil

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1. Introduction*

In a bibliographical note to the published version of his 1971 Santa Cruz Lectures on Deixis, Charles Fillmore begins by stating: "There isn't a great deal to read on the subject of deixis." Twenty-three years later, his statement is still true as regards the study of discourse deixis. While other scholars have evoked the term, little has been written that goes beyond Fillmore's original insight that deictic expressions can refer forwards or backwards in textual space, as in 'This is my explanation (i.e. what I'm about to say next)' and 'That (i.e. what I just said) was my explanation' (Fillmore 1975; cf. also Lyons 1975; Levinson 1983).[1]

There are good reasons however for investigating further the role played by deixis in connected discourse. First, deictics are high frequency items: personal pronouns, demonstratives, and time and place adverbs are encountered in virtually every text. Second, deictic expressions in discourse can often only be interpreted by appealing to systematic properties of textual and/or social organization. Finally, deictics grammaticalize over time as different kinds of grammatical operators — demonstratives, for example, become definite markers in many languages — and the evidence that such a process has begun is often apparent only from their behavior in text. A consequence of these facts is that anyone interested in text analysis, grammatical description, or grammatical change might well find a knowledge of discourse deixis useful.

In this paper, I analyze the use of demonstrative deixis in South Indian Tamil, a language which obligatorily encodes two degrees of proximity/distance in determiners and 3rd person pronouns.[2] The basic questions addressed are the following: In ordinary discourse, what leads Tamil speakers to choose a proximal demonstrative 'this' as opposed to a non-proximal demonstrative 'that'? Do the forms fulfill systematic textual functions, or is their distribution semantically conditioned? The findings reveal a variety of functions fulfilled by 'proximal' demonstratives in Tamil discourse, over and above their literal meaning of physical proximity in relation to a speaking ego. I characterize and illustrate each functional type, arguing that both the semantics of proximity and discourse reference are crucially involved in determining their use. In addition, the investigation makes clear that there are other types of discourse deixis in addition to that identified by Fillmore, thus indicating a potentially fertile ground for discourse-based studies of deixis in other languages.

2. Demonstrative deixis in Tamil

Demonstrative deixis in Tamil contrasts two degrees of distance in space and time: proximal *i-*, said to be reserved for referents close to the speaker, and non-proximal *a-*, which can be used to refer either to remote referents or to referents whose distance from the speaker is unspecified or irrelevant (Lehmann 1989: 94). Together with the interrogative prefix *e-*, they form a three-way morphological paradigm as shown in table 1.

Demonstrative deixis is obligatorily encoded on third person personal pronouns; no deictically neutral forms for 'he', 'she', 'it', or 'they' exist in Tamil, and thus every 3rd person pronominal reference forces a choice between *i-* and *a-*. Similarly, Tamil lacks deictically neutral definite articles but uses demonstrative

determiners *inta* 'this' and *anta* 'that' to signal identifiable referents; these forms also occur with high frequency in discourse.

	Determiners	Pronouns		Adverbs	
proximal	inta N 'this N'	itu	'this-it'	inkē	'here'
		ivan	'this-he'	ippō	'now'
i-		ival	'this-she'	ippati	'like this'
		ivar	'this-he (HON)'	ivvaḷavu	'this much'
		ivarkaḷ	'this-they'	etc.	
			'this-she (HON)'		
non-proximal	anta N 'that N'	atu	'that-it'	ankē	'there'
		avan	'that-he'	appō	'then'
a-		aval	'that-she'	appati	'like that'
		avar	'that-he (HON)'	avvaḷavu	'that much'
		avarkaḷ	'that-they'	etc.	
			'that-she (HON)'		
interrogative	enta N 'which N'	etu	'which-it'	enkē	'where'
		evan	'which-he'	eppō	'when'
e-		eval	'which-she'	eppati	'how'
		evar	'which-he (HON)	evvaḷavu	'how much'
		etc.		etc.	

Table 1: The deictic-interrogative paradigm in Tamil

The focus of the present study is the use of demonstrative determiners and pronouns in narrative discourse. The narrative prototype of 3rd person past tense involves participants and events which are logically remote from the narrator in time and space. Given the definition of proximal deixis found in Tamil grammars, one might expect that non-proximal *a-* forms would be overwhelmingly preferred in narrative texts. In actuality, the situation is very different.

3. The data

For this study, I analyzed nominal reference as expressed by demonstrative 3rd person pronouns and determiner + N phrases in a corpus of 12 oral Tamil narratives (1491 finite clauses) representing two genres. Five folk tales were examined, along with seven real-life accounts, including both 1st person (N=2) and 3rd person accounts (N=5). The narratives were related in informal circumstances by native Tamil speakers (M=7, F=5) in Madurai, South India. All report past-time events or mythic events represented as if they had taken place in the distant past.

The texts in the corpus were found to contain 953 tokens of nominal reference involving *a-* or *i-*. Not surprisingly, these references are divided equally between demonstrative determiners (50%) and demonstrative pronouns (50%). What *is* surprising however is the relative frequency of *a-* as opposed to *i-* forms. Despite the prediction that non-proximal *a-* forms would predominate in past time narration, fully 43% — nearly half — of deictic references in the corpus make use of the proximal *i-* form. This distribution is summarized in table 2.

In addition, even though the real-life accounts include two narratives in which the narrator was a protagonist and two others in which the narrator participated peripherally in the narrated events, real-life accounts contain a *lower* percentage of *i-* forms (38%) than do the folk tales (46%). This further contradicts the expected distribution, since folk tales are less personal and thus ostensibly more

remote than 1st person accounts. In what follows, I take the use of proximal *i-* forms to be the marked case, and focus primarily on the question of why Tamil narrators index referents by means of *i-*.[3]

	Determiner		Pronoun		Det and Pron combined	
	a-	*i-*	*a-*	*i-*	*a-*	*i-*
Real-life accounts	121	50	132	105	253	155
N=7, cl.=549	71%	29%	56%	44%	62%	38%
Folk tales	157	151	135	102	292	253
N=5, cl.=942	51%	49%	57%	43%	54%	46%
Total narratives	278	201	267	207	545	408
N=12, cl.=1491	58%	42%	56%	44%	**57%**	**43%**
a- and *i-* combined	479		474		953	
	50%		**50%**		100%	

Table 2: Distribution of a- and i- by grammatical type and genre

4. Functional types

When I examined all instances of determiners and pronouns with the *i-* form in the corpus and grouped them on the basis of discourse function, six more or less discrete types emerged. Some of these functions have been identified in previous discourse studies but have not been associated with deixis. Others are traditionally associated with deixis but their patterning in discourse has never been examined. I further distinguished between proximity (physical or subjective) to the narrator in the 'real world' and to participants in the 'story world'. This distinction has figured importantly in literary narrative analysis, but has received little attention in studies of informal oral narrative to date. My classification produced the distribution of functional types summarized in Table 3. Each type is described and discussed in the following sections.

	DET (%)	PRON (%)	combined (%)	
1. physical proximity: to narrator	3	3	3	
to participant	12	12	12	15
2. text deixis	12	17	15	
3. presentational deixis	6	2	4	
4. participant tracking	4	10	7	
5. main participant	24	31	28	
6. subjective deixis: to narrator	12	6	9	31
to participant	26	18	22	
	100%	100%	100%	
Total	N=201	N=207	N=408	

Table 3: Distribution of i- by discourse function

4.1 Physical proximity

The most straightforward uses of *i-* in the corpus involve physical proximity, either to the narrator at the time of narration (e.g. the narrator gestures to something in the immediate environment), or to a participant in the story world. The former use is limited to two real-life accounts in which the narrator was personally involved.[4]

1) viḻuntu *inta* iṭattile aṭippaṭṭu *inta* kai oṭiñcu pōccu.
faḻl-CP this place-LOC hit-CP this arm break-CP go-P:3:SG:N

'(I) fell and hit *here* [pointing at scar on forehead] and broke *this* arm [gesturing with right arm].'

More widespread is the strategy of representing something as close to a narrative participant. The following example is from a folk tale.

2) aruccunan "enna oru cinna paiyanā *inta* nāṭṭile uṭkāntu
Arjuna what one little boy-Q this country-LOC sit-CP

irukkānām."
be-PR-3:SG:MASC

'Arjuna (said), "What, it seems there's a little boy sitting (on the throne) in *this* country?!" [*this*= the country Arjuna is currently located in]

Both of these examples involve deixis in the narrow semantic sense; the former is an example of gestural deixis, relying as it does on some physical aspect of the communication situation, and the latter of symbolic deixis, "whose interpretation involves merely knowing certain aspects of the communication situation" (Fillmore 1975:40). It would be impossible to substitute *anta* for *inta* in the examples above without changing the intended referential meaning. However, actual proximity, whether in the real world or the story world, accounts for only 15% of the occurrences of *i-* in the corpus; clearly this explanation alone is not sufficient.

4.2 Text deixis

The second obvious function to consider is what Fillmore originally termed 'discourse deixis', and what, following Lyons (1975), I will call 'text deixis'.[5] In the present investigation, text deixis refers to the use of *i-* to co-refer to preceding or following portions of text. 97% of the uses of *i-* employed in this function are anaphoric, i.e. refer back to a textual entity previously mentioned.

3) "nān English paṭiccittirukkirēn unakkāka vēṇṭi" appaṭi,
"I English study-PR-PROG-1:SG you-BEN sake" thus,

tuition veccu paṭiccittiruntatu, anta pillai English.
tuition put-CP study-P-PROG-3:SG:N that girl English

appuram tān teriñcatu *it(u)* ellām.
afterwards only be known-P-3:SG:N this all

'Thinking, "I'll study English, for your sake", the girl was paying tuition and studying English. (We) only realized all *this* afterwards.' [*this*=the fact that the girl was studying English for the hero's sake]

The text deixis function can be fulfilled by non-proximal *a-* as well.

The use of a proximal deictic in this function appears to be motivated by the closeness of the referent to its previous mention in text, where the text is metaphorically construed as a spatial or temporal construct (Fleischman 1991). However such uses again account for only 15% of *i-* forms in the corpus; the majority of uses remain to be explained.

4.3 Presentational deixis

The third function of *i-*, or some variant of it, is attested for proximal demonstratives in narrative discourse in many languages, including English. This is the use of a proximal NP to introduce a previously unmentioned referent into the

discourse, as in "Then *this* guy on a bicycle comes along". Unlike the other demonstrative functions discussed here, presentational deictics are indefinite; they could be replaced with indefinite articles but not with non-proximal demonstratives. In Tamil, referents introduced for the first time with *i-* tend to be low in specificity and topicality (Givón 1984); that is, their unique identity is not important, and they are often inanimate objects which do not persist in the discourse for more than a single clause.

4) anta vīran .. *inta* cāṭṭai .. vaccu, oru iṭattukku kūṭṭuttu varāru.
that soldier this whip put-CP one place-DAT take-CP come-PR-3:HON
'The soldier takes *this* whip, and brings (Tenaliraman) to a place.' [*this*=a whip, first and only mention]

The following example shows the presentational use of *i-* followed by an immediated shift to *a-* in reference to the same referent.

5) "nī iru, unakku mantiram pōṭurēn" nu colli, *inta* vēppa kilai
you be-IMP you-DAT spell put-PR-1:SG QUOT say-CP this neem leaf
ate vaccu, ippaṭi ippaṭi nnu mantiram pōṭṭāṅka.
that-ACC put-CP like.this like.this QUOT spell put-P-3:PL
'Saying, "You wait, I'll cast a spell (so it won't hurt)", (the doctor placed) *this* neem leaf, (he) placed that-it (on me) and cast a spell like this.' [*this*=a neem leaf, first mention, not referred to after this clause]

Fillmore (1975:71) suggests that the choice of 'this' or 'that' in an English sentence such as "I went to a party last night and I met *this/that* guy" is determined by whether the speaker thinks the hearer can identify the referent in question; 'that guy' is known to both speaker and hearer, while 'this guy' is known only to the speaker. This observation suggests an explanation for the presentational use of proximal forms, in that what is known only by the speaker is metaphorically closer to the speaker than that which is known by both speaker and hearer. Presentational deixis is statistically infrequent however in the Tamil corpus (as are presentative devices in general), accounting for only 4% of *i-* forms.

4.4 Participant tracking

The next discourse use of *i-* is a contrastive strategy that assigns *i-* to one participant and *a-* to another across a stretch of discourse that involves switching reference back and forth between the two. I term this the participant tracking function. In the example below, from a story about two scholarly friends, Vellaittol and his artistic achievements are indexed by *i-*, while Kunjan Nambiyar and his artistic achievements are indexed by *a-*.

6) appa *inta* vellaittolum kuñcan nampiyār reṇṭu pēr rompa friends.
then this Vellaittol-and Kunjan Nambiyar two people very friends
ivar avar vīṭṭukku pōnā cāppituvāru.
this-he that-he house-DAT go-COND eat-F-3:SG:HON
avarē *ivar* vīṭṭukku pōnā cāppituvāru.
that-he-EMPH this-he house-DAT go-COND eat-F-3:SG:HON
cāppiṭṭuttu reṇṭu pērumē rompa nēram varaikkum avanka-
eat-PFV-CP two people-and-EMPH much time until they
itule katai, kavitai, a- .. *itai* patti pēciṭṭiruppāṅka.
this-LOC story drama tha- this-ACC about speak-PROG-F-3:PL

kuñcan nampiyār tān 'ōṭṭantullal' appaṭi nnu .. anke naṭakkira
Kunjan Nambiyar EMPH ottantullal thus QUOT there happen-PR:AjP

oru ṭēnsai, atai kaṇṭuppiṭiccavarē avar tān.
one dance-ACC that-ACC discover-PN-EMPH that-he EMPH

avaru atai patti avar pēciṭṭiruppāru.
that-he that-ACC about that-he speak-PROG-F-3:SG:HON

ivar, ivar eḻutina kāviyam patti *ivar* pēciṭṭiruppāru.
this-he this-he write-P:AjP poetry about this-he speak-PROG-F-3:SG:HON

'So *this* Vellaittol and Kunjan Nambiyar (were) very close friends. If *this-he* went to that-he's house, (he) would eat. As for that-he, if (he) went to *this-he's* house, (he) would eat. Having eaten, the two of them would talk until late about stories and plays, about tha- *this*. It was Kunjan Nampiyar who ... a dance that happens there called 'ottantullal'; that-he was the one who discovered that-it. That-he would speak about that-it. *This-he, this-he* would speak about the poetry that *this-he* wrote.'

In this example, *i-* and *a-* forms track the two main participants in the narrative throughout a series of reciprocal actions. Such usage could be said to establish the participants in metaphorical space, i.e. one proximal, the other further away. As such, it is reminiscent of the practice among American Sign Language narrators of establishing participants in different portions of physical signing space, with subsequent reference achieved by signing relevant activities in the space associated with the intended participant (Friedman 1976).

Unlike in ASL, however, where it seems that a participant's location is fixed for the duration of a story, the assignment of *i-* and *a-* for participant tracking in Tamil is relatively unstable. Later in the narrative cited above in (6), for example, the use of *i-* switches from Vellaittol to Kunjan Nambiyar.

7) oru nāḷ *inta- ivar* vellaittōḷ..kuncan nampiyār viṭṭukku .. kuncan nampiyār
one day this this-he Vellaittol Kunjan Nambiyar house-DAT Kunjan Nambiyar

illāta camayattile pōyirukkāru; pōyttu varum pōtu, *ivar* ..
not time-LOC go-PERF-PR-3:SG:HON go-PFV-CP come time this-he

ivar kēṭṭāru, "cāppiṭṭāyā nī? enkē pōyṭṭu varre"
this-he ask-P-3:SG:HON eat-P-2:SG you where go-PFV-CP come-PR-2:SG

nnu kēṭṭāru; avaru atukku "unka viṭṭukku tān"
QUOT ask-P-3:SG:HON that-he that-DAT your house-DAT EMPH

appaṭi nnāru.
thus say-P-3:SG:HON

'One day it seems that *this- this-he* Vellaittol went to Kunjan Nambiyar's house when Kunjan Nambiyar wasn't there; when (he) was on his way back, *this-he* .. *this-he* asked (him), "Have you eaten? Where are you coming from?" (he) asked. That-he replied to that-it "Your house."'

This transition is potentially confusing for the hearer. It is not until the reply "your house" that one realizes that *this-he*, the questionner, is now Kunjan Nambiyar.

Switching the referential value of *i-* in mid-text seems unmotivated if the goal is simply to distinguish one participant from the other. If we assume however that *i-* and *a-* are differentially weighted, with *i-* indicating greater saliency or importance, and assume further that saliency can shift from scene to scene, the shift makes sense. Vellaittol is the principal protagonist of the story, in that the basic plot

concerns how he manages to outsmart Kunjan Nambiyar; hence Vellaittol is initially assigned *i-*. However Kunjan Nambiyar figures prominently in the scene that follows example (7), in which he (*i-*) argues with his wife while Vellaittol (*a-*) watches from outside the house, literally in the background. Thus the participant tracking function exploits both the formal contrast between *i-* and *a-* and the metaphorical association of proximity with foreground or salience.[6] Narrowly defined as the alternation of *i-* and *a-* to track interacting participants, participant tracking is found in fewer than half of the narratives, and accounts for 7% of uses of *i-* in the total corpus. However the strategy of foregrounding a referent by means of *i-* is more widespread than this figure indicates, as will be seen below.

4.5 Main participant reference

Participant tracking can be subsumed under the broader discourse strategy of assigning *i-* to highly thematic narrative protagonists, thereby signalling their special or salient status in the discourse. This usage is attested in all but one of the texts (a short 1st person account) in the corpus, and accounts for 28% of *i-* forms, more than any single function discussed thus far. When two or more main participants are featured in the same scene, one may be assigned *i-* and the other(s) *a-* as per the participant tracking strategy, or both may be assigned *i-*. This latter use is illustrated in (8), from a story about the ill-fated marriage of a prince and a beautiful woman named Samutra Valli. In this excerpt, the prince and his bride are returning to his kingdom after the wedding.

8) appana "tūnkunka uṭkāntukiṭṭu irukkēn" navuṭanē, *ivan* vantu ..
then sleep-IMP sit-CONT-CP be-PR-1:SG say-as.soon.as this.he TOP
ava matiyile paṭuttu tūnkum pō- tūnkirrān.
that.she lap-LOC lie-CP sleep when sleep-PR-PFV-3:SG:MASC
tūnkinavuṭanē *inta* camuttira valli ēkappaṭṭa poruḷu .. ēkappaṭṭa
sleep-as.soon.as this Samutra Valli personal belongings personal
poruḷkaḷe neraiya pōṭṭirukkā. tiruṭanka vantu, appana
belongings-ACC many wear-PERF-3:SG:FEM thief-PL come-CP then
inta camuttira valliye .. nakaiyellām pariccukiṭṭu, *ivaḷe* tūkki.. anta
this Samutra Valli-ACC jewelry.all pluck-take-CP this.she-ACC lift-CP that
kenattukkuḷḷe pōṭṭu pōyirrānka. kenattukkuḷḷe pōṭṭuttu
well-inside put-CP go-PR-PFV-3:PL well-inside put-PFV-CP
pōnavuṭanē, reṇṭāvatu vantu pākkum pōtu, *inta* camuttira valliye kāṇōm.
go-as.soon.as second TOP see time this Samutra Valli-ACC see-NEG
"ennāccu ētāccu" nnu colli, *ivan* verantu pōyi kantu piṭikka muṭiyale.
what-happened QUOT say-CP this.he fear-CP go-CP find-INF be.able-NEG

'So when (she) said, "You sleep; I'll stay sitting here" *this-he* lay down in that-her lap and when (he) was sleep- (he) fell asleep. As soon as (he) fell asleep, Samutra Valli was wearing alot of her valuables [i.e. jewelry]. Some thieves came, and *this* Samutra Valli .. they took all her jewelry and lifted *this-her* up and threw (her) in that well and then left. After they'd thrown (her) in the well and gone off, the next thing, when (he) looked, Samutra Valli was gone. Crying "what happened, what happened?", *this-he* grew (increasingly) fearful when (he) could not find (her).'

Although in the first sentence the narrator contrasts 'this-he' with 'that-her (lap)', he switches to *i-* to reference Samutra Valli immediately thereafter. Both the prince and Samutra Valli are regularly referred to by *i-* elsewhere in the story as well.

It should be noted in the above example that the prince and Samutra Valli are maintained as distinct referents by means of gender-marked pronouns and agreement suffixes on the finite verbs. If protagonists of the same gender and degree of honorificity were both consistently referred to by pronouns with *i-* (or for that matter *a-*), one can well imagine that ambiguity would result. Such undifferentiated usage is in fact rare.

4.6 Subjective deixis

The final and statistically most important function of *i-* , accounting for 31% of its use, is the expression of subjective deixis (sometimes referred to in the literature as 'empathy' or 'point of view'), where what is subjectively in focus for the narrator or a participant in the story is metaphorically represented as 'close' by means of proximal deictic forms. A related effect is created in cinematography by means of close-up camera shots. Similarly, point of view in written literature can be manipulated by the author to appear close-up and subjective ('internal'), as viewed through the eyes of a character or a subjective narrator, or detached and impersonal ('external'; Fowler 1986). For a Tamil oral narrator, the possibilities can be represented schematically as in figure 1.

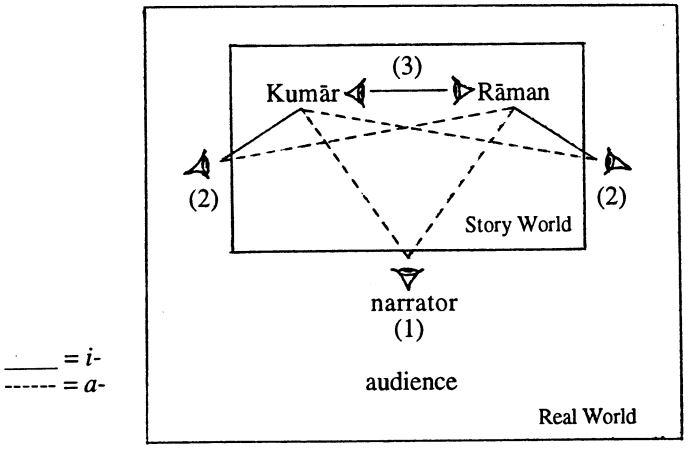


Figure 1: Point of view and deixis in Tamil oral narrative (cf. Kuno 1987:204)

Figure 1 illustrates the possible perspectives that a narrator could take in narrating a hypothetical story involving two male protagonists, Kumār and Rāman. Let us suppose that the status of each in the story is such that both are referred to by 3rd person singular non-honorific pronouns and subject agreement in the verb (i.e. there is a potential for referential ambiguity). At those points in the story where both participants are involved, deictic reference can be deployed in three ways. (1) The narrator could use 'neutral' *a-* forms in reference to both, distinguishing between them by other (e.g. lexical) means; this possibility does not interest us here, as it

does not involve the use of *i-*. (2) The narrator could elect to represent one of the participants by *i-* and the other by *a-*, i.e. by taking a 'close-up' perspective on one. Maintained over continuous stretches of discourse, this becomes the 'participant tracking' strategy discussed above, but narrator close-ups have other uses as well, as will be seen below. (3) The narrator could report the events wholly or in part as though through the eyes of one of the participants, in which case the participant's subjective perceptions are referenced by *i-*. The perspectives associated with these three uses are indicated by the numbers (1), (2), and (3) in figure 1.

An example of subjective closeness to a participant (perspective 3) is given in (9).

9) maṟupaṭiyum pōnavuṭanē, anke vantu oru tavaḷe..taṉṉi illāma..
again go-as.soon.as there come-CP one frog water without
varaṇṭa itule keṭakkutu. atule pala kākkāke vantu, *inta*
dry-P:AjP this-LOC lie-PR-3:SG:N that-LOC many crow-PL come-CP this
tavaḷaiyai kottiṭṭu pōkaṇum nnu colli, vaṭṭam pōṭṭukkiṭṭu irukkum pōtu,
frog-ACC peck-CP go-should QUOT sat-CP circle put-PROG-F:AjP time
'As soon as he started off again, a frog is lying there without water in this dry place. A bunch of crows had come to that place wanting to eat *this* frog [lit. saying, "(We) must peck *this* frog and go"], and while they were circling around, ...'

In this example, the frog is not literally close to the crows circling overhead, but is represented as their subjective focus of interest by the use of *inta*; that is, we see the frog through the eyes of the crows.

Narrator subjectivity is more complex. Here I will tentatively posit three sub-types, arranged along a continuum from least to most systematic in terms of discourse function. The least systematic type is associated with 1st person narration, where subjective closeness can be attributed either to the narrator-as-participant at the time of the narrated events (arguably a case of perspective 3), or to the narrator-in-the-present empathizing with the narrator-as-participant (perspective 2). Consider the following, from a 1st person account of the medical treatment the narrator received after falling down an empty well and injuring himself when he was 12 years old.

10) anta periyavar pakkattile *inta* ūciya koṇṭukiṭṭu *ippaṭiyē* vantāru
that big.man side-LOC this needle hold-CP like.this-EMP come-P-3:SG:HON
pakkattile nēre. "ennanka ūci" nnēn. "*itu* taikkaṇum" appaṭi
side-LOC directly what-HON needle say-P-1:SG this sew-must thus
nāpla. "ayyayyō vēṇām. *inta* periya ūcile vaccu *ippaṭi*
say-P-like oh no don't.want this big needle-LOC place-CP like.this
taccānka nnā eppaṭi-" "at-ellām valikkātu, onnum paṇṇātu, nān
sew-P-3:PL COND how that-all hurt-NP:NEG nothing do-NP:NEG I
mantiram pōṭurēn" appaṭi nnāppla. "ille man- enakku taikkavē
spell cast-PR-1:SG thus say-P-like no spe(ll) I-DAT sew-INF-EMPH
vēṇām" appaṭi nnēn. ... ērkanavē enakku vali .. kālaiyile tān
don't want thus say-P-1:SG already I-DAT pain morning-LOC EMPH
vil untirukkēn. matiyānam *inta* vēlai *ivvaḷavu* vaittiyam paṇrānka.
fall-PERF-PR-1:SG afternoon this work this.much treatment do-PR-3:PL

inta kai ellām eṭuttu vaccu kaṭṭum pōtu, oṭaccu kiṭaccu payankara
this arm all take-CP put-CP tie-P:AjP time break-CP (redup) terrible

vētanaiyile tuṭikkirēn. attōṭa *inta* vētanai vēra. inni *itule* ūci
pain-LOC throb-PR-1:SG that-with this pain other now this-LOC needle

vaccu kuttunānka nnā, evvaḷavu vētanai irukkum.
put-CP stab-P-3:PL COND how.much pain be-F-3:SG:N

'That big man [=the doctor] came up right next to me like *this* holding *this* needle. I said, "What's the needle for?" He's like, "(We) have to stitch *this*". "Oh no, no way. If you put in *this* big needle and stitch like *this*, how (the heck)-" He's like, "That-it won't hurt, (it) won't do anything, I'll cast a magic spell". I said, "No spe(ll)- I don't want to be stitched at all." Already I was in pain. I'd fallen in the morning. In the afternoon they're doing *this* work, all *this* treatment. When they took *this* arm and everything and bound it, I'm suffering terrible pain. Along with that (there's) *this* pain in addition. Now if they stick a needle in *this*, it'll really hurt.'

The immediate perspective of the narrator/boy is here evident in the repeated use of *i-* forms; in contrast, the doctor uses *a-* ('That-it won't hurt') to refer to one of the same propositions, the use of the needle to stitch the boy's wounds. No further attempt will be made to classify 1st person subjective *i-* usage here.

The second — less personal, more text-organizational — type of narrator subjectivity involves the manipulation of perspective by a third person narrator to highlight selected referents or scenes (perspective 2 in figure 1). In this respect narrators make aesthetic and organizational choices similar to those made by cinematographers in the production of visual narrative, with *i-* symbolizing a 'close-up'. A skillful example of this strategy is found at the peak of an involved tale in which an old man has managed to convince a king to be cut in half by his son as part of a ritual sacrifice, while the queen his wife holds him steady. All major dramatis personae are in place and ready to proceed with the sacrifice when the following sequence occurs.

11) ellārum amaitiyā irukkānka. *inta* ammā vantu puṭiccukkiṭṭānka.
everyone quiet be-PR-3:PL this lady come-CP take-hold-P:3:PL

rājā, *inta* rāṇi vantu puṭiccukkiṭṭā. paiyan vāḷa
king, this queen come-CP take-hold-P-3:SG:FEM boy sword-ACC

tūkkiṭṭān. tūkki veṭṭa pōkum polutu, *inta* rājāvōṭa
lift-PFV-P-3:SG:MASC lift-CP cut-INF go-F:AjP time this king-GEN

iṭatu kaṇṇule iruntu appaṭiyē taṇṇī kaṇṇīrā koṭṭutu.
left eye-ABL thus-EMPH water eye.water-ADV spring-P-3:SG:N

iṭatu pakkam māttiram appaṭiyē tuṭikkutu.
left side only thus-EMPH suffer-PR-3:SG:N

ivan vāḷa ōnki talaiyile vaikka pōyṭṭān.
this-he sword-ACC raise-CP head-LOC place-INF go-PFV-P-3:SG:MASC

appa *inta* kaṇṇir viṭarata pāttuṭṭān *inta* kelavan.
then this eye.water shed-PR-VN-ACC see-PFV-P-3:SG:MASC this old.man

"niruttu niruttu niruttu veṭṭāte..."
stop stop stop cut-NEG:IMP

'Everyone is quiet. *This* lady came and took hold (of him). The king, *this* queen came and took hold (of him). The boy lifted the sword. As (he) was

about to cut, suddenly *this* king's left eye issued forth tears. Only the left side is suffering (i.e. weeping). *This-he* having raised the sword was about to bring it down on (his) head. Then *this* old man saw *this* shedding of tears. (He said) "Stop, stop, stop, don't cut!"'

In this example, the narrator creates dramatic intensity by presenting vignettes in rapid succession of the queen taking hold of the king, the tears on the king's face, the son with the lifted sword, and finally the old man who calls a halt to the proceedings. Each successive focus is introduced by a close-up *i-* form.

The third and most systematically textual type of narrator subjectivity involves the selective use of *i-* to introduce a scene or other thematic narrative unit. The onset of a new thematic unit is typically distinguishable from previous text in that it involves a change in referent(s), physical location, and/or time (other than simple temporal progression).

12) avan yārukkumē mariyātai kuṭukkallai. avanka appāvukkellām, avanka
that-he no.one-DAT respect give-NEG that-they father-DAT-all that.they
appāvellām, "pōṭā vāṭā" pēciṭuvān. avan tampi
father-all go-DIS come-DIS speak-PFV-PR-3:SG:MASC that-he y'brother
tān vīṭṭilēyē pāttukuvān. *ivan* enka vīṭṭilēyē
EMPH house-LOC care.for-F-3:SG:MASC this-he our house-LOC-EMPH
paṭuttiruppān; enka vīṭṭilēyē cāppituvān.
lay down-F-3:SG:MASC our house-LOC-EMPH eat-F-3:SG:MASC

'That-he wasn't respectful to anyone. (He)'d speak disrespectfully even to that-their [i.e. his own] father. It was that-his younger brother who took care of things at home. *This-he* would sleep at our house; (he)'d eat at our house.'

The theme of the first three utterances in this example is the (disrespectful) behavior of the protagonist (*avan*) at his parents' home. *Ivan* at the beginning of the last sentence signals a shift to a new theme and a new location — the protagonist's (acceptable) behavior at the narrator's home. A number of initially puzzling shifts to *i-* turn out to signal thematic transitions of this sort. Just as filmmakers sometimes employ close-ups at plot transitions, Tamil narrators appear to evoke metaphorical proximity in demarcating textual units.

There is thus textual systematicity even in subjectivity; narrators use *i-* not only to express empathy or personal involvement, but also to organize and dramatize the telling by alternating between 'neutral' and 'close-up' perspectives.

5. Semantics and textual functions

We have seen that it is possible to classify proximal demonstrative usage in Tamil on the basis of discourse function, and that this approach turns up a variety of 'discourse deictic' phenomena, some of which have not been remarked on the literature on deixis to date. One might argue, however, that all can be derived via metaphorical extension from the idea of physical proximity. Is discourse deixis a separate linguistic phenomenon, or is the use of deixis in discourse predictable from 'core' semantics?

A case can be made that the notion of proximity underlies the working of each functional strategy to some extent. Insofar as referents physically close to the narrator in the real world or close to participants in the story world are appropriately described by proximal forms, the core semantic characterization of *i-* as proximal and *a-* as non-proximal finds direct support. Beyond this, the notion of proximity

extends metaphorically to encompass parts of text recently mentioned or about to be mentioned ('text deixis'), and further yet to presentational deixis where knowledge of the identity of referents is represented as close to the one who possesses it. Strategies based on subjective deixis invoke emotional or psychological proximity. Even strategies distinguishing main from non-main participants can be related to metaphorical distance via the notion of salience and grounding, where what is in the foreground — hence perceptually more salient — is closer to the perceiving ego.

However, to focus exclusively on semantics is to overlook what is systematic on the discourse level, namely, the use of *i-* forms to introduce referents, switch between referents, and more globally, to index highly thematic referents and demarcate thematic episode boundaries. The notion of proximity is not as useful in interpreting these uses as is a knowledge of the functional requirements of narrative, and especially, of narrative referentiality.[7] Moreover, one discourse deictic function — that of participant tracking — exploits a purely formal mechanism, that of assigning contrasting forms to contrasting referents. In practice, the assignment appears to be sensitive to saliency principles similar to those involved in determining focal participants. In principle, however, this strategy is effective regardless of which participant is assigned *i-* and which is assigned *a-*. In this and other respects, *i-* shows evidence of extending its range of meanings from semantic into purely textual domains.[8]

6. Conclusion

In this paper, I have described a set of functions that proximal deixis fulfills in Tamil oral narrative discourse. The results of the approach taken here reveal that a traditional semantic account in terms of physical distance from speaker is insufficient, even when supplemented by 'text deixis', or the use of a deictic form to refer to previous or anticipated portions of text. Rather, proximal demonstratives in Tamil have metaphorical and textual functions that could not have been easily identified except through an examination of actual discourse. The phenomenon traditionally labelled 'discourse' or 'text' deixis thus emerges as only one of a variety of discourse functions that deictic elements can fulfill.

NOTES

* An earlier version of this paper was presented at the South Asian Languages Analysis Roundtable, University of Iowa, May 25, 1993. Thanks to Indira Ayyar and John Paolillo for helpful comments on the present version, and to Reid Wilson for convincing me to write it up.

1 Kirsner (1979) and Gair (1991) are exceptions to this generalization.

2 Hereafter, 'Tamil' will be used as a shorthand for 'South Indian Tamil'. However, the findings presented here are not intended to generalize to other varieties of Tamil. Sri Lankan Tamil, for instance, distinguishes three degrees of distance rather than two, and therefore is unlikely to deploy deixis in discourse the same way as South Indian Tamil. To my knowledge there is as yet no published treatment of discourse deixis in Sri Lankan Tamil; see Gair (1991) however for an intriguing description of discourse deixis in neighboring Sinhalese, a language with four morphological deictic distinctions (close to speaker; close to hearer; removed from both speaker and hearer; previously mentioned in the discourse).

3 I intend this as a first step toward understanding what motivates the choice of *i-* and *a-* in Tamil discourse. Ultimately, the discourse uses of *a-* must also be considered, and the uses of the two forms systematically compared.

4 Standard abbreviations are used for grammatical glosses in the examples given. In addition, the following abbreviations are used: AjP 'adjectival participle', CONT 'continuative', CP 'conjunctive participle', DIS 'disrespectful', F 'future', HON 'honorific', N 'neuter', NP 'non-past', P 'past', PERF 'perfect', PFV 'perfective', PR 'present', PROG 'progressive', and VN 'verbal noun'.

5 I prefer to reserve the term 'discourse deixis' as a cover term for any use of deictic elements to fulfill discourse or textual functions.

6 It goes without saying that the tracking potential would be sacrificed if *i-* forms were replaced by *a-*, although there is no *semantic* constraint against such a replacement.

7 See Venkatesan (1994) for a detailed discussion of referentiality in Tamil narrative discourse.

8 This observation raises the issue of diachronic change. Textual meaning is Stage II in Traugott's (1982) model of grammaticalization, between propositional (semantic) meaning and expressive (pragmatic) meaning. It is possible that we are here witnessing a very early stage of grammaticalization — or a site of potential grammaticalization — of the Tamil proximal deictic into a different grammatical function. At this early stage, we can only speculate as to what, if anything, it might ultimately become. (One possibility is a 'VIP pronoun' of the sort found in some African languages to refer to high-ranking discourse participants.)

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An event-reporting relative construction in Japanese

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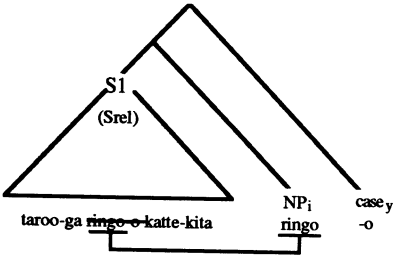
1. Introduction

This paper discusses a biclausal construction in Japanese, which has been categorized as an internally headed relativization (Kuroda 1974-77, 1976, Itô 1986, Ishii 1989, Hirose and Ohori 1992, Ohara 1992). I have argued elsewhere that various structural and semantic properties of the construction do not perfectly fit the definitions of internally headed relativization proposed by Keenan 1985 and Culy 1990 (Ohara 1994). I will thus call it the *no*-relative construction since the relative clause is always followed by the bound morpheme *no*.

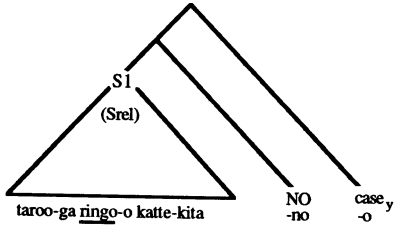
The *no*-relative construction has been regarded as a secondary relativization strategy in the language, similar in function to externally headed relativization. I will argue on the contrary that unlike externally headed relatives, the function of the *no*-relative is event reporting and that its form is motivated by this function.

In order to help clarify the problems regarding *no*-relatives, I will start the discussion by contrasting their structure with that of externally headed relatives, which is the primary means of relativization in Japanese. Schematic representations of an externally headed relative and a *no*-relative are given in (1) below:

(1) a.
Externally headed relative



(1) b.
no-relative



At first glance, the structures in (1a) and (1b) seem parallel to each other. However, they are crucially different from each other in two respects: (i) in whether or not the target of relativization appears inside the relative clause; and (ii) in what kind of constituent can follow the relative clause. With externally headed relatives, the target of relativization and its case marker are phonetically missing inside the relative clause S_{rel}, as the strikethrough in (1a) shows. Inside a *no*-relative clause, however, the target is present, as indicated by the underline in (1b). Secondly, in the case of externally headed relatives, the head noun, shown as NP_i in (1a) follows the relative clause. In contrast, it is the bound morpheme *no* that always follows a *no*-relative.

(2) is a structural description of the externally headed relative. Here, the crossed out ~~NP_i-case$_x$~~ represents the phonetically missing target of relativization and its case marker, or a 'gap' in the relative clause.[1] The relative clause represented as S_1 is followed by the head noun, or NP_i. NP_i is coindexed with the

target of relativization. $Case_y$, which is attached to the NP as a whole indicates the role of the target in the main clause.

The externally headed relative construction

(2) [[... ~~NP_i-$case_x$~~ ... V_1]$_{S_1}$ NP_i]-$case_y$

where ~~NP_i-$case_x$~~: the target (a gap)
$case_x$: a case marker
V_1: the predicate of the relative clause
S_1: the relative clause
NP_i: the head NP
$case_y$: a case marker

A sentence containing an externally headed relative is given in (3):

Externally headed relative

(3) [[taroo-ga ~~ringo$_i$-o~~ katte-kita]$_{S_1}$ ringo$_i$]-o hanako-ga tabeta.
Taro NOM apple ACC buy-came apple ACC Hanako NOM ate
'Hanako ate the apple which Taro bought.'

Here, the crossed out ~~ringo$_i$-o~~ 'apple-ACC' is the phonetically missing target of relativization. *Ringo$_i$* which follows the relative clause S_1 is the head noun coreferential with the target.

A structural description of the *no*-relative construction is given in (4). A *no*-relative, shown as S_1, is a gapless clause followed by the bound morpheme *no* instead of by a lexical noun.[2] NP_i-$case_x$ is phonetically present in S_1; it represents the target and its case marker appropriate for the role of the target within S_1.[3] $Case_y$ after the morpheme *no* indicates the role of the target in the main clause S_2.

The *no*-relative construction

(4) [[[... NP_i-$case_x$ ... V_1]$_{S_1}$-*no*]-$case_y$ ... V_2]$_{S_2}$

where NP_i : the target
$case_x$: a case marker
V_1: the predicate of the *no*-relative
S_1: the *no*-relative
no: nominalizer (NO)
$case_y$: a case marker
V_2: the main predicate
S_2: the main clause

A *no*-relative sentence is illustrated in (5):

(5) *no*-relative
[[taroo-ga ringo$_i$-o katte-kita]$_{S_1}$-no] -o hanako -ga tabeta.
Taro NOM apple ACC buy-came NO ACC Hanako NOM ate

a. *Literal translation*:
'Hanako ate that Taro bought an apple.'

b. *Intended meaning*:
'Taro bought an apple, and Hanako ate (it).'

Here, the target is *ringo$_i$* 'apple' and is present in the *no*-relative S_1. *Ringo$_i$* is also an argument of the main verb *tabeta* 'ate'. The accusative case marker *o*, which is appropriate for the role of *ringo$_i$* in the main clause S_2, appears after the morpheme *no*. This bound morpheme *no* after a 'gapless' clause is usually construed as a nominalizing complementizer roughly translated into English as 'that'. This particular use of *no* is suggested by the literal translation in (5a). However, *no* cannot be understood as a complementizer in this construction: in (5), for example, the main verb *tabeta* 'ate' does not take a complement but an argument, and thus the main verb is construed as taking the NP *ringo* 'apple' inside S_1 as one of its valence requirements. Thus, instead of (5a), what the sentence conveys can be better translated as (5b). I will only provide the intended meaning and not the literal translation for the rest of the sentences in the paper. In the following discussion, I will continue to use S_1 to refer to the preceding clause, and S_2 to refer to the second clause.

In spite of the structural markedness discussed above, the *no*-relative construction can still be regarded as a relative construction, since: (i) an NP inside S_1 satisfies a valence requirement of the main verb V_2; and (ii) the proposition expressed in S_1 conveys some information regarding the referent of the target NP. There are, however, semantic constraints on this construction which are absent in externally headed relativization, as I will show below.

The goal of this paper is to answer the following questions: What are the constraints on the *no*-relative construction? What is the function of the construction? How does the function relate to the constraints?

In characterizing the construction, I will view as central the notion of grammatical construction as used by Fillmore, Kay and O'Connor 1988, 1992 and Lambrecht 1987, 1988a. That is, a grammatical construction is regarded as a pairing of syntax with semantics and pragmatics. This approach claims that a grammatical construction can be dedicated to certain semantic and/or pragmatic functions and that constraints on a construction can be seen as motivated by such functions. I will argue that unlike restrictive and appositive relative clauses, the primary function of *no*-relatives is event reporting and that otherwise puzzling properties of the construction are seen as motivated by its functions.

The organization of the rest of the paper is as follows: I will describe the semantic constraints on the *no*-relative construction (Section 2), followed by a discussion of the pragmatic functions which underlie these semantic constraints (Section 3). I will then proceed to compare the construction to a construction in English which has a similar function (Section 4), and finally Section 5 concludes the analysis.

2. Semantic properties of the *no*-relative construction

2.1. Constraints on the *no*-relative

The most striking semantic difference between externally headed relativization and the *no*-relative construction is that a *no*-relative followed by the so-called nominalizer *no* cannot be used in isolation as a simple referring expression. In contrast, an externally headed relative and its head noun can refer to an entity. This is illustrated in (6):

(6) a. Q: dare-ga kawa-ni otimasitaka?
who NOM river LOC fall-off-POLITE-PAST-Q
'Who fell into the river?'

b. Lexical noun
A: keekan.
policeman
'A policeman'

c. Externally headed relative + head noun
A: [[doroboo-o oikaketeita] keekan].
thief ACC was-chasing policeman
'The policeman who was pursuing a thief.'

d. *no*-relative + *no*
A: *[[keekan -ga doroboo-o oikaketeita] -no].
policeman NOM thief ACC was-chasing NO
Intended meaning:
'The policeman who was pursuing a thief.'

Just as I can refer to a person using a lexical noun *keekan* 'policeman' as shown in (6b), I can also use an externally headed relative and its head noun as in (6c) to refer to him. However, a *no*-relative which accompanies *no* as in (6d) cannot be used alone as a referring expression. This shows that a *no*-relative is part of a biclausal construction which must be used in combination with another clause.

Secondly, the predicate of a *no*-relative is typically used in the affirmative form, not in the negative as shown in (7):

(7) *no*-relative
#[[zyunko-ga hurimukanakatta]-no]-o unno -ga osaeta.
Junko NOM did-not-turn-around NO ACC Unno NOM seized
Intended meaning:
'Junko did not turn her face, and Unno seized (her).'

In order for (7) to be acceptable, we need a special context in which Junko's not turning her face is a surprising or unexpected piece of information.

Thirdly, a *no*-relative cannot describe an intrinsic property of an entity, as illustrated in (8) below:

(8) *no*-relative
#[**[sono gakusei-ga kasikoi**]-no]-o watasi-wa
that student NOM smart NO ACC I -TOP
kenkyuu-situ ni yonda.
office DAT invited
Intended meaning:
'The student is smart, and I invited (him) to my office.'

Being smart is an intrinsic property of the student, and the sentence is unacceptable.

2.2. A temporal constraint between the two clauses

As for the relation between the two clauses, the situation described in S_1 cannot be later than the S_2 event (Ohara 1992). Put differently, in this construction, the clause order is iconic to the order of situations described in the two clauses. Externally headed relatives obviously do not have such a constraint. Thus, (9) with an externally headed relative is acceptable:

(9) Externally headed relative
[[kinoo takarakuzi-ni atatta] otoko]-o
yesterday lottery DAT won man ACC
hanako -wa sensyuu deeto-ni sasotteita.
Hanako TOP last-week date DAT had-asked
'Hanako had asked the guy who won the lottery yesterday out for a date last week.'

The same situation cannot be expressed by a *no*-relative since the clause order would not be iconic to the order of situations as shown in (10):

(10) *no*-relative
#[[kinoo sono otoko-ga takarakuzi-ni atatta]-no]-o
yesterday that man NOM lottery DAT won NO ACC
hanako -wa sensyuu deeto-ni sasotteita.
Hanako TOP last-week date DAT had-asked
Intended meaning:
'The guy won the lottery yesterday, and Hanako had asked (him) out for a date last week.'

Related to this temporal constraint is the fact that in this construction, both V_1 (the predicate of the *no*-relative) and V_2 (the main predicate) must be stage level predicates in Carlson's sense (Dowty 1979). We have already seen in (8), repeated below, that a *no*-relative cannot describe an intrinsic property of an individual. Thus, V_1 cannot be an individual level predicate (e.g. *kasikoi* 'smart'). Sentences in (11) below show that V_2 must also be a stage level predicate such as *osaeta* 'seized' and that it cannot be an individual level predicate such as *nikunda* 'hated':

(8) *no*-relative
#[[sono gakusei-ga **kasikoi**]-no]-o watasi-wa
that student NOM smart NO ACC I -TOP
kenkyuu-situ ni yonda.
office DAT invited
Intended meaning:
'The student is smart, and I invited (him) to my office.'

(11) *no*-relative
a. [[zyunko-ga suutu-o orosi-kaketa] -no]-o
Junko NOM suit ACC was-about-to-pull-down NO ACC
unno -ga **osaeta.**
Unno NOM seized
'Junko was about to pull her suit off, and Unno seized (her).'

b. #[[zyunko-ga suutu-o orosi-kaketa] -no]-o
Junko NOM suit ACC was-about-to-pull-down NO ACC
unno -ga **nikunda.**
Unno NOM hated
Intended meaning:
'Junko was about to pull her suit off, and Unno hated (her).'

3. Pragmatic functions of the *no*-relative construction

I characterize the pragmatic functions of the *no*-relative construction as follows: the *no*-relative, that is, S_1, functions to report a situation, and the

construction as a whole advances a narrative.[4] These functions are seen as motivating the semantic properties pointed out in the previous section. I will first discuss the function of the *no*-relative and then that of the construction as a whole.

3.1. The event-reporting function of the *no*-relative

The primary function of the *no*-relative is to assert or report a scene. That is, although the *no*-relative presents a target NP referent that also participates in the following S_2 event, its main function is not to describe a property of the target NP referent, but rather to report a scene in which the referent is included.[5, 6] In this sense, the event-reporting function of the *no*-relative is distinct from the restrictive and appositive functions that ordinary relative clauses are associated with. Restrictive relatives restrict the set of possible referents; appositive relatives add a piece of parenthetical information about an NP referent. They both describe a property of a target NP referent. In Japanese, externally headed relatives are used either restrictively or appositively as shown in (12) and (13):

(12) Externally headed relative - Restrictive
[[nihon-kai-ni sundeiru] kuzira]-wa ooki.
Japan-Sea LOC living whale TOP large
'Whales that live in the Japan Sea are large.'

(13) Externally headed relative - Appositive
[[honyuurui de-aru] kuzira]-wa sakana-to-wa kotonaru.
mammal COP whale TOP fish-COM-TOP different
'Whales, which are mammals, are different from fish.'

Event-reporting sentences report a scene from the point of view of the speaker (Teramura 1992, Morita 1990). The unacceptability of (8) may be seen as motivated by the event-reporting function of the *no*-relative, since intrinsic or static properties do not qualify as scenes to be reported.

Furthermore, it has been noted that unlike topic-comment sentences, event-reporting sentences are typically used in the affirmative, unless the speaker wants to depict an unexpected situation worthy of reporting by the use of the negative form (Teramura 1992: 65-73). We have seen in sentence (7), repeated below, that the predicate of a *no*-relative is usually used in the affirmative form. Again, this seems to be due to the event-reporting function of the *no*-relative.

(7) *no*-relative
#[[zyunko-ga hurimukanakatta]-no]-o unno-ga osaeta.
Junko NOM did-not-turn-around NO ACC Unno NOM seized
Intended meaning:
'Junko did not turn her face, and Unno seized (her).'

3.2. The narrative advancing function of the *no*-relative constuction

The *no*-relative construction as a whole advances a narrative, linking two situations. Thus, the sentences are paraphrasable using the so-called 'coordinate' conjunction *ga* 'and' as shown in (14) and (15):

(14) *no*-relative
[[kare-ga hon go -roku-satu -o sasidasita]-**no]-o**
he NOM books five six CLASS ACC held-out NO ACC
watasi-wa uketotta.
I TOP received
'He held out five or six books to me, and I took (them).'

(15) *ga*-conjunction
[kare-ga hon go-roku-satu -o sasidasita] **-ga**
he NOM books five six CLASS ACC held-out and
sorera-o watasi-wa uketotta.
them ACC I TOP received
'He held out five or six books to me, and I took them.'

In (15), the conjunction *ga* immediately follows S_1, and a valence requirement of V_2 is explicitly realized in the form of a pronoun and a case marker, as indicated by the bold type. This paraphrasability by *ga*-conjunction suggests that the propositions described in the two clauses of a *no*-relative sentence are semantically and pragmatically on the same level in the sense that each of them equally makes an assertion. It is known that in Japanese coordinate sentences, in contrast to subordinate sentences, it is impossible to question a constituent of the first clause. Thus, *ga*-conjunction prevents an NP inside its S_1 from being replaced by a *wh*-word as shown in (16):

(16) *ga*-conjunction
***[dare-ga** ringo-o katte-kita] -ga hanako-ga
who NOM apple ACC came-buying and Hanako NOM
tabemasitaka?
eat-POLITE-PAST-Q
'Who bought the apple and Hanako ate it?'

The *no*-relative construction is also subject to this restriction as (17) shows:

(17) *no*-relative
*[[**dare-ga** ringo-o katte-kita]-no]-o hanako-ga
who NOM apple ACC buy-came NO ACC Hanako NOM
tabemasitaka?
eat-POLITE-PAST-Q
'Who bought the apple and Hanako ate (it)?'

The inability to question a constituent of S_1 suggests that each of the two clauses in the construction makes an assertion, as coordinated clauses do. Thus, this syntactic behavior of the *no*-relative construction may be seen as a syntactic correlate of its pragmatic function of reporting two situations.

I have discussed in Section 2.2. that both V_1 and V_2 must be stage level predicates ((8) and (11)). This constraint may be seen as due to the function of the construction to advance a narrative.

We have seen that the function of the *no*-relative is neither restrictive or appositive but event reporting. It is thus misleading to refer to the *no*-relative construction as internally headed relativization since the term implies that the *no*-relative can have either restrictive or appositive function just like externally headed relativization. Rather, the *no*-relative construction should be characterized as an

event-reporting relative construction. Furthermore, the *no*-relative, together with the main clause, advances a narrative. It is to this narrative-advancing function of the construction as a whole that we now turn.

4. Narrative-advancing constructions in Japanese and English

4.1. The English continuative relative construction

The continuative relative construction in English discussed by Jespersen 1924, Lambrecht 1988a and Fillmore 1989 has a function similar to the narrative-advancing function of the *no*-relative construction in Japanese.[7] The construction is exemplified in (19):[8]

English continuative relative construction

(19) a. He gave the letter to the clerk, who then copied it.
(Jespersen 1924:113)

b. She had quite a long argument with the Lory, who at last turned sulky.

c. She said it to the Knave of Hearts, who only bowed and smiled in reply.

d. The Queen began staring at the Hatter, who turned pale and fidgeted.
(Lewis Carroll *Alice's Adventures in Wonderland*)

Lambrecht 1988a describes the continuative relative construction as a construction which establishes a temporal link between two states of affairs (Lambrecht 1988a: 328).[9] Unlike restrictive and appositive relatives, continuative relatives advance a narrative. Thus, by using 'and then' and replacing a relative pronoun with an appropriate pronoun, continuative relative sentences are generally paraphrasable as coordinated sentences. This is illustrated in (20) and (21):

(20) The continuative relative construction
I gave the form to Mary, **who** immediately lost it.

(21) *and*-conjunction
I gave the form to Mary, **and then she** immediately lost it.

This paraphrasability by 'and then' shows that the order of two clauses is iconic to the order of events and that each of the two clauses makes an assertion.

4.2. Comparison of the Japanese event-reporting relative construction with the English continuative relative construction

In comparing the English continuative relative construction with the Japanese event-reporting relative construction, I will focus on: (i) their clause-linking mechanisms; (ii) their target-identifying mechanisms; and (iii) their narrative-advancing patterns.

i) Clause-linking mechanisms

Whereas the main clause is followed by the relative clause in the English construction, the order of the 'main' clause and the relative clause is reversed in the Japanese construction. In (22) and (23), the relative clauses are shown in bold:

(22) English continuative relative construction
I took it to my house, **which then burned down.**

(23) Japanese event-reporting relative construction
[[tukue-no ue-ni kaado-ga tunde-aru] -no]-o
desk- GEN top LOC cards NOM are-piled-up NO ACC
eriko-wa yondemita.
Eriko top tried-to-read
'The cards were piled up on the desk, and Eriko tried to read (them).'

In spite of the contrast, the clause order is iconic to the order of situations in either of the constructions.

ii) Target-identifying mechanisms

Target identifying mechanisms differ in the two constructions in question. In the English construction, the target is structurally marked by its position *inside* S_1: it occurs at the end of S_1 (i.e. the main clause) irrespective of the role it plays in S_1. The targets are shown in bold in the sentences in (24):

(24) English continuative relative construction
a. 'I see!' said **the Queen**, who then turned to Alice.
b. I punched **John**, who instantly fell down.
c. I gave the ticket to **the ticket-taker**, who then punched a hole in it.

In contrast, in the Japanese construction, the target is not marked by its position in S_1. Furthermore, there is no morphosyntactic marking on the target inside S_1 to help identify it. It is the semantics of the main verb and of the two clauses that help the hearer construe the target. Sentences in (25) exemplify this. Again, the targets are indicated in bold:

(25) Japanese event-reporting relative construction
a. [[**ringo**-ga ki -kara otita]-no]-o hanako-ga tabeta.
apple NOM tree-ABL fell NO ACC Hanako NOM ate
'An apple fell down from a tree, and Hanako ate (it).'
b. [[taroo-ga **ringo**-o kureta]-no]-o hanako-ga tabeta.
Taro NOM apple ACC gave NO ACC Hanako NOM ate
'Taro gave (me) an apple, and Hanako ate (it).'

In both of the sentences in (25), there are two NPs in the relative clause, but the semantics of the main verb *tabeta* 'ate' helps construe the target to be *ringo* 'apple'. Note that the target *ringo* appears sentence-initially as the subject of S_1 in (25a), while it appears sentence-medially as the direct object in (25b). Although the target-identifying mechanisms differ in the Japanese and English constructions, in either of them the two states of affairs are related to each other by sharing a participant, namely, the target NP referent.

iii) Narrative-advancing patterns

Whereas each of the two clauses describes an event in the English construction, S_1 may describe a state rather than an event in the Japanese construction. This is illustrated in (26):

(26) *no*-relative

[[**ringo-ga teeburu-no ue -ni atta**]$_{S_1}$ -no] -o hanako -ga tabeta.
apple NOM table GEN top LOC existed NO ACC Hanako NOM ate
'An apple was on the table, and Hanako ate (it).'

An apple being on the table is a state, but this sentence advances a narrative in the sense that the state described in S_1 changes in the S_2 event. It has been noted that compared to English, Japanese tends toward lower transitivity. Especially, Ikegami 1991 and Ohori 1991 discuss the tendency in terms of different event realization patterns in the two languages. Further study is needed before I can say anything conclusive, but the fact that the Japanese construction allows its S_1 to describe a state rather than an event may perhaps be related to the general tendency toward lower transitivity in Japanese.

5. Conclusion

I have discussed the event-reporting relative construction or the *no*-relative construction in Japanese. In naming it the *no*-relative construction, which crucially involves *no*-relatives, I have rejected Charles J. Fillmore's suggestion to call it the *orphan* construction (Someone who has 'no relatives' is an orphan). I have claimed in this paper that the construction is conventionally associated with the pragmatic function of advancing a narrative, with the relative clause reporting the first situation. I have demonstrated that what seems like an arbitrary set of constraints, such as the constraints on the semantic content of the relative clause and the temporal constraint between the two clauses, can be understood as coherent when the pragmatic motivations are shown. Finally, the construction has been compared with the English continuative relative construction. Although the two constructions have the function of advancing a narrative, they differ in their clause-linking mechanisms, target-identifying mechanisms, and narrative-advancing patterns. These differences reflect the profound structural differences between the two languages, which seems to support the claim that the form of a grammatical construction is not determined solely by its functions but also by structures seated deep within the language in question.

NOTES

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[1] In frame-semantic terms, the existence of a 'gap' in a relative clause would be described as a situation 'in which a member of the category denoted by the head noun participates in a frame evoked by the linguistic elements in the modifying clause' (Matsumoto 1988:56a). See Fillmore 1992 and 1994ms for the framework and for a lexical semantic analyses of *risk*, *home* and English visual perception verbs and nouns using the framework.

[2] Characterization of the bound morpheme *no* in this construction is problematic. It is different from the 'pronominal' use of *no*. In (5), for example, it cannot be replaced by the target *ringo* 'apple'. As will be mentioned later, it cannot be construed as a complementizer or a nominalizer either. However, following Kuroda, I call it 'nominalizer' here (cf. Kuroda 1976-77).

[3] The target is usually the subject or the direct object of V_1, but can be both (Hirose and Ohori 1992: 12c).

[4] One can think of the former (i.e. the function of reporting a situation) as the *internal function* of the *no*-relative, and the latter (i.e. the function of narrative-advancing) as the *external function* of the *no*-relative when it is combined with S_2 and when it is licensed by the construction.

[5] Lambrecht calls the function of monoclausal sentences such as *My car broke down* or *A man just got run over by a car!* 'event reporting' (Lambrecht 1988b). By 'event reporting' sentences, he means sentences in which an NP referent is not a topic but only a necessary participant in an event. He seems to be restricting the use of the term to the function of a construction as a whole. Thus, he argues that a two-clause sequence such as *There was a ball of fire burst through the seats in front of me* is also event reporting since the sentence as a whole reports a situation 'a ball of fire burst through the seats in front of me'. In contrast, I use event reporting to refer to the function of a CLAUSE (specifically, that of the *no*-relative here) NOT to the function of a TWO-CLAUSE SEQUENCE as a whole. However, I believe my use of the term is basically compatible with that of Lambrecht since what I mean by event-reporting clauses are those in which an NP referent is not a topic but merely a participant in a scene. Furthermore, like Lambrecht, I use the term to contrast event-reporting clauses or sentences with topic-comment clauses or sentences (See Footnote 6 below. See Kuroda 1972 for a logical distinction between thetic and categorical judgments which parallels the contrast above). Japanese grammarians make use of a similar distinction, but they somewhat misleadingly use the terms *gensyoo-bun* 'phenomenon sentences' and *handan-bun* 'judgment sentences' corresponding to event-reporting and topic-comment sentences respectively (Teramura 1992, Morita 1990).

[6] In the *no*-relative, the identity of the target NP referent is not as important as the reported event itself. Thus, the target can be an indefinite NP:

(i) [[kare-ga hon go-roku-satu -o sasidasu] -no]-o watasi-wa uketotta.
he NOM books five six CLASS ACC hold-out NO ACC I TOP received
'He held out five or six books to me, and I took (them).'

That is, the target NP in *no*-relatives is not construed as a topic of the sentence. In this respect, *no*-relatives are in contrast with topic-comment sentences. It is also true that the event-reporting function may not be categorically distinct from the presentational function of introducing an NP referent to a scene (Lambrecht 1988b). However, I prefer to characterize the function of *no*-relatives as event reporting since in many cases the target NP referent is already identified; thus, the target can be a proper noun (ii) or a pronoun (iii):

(ii) [[zyunko-ga suutu-o orosi-kaketa] -no]-o
Junko NOM suit ACC was-about-to-pull-down NO ACC
unno -ga osaeta.

Unno NOM seized
'Junko was about to pull her suit off, and then Unno seized (her).'

(iii) [[sore-o teeburu-no ue-ni oiteoita]-no]-ga nakunatteiru.
that ACC table GEN top-LOC have-put NO NOM is-gone
'I put it on top of the table, and (it) is gone.'

[7] Fillmore calls these types of relative clauses 'narrative-advancing' relative clauses (Fillmore 1989).

[8] The connective relative in Latin discussed in Robin Lakoff 1984 seems to be similar in function.

[9] In defining the continuative relative construction, Lambrecht states that it is a construction which establishes a temporal *or logical* link between two states of affairs, thereby allowing the sentence below to be an instance of the construction:

(iv) The cockroach was very arrogant, which is surprising, since cockroaches are know to be humble beings.

(Lambrecht 1988a: 328 (28b))

The crucial difference between the sentences in (19) above and (iv) is that in the latter the antecedent of the relative pronoun *which* is not an NP but the propositional content of the entire S_1. I will thus regard (iv) as disinct from the continuative relative construction in which two states of affairs are temporally connected. I will only discuss sentences such as those in (19) in which the antecedent is an NP rather than the propositional content of the entire S_1.

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On the grammaticalization of negative polarity items*

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0 Introduction

The phenomenon of polarity sensitivity is not, in general, very well understood. Why is it that certain words and idioms have the peculiar property of occurring only in negative, interrogative or conditional contexts? It is intuitively clear that negative polarity items (NPIs) are not arbitrarily distributed over the lexicon. A field-worker analyzing an unknown language would probably not ask if the word for *knife* is limited only to negative statements. On the other hand, indefinite pronouns, or certain modal verbs, are generally good candidates for NPIs. On the basis of these limited observations, one might venture the guess that negative polarity is a reflection of word meaning. More precisely, certain expressions are predestined to become polarity sensitive due to their semantic properties.

In the case of English *any*, this idea has been put forth by Kadmon and Landman (1993), who argue that all its uses can be explained by reference to its lexical-semantic properties. Fauconnier's (1975, 1978) work on minimal-quantity NPIs like *budge an inch* or *hurt a fly* suggests that their occurrence in negative contexts is directly related to their pragmatic force. They have an intensifying character and are used to make universal statements. Given the indefinite meaning of the minimal-quantity NP, this goal can only be achieved in implication-reversing contexts (e.g. negation, cf. Ladusaw 1980).

However, the rhetorical force of these expressions is idiomatic because it cannot in general be predicted from their literal meaning. Compare e.g. *one bit*, an NPI with *a bit*, which is not an NPI (cf. *I am (not) a bit worried*), but may be used to strengthen negation, and *a little bit*, which is also not an NPI, but differs from *a bit* in negative clauses. Thus *I am a little bit worried* is roughly equivalent to *I am a bit worried*. The negative counterpart of the first sentence, *I am not a little bit worried,* indicates a fairly strong degree of worry, while the negation of the second sentence, *I am not a bit worried*, expresses the absence of any worry. Arguably, these items have the same basic interpretation, but have developed special uses which have to be learned separately. If this is so, then *a bit, one bit* and *a little bit* are all possible candidates for NPI-status, but only *one bit* has been grammaticalized as such.

In using the term 'grammaticalization', I assume that the creation of NPIs shares some important features with other changes whereby lexical items acquire a special place in the grammar of a language. Traugott and Heine, in their introduction to the book *Approaches to grammaticalization* (Traugott and Heine 1991) mention the fact that only certain lexical classes are likely to become grammaticalized:

> "What we find in language after language is that for any given gram-matical domain, there is only a restrictive set of lexical fields, and within them only a restricted set of lexical items, that are likely to be sources. For example, case markers, including prepositions and postpositions, typically derive from terms for body parts or verbs of motion; tense and aspect markers typically derive from specific spatial configurations; modals from terms for possession, or desire; middles from reflexives, etc." (1991: 8)

Rather similar things could be said about negative polarity items. They cluster in certain semantic domains, and undergo processes of seman-tic bleaching, typical of grammaticalization phenomena in general. E.g., the phrase *lift a finger* as used in *The police didn't lift a finger to stop him* means something like *do anything*; all other aspects of its etymological meaning have become irrelevant.

Another aspect of grammaticalization is a shift from objective reference-based meanings to subjective meanings which involve aspects of speaker attitude. Again, this can be illustrated for NPIs. Compare for instance the sentence *John didn't move his left index finger*, which is simply descriptive, with *John didn't lift a finger*, in its idiomatic reading, which has the added property of emotional intensity.

A final relevant property of grammaticalization is "layering": next to the grammaticalized use, older, nongrammaticalized uses often stay around. For example, the polarity item *need*, used as a modal auxiliary, has a main verb counterpart which is not polarity-sensitive (cf. *You need not worry* and *I need you*). Layering is in fact so rampant that there are hardly any "pure" NPIs that have no other uses as well. This makes it virtually impossible to automatically detect NPIs in a corpus: first the different uses have to be distinguished. A number of examples of this phenomenon will be discussed below.

In this paper, I investigate the grammaticalization of NPIs in the largely unexplored area of verbs and verbal idioms, basing my conclusions on a comparison of English and Dutch data. These data, I should add, for the most part are not diachronic in nature, but present tendencies in current usage, as reflected in various text corpora. I show that some verbs have a strong tendency to occur in negative contexts, although they are not, strictly speaking, NPIs. For these, I will introduce the term "semi-NPI".

1 Verbs of indifference

The first set of verbs to be considered here I call "verbs of indifference". These verbs are psychological verbs which assess the affective aspects of the relation between a human subject, the "experiencer", and a "stimulus".

The basic verbs in this domain are *care, matter, mind* and *bother*. They can be classified as in Table 1, using two binary oppositions:

Table 1: Classification of verbs of indifference

	positive	negative
personal	care	mind
impersonal	matter	bother

The personal verbs in this table assign the experiencer role to the subject and the impersonal ones assign the stimulus role to the subject. Compare *I don't care about it* with *It doesn't matter to me* and *I don't mind it* with *It doesn't bother me*. The positive verbs entail a positive evaluation, the negative ones a negative evaluation.

The intimate relationship between *matter* and *mind* is suggested by some obsolete uses, listed in the OED: *mind* with the meaning of *matter*, as in the OED example *Bullets don't mind much* and *matter* with the meaning of *mind*, as in the following example cited from Fielding's "Tom Jones":

(1) If it had been out of doors I had not mattered it so much.

Note that these verbs are polysemous. Both *care* and *mind* can be used in a nonpsychological sense, meaning "look after" (cf. *One nurse had to care for 70 patients, Who is minding the store?*). In the psychological use, there is a strong tendency to use these verbs in a negative, interrogative or conditional context. I have checked this in an 11-million word corpus of English texts posted on the Internet. My findings are presented in Table 2:

Table 2: Four verbs of indifference: distribution[1]

Environments	CARE N=792	MATTER N=406	MIND N=341	BOTHER N=377
negative	53%	57%	72%	35%
other neg	12%	7%	20%	7%
interrogative	15%	13%	7%	11%
affirmative	20%	20%	1%	48%

Note in particular that the scores for *care* and *matter* are very close. Among the affirmative uses of these two verbs, quite a few are emphatic in character, either by displaying emphatic DO, as in *But I do care, my dearest!*, or by occurring in a cleft or pseudo-cleft construction. The verb *mind* is more nearly a negative polarity item than the others, as is evidenced by the paltry 1% of affirmative contexts. It is sometimes cited as a negative polarity item in the literature, but this is not entirely correct, since it is, after all, grammatical to say that you mind being left out.

Within the modern English period, the negation system shifted rather radically from postverbal negation (as in the jocular *I kid you not*) to preverbal negation with do-support. While the change was going on, some verbs resisted the new form of negation more than others. In the 18th century, the verbs that maintained the old form the longest were semi-polarity items, such as *care* and *matter* (cf. Tieken-Boon van Ostade 1987). In fact, Jespersen (1917) already suggested that the verbs which resisted the change the longest had a special affinity with negation. This, then, illustrates one of the ways in which semi-polarity status may become grammatically relevant.

In the case of *bother*, the association with nonaffirmative contexts is by far the weakest. I have no explanation as to why this might be. Interestingly, this verb is ambiguous, and also has another sense, which is easily distinguished and can be paraphrased roughly as "to take the trouble", as in *Fred did not bother to call* or *You need not have bothered.* With this meaning, the verb is actually a true negative polarity item[2], as you can see in Table 3, where the two uses are compared:

Table 3: Two types of BOTHER

contexts	=to annoy N=377	=to take the trouble N=253
negation	35%	65%
other neg	7%	14%
interrogative	11%	21%
affirmative	48%	0%

As you can see, all nonaffirmative contexts have roughly doubled their frequency, while the affirmative contexts have disappeared. In the second use, *bother* seems to belong to the class of minimal-extent verbs, indicating, in a nonaffirmative context, a minimal degree of effort or involvement. This is underscored by the frequent use of *even* with this particular sense. All 30 examples in my corpus of *even* modifying *bother* involve the sense 'take the trouble'. Given that the other use is more common overall, this is no doubt a highly significant finding. Some examples from the corpus are given in (2):

(2) a. I won't even bother to answer that narrow-minded question.
b. She becomes concerned when he doesn't even bother to give her a hard time about it.

For both senses of *bother*, the incidence of negative contexts is higher than one would expect for an arbitrary verb. For instance, compare the psychological sense of *bother* with the distribution of two other psychological verbs, *like* and *amuse*:

Table 4: Some psychological verbs.

contexts	bother N=377	like N=128	amuse N=126
negation	35%	24%	23%
rest neg	7%	5%	1%
interrogative	11%	12%	4%
affirmative	48%	59%	72%

In a semantic domain such as the verbs of indifference, with lots of semi-NPIs, one may expect the emergence of true NPIs. In these NPIs the strong tendency to appear in a negative context has become grammaticalized, that is to say, categorical. Examples are the various strengthenings of *care*, among which the OED lists:

(3) *Strengthenings of CARE (Source: OED on CD-ROM)*

care	a pin	a fig
	a button	a farthing
	a straw	a rap
	a rush	a damn

and also the idioms of the pattern *give an X*: *give a damn/shit/fuck/flying fuck/hoot/tinker's damn.* There seems to be a much greater variety in the ways you can say that you just don't care than there is in the more polite domain of saying that you don't mind.

An investigation of Dutch verbal polarity idioms also revealed a substantial number of idioms expressing indifference, such as

(4)

kunnen schelen	*uitmaken*
kunnen bommen	*malen om*
kunnen verdommen	*talen naar*
(kunnen) donderen	*zich bekreunen om*

all of which express various shades of indifference, and all of which have a strong, sometimes absolute tendency to occur in negative contexts. They correspond mostly to the English pair *care-matter* and not to the pair *mind-bother*. For the latter, only the counterparts *deren* and *hinderen* come to mind. The Dutch, like the English, appear to be more preoccupied with the rude than with the polite uses of the verbs of indifference. It would be interesting to say more about the etymological meanings of the various expressions listed in (4), but a full discussion would take far too long. Let me just point out that *kunnen schelen* contains the verb *schelen* which is related to the noun *verschil* "difference". So *kunnen schelen* literally means something like "to be able to make a difference (to somebody)". There is also a related adjective, *onverschillig* "indifferent", which like its English counterpart cannot drop the negative suffix, and therefore constitutes a NPI at the morphological level.

Another expression of indifference is *geven om* "give about = care about", which is clearly related to the English pattern *give a damn* etc. It has an impersonal variant, cf. the examples in (5):

(5) a. Ik geef niet om boontjessoep
I give not for bean soup "I don't care for bean soup"

b. Dat geeft niet.
that gives not "That doesn't matter"

The impersonal expressions often optionally take two nonsubject arguments as well as a subject argument. One of these indicates a measure, e.g. the extent to which something matters, or rather, doesn't matter, the other indicates the experiencer:

(6) Dat kan me niets/niet veel/weinig/*niet alles/geen bal schelen
that can me nothing/not much/little/*not all/no ball differ
"It makes no/no big etc difference to me"

The measure expressions must be indefinite, which is why negated universals, which are otherwise possible triggers for negative polarity items (Ladusaw 1980), are ruled out here. In this regard they are much like measure NPs elsewhere, which also frequently exhibit a definiteness effect, compare:

(7) *It took no/little/some/*the/*all time to build it*

Due to the optionality of the measure phrase, *niet* "not" and *niets* "nothing" can be used interchangeably with these verbs:

(8) Dat kan me niet(s) schelen.
That can me not(hing) differ "I don't care about that"

All Dutch verbs and verbal idioms reviewed here can be used affirmatively with the affirmative adverb *wel*, which plays the same role in Dutch as emphatic DO in English. This adverb is typically used to deny an earlier negative statement or a negative presupposition. In Table 5, the distribution of some of these verbs is laid out.[3]

Table 5: Some Dutch verbs of indifference

context	kunnen schelen N=140	uitmake n N=39	malen om N=34	deren N=110
negation	51%	59%	71%	92%
other neg	35%	19%	3%	6%
interrogative	12%	13%	24%	1%
affirmative	2%	11%	3%	1%

2 Verbs of intolerance

Another set of semi-NPIs consists of what I will call verbs of intolerance. This category includes such items as *can stand, can take, can bear*. Unlike the previous category, this class tends to consist of verbal combinations, with a modal element (usually *can*) and a verbal element. However, the modal element is not lexically fixed, as is evident from pairs such as:

(9) a. I could not stand it any longer.
b. I was unable to stand it any longer.

An adjective which expresses a similar meaning is *insufferable*. The suffix *-able* represents the modal element, and *suffer* the verbal element. Its polarity sensitivity is obvious from the fact that the negative prefix *in-* is obligatory.

All expressions in this class appear to be firmly semi-NPIs. That is to say, they have a robust tendency to occur in nonaffirmative clauses, while at the same time being genuinely acceptable in purely affirmative use (cf. also the discussion in Linebarger 1980 and Von Bergen and Von Bergen 1993). For *can stand*, this is shown by the following examples from my Internet corpus:

(10) a. Now, patriarchism can stand some criticism, but I think Tepper goes way too far in saying that having a father is a bad experience for men.
b. "Are you tired, Sufi?" "I could stand a nap, M'lord."
c. Looks like he could stand to do some heavy labor out at the farm to burn away some of those extra calories....
d. This is a "Gotterdammerung" that can stand the test of time.

Some relevant numbers are presented in the following table:

Table 6: Some English verbal expressions of intolerance.

context	can stand N=137	can bear N=60	can take N=36
negation	72%	67%	72%
rest neg	14%	26%	12%
interrogative	7%	3%	6%
affirmative	7%	5%	11%

There is a plenitude of meaning-related NPIs in Dutch, such as

(11) *kunnen uitstaan* *kunnen velen*
kunnen verkroppen *kunnen luchten of zien*
kunnen zetten

The adjective *onuitstaanbaar* is a direct counterpart to English *insufferable*, and the negative prefix *on-* is the (likewise obligatory) marker of negation. Table 7 presents usage data from our Dutch database.

Table 7: Some Dutch expressions of intolerance.

context	kunnen uitstaan N= 27	kunnen velen N=36
negation	81%	84%
rest neg	15%	6%
interrogative	0%	0%
affirmative	4%	12%

3 Modal verbs

Next, I want to briefly mention the case of NPIs which are auxiliary verbs[4], such as English *need* (*Engineers need *(not) apply*), Dutch *hoeven*, German *brauchen* and Mandarin *yòng*. Although not historically related, these modals have all developed into NPIs in the course of history and express the same meaning, which suggests strongly that NPI-status is not an arbitrary feature of these verbs. They also have largely the same sets of triggering contexts.

4 Verbs of minimal degree

A very large class of verbal expressions with NPI-status are the expressions of minimal degree or extent. These include well-known items such as *budge (an inch), lift a finger, bat an eyelid, move a muscle* and the like. Usually, these contain an indefinite NP, often a measure expression, such as *inch* or *second*.[5] Less easily identifiable are solitary verbs whose negative affinity derives from the fact that they express some minimal action or relation. We have already seen the case of *bother* in the sense of *take the trouble*. Other verbs which may express minimality are *begin* or *touch* in sentences such as the following:

(12) a. He did not even begin to answer the problem.
b. You have not touched your meal yet.

Note that it is usually idiomatic to add *even* to these verbs, as in (12a), which fits the fact that they point to some endpoint of a scale.

Nonpsychological verbs which exhibit polarity sensitivity often can be placed in this category. Take for instance the Dutch verb *reppen*. In one of its meanings, this verb means *to mention, to speak of*. Until recently, this item was a negative polarity item for many speakers. Etymologically, this verb meant something like "to hit, to touch", compare the English idiom *to touch upon*

something. Perhaps it was this meaning of 'touching' which gave the verb its character of expressing some minimal extent, which is often enhanced by adding the phrase *met (g)een woord* "with a (no) word", a clear minimizer. The same sense of 'barely touching (with the tips of your fingers)' can be found in the expression *kunnen tippen aan* "to be able to match = hold a candle to", as in (13)

(13) Niemand kon aan haar tippen.
nobody could to her touch "Nobody could hold a candle to her"

Note that impersonal verbs, verbs which I loosely define here as taking a nonhuman, nonagent subject, and verbs with an auxiliary indicating ability, such as *can* in English, are rather overrepresented within the class of polarity sensitive verbs. In the case of *can*, there seems to be a semantic explanation: This item often sets up a pragmatic scale (cf. Fauconnier 1975). Usually, if I did not do something minimal, it does not follow that I did not do anything less minimal. However, if I could not do something minimal, it follows (pragmatically, not logically) that I could not do anything less minimal either.

5 Other verbs

The classes identified so far appear to be the most significant among verbal polarity items. However, I am aware of others that do not fit into these categories, such as the Dutch verb *boteren*, lit. "to butter", an impersonal verb:

(14) Het boterde niet tussen de Koningin en de premier.
it buttered not between the Queen and the prime minister
"The Queen and the prime minister did not get along"

Another Dutch verb, with a similar meaning, is *klikken*. Here we see a much weaker affinity for nonaffirmative contexts, cf. Table 8.

Table 8: A comparison of two Dutch verbs for getting along

context	botere n N=50	klikke n N=34
negation	98%	40%
rest neg.	0%	0%
interrogative	0%	0%
affirmative	2%	60%

A more detailed discussion of the remaining cases must be set aside for another paper, due to considerations of space.

6 Conclusions

I have identified the main lexical domains in English and Dutch in which verbal NPIs occur, in order to argue that NPIs and semi-NPIs do not arise out of thin air or spring up randomly in the lexicon, but cluster in certain semantic areas. For largely pragmatic reasons, some verbs tend to occur in nonaffirmative contexts more than other verbs. This may set the stage for further specialization, but the

main point here is, that there is no necessity for this at all. Grammaticalization is not an inevitable process. We do not need to appeal to pragmatics to explain the distributional properties of NPIs and semi-NPIs, as some authors appear to want to do (cf. e.g. the discussion in Von Bergen and Von Bergen 1993). Compare for instance the English verb *bother* in its psychological sense with Dutch *deren*. Whereas affirmative clauses make up 48% of the environments in which *bother* may occur, they make up only 1% of occurrences for its Dutch counterpart (cf. Tables 3 and 5). The same point is made in Table 8, where two verbs for getting along are compared. Pragmatics cannot and need not explain such differences, which are a matter of one verb being further along the way in the grammaticalization process than the other.

Another conclusion is that attraction to negative environments is semantically-induced, but independent of argument-structure (unlike what Linebarger 1980 suggests). This is what pairs such as *care-matter* or *mind-bother* have to tell us.

I have concentrated here on the lexicographical aspects of verbal polarity items. Much could be said about other important aspects, such as the fact that all of them may appear before their triggers, in spite of the leftness condition on polarity licensing (Jackendoff 1972, Ladusaw 1980), a condition which seems otherwise valid for English. Cf.:

(15) a. You need not worry.
b. I could stand it no more.
c. It matters less and less.

Notes

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[1] By "negative", clausal contexts are meant where *not, n't* or a negative quantifier, such as *nobody, nothing, never, no* is present. By "other neg.", clausal contexts with other downward entailing operators are meant, such as *at most three students*.

[2] *Bother* also occurs in the polarity-sensitive collocation *can be bothered*. This usage was not included in the data for Table 3.

[3] Taken from a database of naturally-occurring examples compiled at the University of Groningen.

[4] For discussion of polarity sensitive auxiliaries from a typological perspective, see Edmondson (1983).

[5] A rare case of a (formally) definite NP in a verbal idiom of minimal extent is *the first thing* in *Ned does not know the first thing about topology.*

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Anaphoric Binding in Construction Grammar[1]

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Introduction

This paper will present the main outlines of an approach to anaphora within the Construction Grammar (CG) framework. The primary goal will be to sort out the universal, the language-particular and the lexeme-specific properties of individual anaphoric items. The basic idea is the following: in the domain of anaphora, universal grammar provides a fairly limited array of patterns or constructions. Individual languages select subsets of these commonly encountered patterns and combine them into more complex constructions. Finally, a language assigns each of its anaphoric elements a particular role in at least one, frequently more than one, anaphoric construction.

It is now widely recognized that there are not universally just two kinds of anaphoric elements: 'anaphors' which must find an antecedent (i.e., must be bound) within a specified local domain and 'pronominals', which must not find an antecedent (i.e. must be free) within that same domain. First, within a single language, the domain in which a bound element is bound need not be the same as the domain in which a free element is free; 'anaphors' and 'pronominals' do not in fact occur in strict complementary distribution. Secondly, anaphoric domains[2] vary across languages. Thirdly, anaphoric domains may vary across lexical items within a language. Fourthly, a single lexical item in a single language may have more than one associated domain: in particular the anaphor may be free in a narrower domain and bound in a wider one (See, e.g., Dalrymple 1993: 43 *et passim*). These insights come in large part from the work of Bresnan in the mid-eighties, partially in collaboration with Halvorsen and Maling.[3] They are now represented to varying degrees in a wide range of theoretical approaches, for example in GB by Manzini and Wexler (1987), in HPSG by Pollard and Sag (1992) and especially in LFG by Dalrymple (1993), whose approach anticipates that presented here in important respects.

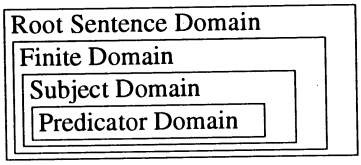
Domains

The notion of anaphoric domain is informally illustrated in examples (1) and (2).

(1) $[_a\ I_i$ think $[_b$ Joe$_j$ relied $[_c$ on *him$_j$/himself$_j$/me$_i$/*myself$_i$]]]

(2) $[_a\ I_i$ think $[_b$ Joe$_j$ reached $[_c$ behind him$_j$/himself$_j$/me$_i$/ *myself$_i$]]]

(3)



In (1) *him* may not be anteceded by *Joe*, while in (2) the reverse is true. This observation illustrates the fact that the meaning-bearing pronoun *behind* in (2) creates a minimal Predicator Domain in which an English pronoun such as *him* must be free, whereas the non-semantic (or 'case-marking') pronoun *on* in (1) does not. The minimal predicator domain containing *him* in (1) is therefore b, while in (2) it is c. Since *Joe* is within b but not within c, *him* is free of an antecedent in its the minimal predicator domain in (2) but not in (1).

The reflexive anaphor *himself*, unlike the ordinary pronoun *him*, may be bound by *Joe* in both examples. This observation illustrates the general fact that English reflexives must be bound, not in the minimal domain governed by a predicator, but in the minimal domain containing a subject. In both examples that nearest subject is *Joe* and the domain is therefore b.

In the diagram given in (3) we find that the box labeled Subject Domain contains the box labeled Predicator Domain. This reflects the fact that the minimal subject domain of an element will always contain (though not always properly contain) the minimal predicator domain of that element.

The pronoun *me* is bound in both examples by *I*. Since *I* is outside of b in (1) and outside of c in (2), it may antecede *me* in both examples.

The reflexive *myself* may not be bound by *I* in either example because the minimal subject domain for *myself* is b in both cases, and *I* falls outside b.

The minimal Finite Domain of an anaphoric element contains that element and the 'nearest' finite verb.[4] In both (1) and (2), b is the minimal finite domain of the anaphor(s). The minimal finite domain plays no role in English, but it does in Norwegian, as we will see below. The minimal finite domain contains (although not necessarily properly) the minimal subject domain of any anaphoric element, as indicated in diagram in (3).

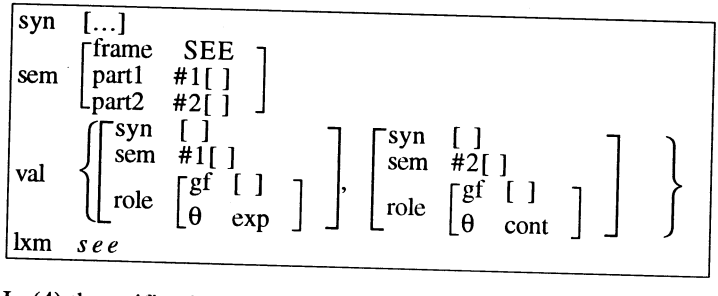
The Root Sentence Domain also plays no role in English, although it does in languages such as Marathi (Dalrymple 1993). To say that an anaphor is bound in its root sentence domain is only to say that it must have an antecedent in the sentence in which it occurs, though of course not necessarily in the minimal finite clause in which it occurs. An example of such an anaphor is Marathi *apaaṇ* (Dalrymple 1993: 26). Of course the root sentence domain contains the minimal finite domain (though not necessarily properly), as indicated in (3).

Valence sets: the locales of binding domains

Binding domains are defined in GB in terms of constituent structures, in LFG in terms of functional structures, and in HPSG in terms of subcat lists[5]. In CG binding domains are defined in terms of valence sets. Valence sets may be briefly characterized as follows. The CG objects representing linguistic

constructions – and the words, phrases and sentences which they license (*constructs*) – are tree structures with feature structures (FSs) at the nodes. FSs encode a complex of information, including syntactic, semantic and relational information.[6] Simple lexical entries take the form of structures of this type which consist of a single node[7] with its associated FS. Lexical entries which represent predicators have a valence attribute. The value of the valence attribute is a set of FSs (the *valence set* of that lexical entry), each of whose members represents an argument requirement of the predicator.[8] A member of the valence set of a predicator p is called a *valence element* of p. The CG notion of valence set corresponds roughly to the subcat list in HPSG or the semantic form in LFG. A valence set is illustrated for the lexical entry *see* in (4).

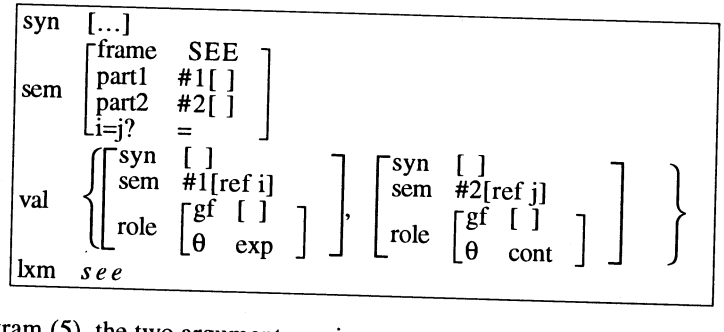
(4)



In (4) the unification variables #1 and #2 assure that the semantic values of the experiencer and content arguments of *see* (which will be respectively its subject and object arguments if *see* undergoes transitive linking) are unified with the values of the two participants in the SEE frame in the external semantic value.

Binding is represented within a valence set in CG, as illustrated in (5).

(5)



In diagram (5), the two argument requirements constituting the valence set appear with the referential indices i and j; a new attribute 'i=j?' appears in the external semantic value. In (5) this attribute has the value '=', indicating identity of the two indices, hence binding. Had this value been '≠', that would have recorded non-identity.

Valence embedding

So far we have illustrated binding only for the circumstance in which antecedent and anaphor are coarguments. This is not always the case. An example of an anaphor never bound by a coargument is Norwegian *seg*, discussed in a later section and illustrated in example (6) (repeated later as 23b).

(6)	Jon$_i$	hørte	oss	snakke	om	seg$_i$
	John$_i$	heard	us	talk	about	him$_i$

If antecedence is determined by valence membership but is not simply coargumenthood, what is it? Looking again at example (6) we see that the antecedent *Jon* is a valence member of *hørte* 'heard' and that the anaphor *seg* is a valence member of *om* 'about', which is a valence member of *snakke* 'talk', which is a valence member of *hørte*. Thus, the antecedent is a valence member of *hørte* and the anaphor is a valence member of a valence member of a valence member of *hørte*. We will want to say that *Jon* and *seg* are both *valence embedded* in the same domain, that of *hørte,* and that *Jon* is in some sense 'superior' to *seg*. We wish to develop a precise notion of valence embedding in order to define the superiority relation obtaining between antecedent and anaphor. The rough idea is that the antecedent is a valence member of some FS [π] and the anaphor is a valence member of a valence member ... of a valence member of [π].

We need a way to symbolize an arbitrary number of iterations of the relation 'is a valence member of'. Given two FSs [π] and [α], we say that [π] directly valence embeds [α], or equivalently that [α] is valence embedded in [π] at depth unity, iff [α] is a valence member of [π]. We express this relationship with the symbol ɜ. Thus,

(7) [π]ɜ[α] iff [π val {[α]}]

We can now use the Kleene star notation to express the idea that one FS is embedded in another at an arbitrary depth. Thus, (8) says that [α] is valence embedded in [π] at an arbitrary depth, or, more simply, that [α] is valence embedded in [π]. If the Kleene star represents zero iterations of the material in its scope, [α] is simply a valence member of [π]; if the Kleene star represents one iteration, [α] is a valence member of a valence member of [π]; and so on.

(8) [π val {([ ]ɜ)*[α]}]

Anaphoric superiority

The superiority relation between antecedents and anaphors in CG holds between two FSs [α] and [β]which (a) are valence embedded in the same FS [π] and (b) obey a further, asymmetrical, condition. The first part of the asymmetry-inducing condition is that [α] must bear a thematic relation to [π], while [β] need not. Thus, [α] will either be a valence member of [π] or a valence member of a non-semantic (case marking) preposition which itself is a valence member of [π],

while [β] may be valence embedded in [π] at an arbitrary depth. If [β] does not bear a thematic relation to [π], this first part of condition b is sufficient to establish the required asymmetry. The analogy to non-mutual C-command is apparent, and also to the comparable non-coargument binding situation in HPSG's (non-local) O-command (Pollard and Sag 1992: 300) or in LFG's f-command (Bresnan 1982: 334; see also Dalrymple 1993: 155-157, who derives Bresnan's condition from the form of her (Dalrymple's) binding equations).

Anaphoric superiority among coarguments

What about the case in which [β] does bear a thematic relation to [π], that is, when [α] and [β] are coarguments? In English, where the question has been studied in greatest detail, at least three classes of factors interact in complex ways to produce the asymmetric 'command' relation obtaining between antecedents and anaphors: linear precedence, relative obliqueness of grammatical function, and semantic factors, the latter perhaps not always assignable to a hierarchy of thematic relations. Pollard and Sag (1992) provide several examples in which relative obliqueness appears as the controlling factor. They, as well as many other authors, also recognize examples such as (9), in which linear precedence is the controlling factor.

(9) a Amy talked to Bea about Cy
b Amy talked about Cy to Bea
c Amy_i talked to Bea_j about $\text{herself}_{i,j}$
d Amy_i talked about herself_i/*himself_j to Cy_j

Semantic factors arise in cases like (10)c, where perhaps the agency of the oblique prevents its being treated as anaphorically 'inferior' to the patient subject.

(10) a Amy lied about herself
b Amy slandered herself
c *Amy was slandered by herself

Pollard and Sag (1992: 280, ex. 70) give (11)a,b as evidence that the objects of non-semantic prepositions such as *to* and *with* count the same as direct objects for purposes of anaphoric superiority, while *about* marks a more oblique argument.

(11) a Kim_i told Bill_j about $\text{himself}_{i/j/*k}$
b Kim_i talked to/with Bill_j about $\text{himself}_{i/j/*k}$

Notwithstanding the correctness of Pollard and Sag's point regarding the status of non-semantic prepositions, we observe that in a structurally parallel case like (12), semantic considerations seem to override relative obliqueness in establishing anaphoric superiority among coarguments.

(12) It's wrong to discuss students behind their backs. We must start talking about them$_i$ to themselves$_i$.[9]

Moreover, it does not seem that the semantic considerations operative in (12) can be reduced to a simple hierarchy of thematic roles, since at the relatively coarse level of agents, themes, goals, etc. the unacceptable (13)[10] displays the same thematic structure as (12).

(13) *I discussed Bea with herself.

There are also cases, such as (14), in which both relative obliqueness and relative semantic superiority (whatever that may be) give way to simple linear precedence.

(14) a The envelope must be addressed by the applicant$_i$ to himself$_i$ in his own handwriting

b The envelope must be addressed to the applicant$_i$ by himself$_i$ in his own handwriting

In view of the complexity, and apparent indeterminacy, of the facts governing anaphoric superiority among coarguments in English, the approach taken here to anaphoric superiority as a cross-linguistic phenomenon will leave the question of superiority among coarguments as a parameter to be set by each individual language,[11] perhaps according to some kind of multi-dimensional optimization procedure[12].

Valence command

The anaphoric superiority relation is called in CG (with staggering originality) 'valence command' or v-command. It is represented as a construction in (15). Construction (15) says that for two FSs [α] and [β], both of which are v-embedded in a FS [π], [α] v-commands [β] iff (i) [α] bears a θ-relation to [π] and (ii) either [β] bears no θ-relation to [π] or [α] is 'anaphorically superior' to [β] according to some language specific combination of the parameters of relative obliqueness, semantic role and linear precedence. We will see shortly how this construction comes into play in sentences containing lexical anaphors.

(15)

Valence Command (VC) Construction

[π val {([ ]$_\ni$)*[α role [θ_π [ ]] , ([ ]$_\ni$)*[β]}]

(If [β role [θ_π [ ]], then ...])[13]

Universal (i.e., popular) domain constructions

In this section we examine the four widespread constructions representing the anaphoric domains introduced informally in (1), (2) and (3).[14] The corresponding constructions all *inherit* the VC construction. That is, each of these

constructions contains all the information of the VC construction, plus some added information of its own.[15]

The Minimal Predicator Domain Construction (MPD) stipulates that the anaphor in question, [β], must find (or not find) its antecedent in the minimal FS in which [β] is v-embedded and which is a predicator (i.e., which has non-null semantics).[16] This amounts to saying that with regard to the VC structure which the MPD construction inherits, none of the FSs intervening between [π] and [β] – which are collectively denoted by the expression '([ ]ɔ)*' preceding the expression '[β]' – may carry non-null semantics. The Minimal Predicator Domain Construction may thus be notated as in (16).

(16)

Minimal Predicator Domain (MPD)[17]

inherit VC
(¬[sem ¬null]ɔ)*[β]

The Minimal Subject Domain (MSD) Construction provides that no FS intervening in the chain of direct valence embedding from [π] to [β] contains a subject element.

(17)

Minimal Subject Domain (MSD)

inherit VC
(¬[val {role|gf subj}]ɔ)*[β]

The Minimal Finite Domain (MFD) Construction is analogously represented.

(18)

Minimal Finite Domain (MFD)

inherit VC
(¬[syn|fin +]ɔ)*[β]

Antecedence

The subject of antecedence, broadly construed, takes in both identity of the referential index of an anaphor with that of a v-commanding FS (binding) and non-identity of the referential index of an anaphor with that of a v-commanding FS (freedom). CG attributes to universal grammar an abstract Antecedence Construction, which is combined, via inheritance, with more specific constructions imposing a choice of either Binding (A) or Freedom (B). The Antecedence construction stipulates a structure satisfying a valence command relation between FSs [α] and [β], provides [α] and [β] with referential indices, and creates an attribute, represented 'i=j?', whose unspecified value ranges over the possibilities identical ('=') and distinct ('≠'). The Binding and Freedom constructions provide the values '=' and '≠', respectively, to the attribute assessing the identity or non-identity of the referential indices of [α] and [β].

(19)

(i) Antecedence (Ant)

inherit	VC
sem	[i=j? [ ]]
val	{[α ref i] , [β ref j]}

(ii) Binding (A)

inherit	Ant
i=j?	=

(iii) Freedom (B)

inherit	Ant
i=j?	≠

Individual languages: English

As illustrated in (1) and (2), English reflexives are bound in the minimal subject domain while English non-reflexive pronouns are free in the minimal predicator domain. Part of the description of English reflexive pronouns will require us to amalgamate the MSD construction and the A construction. Similarly, part of the description of English non-reflexive pronouns will require the amalgamation of the B construction and the MPD construction. The general idea is that each of the four constructions just mentioned is, as part of universal grammar, available to any language. The particular combinations mentioned (of A with MSD of B with MPD) are specific to English (of course, not only to English). The specific technique of 'amalgamation' we will use is again constructional inheritance.

Non-lexical anaphoric constructions of English

The non-lexical construction involved in the licensing of sentences with English reflexives consists simply in the inheritance of both A and MSD, as shown in (20)a. The non-lexical English construction involved in licensing sentences containing non-reflexive pronouns consists in the inheritance of B and MPD, as shown in (20)b.

(20)

a MSD Binding (MSD-A)

inherit MSD
inherit A

b MPD Freedom (MPD-B)

inherit MPD
inherit B

Lexical anaphoric constructions in English

As noted in the introduction, although in English one can divide pronouns into reflexives and non-reflexives, the first bound according to the structure presented in (20)a and the second free according to the structure presented in (20)b, in other languages individual anaphors may require different binding (non-binding) domains and anaphors may also require both freedom in a narrower domain and binding in a wider one. Consequently, conditions on binding and freedom, such as those expressed in (20), must ultimately be attached to individual lexical anaphors. Of course we would in any case have to find a way to get the English lexical anaphors to fill the role of [β] in (20).

The general problem becomes how to attach conditions on antecedence, such as those given in (20), to particular lexical entries like *him* or *herself.* It will not do simply to say that the lexical entries inherit constructions like (20)a or (20)b, since these construction denote the (classes) of verb phrases within whose valence values binding takes place, not the objects being bound, i.e., not the FSs filling the role of [β] in these structures. In order to represent the fact that some FS [χ] has the property of being bound in, say, the minimal subject domain, we need to unify [χ], not with MSD-A itself, but with the [β] substructure of MSD-A.

That the word *herself* must figure as the [β] substructure in a MSD-A construct illustrates a kind of formal situation which is not restricted to the characterization of lexical *anaphors.* A number of other kinds of lexical items must occur in particular syntactic and semantic environments under circumstances in which it is not a property of the larger structure to require presence of the lexical item but rather a property of the lexical item to require realization in the larger structure and, crucially, the requirement of the lexical entry to appear in the larger structure is not a matter of the valence, subcategorization or argument structure properties of the former. For example, Fillmore (1990) shows that the word *ago* must appear as the second constituent of the Extent Modification construction which licenses such phrases as

(21) a [three miles][beyond the city limits]
b [long][after the dance]
c [a mile][across]

Similarly, the word *respectively* calls for realization in a specific syntactic and semantic environment (McCawley 1976, Kay 1989). Analogous observations have been made regarding expressions like *let alone* (Fillmore, Kay and O'Connor 1988) *vice versa, respective* (Fraser 1970, McCawley 1970, 1976, Kay 1989), *at least* (Kay 1992; see also for French *au moins* 'at least' Ducrot 1980, Anscombre and Ducrot 1983). Negative polarity items in general, which notoriously do not all

require exactly the same syntactico-semantic context, also bear with them, as it were, the seeds of a larger structure in which they must occur.

I will use the term 'conscription' to denote a three place relation between a single-constituent construction S, a multi-constituent construction M and a constituent C of M where it is a property of S that it must unify with C. The term 'conscription' is chosen with the image of military conscription in mind. Unlike the metaphor of 'inheritance', where a 'person' (construction) 'receives' stuff from an outside source, the mnemonic image intended for 'conscription' is that the 'person' (construction) is required to play an assigned a role in a specific larger structure. For example, the lexical item *herself* is conscripted to play the role of the [β] constituent in a MSD-A structure. We notate the conscription of construction S into the C constituent of construction M by writing 'conscript M: C' in our representation of S, which may be read 'S has the property that every construct licensed by S appears as an M constituent of a C construct.'

Typical constructions of lexical anaphors in English can now be given.

(22)

a *herself*

conscript	MSD-A: [β]
sem	[...]
syn	[...]
lxm	*herself*

b *him*

conscript	MPD-B: [β]
sem	[...]
syn	[...]
lxm	*him*

Lexemes with more than a single anaphoric domain: Norwegian

Long distance anaphors, that is, anaphors which must be bound outside a local domain, require conscription to both a non-binding and a binding construction. Bresnan and her collaborators in the mid-eighties (e.g., Bresnan, Halverson and Maling 1985) introduced the phenomena of long-distance anaphora into theoretical discussion within the LFG approach, and the language focused upon was Norwegian. Speaking in theory-neutral terms, the analysis of Norwegian to be presented here is based on that original LFG analysis, as summarized in Sells (1985: 174-178) and recently elaborated in a theoretical format more like the present one in Dalrymple (1993).[18]

I will not present the range of data on which this analysis is based, referring the reader to the sources cited in the preceding paragraph, but will simply provide a summary description of a few facts and show how these are modeled in the present approach.

Norwegian has three sets of anaphoric pronouns and one set of ordinary (non-bound) pronouns[19]. The reflexive pronouns may be divided up as follows. There are two local reflexives, *seg selv* and *ham selv*, both of which must be bound within the minimal subject domain (like English reflexives). The difference between *seg selv* and *ham selv* is that the antecedent of the former must itself be a subject while the antecedent of the latter may not be a subject. The third bound pronoun of Norwegian is the non-local reflexive *seg*. Seg must be free within the minimal predicator domain but also must be bound by a subject within the minimal finite domain. The free pronoun *ham* has the same properties as English *him* and

thus overlaps in distribution with *seg*. The examples in (23)[20] illustrate, but of course do not justify, the preceding descriptions.

(23)							
	a	Jon_i / $John_i$	fortalte / told	meg / me	om / about	seg selv$_i$ / himself$_i$	
	b	Jon_i / $John_i$	hørte / heard	oss / us	snakke / talk	om / about	seg$_i$ / him$_i$
	c	Vi / We	fortalte / told	Jon_i / $John_i$	om / about	ham selv$_i$ / himself$_i$	
	d	Jon_i / $John_i$	ba / asked	oss / us	snakke / to talk	til / to	ham$_i$ / him$_i$

It is likely that a significant number of languages beyond Norwegian have anaphors which obligatorily take or reject subject antecedents. We are inclined to add to our array of universal anaphoric constructions a subject antecedence construction.[21]

(24)

Subject Antecedence (Subj-Ant)

inherit	Ant
val	{[α role|gf subj]}

Combining Subj-Ant with constructions A and B (see 19), we get universally available constructions for subject binding and subject freedom.

(25)

a Subject Binding (Subj-A)

inherit	Subj-Ant
inherit	A

b Subject Freedom (Subj-B)

inherit	Subj-Ant
inherit	B

Lexical anaphoric constructions in Norwegian

Although the conditions on binding and freedom of Norwegian anaphors are more complex than those required for English, we do not need to posit additional non-lexical anaphoric constructions for Norwegian. Allowing distinct Norwegian lexical anaphors to conscript different combinations of the universally available constructions already at hand will suffice.

(26)

seg selv

conscript	Subj-A: [β]
conscript	MSD-A: [β]
lxm	*seg self*

seg

conscript	Subj-A: [β]
conscript	MFD-A: [β]
conscript	MPD-B: [β]
lxm	*seg*

ham selv	
conscript	Subj-B: [β]
conscript	MSD-A: [β]
lxm	*ham selv*

ham	
conscript	MPD-B: [β]
lxm	*ham*

Integration with non-syntactic binding: Marathi *aapaṇ*

Dalrymple discusses the Marathi long-distance reflexive *aapaṇ* (1993: 11-17 *et passim*). She points out that this anaphor has three properties of interest to binding theory: (1) it must be free in what we have called the minimal predicator domain, (2) it must be bound in the root sentence domain (but not necessarily in the minimal finite domain), and (3) it must be bound by a 'logical subject', that is, what is called a distinguished argument (DA) in CG (see Fillmore and Kay 1993, Kay and Fillmore 1994). Although Dalrymple's approach provides perspicuous representation of the first two properties, she provides no formal representation of the third property of *aapaṇ*. Perhaps this could be done, but no simple and perspicuous way to represent a requirement for binding by a distinguished argument immediately suggests itself within Dalrymple's LFG formalism. On the other hand in the valence-embedding approach developed here, representing DA binding presents no complications.

We earlier assumed that minimal subject domain binding (20)a and minimal predicator domain freedom (20)b were constructions of English in particular. This was too conservative, although it simplified the exposition at that point. We subsequently saw both these constructions show up in Norwegian and now we see MPD-B (20)b in Marathi. Something on the order of constructions (20)a and (20)b express the essential intuitions of Chomsky's original (1981) formulation of the universal Principles A and B of his binding theory. Let us suppose that the constructions of (20) are universally available to languages (though evidently not chosen by all). Having assumed this, to account for Marathi *aapaṇ* we need only add to our existing inventory of non-lexical anaphoric constructions one specifying binding by a distinguished argument. It would be premature to judge this construction sufficiently widespread in the world's languages to attribute it to universal grammar, so we suppose for now that it is particular to Marathi.

(27) Distinguished Argument Binding (DA-A)

inherit	A
val	{[α rolelθ DA]}

Marathi *aapaṇ* may now be represented as follows.

(28)

aapaṇ	
conscript	RD-A: [β]
conscript	DA-A: [β]
conscript	MPD-B: [β]
lxm	*aapaṇ*

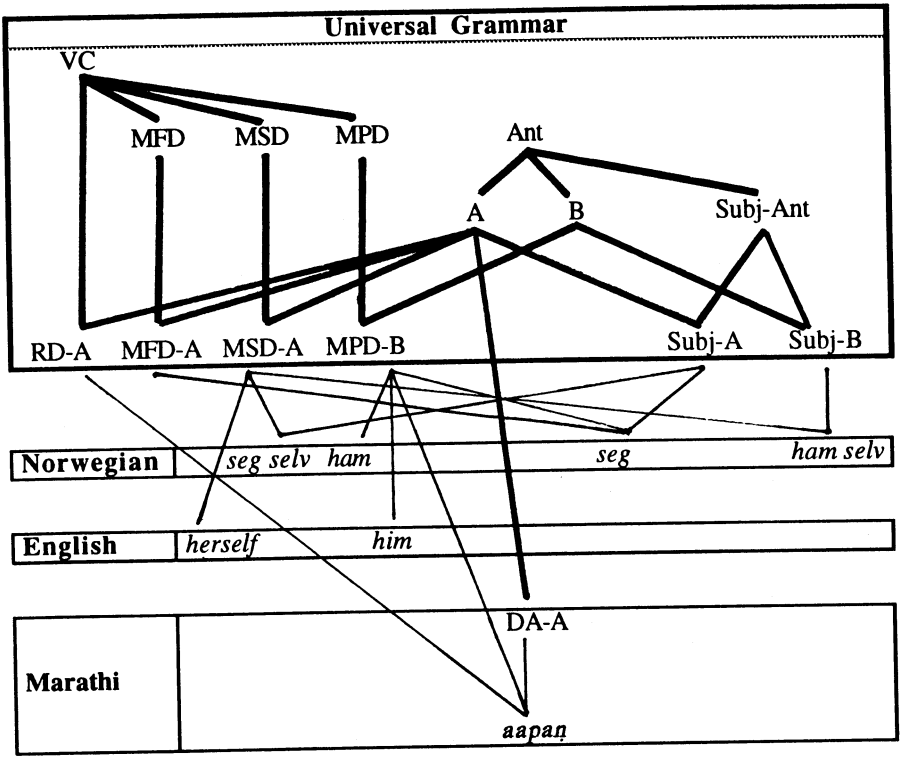
Conclusion

Diagram (29) summarizes those anaphoric constructions which have been suggested to form part of universal grammar, in the sense of being *available* to every language. The non-lexical constructions given in the diagram are those needed to illustrate conscription with respect to the lexical anaphors of English, Norwegian and Marathi discussed in the text. In (29) a heavy line indicates constructional inheritance; a lighter line indicates conscription of a lexical anaphor into the [β] constituent of a non-lexical anaphoric construction.

A small number of non-lexical anaphoric constructions are attributed to universal grammar. The generalizations over these constructions are abstracted into an inheritance network, which provides an economical map of this region of universal grammar. Non-lexical anaphoric constructions in particular languages also exist. These may inherit one or more of the universal constructions, while adding further information of their own. Particular lexical anaphors in individual languages are conscripted into the non-antecedent role in one or more non-lexical anaphoric constructions, either universal or language-specific.[22]

Anaphoric phenomena, regarded cross-linguistically, display a rather limited number of frequently occurring patterns. There are also anaphoric phenomena which are not widespread, occurring in one or a small number of languages. The constructional and unificational approach to anaphora sketched above, relying directly on the notions of valence embedding, constructional inheritance and conscription, appears to provide a perspicuous theoretical vocabulary for the discussion of these phenomena.[23]

(29)



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[1]It is a special pleasure to contribute the present paper to a conference dedicated to Charles Fillmore, with whom I've been honored to collaborate on the development of Construction Grammar for the past decade. In addition he has contributed specific ideas to this paper, which I gratefully acknowledge. I would also like to thank Jean-Pierre Koenig for important contributions to the paper.

[2] I will use the expression 'anaphoric domain', or simply 'domain', as a shorthand for 'domain in which an anaphoric element is required to find, or required not to find, an antecedent'.

[3] See, for example, Bresnan, Halvorsen and Maling 1985.

[4] 'Nearest' in a sense to be made more precise below.

[5] More accurately, this is true only of local o-command. O-command involves both subcats lists and constituent structures.

[6] We ordinarily represent constituent structures as nested boxes rather as rooted graphs. Nothing turns on this choice, which merely provides a convenient place in the constituent structure skeleton to display the feature structures.

[7] Hence a single box.
[8] This is a considerable oversimplification, but accurate enough for present purposes.
[9] Pollard and Sag (1992: 299) consider examples structurally like (12) simply ungrammatical. The literature is rife with conflicting acceptability judgments for examples involving non-subject coargument antecedents for English reflexives, the starred examples of one author often claimed to be acceptable by another. This variability would itself seem to argue for the kind of multi-factor, 'trade-off' approach to coargument anaphoric superiority suggested below.
[10] The example is from Charles Fillmore (pc).
[11] Pollard and Sag (1992: 297-299) provide an insightful discussion of these and related issues, as does Dalrymple (1993:168-177). The former come down on the side of relative obliqueness of grammatical function, the latter on the side of thematic primacy. I propose a blessing on both houses – with tolerance for linear order as well.
[12] Optimality theory (see e.g., Prince and Smolensky 1993) provides a special example of an optimization procedure. 'Optimality' constitutes a limiting case of optimization in which the effect of each factor absolutely outweighs the combined effects of all less powerful factors. Labov's original additive model of variable rules (proposed to govern token frequencies) has this same property. It consists of a set of ranked constraints in which the effect of each constraint outweighs the combined effect of all lower constraints (Labov 1969).
[13] The technique of iterated valence embedding employed here for modeling anaphoric dependencies, which may be unbounded, is also used in Kay and Fillmore (1994) for modeling the familiar 'filler-gap' unbounded dependencies arising in connection with phenomena such as topicalization and wh-movement. This technique bears a close relationship to the functional uncertainty of Kaplan and Zaenen (1989) and in the present application to lexical anaphors an even closer relation to the 'inside-out functional uncertainty' of Dalrymple (1993: 117 ff). The main difference is that while the LFG approaches involve somewhat indirect allusion to successively embedded argument sets, via the grammatical functions of the predicators governing these argument sets, valence embedding refers directly to the argument sets in question. When reference to properties of the valence sets other than their grammatical functions is desired, valence embedding requires no auxiliary devices, such as the off-path constraints of Dalrymple (1993: 128 ff).
[14] These are for all practical purposes those proposed by Dalrymple (1993: 113-152).
[15] One may thus read the notation 'inherit VC' in a box as saying 'imagine that all the information recorded within the outer box of the VC construction is written in this box too'. Inheritance is not intended in CG, however, as a mere notational convenience but rather as a device for the perspicuous expression of linguistic generalizations.
[16] In example (1) *on* does not count as a predicator because it has null semantics.
[17] A more longwinded representation of the same construction, not showing the inheritance of VC explicitly, would look like the following.

(i) $[\pi \text{ val } \{([\ ]\ni)^*[\alpha \text{ role } \theta\pi[\ ]],\ (\neg[\text{sem } \neg\text{null}]\ni)^*[\beta\ ]\}]$

Our informal convention for depicting constructions exhibiting inheritance is to repeat just enough of the inherited construction for the reader to be able to see where the uninherited information is added.

[18] Dalrymple (1993: 87ff) discusses some significant differences in judgments between Hellan (1988) and Hestvig (1991). Briefly put, Hestvig's judgments allow a formulation which does not distinguish the minimal predicate domain and the minimal subject domain, while Hellan's require a distinction of this kind. Dalrymple accepts the judgments of Hellan, as do I. Checks with two native speakers on the critical cases, for the elicitation of which I am indebted to Andrew Dolbey, confirm the Hellan-Dalrymple version of the facts. There are clearly Norwegian speakers for which the full range of distinctions proposed here is necessary.

[19] We restrict our attention, for the sake of brevity, to forms appropriate to third person singular male referents.

[20] From Sells (1985) and Dalrymple (1993).

[21] Should this decision turn out to be ill-advised, subject antecedence showing up in a tiny handful of languages, it would be more reasonable to posit the corresponding construction independently in each.

[22] This paper has ignored anaphors which accept non-superior antecedents. It is well known that such anaphors exist (Keenan 1988, Dalyrymple 1993: 157-158, Culy 1991), but since these have received much less attention in the literature and are less well understood than anaphors accepting some kind of asymmetric inferiority relation to their antecedents, it would not be practical to attempt to deal with them in a paper of this length. It is hoped that the flexibility provided by the CG approach will ultimately permit an accurate treatment of such phenomena.

[23] Whatever originality there may be in this view is probably more synthetic than creative. Conscription and, especially, inheritance are quite similar to the HPSG notion of (sub)typing and valence embedding has much in common with LFG's functional uncertainty.

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Conceptual mechanisms underlying noun and verb categorization: evidence from paraphasia[1]

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0. Introduction

Sapir (119:1949) noted that nouns and verbs constitute one of the most basic distinctions made in language. He based this fundamentality on the pragmatic function they serve. As he put it, "There must be something to talk about and something must be said about this subject of discourse once it is selected." People suffering from aphasia, however, often encounter great difficulty producing content words which severely impairs their ability to communicate. This disability is called anomia. Several studies of aphasia have found evidence of selective dysfunction for nouns or for verbs. Some patients have greater difficulty accessing nouns, while other patients have greater difficulty accessing verbs. The fact that either nominal or verbal word categories may be selectively affected by aphasia indicates that nouns and verbs are differentiated in the cognitive processes involved in lexical representation and access. In other words, the distinction between nouns and verbs must have a fundamental cognitive basis.

This paper addresses the structure and plasticity of lexical categorization. In particular, I will show evidence that noun and verb category differences are, at least in part, conceptually based. The lexicon has been envisioned as being like a dictionary, where non-redundant semantic and syntactic information is stored. An alternative view of the lexicon is that of a complex network of conceptual associations which, taken as a whole, incorporates encyclopedic knowledge of the world. Based on lexical substitutions made by ten Wernicke's aphasic patients, I will argue that the lexicon must be organized in the form of a complex network of conceptually motivated associations. In other words, the categorical distinction between nouns and verbs must be conceptually motivated rather than simply being due to grammatical category coding in the lexicon.

An analysis of aphasic substitution errors should indicate which structures of the lexicon are the most resistant to damage. In this manner, the most fundamental aspects of lexical categorization can be uncovered. To make a case for the conceptual basis of grammatical category representation, I will show that nouns and verbs are differentially affected by the dysfunction. The prediction is that if the lexicon is derived from a network of associations, then the majority of the lexical substitutions should be related to the target word in a number of diverse ways. Furthermore, an analysis of aphasic lexical substitutions should indicate what type of associations are preserved by the dysfunction and are sufficiently salient for the substitution to occur. Cognitive linguistic theories have established certain mechanisms such as schematization, metaphor, and metonymy as being central to categorization and the formation of associative links in the lexicon. As such, these same mechanisms should drive the production of lexical substitutions. Lastly, if noun and verb categories are derived from conceptual structures rather than being stipulated in the lexicon then there should be systematic differences between noun and verb substitutions involving the above mentioned cognitive mechanisms.

This paper is divided into two parts. In the first half, I will show that the vast majority of lexical substitutions made by the Wernicke's patients are semantically driven. In the second half, I will discuss the types of associations which appear to be the most productive in aphasic lexical substitution. I will also

explore the relevance of schematicity, metaphor, metonymy, and frame semantics to aphasic lexical substitutions.

1. Frequency analysis of lexical substitution in the Given/New task

The respective difficulty of using nouns or verbs appears to correspond to different aphasic syndromes: Broca's aphasics have trouble describing actions (McCarthy & Warrington 1985; Miceli, Silveri, Villa & Caramazza 1984; Bates, Chen, Tzeng, Li, & Opie 1991); whereas Wernicke's aphasics show the greatest word-finding difficulties with object names (Caramazza & Hillis 1991; Gleason, Goodglass, Obler, Green, Hyde & Weintraub 1980; Baxter & Warrington 1985; Goodglass, Kline, Carey, & James 1986). Physiologically, the noun/verb dissociation appears to correspond to anterior and posterior cortical damage, respectively (Goodglass 1976).

Although most aphasic syndromes involve some anomia, it is primarily associated with Wernicke's and anomic aphasia, typically involving posterior cortical damage. Language production difficulties attributed to anomia involve both lexical omission and substitution. When a patient is unable to access a word he may omit it. For example, one patient described the target structure: 'A dog is on the car' as "the car is under, we'll assume that". Alternatively, the patient may substitute it with another word, a symptom called *paraphasia*. Paraphasic substitutions may involve (a) semantically vague words, such as calling a 'present' "something good"; (b) substitutions which are related in some way to the target, such as calling a 'cat' a "cow"; and (c) substitutions which bear no apparent relation with the target, such as calling a 'mouse' a "key". The patient might also attempt to paraphrase the target word (*circumlocution*) such as referring to 'crying' as "tears going down". In some cases, however, the intended meaning is not recoverable; the patient simply produces unrelated word strings (*jargon*). For example, one patient described the target structure 'A boy is skiing' as "mister wind wonder wind no that's oh ... frit tear sair. I know exactly what I want to say and its not doin' it. Stay ss ... wind uh wind uh chair ss sairs ...". In this study, I will focus on paraphasic and circumlocutionary lexical substitutions.

1.1 Method: The responses of ten Wernicke's patients in a language production task involving the description of events portrayed in a series of line drawings were compared with those of a control group of ten non-aphasic elderly subjects.

1.1.1 Subjects: All ten patient subjects became aphasic as a result of a stroke and were diagnosed as Wernicke's aphasics. Although the patients varied with respect to the scope of the lesion, it encompassed the left temporal-parietal region in all ten cases. The patients were between the ages of 50 and 75 and had 11-18 years of education. The control group consisted of ten elderly subjects who were between the ages of 64 and 78 and had 14-22 years of education.

1.1.2 Task: The Given/new task, developed by MacWhinney and Bates, consists of nine sets of picture triplets, each consisting of a similar scene in which all but one of the elements remain constant: in some triplets the subject or object is changed (e.g., A {bear, mouse, bunny} is crying), in other triplets the action is changed (e.g., A boy is {running, swimming, skiing}). The subjects were asked to describe what they saw in each series of three pictures. In order to compare the production of nouns and verbs, each instance of a noun or verb produced was counted.

Sequences of repeated words were counted as one. Pronouns used for the first mention of a nominal were counted as semantically vague substitutions. Pronouns which were of the wrong gender or number were counted as semantically similar substitutions. Circumlocutions/jargon which could not reliably be related to any of the target words were not counted. Neologisms (word-blends and non-words) were not counted, as they do not constitute lexical (real-word) substitutions.

1.2 Results: The elderly control subjects' responses are compared with Wernicke's patients' responses in Table 1. The first column shows the means for the percent correct (correct responses/all responses) and the error rate (errors/target-opportunities). Both factors show that the Wernicke's patients tended to miss the verb targets more often than the noun targets. This result is somewhat surprising since studies which contrast Wernicke's patients with Broca's patients have found that Wernicke's patients have greater difficulty with nouns. However, the elderly subjects also had slightly greater difficulty with the verbs than with the nouns. It is possible that these results reflect the greater conceptual complexity of verbs. In addition, 49% of the correct Wernicke's noun responses were pronouns as compared to 2% of the Elderly control subjects. This suggests the possibility that the Wernicke's patients were able to resort to using pronouns in order to avoid making errors for nouns, whereas there were fewer opportunities to avoid verbs in such a manner.

The second column contrasts the two main error types, omission and substitution, as a factor of the total incorrect responses. It shows that, although substitution was far more common for both subject groups, the Wernicke's patients erred by omission more often than the elderly control subjects.

Table 1: Mean percentages and rates of subject responses

		all responses		incorrect responses	
		% correct	error rate	% omitted	% substituted
Wernicke's	noun	0.62	0.66	0.18	0.82
	verb	0.42	1.07	0.19	0.81
Elderly	noun	0.94	0.06	0.04	0.96
	verb	0.92	0.08	0.09	0.91

In order to determine the nature of the substitution errors, they were divided into four types: phonologically similar to the target, semantically similar to the target, both phonologically and semantically similar, or unrelated. The results are shown in Table 2. An example of the phonologically similar items would be calling a 'rabbit' a "robber". In most cases, the subjects were aware of the inappropriateness of the word and continued to attempt to produce the target. Semantically similar words were usually from the same general semantic category such as calling an 'apple' a "strawberry". Also included in this group were inappropriately used pronouns and semantically vague terms such as referring to a 'donut' as "those things". The subjects rarely attempted to correct the semantically related errors. An example of substitutions which are both phonologically and semantically similar is calling a 'cat' a "cow". The unrelated items were words for which there was no obvious relationship between the word and target such as referring to a 'flower' as a "key" and to 'crying' as "smashing".

Table 2 shows the percentages for each substitution type as a factor of the total number of substitutions. The semantically related substitutions were by far the

most common. They comprised 73% of the noun substitutions and 79% of the verb substitutions. Phonologically related substitutions were a distant second for noun substitutions, whereas phonological similarity played a less important role in verb substitution. Note that, unlike nouns, there were no verb substitutions which were both phonologically and semantically related. Unrelated substitutions were more common for verbs than for nouns.

Table 2: Wernicke's mean percentages for each substitution type

	related substitutions			unrelated substitutions %
	% phonologically related	% phonologically & semantically related	% semantically related	
nouns	0.17	0.03	0.73	0.05
verbs	0.09	0	0.79	0.12

The robustness of the semantically related substitutions found for all ten Wernicke's patients shows that the disruption of lexical access occurs at a point where semantic relations between words are available. The occurrence of phonologically related lexical substitutions suggests that both semantic and phonological information must be concurrently available. The relatively small number of unrelated substitutions underscores the importance of semantic relatedness in lexical substitution.

Table 3 shows the breakdown of semantically related substitutions by the degree of semantic schematicity. The first column shows the percentage of substitutions which were semantically more specific in meaning than the target word, such as referring to a 'table' as a "bridge table" and to 'eating' as "biting". The results show that verb substitutions tended to be more semantically specific than the target verb more often than noun substitutions did. The second column shows that noun substitutions were drawn from a similar level of schematicity as the target more often than verb substitutions. The third column shows the percentage of substitutions which were more semantically schematic than the target word, such as referring to a 'dog' as an "animal" and to 'giving' as "doing". The results show that verb substitutions tended to be more semantically schematic than the target verb more often than noun substitutions were. Overall, the noun substitutions tended to be drawn from a similar level or higher level of schematicity than the target noun, whereas the majority of the verb substitutions were drawn from a higher level of schematicity than the target verb. The last column shows the percentage of semantic substitutions which appeared to be perceverations of a prior target item. For example, for the target group: 'A cat is on the {table, bed, chair}' one patient referred to the 'bed' as a "table" right after having described the cat being on the table. It is interesting to note that semantically related perceverations occurred much more often for nouns than for verbs; this difference was statistically significant (.016). This indicates that once nouns are lexically accessed they remain accessed longer than verbs do.

Table 3: semantically related substitutions with respect to degree of schematicity

	Semantically related substitutions			
	% specific	% similar	% schematic	% percev.
nouns	0.08	0.39	0.39	0.14
verbs	0.19	0.19	0.61	0.01

All of the noun targets were concrete nouns which are perceptually autonomous, whereas as verbs are inherently relational and hence are perceptually dependent on the entities which are interacting. Gentner (1981) has suggested that this *perceptual* difference between concrete nouns and verbs denoting overt physical actions may correspond with relative *conceptual* autonomy. This may account for the greater durability of nominal notions once they are lexically accessed.

To sum up, the results from Table 1 show that the error rate for verbs was greater than the error rate for nouns. This was attributed to the greater semantic complexity of verbs. The results from Table 2 show that the majority of the substitutions were semantically related. Thus, the disruption of lexical access must occur at a point were semantic associations are accessible. The results from Table 3 show that schematicity plays a distinctive role in noun and verb substitutions: verb substitutions are drawn from higher levels of schematicity at a greater rate than nouns are. It was also suggested that once concrete nouns have been accessed, they remain accessed longer than verbs do. These findings show that nouns and verbs are differentially affected by aphasia in a manner which implicates the influence of semantic/conceptual processing. If grammatical category coding were completely independent of semantic/conceptual processing the above findings could not be accounted for.

2. Lexical Categorization and Network Associations:

For the remainder of the paper I will discuss the different types of associations linking the substitutions discussed in the previous section with the target words. In particular I will explore the relevance of frame semantics, metaphor, and metonymy by looking in greater detail at the types of associations that occurred in the lexical substitutions.

The relevance of lexical categories to aphasic disorders has long been acknowledged. There are many reports of patients who have particular difficulty in accessing words belonging to specific semantic categories such as concrete versus abstract words (Warrington & Schallace 1979; 1984), living things versus inanimate objects (Damasio 1990), fruits and vegetables (Hart, Berndt, & Caramazza 1985), body parts, letters, and color names (Goodglass, Klein, Care & James 1986), as well as the grammatical category distinction mentioned above: Broca's aphasics tend to have greater difficulty with verbs, whereas Wernicke's and anomic aphasics tend to have greater difficulty with nouns.

Eleanor Rosch pioneered the study of categorization which provided the foundation for the notion of semantic categories linked together in complex networks. Based on her research of basic levels, Rosch identified the following operational definitions for object categorization: attributes in common, motor movements in common, objective similarity in shape, and identifiability of averaged shapes.

2.1 Nouns: Table 4 shows noun substitutions which corresponded with Rosch's operational definitions: shape, attributes in common and motor movements in common. I found that all three factors were quite productive as sources for lexical substitution. The attributes in common that appeared to be operative in these substitutions were salient physical features and similarity of function. Of the two, salient physical features proved to be a more productive source for substitution. For the most part, targets were substituted by items from the same semantic category. The notable exception to this trend were the substitutions which focus on a salient physical attribute of the target such as referring to 'tears' as "water" and to a 'donut' as a "hole".

Table 4: Types of associations between noun substitutions and their targets with respect to Rosch's operational definitions for object categorization

Overall Shape		Attributes in Common		Motor Moves in Common	
man	BOY	1. Salient Physical Attributes		truck	
girl		water	TEARS	van	CAR
mother	LADY	hole	DONUT	car	
pot	JAR	wet	WATER	cot	CHAIR
horse		cone	ICE CREAM	muffin	
zebra	DONKEY	square	BLOCK	toast	
bear		2. Similar Function		bread	DONUT
dog	RABBIT	bicycle	TRUCK	cookie	
dog	CAT	prize	PRESENT	sandwich	
dog	BEAR	car	TRUCK	auto, car	TRUCK

Target words are in upper-case letters

Table 5 shows other factors which were found to be relevant to aphasic lexical substitutions. The use of a representative individual to refer to basic level entities is a form of metonymy: the individual stands for the whole category. The Easter Bunny was particularly productive; a rabbit was referred to as the Easter Bunny on several occasions by more than one patient. The occurrence of antonymic substitutions, such as calling a 'dad' a "son", shows that opposites are closely associated. The last two examples on Table 5 show that an association between the target and the substitute can be established by the immediate context. These two examples indicate that semantic association is a dynamic process which the patient can draw upon when faced with the deficits imposed by aphasia.

Table 5: Other factors identified in noun associations

Representative Individual		Antonymic Relationship		Pragmatic Association	
Easter Bunny	RABBIT	dad	SON	baby	GIRL
Mickey	MOUSE	girl	BOY	child	DOG
Ridey Locks	BEAR	father	MOTHER		
Association Established by Context					
Attribute in common: similar function					
ladder	STOOL	(used for standing on to reach up high)			
Schematic word substituted for target					
gift	FLOWER	(an object which is given)			

Metaphor and metonymy also played an important role in establishing associations which were made explicit by the lexical substitutions. Examples are

shown on Table 6. As can be seen, metonymic association was far more productive for nouns than metaphoric association.

Table 6: Noun metaphoric and metonymic associations

Metonymic Associations		
American	ENGLISH	(location for language)
college	EDUCATION	(location for event)
in the swim	WATER	(action for location)
Mickey	MOUSE	(token for type)
stool, chair bench	TABLE	(adjacent objects)
Metaphoric Associations		
trip	MISTAKE	(physical mapped to abstract)

The examples in Tables 5 and 6 show that a minimalistic lexical structure would not account for many of the aphasic lexical substitutions. A dictionary-like lexicon could not account for culturally and contextually motivated associations.

2.2 Verbs: In analyzing the verbs, I was curious to see if Rosch's operational definitions for objects could be adapted to verbs. The outcome can be seen in Tables 7 and 8. When a patient was unable to express the action with a simple verb, the patient most often focused on a salient component of the event. As can be seen from Table 7: Attributes in Common, an object which is closely associated with the action was quite productive in verb substitution, both alone and in relation to its motion and path. Thus, 'crying' was expressed as "have eyes" and as "water coming through his eyes". Motor movements in common, shown on Table 8, also proved to be relevant for verb substitutions.

Table 7: Rosch's operational definitions extended to verbs: associations between verb substitutions and targets - attributes in common

Attributes in Common			
1. Salient Object Involved in Action		2. Motion & Path of Salient Object	
has eyes, got tears about his eyes about his face	CRYING	water is coming through his eyes water is coming down there are tears going down he went (going) down	CRYING FALLING
water, watering water up and down swimmer of water	SWIMMING	3. Salient Subcomponent of Action	
snow with skis arms all over	SKIING HUGGING	*mutual possession of DO = GIVE* S + IO having DO S + IO holding DO IO have DO with S S holding DO & IO have DO S holding DO & IO with DO	GIVING

Table 8: Rosch's operational definitions extended to verbs: Motor movements in common

Motor Movements in Common			
swishing water stroking water reaching water	SWIMMING	jumping walking	RUNNING
running	KICKING	holding pick up	HUGGING

Tables 9 and 10 show other factors which appeared to influence aphasic substitutions. I found several types of associations which appear to be drawing from event frames associated with the target verbs, shown on Table 9. Several verb concepts were broken down into component events which make up the entire action, such as referring to 'eating' as "he comes and grabs and he bites x". Preceding events, such as referring to 'giving' as "offering", and resulting states, such as referring to 'spilling' as "wetting", also played a minor role.

Table 9: Event Frames invoked in verb substitutions

Event Frames			
1. Breakdown into Component Events		2. Preceding Event	
possession & result = EAT comes and grabs and he bites x he has an x and he likes x		went for x went with x comes and sees had x; with x, got x,	EATING
possession & path = GIVE IO has DO, DO to IO IO taking up the DO S has DO to IO		offering have DO for IO	GIVING
possession & instr of transfer = GIVE S with DO and boy, his hand is there S with DO and dog, his hand is up doesn't have that wanders and hand...		3. Resultant State	
		wetting spilling he was wet	SPILL, OVERFLOW SWIMMING

Table 10 lists other types of associations found to play a role in verb substitutions. Antonymic relations, such as referring to 'crying' as "laughing", proved to be a source for verb substitutions as well as for noun substitutions. Nominalizations of the event also occurred. Lastly, for actions which were highly correlated with a strong emotional state, the emotional content of the event was a productive source for substitutions.

Table 10: Other relationships involved in verb substitutions

Other Types of Relationships			
1. Antonymic Relationship		3. Associated Emotional State	
laughing	CRYING	x is upset; x feels bad x is saddened/sad	CRYING
taking S & IO get	GIVING	x likes y x loves y x is nice to y	HUGGING also: KISSING HUGGING
2. Nominalization of the Event		x is pissed off	KICKING
the swim with kisses	SWIMMING KISSING		

The fact that nominalizations of the event occurred is interesting given previous findings cited at the beginning of the paper that Wernicke's aphasics have greater difficulty expressing nouns than verbs when compared with Broca's aphasics. This finding, in conjunction with the fact that the Wernicke's patients in this study tended to make more errors for verbs than for nouns suggests that reports of selective dysfunction for nouns and verbs may actually reflect finer-grained distinctions which contribute to grammatical category differences.

Both metaphoric and metonymic associations occurred in verbal substitutions, examples of which are shown in Table 11. Unlike nouns, verb substitutions appeared to be equally driven by metaphor and metonymy. The use of "hear" to mean 'understand' is an example of a well established metaphorical semantic extension from a verb of perception to refer to the mental state of 'understanding' analogous to the expression "I see what you mean". All of the examples in this table show that metaphor and metonymy are used productively by aphasic patients to make novel semantic extensions of meaning.

Table 11: Verb metaphoric and metonymic associations

Metaphoric		Metonymic	
go down	GET WORSE	*location for action*	
go up	IMPROVE	is in the water	SWIMMING
fall	FAIL	is on the mountain	SKIING
hear	UNDERSTAND	is on the hill	SKIING
read	UNDERSTAND		

3. Conclusion

Studies which have compared Broca's with Wernicke's aphasics have reported that Wernicke's patients tend to have greater difficulty with nouns than Broca's patients, which suggests a selective dysfunction with respect to noun and verb grammatical categories. A comparison of Wernicke's production of nouns and verbs, however, showed that Wernicke's patients tended to make more errors for verbs than for nouns and that they sometime substituted verbs with nominalizations of the event. It was suggested that reports of selective dysfunction for nouns and verbs may reflect finer-grained conceptual distinctions which contribute to grammatical category differences. Supporting evidence is provided by systematic difference between noun and verb substitutions.

I found that the majority of the lexical substitutions for both nouns and verbs were semantically related to the targets. An analysis of the most common types of associations that occurred showed that basic physical and semantic properties were important for establishing and utilizing association links between words. For nouns the most relevant properties were physical attributes such as shape and salient physical features. For verbs the most relevant properties were relational substructures in the event frame such as motion, path, and an object inherently involved in the action. All of the substitutions discussed in this paper are indicative of the richness and diversity of semantic networks which draw upon encyclopedic
knowledge structures.

Cognitive mechanisms such as schematization, metaphor, metonymy, and event frames all proved to be productive sources for lexical substitutions. Systematic differences between noun and verb substitutions with respect to these mechanisms indicates that conceptualization is relevant to the category-specific

affects of aphasia on noun and verb categories. Thus, noun and verb categorization must play a greater role in conceptual-semantic processing than simple grammatical-category coding in the lexicon would suggest.

NOTES

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A Focus Marker in Cayuga*

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0. Introduction

A feature of the Northern Iroquoian languages is their especially rich inventory of particles. This paper is concerned with one particle in the Cayuga language which has a widespread distribution and performs a broad range of apparently unrelated functions. The particle *ne:'* is commonly translated as 'it is/that is', 'this' or 'that'. In other instances it is translated as predominant stress, or is simply omitted in the translation. The particle can occur in almost any syntactic or semantic environment, but it is not obligatory in any context. The various functions that have been suggested for the particle in the literature include indication of declarative mood and assertion, marking of emphasis, focus or contrast, and expression of predicative and deictic force.[1]

I will argue that the particle *ne:'* can be described successfully if its distribution is considered from a wider perspective, taking into account discourse structure and variation in scope. Its analysis as a focus marker can account for the variety of apparently unrelated functions. The discussion is based on a detailed study (Keusen 1994) of the particle's distribution in spoken language using a database of five Cayuga texts, including three narratives (Foster 1980, Sasse 1993b, Sasse and Doxtador ms.), one procedural text (Mithun and Henry 1980) and a children's version of a ceremonial text (Keusen 1994).

1. Distribution

The particle *ne:'* occurs in diverse syntactic and semantic environments. It varies in the types of elements it modifies, and in most cases it is accompanied by other particles that determine the scope of the cluster and thus indirectly the scope of *ne:'*. For the purpose of this paper, I distinguish two types of scope: (a) over a word, and (b) over an entire utterance.[2] Given the polysynthetic nature of Cayuga, which requires pronominal prefixes on verbs, in many cases scope over a single word means scope over an entire clause. The particle's variation in scope largely correlates with its position in an utterance. When *ne:'* modifies a word, it typically occurs in medial position in the utterance as in (1); when it modifies an utterance as a whole, it occupies the initial position, as shown in (2).

(1) *nę'* *shę* ***ne:'*** *teshakokahné: tę'* *ho'tę'* *tę'* *ho'tę'* *niyǫkyeha'*
and.then Comp that.is he.watched.her what kind what kind she.do
. . . and in reality he was watching her – what she was doing.

(2) ***ne:'*** *ki'* *kyę:'*
that.is Decl Emph

aha:tkę́:h *akę'* *tho:kyę́h* *aha'ahthraniyǫta:kó'* *aha:ktą́:'* *tę'* *í:wa:t*
he.got.up Evid that he.basket.hang he.examine what be.in
That one got up, took the basket down and examined what was in.

In example (1) *ne:'* modifies the verb form *teshakokahné:* 'he watched her', while in (2) the initial particle cluster *ne:' ki' kyę:'* has scope over the entire utterance.

2. Analysis as a focus marker

Various scholars have considered the marking of focus, emphasis, or contrast as a possible function of the Cayuga particle *ne:'* and its Northern Iroquoian cognates. Sasse (1988, 1993a) considers focus marking to be the basic function of *ne:'*, and Bonvillain (1988) lists focus as one meaning among others for the cognate Mohawk particle. Woodbury (1980) makes a similar point in stating that the corresponding Onondaga element marks contrast, and Michelson's (1985) description of the Oneida form of the particle as an emphatic element provides further support for the interpretation of *ne:'* as focus marker.

When modifying a word, *ne:'* marks it as the focus of the utterance, in many cases contrasting it with a previously mentioned alternative. In example (1) above, *ne:'* modifies the verb form *teshakokahné:* 'he watched her', which is contrasted with the information 'he was pretending to be asleep' in the immediately preceding discourse. In the English translation, the contrastive and therefore focal status of the information *teshakokahné:* 'he watched her' is indicated by the introductory phrase 'and in reality ...'. The utterance in (3) below gives a similar example. Here, *ne:'* occurs as part of a magic spell, modifying the word *ohta'kehshą́:'* 'the low spots'. The introducing cleft construction in the English translation ('it is the low spots...') indicates the focused status of the concept.

(3) *ahé' akę' ohta'kehshą́:' ne:' tshą: nęka:tą́:koht*
he.said Evid low.spots that.is only I.will.pass
So he said: It is the low spots only that I will pass.

The 'low spots' are contrasted with 'the high spots', which are mentioned in the immediately preceding discourse presented in (4).

(4) *a:ké' akę' kę:s he'tkęhshą́:' nęka:tą́:koht*
she.said Evid usually up I.will.pass
She used to always say: It is the high spot that I will pass.

ne:' akę' tho:kyę́h a:yé' ahatshahnî'k thrę́hs he'tkę́h niyo:wé'
that.is Evid that it.seems he.got.scared too high far
But it seems he got scared, it is too high.

So he said: It is the low spots only that I will pass.

In a number of instances, *ne:'* co-occurs with scalar particles like *tshą:* 'only' or *hnî'* 'also'. Elements of this kind have themselves been referred to as focus markers in the literature (e.g., König 1991). The assumption, however, that scalar particles are focus markers is controversial. For example, both Dryer (1994) and Vallduví (1992) argue that the English particle *only* interacts with focus structure but does not mark focus itself. Whether one considers scalar elements to be actual focus particles or to correlate with focus structure through pragmatics, the co-occurrence of *ne:'* with these elements illustrates its involvement in focus marking.[3] In (3) above, *ne:'* is followed by the particle *tshą:* 'only', and both elements modify the

word *ohta'kehshą́:'* 'the low spots'. Example (5) shows a similar case with the particle *hni'* 'also'.

(5) *hoyęti'ąhné:' hne:' haya'tahá' **ne:'** hni' hakyęn'athá' hni' kę:s*
he.knew Assert he.paint Assert also he.actor also usually
He was good at whatever he was doing, he was a painter and he was also a performer.

Here, ne:' is followed by *hni'* and both particles modify the following content word *hakyęn'athá'* 'actor/performer'.

With scope over a single word, the focus function of *ne:'* is well documented by the previous examples. Next, I will apply the focus interpretation to the cases where *ne:'* modifies entire utterances. In his taxonomy of focus types, Lambrecht (1987, in press) discusses cases of entire utterances being focused under the term SENTENCE FOCUS. In sentence focus constructions, no part is presupposed or accessible from the previous discourse, and participants are represented by lexical NPs rather than by pronouns. Utterances of this kind consist entirely of new information, and thus there is no division into non-focus (TOPIC, OPEN PROPOSITION, etc.) and focus. Some of the utterances introduced by *ne:'* seem to fit these criteria. For instance, (6) is a presentational sentence that introduces the spatial setting and the main participants of a narrative.

(6) ***ne:'** akę' nę:kyę́ skanąhsá:t shę nhą: kae'trą' hąwayatrę́:'ah*
that.is Evid this house Comp place they.lived be.granny.and.grandchild
There was this house, where a grandmother lived with her small grandson.

The majority of the utterances introduced by *ne:'*, however, cannot be classified as sentence focus constructions. In (2) above, for example, the participant is represented by a pronominal prefix and is clearly accessible from the previous discourse. This implies a sentence-internal structure of focus and non-focus. Similar examples are given in (7) and (8).

(7) ***ne:'** ki' kyę:' aweht'akę́' hota'ą́h*
that.is Decl Emph pretending he.sleep
That's what it was, he was pretending to be asleep.

*nę' shę **ne:'** teshakokahné: tę' ho'tę́' tę' ho'tę́' niyąkyeha'*
and.then Comp that.is he.watched.her what kind what kind she.do
and in reality he was watching her – what she was doing.

(8) ***ne:'** akę' tho:kyę́h a:yę́' ahatshahnî'k thrę́hs he'tkę́h niyo:wé'*
that.is Evid that it.seems he.got.scared too high far
But it seems he got scared, it is too high.

Since the majority of *ne:'*-initial utterances do not allow an interpretation as sentence focus, these examples seem to contradict the particle's general analysis as a focus marker. In the next section, however, I will show how the particle's function as discourse marker is related to focus marking.

3. Discourse functions

Like many other particles in Iroquoian, *ne:'* performs functions not only on the sentence level but also on the level of discourse. Mithun (1984) describes the properties of Iroquoian discourse particles as follows:

> . . . the particles seem . . . to have less salience to the speakers. If a speaker slows down for clarity or dictation . . . the particles tend to disappear. . . . Speakers are almost uniformly at a loss to translate them. . . . they tend to cluster around specific statements which speakers would like to hedge . . . . They tend to occur in very long strings, particularly . . . around elements of high communicative value to the discourse. They allow the speaker to regulate the flow of information so as to be most easily understood by the hearer. If too many short, highly important units of information were to occur in rapid succession, a hearer might not be able to take them in all at once with their proper force. Strings of particles permit the speaker to arrange important information such that it arrives in proper intervals. In addition, . . . proper rhythm can affect the hearer's willingness to listen. (Mithun 1984: 329)

Given functions like marking elements of high communicative value, regulating the flow of information, and influencing the hearer's willingness to listen, it becomes clear that the primary function of discourse markers is not to EXPRESS the content of communication, but to provide ways of successfully TRANSMITTING it. A further kind of discourse function is that of CLASSIFYING the content of an utterance according to categories such as high communicative value.

In its function as discourse marker, the particle *ne:'* introduces a specific group of utterances. In the three narrative texts of the database, sentences starting with *ne:'* are found to express events (in about one third of the cases) as well as non-events (in about two thirds). Tomlin (1985: 90) suggests a distinction between PIVOTAL INFORMATION, 'which describe[s] the most important events in the narrative', and FOREGROUND INFORMATION, 'which describe[s] successive events in the narrative'. A classification of all utterances in the three narratives shows that the *ne:'*-initial events express pivotal information. They describe moments of highest tension, express the climax of a story, and contain key information for the understanding of the text. Example (9) is the punchline of an anecdote that is part of a narrative.

(9) ***ne:'*** *akę' kę:s* *ne:'* *kę:s* *to:s* *ne'* *kaehnyą'ą́h*
Assert Evid usually Assert usually certainly Ref they(f).are.white
And the white women really,

akonahtrą́hk *akyakotíhe:ht* *akę'* *kę:s* *akonikąhahtą́'trą:'*
it.scared.them they.shouted Evid usually they.mind.lost
they got frightened, they screamed, they all fainted.

In the previous context, the speaker told about how her grandfather used to pretend to scalp somebody using red ink to imitate blood. The description of the effect on the white women in the audience is the highlight of the anecdote. The utterance closes the episode and the speaker continues the narrative, turning to a new discourse topic. A similar example is given in (10).

(10) ***ne:' di' ha'gyą́' kąhsegwáa' ne' thagá:wí ngyę́nhwá'***
so I.arrived.there the.pitchfork he.has.given.me this
Well, when I got to my uncle's

ne' tshę nigá:' hakhnahsgwanihahdá:ní: 'ahátkąhthó' né' hakhnó'zę́
who (the.one) he.lent.me.some.domestic.animals he.saw.it my.uncle
and he saw the old pitchfork I'd gotten from the guy who'd loaned

tshę nigahsegwáo'dę́h 'ahé' ne:' ni:' do:gę́s 'ągetsy'ątanąwá:kdę́'
what what.kind.of.fork.it.is he.said me really it.makes.me.hungry.for.fish
me the horses, he said, "That fork really makes me hungry for fish!".

nę:: nigahsegwáo'dę́h .
this what.kind.of.fork.it.is

Here, *ne:'* again introduces the last sentence of an anecdote. The utterance contains the punchline – a pun with the word *kahsegwáa'* 'pitchfork'.[4] The utterance in (11) below is pivotal in that it presents key information and describes one of the moments of highest tension.

(11) ***ne:' akę' tho:kyę́h a:yę́' ahatshahní'k thrę́hs he'tkę́h niyo:wé'***
that.is Evid that it.seems he.got.scared too high far
But it seems he got scared, it is too high.

ahé' akę' ohta'kehshą́:' ne:' tshą: nęka:tą́:koht
he.said Evid feet.Locative that.is only I.will.pass
So he said: It is the low spots only that I will pass.

The example is part of a ghost story in which a boy spies on his grandmother and later tries to do what he saw her doing. However, instead of using the same magic spell as she did ('It is the high spot that I will pass'), he gets scared and changes it. The result is that he is dragged through the woods instead of flying high above the trees.

Within the category of non-events, *ne:'* frequently introduces SETTINGS and BACKGROUND information. Grimes (1975: 51) defines settings as 'where, when, and under what circumstances actions take place', and he characterizes background information as explanations and comments about what happens. *Ne:'* does not modify just any kind of setting or background information, however. As was the case with events, the particle introduces a specific set of utterances within the categories of setting and background. In example (6) above, *ne:'* occurs at the beginning of a presentational sentence that introduces the spatial setting and the main participants of a narrative. The utterance in (12) is a similar example. It is the first sentence in a narrative introducing the spatial setting as well as the discourse topic.

(12) ***ne:' gi' gaditshenę'shą́:' áh 'ągwanąhsgwaędą́' gę́:s***
they.are.tame.ones we.had.some.domestic.animals formerly

tshę (nhą́:weh) :gwę́'drą́'.
what (place) (=where) we.were.living
Well, we used to have some domestic animals at home.

Example (13) starts a new episode within a narrative. It provides the habitual background to the events described in the following.

(13) ***ne:'*** *hę'hne:' akahshá:'s tho:kyę hne:' tshikatatrihǫnyanihnhé's kę:s*
Assert also I.remember that Assert I.learn usually
Also I remember that one: when I used to go to school

tho katǫkohthá' shę nhǫ: hę'trǫ'
there I.pass Comp place he.lived
I used to pass there where he lived.

Besides settings and background information, introductory phrases and closing remarks frequently show the particle *ne:'* in initial position. These two types of utterances are alike in that they are not directly part of a story but comment on the text-telling itself. Examples are given in (14) and (15).

(14) ***ne:'*** *kyę:' nę:kyę ne' hęska:thro:wi'*
Assert Empf this Ref I.will tell.you
This is what I will tell you.

(15) *Tót'iǫ: ni:yǫ: **ne:'** ahi:' aeswatǫ́:dęh*
that so.much that I.thought you.would.hear
And that is about as much as I thought you would like to hear.

I suggest that not only events but also non-events can have pivotal status. Settings and background information that provide the set-up for a narrative typically introduce the time frame and location, as well as the participants of the story. Also, they can consist entirely of new information, as in the case of presentational utterances. Furthermore, *ne:'*-initial discourse units are found to express changes of the subject or discourse topic (cf. Michelson (1981) on Oneida). Finally, introductory and closing remarks have special status in that they comment on the text-telling itself.

4. Discourse focus

Traditionally, the notion of focus is applied to the domain of the sentence. Some definitions describe focus as the 'center of communicative interest' (Crystal 1985: 123) or as the 'information center of a sentence' ('Informationszentrum des Satzes', Bussmann 1983:144). For an analysis of the particle *ne:'* as focus marker, it is necessary to broaden the idea of focus, applying it to the domain of discourse. The concept which I will call 'discourse focus' differs from the traditional focus notion primarily in its domain of application. Just as words can be the center of communicative interest within a sentence, so UTTERANCES can be the center of communicative interest within the DISCOURSE. Criteria for discourse focus are concepts such as importance and unexpectedness of information. In this sense, the notion of discourse focus is closely linked to the Prague School notion of RHEMATICITY. Adapting Firbas's (1964: 272) description of theme and rheme, discourse focus falls on the utterances with the highest degree of communicative

dynamism within the discourse. The indication of discourse focus classifies the content of an utterance as important, noteworthy and/or unexpected.

A further concept that is related to discourse focus is Mithun's (1987: 304) idea of NEWSWORTHINESS. She states: 'An element may be newsworthy because it represents significant new information, because it introduces a new topic, or because it points out a significant contrast'. Mithun applies the idea of newsworthiness to elements of the utterance. Adapting it to the level of discourse, one can say that an UTTERANCE may be newsworthy because it represents significant new information, because it introduces a new topic, or because it points out a significant contrast. As shown above, this is the kind of information expressed by *ne:'*-initial utterances.

Discourse focus has to be distinguished from the notion of sentence focus as described by Lambrecht (1987, in press). In both cases, an entire utterance is focused. Sentence focus, however, refers to the internal information structure of the utterance, i.e. there is no division of focus and non-focus. Discourse focus, on the other hand, refers to the status of an utterance in comparison to other utterances in the discourse. It can fall on sentences with any internal structure. However, an utterance with sentence focus is most likely to carry discourse focus as well, since it expresses entirely new information. Nevertheless, the notions of sentence focus and discourse focus are distinct, and characterize an utterance from different perspectives.

5. Conclusion

The particle *ne:'* modifies single words as well as entire utterances. The modified elements are alike in that they have pivotal status in the context of their occurrence. When *ne:'* modifies a single word, this word receives focus within the utterance. When *ne:'* modifies an entire utterance, the utterance as a whole receives focus in the larger discourse. Thus, a particle that appears to perform a set of unrelated functions and to occur randomly in almost any syntactic environment can be described successfully if its distribution is considered from a wider perspective, taking into account discourse structure and variation in scope. The analysis of the particle *ne:'* as a marker of focus shows that its uses are less random and contradictory than an initial picture suggests.

Endnotes

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[1] The following scholars have provided some description of the Cayuga particle *ne:'* or its cognates in other Northern Iroquoian languages: Bonvillain (1985,

1988), Foster (1989), Lounsbury (1953), Michelson (1985), Mithun (1986), Sasse (1988, 1993), and Woodbury (1980).

[2] The question of the particle's scope and its interaction with scope-determining particles is more complex than can be discussed here. For details on this issue see Keusen (1994).

[3] The co-occurrence of a 'pure' focus marker like *ne:'* and scalar elements like *tshoÁ:* 'only' or *hni'* 'also' can be considered evidence against the focus function of the scalar particles, since both modify the same element.

[4] The incorporated noun root *-hsekwa-* can mean both 'fork' and 'spear' and also occurs in the word for fishspear (cf. Foster (1980: 149)).

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Form and Function of the English Subject 1150-1400

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At least since Keenan (1976), the category of "subject" has been known to serve a variety of functions. Both Keenan and later Comrie (1981) construe the prototypical subject as the intersection of two categories, one defined in terms of clause-internal semantics, the "actor", and the other defined at a discourse level, termed "topic". Shibatani (1991), however, argues that a subject category will express topicality only when it does not compete with an explicit topic construction, where a "topic construction" is defined as a "cohesive device that relates an event to the preceding event."

Following much the same reasoning as Shibatani, Faarlund (1988) suggests a correlation between the type of grammar a language uses to express the subject category and the meanings it will encode. Particularly, he postulates that in languages where constituent order can be used pragmatically and grammatical relations are expressed through morphological case, grammatical roles will more closely parallel Fillmorean semantic cases than in those where the position of noun phrases, rather than their inflection, distinguishes subjects from objects. On the other hand, when grammatical roles are expressed chiefly through syntax they will tend to take on more pragmatic functions. In the first type of language, subjects tend to be restricted to Agents and roles which share Agents' central properties of causality and volition; in the second type, an Agent is still, as Shibatani (1991) has put it, an "archetypical" subject, but the category expands to include noun phrases sharing the topicality which Agents typically possess.

English, which has shifted historically from the first of these types to the second, provides an interesting test-case for this hypothesis; This study finds support for it in the semantic expansion of the English subject during and following the decline of the language's case system, and the concurrent loss of an independent, syntactically-defined, topic construction. The semantically omnivorous English subject has generalized so far from the prototypical agent as to include experiencers, as in *I like Streetcars,* and *I'm freezing,* instruments, as in *This slide-rule can solve any problem,* locatives such as in *this tent sleeps five,* and even occasionally (in active voice) patients as in *they suffered.* or *his sections on Latin America read glibly.*

Following Shibatani's reasoning, this is a natural consequence of the by now well-established fact that the English subject is a category used pragmatically to ground each clause in preceding discourse, that is, by pointing to an already activated referent from which the clause can "move on to provide its own new contribution", as Chafe (Forthcoming) has put it, or to use Givón's mechanistic metaphor, by providing a "label" to tell the hearer what "file" the new information should be appended to.

What we need to ask is to what extent this situation is due to the way the Modern English subject is expressed. Old English had a well-developed case system, and I will argue that it had a syntactically defined topic construction; but did the subject become a more pragmatic or discourse-based category because of the shift from case to word order? Obviously there is no absolute answer to this question, but if we can show that these shifts happened together, and roughly at the

same time, this is a good argument in favor of the hypothesis.

It turns out that crucial developments in both the form and content of the subject did happen concurrently, and during a fairly narrow timespan, between the mid-twelfth century and the end of the fourteenth. On the semantic front, we find a shift away from "impersonal" expressions: that is, many verbs selecting a single argument whose case is Experiencer, Benefactive, or some other role widely removed from the "archetypical" Agent, formerly treated them as objects, but about this time began promoting them to subject. On the formal side, English entered this period with a fairly complete noun case system, but had nothing left to show of it but the genitive *'s* by the end of it; and as word order became fixed, a formerly independent and productive topic-construction disappeared.

I will look at the two sides of this story in turn, and then provide some additional evidence why they should be considered aspects of a single shift.

Diachronic Semantics

The Old English subject was originally quite restrictive in the case roles it contained, in much the way Shibatani predicts for a language with a competing topic construction. Most subjects were Agents, Themes, Causes, or similarly "active" participants. This began to change rapidly in the 250 years alluded to above, as impersonal expressions disappeared. The transition from impersonal to active verbs has been the subject of several studies, including a treatise by van der Gaaf early in this century, a chapter in Jespersen, and most recently an admirably complete descriptive work by Ogura (1986).

Ogura has pointed out that for many verbs, the transition was a slow one; *hyngrian* "to hunger" or "to be hungry" and *thyrstan,* "to thirst" or "to be thirsty" were occasionally used personally even in the earliest written records (as we can see in some examples from the OED), and so were the competing expressions "to be hungry" or "to be thirsty".

900: *thonne ge gefon hingrendum hlaf*

1000: *eadige synd ge the hingriath nu*

1300: *I wat thou has fasted lang and hungres*

However, there is evidence that the basic or unmarked way of using these predicates made a decisive switch during this period. When we compare parallel passages in a twelfth century West-Saxon translation of the gospels called the Hatton manuscript (Skeat 1970), and John Wycliffe's 1383 bible (Forshall and Madden 1879), we find that the former consistently renders these two predicates impersonally and the latter always has experiencer subjects.

Hatton: *sothlice his leorning-cnichtes hyngrede.*

Wycliffe: *and his disciplis hungriden.*

"his disciples were hungry" (Mt 12:1)

Hatton: *Me hingrede. & me sealden ætan.*

Wycliffe: *For Y hungride, and ge gauen me to ete;*

"for I was hungry and you gave me food" (Mt 25:35)

Hatton: *Me therste & ge me drincan ne sealdan.*

Wycliffe: *Y thirstide, and ge gaven not me to drynke;*

"I was thirsty and you gave me no drink." (Mt 25:42)

In other cases a clear-cut shift is immediately apparent. Mustonoja (1960) reports that this period saw the first subject-selecting use of a number of verbs; *I dream* first appears as an alternative to the formerly impersonal *me dreameth* in 1303, and *I lack* first replaced *me lacks* in 1330.

A similar though more complicated change happened to the bivalent verb *lician,* or *lyken*, the ancestor of modern *to like* which however had a meaning something more akin to *to please;* that is, the alignment of semantic and grammatical roles reversed. The person or thing causing pleasure was originally the subject, and the being experiencing it was a dative object. This makes sense in terms of the semantically-driven Old-English grammatical relation system, since it places the argument with the agent-like feature of causality, that is, whatever causes someone's enjoyment, in the subject role. The new system is more in line with the modern, discourse-driven system because the experiencer participant, which is always human–and thus more likely to be the starting point of the predicate given people's tendency to talk about each other rather than things–has become the subject.

Again looking to the OED, we can see that this change began during the two-and-a-half centuries we have been discussing, but lasted considerably past them; interestingly, the older version, the one meaning something like "to please", persisted long past the collapse of distinctive case and was last recorded in 1616. In some cases during the transition, the experiencer argument occurs in a *to*-phrase, as in *the sandwich likes to me*. But, since the modern sense does first appear in the year 1200, it seems reasonable to link this development to the same semantic shift affecting monovalent verbs like *hunger* and *lack.*

Concurrent Structural Changes

The timespan of 1150 to 1400 saw a number of important changes in English, structural and otherwise. The bulk of Norman French borrowings were made at this time, as the nobility shifted from really speaking French to using French words in English, and the Norse 3PL pronoun *they* first made its way into midland and southern dialects then as well (Thomasson and Kaufmann 1988:308). More importantly, grammatical gender was dropped and full NP's ceased to be marked for any case besides the genitive. Also during this time, the indefinite article developed into pretty much its modern form.

No doubt because of the decline in inflection, the period also saw a rather sudden crystalization of Old English's relatively fluid syntax into basically the SVO clause structure we have today. In an important diachronic study of English word order, Fries (1940) found that OV clause orderings, which were slightly more

common than VO's in 1200, had shrunk to 10% of all clauses by 1400.

	1000	1200	1300	1400	1500
OV Clauses	52.5%	52.7%	40.0%	14.3%	1.87%
VO Clauses	47.5%	46.3%	60.0%	87.5%	98.13%

I have made a similar study of the relative order of subjects and main verbs, using sermons from the mid-twefth century and the turn of the fourteenth and fifteenth centuries; that is, the end-points of the timeframe for the semantic shifts examined above. (The advantage in studying religious documents is that they are fairly easy to find for almost any date, and tend to be more stable in their content and style than other literature.) Though not as drastic as Fries' results, these also show a reduction in word-order variability.

	Mid 12th Ct. Texts			Texts Circa 1400		
	CC	**CA**	**JB**	**MES1**	**MES8**	**WS**
Post-Verbal	33%	23%	51%	5%	6%	10%
Pre-Verbal	67%	77%	49%	95%	94%	90%

Although these data establish a rough chronological parallel between the structural and semantic facts we set out to connect, we can't really claim to have explained the connection unless we can find some function which word-order formerly filled, which could be incorporated into the meaning of grammatical relations. In fact, the preverbal position of twelfth-century English does seem to have a special status in relating the clause in that particular position to preceding material, and it seems that the subject category, in taking over this position as its marker, may have absorbed some of its old functions.

Clause-Initial Constituents in Twelfth Century English

As the figures above make clear, the preverbal position of main clauses was already most commonly filled by the subject in twelfth century texts. Yet not every subject holds this position, nor does the subject always occupy it alone. An examination of several types of non-SVO main clauses reveals that the initial position serves a number of functions expressing types of continuity between clauses.

In corelative constructions, subjects are placed post-verbally, and the clause-initial position is filled by a small class of words which might be called "deictic adverbs". This often creates parallelism between an adverbial subordinate or relative clause and the modified main clause.

CA 15:26: *Gyf se biscop beo gameleas,... thonne losigeth feale sawlen...*
"If the bishop is careless, (then) many souls are lost"

CC 2:4: *Tha tha heo ealle hæfdon thysne unræd betwox heom gefæstnod; tha become Godes grame ofer heo ealle.* "When (that) they all had fixed this miscounsel between them, (then) God's anger fell over them all."

CA 13:3: *thær thær seo seodefullnysse byth, thær byth eac clænnysse,* "Where there is chastity there is also purity."

Placed in this position, the word *tha* (which has a number of spatial and temporal deictic uses) can also indicate that an event builds on or responds to the previous one. It is usually translated as "thereupon" or "moreover" in this context.

CC 1:29: *...cwæth on his heorte, thæt he... eathe mihte beon his Scyppende gelic...* "...(he) said in his heart, that he might easily be like his creator..."

Tha gefestnode he thysne unræd wyth than werode the he bewyste, "Thereupon he fastened this miscounsel with the army he commanded"

CC 2:18: *tha nigon werod... betæhton heora ræd to his willen. Tha getrymede se Ælmihtige God tha nigon engle werod,* "The nine armies trusted their counsel to his will, whereupon Allmighty god strengthened the nine armies of angels."

Several types of phrasal constituents can also appear preverbally. Adverbs show up here often, and do not usually bounce the subject out of its habitual spot. Predicate adjectives can also be found here, and in these cases the subject does end up after the verb. An example is:

CA 12:17: *Ungesælig byth se gitsere, the thurh his gesælthe losath,* "Unhappy is the miser who perishes on account of his happiness."

Unfortunately my data have too few examples like this to try to discover their distribution or function.

Object noun phrases show up preverbally in main clauses fairly often. They often share this position with the subject; and they can be ordered either before or after it. Most commonly referential objects are placed here if they are either co-referential with the subject of the immediately preceding clause,

CC 1:23: *Thæt teothe werod abreath & awende on yfel. God heo gesceop ealle gode, &...* "The tenth order revolted and turned to evil. God created them good, and..."

CC 2:19: *...God gesceop to mæren engle thone the nu is deofol. Ac God hine ne gesceop na to defle;* "...God created a radiant angel who now is a devil. But God didn't make him into a devil."

CC 3:2: *he wæs tha sume hwile anstandene. God tha hine gebrohte on neorxenewange,* "he was standing there a while, and then God brought him to Paradise (Eden)"

CC 13:16: *Se Hlaford sceal beon wordfæst, & wyten hwæt he clypige, hine man sceal lufigen for his lithnysse.* "(A) lord should be true to his word, and know what he says; one should love him for his kindness."

or somehow parallel to its object:

CA 12:9: *Ure Hælend on his jugothe wæs gehyrsum his magen, & his Heofonlice Fæder he gehyrsumode oth death.* "Our savior was obedient to his parents in his youth, and obeyed his heavenly father until death."

CC 1:7: *He awehth ealle dune mid anre hand, & ealla eorthen he belucth on his hande,* "He raises up all the hills with one hand, and shuts up all (the) earth on his hand."

The three uses can be summed up as one general function, namely linking each clause with the material preceding it. Deictic adverbs put here seem to point the hearer's attention back to preceding clauses or events. Object noun phrases are apparently placed here either to alert the hearer (or reader) to their referential continuity with the preceding clause, or to the parallelism/continuity of the two clauses. This function seems to correspond more or less to Shibatani's notion of a "cohesive device", and I will call this use of the preverbal position the "topic" construction.

Since the experiencer or benefactive objects of impersonals were these verbs' only arguments, they tended to be the referential starting points of clauses containing these verbs, and were often placed initially.

Mk11.12: *and othrum dæge tha hi ferdon fram Bethania hine hingrode.* "On the following day, when they came from Bethany, he was hungry."

PsGLI: *tha weligan wædlon & him hingrode...* "The wealthy man was impoverished and he was hungry."

Thus they tended to end up in the same syntactic positions that they would eventually assume as subjects, and for the same pragmatic reasons.

In the texts of around 1400 which I have examined, not only are non-SVO main clauses much scarcer than in earlier texts, but seem to be in different types as well. I have not found any objects placed before verbs. On the other hand, existential clauses of the *there be* + subject type are well attested, although they have only rough parallels in the twelfth century data. Fronted adverbs do occur, but infrequently. Interestingly, postverbal subjects do occur fairly often when the verb describes a speech-act;

MES8 38:30: *And here-to bereth wittenes Seynt Poul,... "...*

WS 110:9: *And thuus comaundeth crist that men schullen...*

I do not have an explanation for this development.

Conclusions

Generally, by 1400, the preverbal position itself did not express the kind of interclausal continuity for non-subjects that it had 250 years earlier. Apparently the subject category, in taking over the form of the old topic construction, absorbed its function completely, so that the preverbal position per se no longer had the meaning it once did. There are several ways that this structural shift could have led to the semantic changes in verbs like *hyngrian* and *lician.*

The first possibility is structural reanalysis. Mustonoja (1960) attributes these object nouns' evolution into subjects, in part, to the simple fact that "preceding the verb, (they) occupied the position normally held by the subject." And hence, they came to be felt as subjects. Jespersen (1949), too, proposes this explanation. But there are reasons to believe that the development reflects a more fundamental change in the function of subjects. For example, we have noted that for a time one usage of the verb *like* maintained its experiencer as an object, and marked it with *to* (the following examples are again from the OED)

1340: *merci liketh to god...* "mercy pleases god/god likes mercy"

1374: *the victories cawse lykede to the goddess,* "The victorious cause pleased the goddess."

Here the original dative case has been replaced by a preposition, as happened regularly to other datives marking Recipients and Benefactives, and the "thing liked" keeps its subjecthood and ends up preverbally. Such cases make reanalysis alone an unsatisfactory explanation for the eventual change of valence which did occur. Faced with a change in fundamental structure (that is, turning the old object into a subject and vice versa) or a change in form (replacing the dative with *to*), we must ask why the language settled on the former.

The answer seems to be that in absorbing the form of the old grammatical topic, the English subject necessarily absorbed some of its function. There is no reason to doubt that Bybee's (1988) hypothesis that grammatical morphemes encode a meaning "containing vestiges of (their) former lexical meanings" might not also apply to regrammaticized syntactic constructions. At the same, the shift can be interpreted as showing that without an explicit topic construction, a language's subject will inevitably come to mark the continuity of referents rather than their deep case. Ultimately, these are not mutually exclusive hypotheses.

Textual Sources

CC: Homily I, "The Creation", from Rubie and Warner (1971).

CA: Homily XII, "The Twelve Abuses", ibid.

JB: Sermon XXII, "De Sancto Iohanne Baptista", from Morris (1873).

MES1: Sermon 1, from Ross (1940).

MES8: Sermon 8, ibid.

WS: John Wycliffe, "Speculum de Anticristo", from Winn (1929).

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Agentivity and the Georgian Ergative

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Case marking has been assumed to be either inherent, semantic, or structural, i.e., syntactic (Babby 1986, Chomsky 1986, Zaenen et al. 1985).[1] Inherent case is stated in the lexical entry of individual predicates; due to its unpredictable nature, it is relatively uninteresting. In contrast, structural case is predictable on the basis of syntactic function. Semantic case has, in general, not been explored; the basic idea is that case correlates with the meaning of an argument in relation to the predicate, e.g., the thematic role of an argument might determine its case. In general, those analyses which consider semantic case assume that it is assigned independently of the syntax, i.e., the argument is assigned the given case regardless of the grammatical function it ultimately bears. If arguments are projected into the syntax based on the meaning of the predicate, some structural case marking will have thematic correlates (Dowty 1991, Grimshaw 1990, Jackendoff 1990). However, I argue that the thematic information used to project arguments into the syntax is not detailed enough to account for case marking with both semantic and syntactic restrictions. In particular, I propose that the Georgian ergative applies to external arguments of Aorist series verbs, a syntactic restriction, which are either cause or volitional agents, a semantic restriction. In order to account for the distribution of the ergative, case marking must be able to refer simultaneously to the syntax and the finer-grained semantic structure (Jackendoff 1990).

1 The Georgian Verbal System

Georgian verbs divide into morphosyntactic classes on the basis of their syntax and semantics (Holisky 1981, Harris 1981). Class 1 verbs are transitives, as in (1a), Class 2 verbs are unaccusative intransitives, as in (1b), and Class 3 verbs are unergative intransitives, as in (1c).[2]

(1) a. nino Cerils Cers.
Nino-NOM letter-DAT writes
'Nino is writing a letter.' (Cl. 1; Present)

b. nino Citldeba.
Nino-NOM blushes
'Nino blushes.' (Cl. 2; Present)

c. nino mγeris.
Nino-NOM sings
'Nino is singing.' (Cl. 3; Present)

Each class governs particular case marking patterns. Within a given class, the case marking patterns vary depending on the tense-mood-aspect of the verb. Tense-mood-aspect forms comprise three series: Present, Aorist,

and Perfect. The case marking patterns for these are summarized in (2). The pattern for the Present series was expemplified in (1); the Aorist series is discussed in §1.1. I am primarily concerned with the Aorist series in which external arguments are marked with the ergative. The subjects of Class 1 and 3 verbs are external arguments, as reflected by the semantics of the verbs. This contrasts with Class 2 verbs which are unaccusative and hence have only an internal argument.

(2)

	Arg.	'Present'	'Aorist'	'Perfect'
Class 1 (trans.)	EXT-INT	NOM-DAT	ERG-NOM	DAT-NOM
Class 2 (unacc.)	INT	NOM	NOM	NOM
Class 3 (unerg.)	EXT	NOM	ERG	DAT

1.1 Split-Ergativity

Georgian has a split-ergative system. The split-ergative pattern is triggered by the Aorist series. All external arguments are marked with the ergative in these tenses, i.e., the subjects of both transitives and unergatives are ergative.

(3) a. ninom Cerili daCera.
Nino-ERG letter-NOM wrote
'Nino wrote a letter.'
(Cl. 1; Aorist)

b. ninom imγera.
Nino-ERG sang
'Nino sang.'
(Cl. 3; Aorist)

The verb in (3a) is a transitive Class 1 verb. The subject *ninom* is in the ergative, while the object *Cerili* is in the nominative. This contrasts with the present tense form in (1a) in which the subject *nino* is in the nominative and the object *Cerils* is in the dative. The unergative verb in (3b) shows a similar pattern; in the Present, as in (1c), the subject is in the nominative.

The ergative case marking in the Aorist series is restricted to external arguments. That is, the internal argument of unaccusative verbs is marked with the nominative in the Aorist series, as in (4a), and not the ergative, as in (4b) (cf. (1b)).

(4) a. nino gaCitlda.
Nino-NOM blushed
'Nino blushed.' (Cl. 2; Aorist)

b. *ninom gaCitlda.
Nino-ERG blushed
(Cl. 2; Aorist)

So, in the Aorist series, the internal argument of Class 2 unaccusative verbs patterns differently from the external argument of Class 1 and 3 verbs.

2 Agentivity Restrictions

In addition to the syntactic restriction that ergatives be external arguments, there is a semantic restriction on them. In §2.1, I discuss the association of the ergative with volitionality and then in §2.2 the role of cause.

2.1 Volitionality

2.1.1 Inanimates

The most striking restriction on the occurrence of ergative subjects is that Class 3 verbs do not allow inanimate ergative subjects. Inanimate subjects are possible with Class 3 verbs in the Present series which has nominative subjects, as in (5a) and (6a). However, inanimates cannot be subjects in the Aorist series where they are marked with the ergative case and a volitional reading is forced on them, as in (5b) and (6b).[3]

(5) a. čaidani imγeris.
teakettle-NOM sings
'The teakettle is singing.'
(Holisky 1981:164)
(Cl. 3; Present)

b. *čaidanma imγera.
teakettle-ERG sang
(Holisky 1981:164)
(Cl. 3; Aorist)

(6) a. pexi qinulze srialebs.
foot-NOM ice.on slip
'The foot slips on the ice.'
(Holisky 1981:163)
(Cl. 3; Present)

b. *pexma qinulze (da)isriala.
foot-ERG ice.on slipped
(Holisky 1981:163)
(Cl. 3; Aorist)

In (5a), the nominative subject *čaidani* is compatible with the Present series form of the verb *imγeris*. However, when this verb appears in the Aorist series and the subject is marked with the ergative, the resulting sentence is ungrammatical, as seen in (5b). (6) shows a similar effect with the verb *srialebs*.

The restriction seen in (5) and (6) is not the result of an incompatibility between the Class 3 unergative verbs and the Aorist series. These verbs can appear in the Aorist series if their subjects are animates, as seen in (7). The sentences in (7) are identical to those in (5b) and (6b) only the subject *vanom* is animate, not inanimate.

(7) a. vanom imγera.
Vano-ERG sang
'Vano sang.'
(Holisky 1981:164)
(Cl. 3; Aorist)

b. vanom qinulze isriala.
Vano-ERG ice.on slipped
'Vano slid on the ice.'
(Holisky 1981:163)
(Cl. 3; Aorist)

The restriction against inanimate subjects cannot be a subcategorization restriction on the part of the verb since inanimate subjects are possible in the Present series, as was seen in (5a) and (6a). This suggests that the restriction is connected with the appearance of the ergative case. One possibility is that the ergative requires volitionality, a prototypical property of agents, on the part of the subject. Since inanimates cannot be volitional, they cannot occur in the ergative. I first discuss several phenomena which support this restriction and then show why it must be further refined.

2.1.2 Unaccusatives

By definition Class 2 verbs cannot have agentive subjects because they are unaccusatives. As such, we predict that they should never appear with ergative subjects. In fact, Class 2 verbs, as seen in §1.1, require nominative subjects in the Aorist series. Since their subjects are in the nominative, there is no volitionality restriction imposed on them. Unlike Class 3 verbs which did not allow inanimate subjects in the Aorist series, inanimate subjects are possible with Class 2 verbs in the Aorist series, as in (8).

(8) a. namcxvari gamocxva.
pastry-NOM baked
'The pastry baked.' (Harris 1981:43) (Cl. 2; Aorist)

b. "vepxisTqaosani" Pirvelad 1712 Cels gamokveqnda.
Vepxistqaosani-NOM first 1712 year published
'Vepxistqaosani was first published in 1712.' (Aronson 1989:123)
(Cl. 2; Aorist)

2.1.3 Frozen Forms

A few verbs are morphologically Class 3 unergatives, but their semantics patterns with that of Class 2 unaccusatives. The number of these verbs is quite small, and they are not productive. Harris (1981) makes the following observation concerning these verbs. Morphologically, it is predicted that their subjects occur in the ergative in the Aorist series. However, semantically, the nominative is predicted. Although Georgian case marking patterns are usually very fixed, this is one place in which confusion arises, and nominative subjects are found increasingly in the place of ergative ones.

(9) a. macivridan Cqalma iCveta.
refridgerator.from water-ERG drip
'Water dripped from the refridgerator.' (Harris 1981:246)
(Cl. 3; Aorist)

b. macivridan Cqali iCveta.
refridgerator.from water-NOM drip
'Water dripped from the refridgerator.' (Harris 1981:246)
(Cl. 3; Aorist)

In (9a) the Class 3 verb *iCveta* takes an ergative subject *Cqalma*, as predicted from the morphology. However, this form is being replaced by that in (9b) with a nominative subject *Cqali*. If the ergative requires volitionality, forms like those in (9a) are synchronically anamolous and result in confusion as to the appropriate case assignment, and thus in the appearance of forms like (9b) with the nominative case, which imposes no volitionality requirement.

2.1.4 Negation

When Present series verbs are negated, their nominative subjects can be interpreted as volitional or not with respect to the action, as in (10a) and (11a). However, when Aorist series verbs are negated, their ergative subjects are volitional, as in (10b) and (11b).

(10) a. nino im Cigns ar qidulobs.
Nino-NOM that book-DAT not buys
'Nino isn't buying that book.' (on purpose/simple statement)
(Cl. 1; Present)

b. ninom is Cigni ar iqida.
Nino-ERG that book-NOM not buy
'Nino didn't buy that book.' (on purpose) (Cl. 1; Aorist)

(11) a. nino ar ceKvavs.
Nino-NOM not dance
'Nino is not dancing.' (on purpose/simple statement)
(Cl. 3; Present)

b. ninom ar iceKva.
Nino-ERG not dance
'Nino didn't dance.' (on purpose) (Cl. 3; Aorist)

In (10a) the verb *qidulobs* is in the Present series and takes a nominative subject. When the verb is negated with *ar*,[4] the reading can either be a simple statement of the fact that Nino is not buying a book or can indicate that Nino is purposely not buying a book. However, in (10b) the verb *iqida* is in the Aorist series and takes an ergative subject. The reading is one in which Nino is purposely not buying the book. (11) provides a similar example with the Class 3 verb *ceKvavs*.

In order to express the simple statement reading of (10a) and (11a) in the past tense, a different series, the Perfect, must be used, as in (12). In the Perfect series, the subject is in the dative, not the ergative (Table 2).

(12) a. ninos is Cigni ar uqidia.
Nino-DAT that book-NOM not buy
'Nino didn't buy that book.' (simple statement) (Cl. 1; Perfect)

b. ninos ar uceKvia.
Nino-DAT not dance
'Nino didn't dance.' (simple statement) (Cl. 3; Perfect)

In contrast to Class 1 and 3 verbs, under negation, the subjects of Aorist series Class 2 verbs do not have a volitional reading. For example, (13) with the nominative subject *nino* has no implication that Nino puposely got herself cold (cf. (10b) and (11b)).

(13) nino ar gacivda.
Nino-NOM not get.cold
'Nino didn't get cold.' (simple statement) (Cl. 2; Aorist)

Thus, negated verbs with ergative subjects have a reading of volitionality on the part of the subject. This reading is not present in the Present and Perfect series or with Class 2 verbs which do not have ergative subjects.

2.1.5 Imperatives

Subjects of imperatives must, by definition, have control over the action (see Jackendoff 1994 for one way to capture this requirement). Georgian imperative forms belong to the Aorist series. As such, the subjects of imperatives are marked with the ergative. This is seen overtly in third person imperatives. In second person imperatives, it is seen indirectly, via the verb form and the nominative object marking. In (14a), the third person subject of the Class 1 imperative is in the ergative case. The verbal form of the imperative is identical to the optative, which is part of the Aorist series. In (15a), the second person subject of the imperative is pro-dropped. However, its ergative case can be deduced from the fact that the verb form *daCere* is identical to the aorist and from the nominative case marking on the object *Cerili*. (14b) and (15b) demonstrate imperatives of Class 3 verbs.

(14) a. ninom gaKvetili daamtavros!
Nino-ERG lesson-NOM finish
'(Let) Nino finish the lesson!'
(Cl. 1; Aorist)

b. gogonam icuraos!
girl-ERG swim
'(Let) the girl swim!'
(Cl. 3; Aorist)

(15) a. Cerili daCere!
letter-NOM write
'Write the letter!'
(Cl. 1; Aorist)

b. čemtan iceKve!
me.with dance
'Dance with me!'
(Cl. 3; Aorist)

In contrast, Class 2 verbs do not generally form imperatives, due largely to the nonvolitional semantics associated with unaccusatives. Interestingly, the one Class 2 verb which frequently forms imperatives is the irregular verb *svla* 'go'.[5] The imperative form of this verb is not based on an Aorist series form of the verb, but instead is unique to the imperative.

2.2 Non-volitional Ergatives

Despite the evidence cited above for the hypothesis that the ergative requires volitionality on the part of the subject, there is a serious flaw in such an analysis. Many Class 1 transitive verbs allow clearly non-volitional subjects in the ergative. That is, they can appear with inanimate ergative subjects, and inanimates are by definition not volitional. For example, in (16a) the subject of the Aorist series verb *moKla* is an inanimate *xem* 'tree'. The tree is in no way anthropomorphized in this sentence; the tree is simply the cause of the

death of the sheep.[6] The same effect is seen in (16b) where *mzem* 'sun' is the ergative subject of a transitive verb. The sentence just states that the sun caused the children to be warm; there is no implication that the sun purposely warmed the children. (16c) provides an additional example.

(16) a. xem cxvari moKla.
tree-ERG sheep-NOM killed
'The tree killed a sheep (e.g., when it fell).' (Cl. 1; Aorist)

b. mzem bavšvebi gaatbo.
sun-ERG children-NOM warmed
'The sun warmed the children.' (Cl. 1; Aorist)

c. tovlma sopeli gadaatetra.
snow-ERG village-NOM whitened
'The snow made the village white.' (Cl. 1; Aorist)

3 Analysis

Ergative subjects must be either volitional (§2.1) or cause (§2.2).[7] Following Dowty (1991), cause and volitionality are properties which define Proto-agents. That is, Proto-agents show volitional involvement in an event or state and cause an event or change of state in another participant.[8] So, the ergative requires that a noun phrase show at least one of these properties typically associated with agents. I assume that Dowty's Proto-agent properties are represented in the argument structure semantics that is used to project arguments into the syntax and to determine properties usually attributed to thematic roles (Jackendoff 1994).

As discussed above, the ergative subject of a Class 1 transitive verb can be either volitional or cause. However, the ergative subject of a Class 3 unergative verb must be volitional; the cause option is not available (§2.1.1).

(17)

	Volitional	Cause
Class 1 (trans.)	√	√
Class 3 (unerg.)	√	*

For Class 1 transitive verbs, the restriction that ergative arguments be either volitional or cause applies straightforwardly. If the subject is inanimate, it must be cause, since inanimates cannot be volitional.[9] Animate subjects can be either cause or volitional. In general, animate subjects are interpreted as both volitional and cause, when both are relevant roles for the predicate. Jackendoff (1994) suggests that arguments are interpreted as maximally agentive, i.e., when possible an argument will be both volitional and cause. Note that particular contexts may require a particular attribute on the part of the subject. For example, imperatives require volitionality (§2.1.5), a requirement which is compatible with the restriction on the ergative.

Next consider Class 3 unergatives. These verbs cannot appear with inanimate ergative subjects (§2.1.1), unlike their Class 1 counterparts (§2.2).

Why should this be? If the subject is animate, it can be volitional, and there is no problem. If it is inanimate, it must be cause. However, in order to have a cause argument, there must be an internal event for the ergative argument to cause, and such an event is absent in unergative verbs. As such, the cause role is unavailable, and the only option for the ergative subjects of these verbs is to be volitional, which means that only animate subjects are possible.

3.1 Mechanics

Traditionally, case assignment has been divided into structural/syntactic, semantic, and inherent (Babby 1986, Chomsky 1986, Zaenen et al. 1985). Inherent case cannot be predicted by either grammatical or semantic factors and so must be stipulated in the lexical entry for individual verbs, e.g., nonnominative subjects of Icelandic verbs are assigned inherent case (Andrews 1982, Zaenen et al. 1985); due to its idiosyncratic nature, inherent case will not be considered here. Syntactic case is determined solely by syntactic information, e.g., subjects in English are assigned nominative case, regardless of their thematic role, although if arguments are projected into the syntax based on the argument structure, some syntactic case may have thematic correlates. Semantic case is assigned to an argument based on its semantic role with respect to the predicate, regardless of its grammatical function, e.g., goals in Hindi are assigned dative case (Mohanan 1990). Semantic case is usually assumed to apply before the syntax, e.g., in the argument structure, so that in the syntax, semantic case and inherent case are indistinguishable, and inalterable. Under most theories of case marking and argument projection, semantic information is unavailable in the syntax. However, to account for the Georgian ergative, both grammatical and semantic factors must be considered. For the sake of exposition, I use Lexical-Functional Grammar (LFG) (Bresnan 1982), although the basic generalizations made here must be captured in any theory.

In LFG, the syntax is divided into c(onstituent)-structure[10] and f(unctional)-structure. F-structure contains information about the grammatical functions of the arguments, their cases, etc. In addition to f-structure and c-structure, there is an argument-structure which contains the detailed semantic information about the predicate and its arguments which is necessary for linking the arguments with grammatical functions (Alsina 1993, Butt 1993). The case marking rules for the Georgian ergative make reference to both the f-structure, in the requirement that only subjects of Aorist series verbs be in the ergative, and the argument-structure, in the requirement that the argument be volitional or cause.

The semantic restriction on the ergative is not part of the meaning of the verb or the information necessary for projection as an external argument, since no such requirement holds when the subject is in the nominative. Instead, the restriction is part of the ergative case marking.[11] This can be accomplished via the lexical entry for the ergative ending, shown in (18).

(18) *-m(a)*: $(\uparrow \text{CASE}) =_c \text{ERG}$
$(\uparrow \text{PRED})_\alpha = (\text{VOL}_\alpha \vee \text{CAUSE}_\alpha)$

(18) first states that any noun to which the ending is affixed must be in the ergative in the f-structure. This is written as a constraint equation, which means that ergative case must be assigned to the noun by a case assignment rule.[12] The second line states that the noun phrase to which the case marker affixes must be either volitional (VOL_α) or cause (CAUSE_α) in argument-structure (indicated by an α). The notation $(\uparrow\text{PRED})_\alpha$ accesses the argument-structure function of the relevant predicate, in this case, the information corresponding to the noun to which the ergative case marker is affixed.[13]

Next, we need a rule to assign the ergative, i.e., a way to account for the split-ergative pattern. Remember that the ergative appears on external argument subjects of Aorist series verbs;[14] unaccusative subjects are not assigned ergative case. So, the subject must be of the appropriate type in the argument-structure to be linked as an external argument. For the sake of simplicity, I have represented this as in (19).

(19) AORIST: $((\uparrow\text{SUBJ CASE}) = \text{ERG}) \longleftrightarrow ((\uparrow\text{SUBJ PRED})_\alpha = \text{EXT}_\alpha)$

(19) states that the subject of an Aorist series verb is assigned ergative case if and only if the subject corresponds to an external argument in the argument-structure. The designation EXT_α corresponds to arguments whose argument-structure semantics results in their being external arguments.[15] The syntactic nature of this requirement is reflected in the fact that the ergative never appears on the non-subject agents of passive constructions, which have semantic roles similar to those of external arguments.

With the constraints in (18) and (19), we can account for the distribution of the Georgian ergative. (19) accounts for the syntactic restriction on the ergative by assigning the ergative to all external arguments of Aorist series verbs. Since these arguments have the ergative case ending affixed to them, they must be either VOL_α or CAUSE_α in the argument-structure of the verb, as required by (18), which captures the semantic restriction on the ergative. If this semantic restriction is not met, the resulting clause is ungrammatical, and an Aorist form requiring an ergative subject cannot be used.

3.2 Other Languages

A similar restriction on ergative arguments holds in several unrelated languages with split-ergative systems, including Hindi/Urdu, West Greenlandic, Acehnese, and Tsova–Tush. Here I demonstrate how the fundamentals of the Georgian analysis applies to Urdu (Butt and King 1991) and Tsova–Tush (Holisky 1987), despite superficial differences in the split-ergative patterns of these languages.

In Urdu, the subjects of transitive verbs are marked with the ergative in the perfect; these ergative subjects can be either cause or volitional. In this way they resemble their Georgian counterparts. However, unlike in Georgian, subjects of intransitives usually appear in the nominative. Certain verbs allow either nominative or ergative subjects. Ergative marking on the subjects of these intransitives correlates with volitionality, as in (20a). The nominative occurs when the subject is not volitionally involved in the action, as in (20b).[16]

(20) a. anjum-ne royaa.
Anjum-ERG cry-PERF
'Anjum cried.' (on purpose)
(Urdu; from Butt and King 1991:33)

b. anjum royii.
Anjum-NOM cry-PERF
'Anjum cried.'

So, the Urdu ergative is similar to Georgian in that it marks volitionality on the part of intransitive subjects and either cause or volitionality on the part of transitive subjects. The difference is that Urdu allows subjects of unergatives to appear in the nominative. Since, as with Georgian, the nominative places no semantic restriction on the argument, non-volitional subjects are possible with perfect unergatives, as long as they appear in the nominative case.

The split-ergative system of Tsova–Tush is different from that of Urdu and Georgian in that it is not triggered by past perfectives. However, there is still a correlation between the ergative and volitionality. With transitive verbs, all subjects appear in the ergative. With intransitives, there is a split in case marking depending on the person of the subject. Third person subjects of intransitives are always nominative. However, first and second person subjects can be either nominative or ergative.[17] Holisky (1987) argues that verbs whose argument is typically an actor are marked with the ergative, while those whose argument is typically an undergoer are marked with the nominative. However, this pattern can be overridden. So, an argument which is typically an actor can be marked with the nominative when it is used non-agentively. Correspondingly, an argument which is typically an undergoer can appear in the ergative when it acts agentively. An example is shown in (21).

(21) a. (as) vuiž-n-as.
I-ERG fell-AOR-1SG-ERG
'I fell down, on purpose.'
(Tsova–Tush; from Holisky 1987:105)

b. (so) vož-en-sO.
I-NOM fell-AOR-1SG-NOM
'I fell down, by accident.'

Thus, with Tsova–Tush intransitive verbs, the case marking of first and second person subjects depends on the agentivity (or lack there of) of the subject, a phenomenon which is similar to the Urdu intransitives in which the ergative indicates volitionality on the part of the subject.

To conclude, the Georgian ergative applies only to external arguments which are volitional or cause, a phenomenon which occurs cross-linguistically in languages with split-ergative systems. External arguments which do not meet this semantic requirement cannot appear in the ergative. As such, Georgian provides evidence not only for the existence of semantic case, but also that case assignment can simultaneously have syntactic and semantic restrictions, which is only possible if syntactic case assignment has access to the type of semantic information found in the argument structure of predicates.

Notes

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[1]'Government and Binding' theory usually makes no distinction between inherent and semantic case since in the syntax both are linked to theta-role assignment.

[2]There is a fourth class which comprises verbs whose experiencer is in the dative case. These never have external arguments.

[3]It is possible to derive Class 2 inceptive counterparts of these verbs. Since these forms are unaccusatives, their subject is in the nominative in the Aorist series (Table 2). Inanimate subjects are possible in the Aorist series with these forms.

[4] There is another negative marker in Georgian *ver* which denotes incapability on the part of the subject.

[5] Harris (1981:246, 305) points out that in certain dialects, these verbs, which are morphologically Class 2, take ergative subjects in the Aorist.

[6]Correspondingly, when these sentences are negated, there is no implication of volitionality, in contrast to the sentences in §2.1.4. As such, (i) is a syntactically and semantically well-formed sentence.

(i) xe daeca, magram (xem) aravin ar moKla.
tree-NOM fell but tree-ERG no one-NOM not kill
'The tree fell, but it didn't kill anyone.' (Cl. 1; Aorist)

[7]There remains the important issue of why volitionality and cause pattern together in this way. As discussed below, both are properties of Proto-agents. In addition, following Jackendoff (1990), the first argument of CS (cause), when present, is also the first argument of AFF (affect), and volitionality is encoded on the AFF tier.

[8]The other properties of Proto-agents are: sentience and/or perception; movement relative to the position of another participant; exists independently of the event named by the verb (Dowty 1991:572).

[9]I am not concerned with coercion which allows inanimates to be treated as animates under certain pragmatic conditions (see Pustejovsky 1992).

[10]Constituent-structure contains information about the phrase structure of a clause, i.e., the dominance and precedence relations among constituents. C-structure is irrelevant for the issues discussed here.

[11]Another reason for having a general semantic requirement on the ergative is that this generalization holds productively of all ergatives. For example, derived causatives are always Class 1 verbs, and in the Aorist series their external argument appears in the ergative. Also, Class 3 verbs can be productively formed via derivational morphology; when these appear in the Aorist series, their subjects must be volitional and hence animate. In particular, no new verb can be derived of the type in §2.1.3.

[12]The assumption that case endings are constraint equations instead of assignment equations is not important for the discussion here. If case endings are constraint equations, then all case marked noun phrases must be assigned case independently; if they are assignment equations, then the noun phrase is licensed for case as is, unless some rule assigns a conflicting case to the noun phase.

[13]The α subscripted on the parentheses can be thought of as a pointer to the argument-structure. It picks out the relevant argument (variable) in the argument-structure. Note that if argument-structure is similar to Jackendoff's (1990) lexical conceptual structure, then a given f-structure PRED may correspond to more than one position in the argument-structure, reflecting its semantic function on different tiers. However, these multiple positions must be coreferent.

[14]An external argument in LFG is one whose Lexical Mapping Theory value is always [−o(bject)] in the argument-structure, as opposed to the single argument of unaccusative verbs which is [−r(estricted)] (see also Alsina 1993). In LFG this difference is generally not reflected by the position of the subject in the c-structure.

[15]For example, using Jackendoff's (1990) lexical conceptual structure EXT_α would designate the first argument on the AFF tier.

[16]This class of verbs is relatively small and includes *ciik*^{h} 'scream', *nahaa* 'bathe', *soc* 'think', etc. M. Butt (p.c.) suggests that Urdu unergatives generally allow ergative case subjects; however, the number of unergative verbs is very small in Urdu (e.g., N-V complex predicates are found instead).

[17]Some verbs only allow one case or the other, usually for semantic reasons.

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An Optimality Theoretic Account of the Athapaskan D-Effect(s)

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1.0 Introduction

In Athapaskan languages, the classifier prefix /d/ enters into several prosodic and segmental alternations with the initial segment of a following root-- alternations referred to as the 'D -Effect'; see, for example, Howren 1971, McDonough 1990, Rice 1987, Shaw 1991 for discussion. In some cases this prefix merges with the root-initial segment to form a 'contour' segment; in others it syllabifies either as a coda of a preceding syllable or as the onset of a syllable supported by an epenthetic vowel, in still others it is lost. The effects of the classifier prefix /d/ on an immediately following root-initial consonant are presented in the table in (1):

(1) Effects of classifier prefix /d/ on an immediately following root-initial consonant

d+root-initial	Navajo-type	Ahtna-type	Koyukon-type	Hupa-type
d+ʔ	t'	t'	t'	dV.ʔ
d+fricative d+S, d+L, d+Ś, d+X, d+X̣	dz, dl, j, g	dz, dl, g/dɣ, G/dɣ̇	dV.C	dV.C
d+other C	C	d.C if C is not coronal stop; C if C is coronal stop	dV.C	dV.C
d+V	dV	dV	dV	dV
d+n	n', n, d, dn	d.n	dV.n	dV.n

The above table is partitioned into four cross-family patterns: Navajo-type, Ahtna-type, Koyukon-type, and Hupa-type[1] . Each pattern is characterized by five distinct contexts: from top-to -bottom, /d/ affixed to a root beginning with a glottal stop; /d/ affixed to a root beginning with a fricative; /d/ affixed to a root beginning with a consonant other than a glottal stop or a fricative; /d/ affixed to a root beginning in a vowel; and finally, /d/ affixed to root beginning with the coronal nasal /n/. The cells of the table illustrate the segmental and prosodic alternations exhibited by the prefix in a specific context.

The full range of generalizations, prosodic and segmental, which emerge from a close inspection of the table in (1) are listed in (2) and summarized in (3).

(2) Generalizations

(a) In the Hupa-type languages, epenthesis is always found.

(b) In the Koyukon-type, epenthesis occurs except when the /d/ is followed by a glottal stop (the only laryngeal in the language), in which case the two segments fuse to a single segment.

(c)i. In the Ahtna and Navajo types, a single segment is created whenever possible; this is the case when the root begins with a non-stop.

ii. When the root begins with a stop, the /d/ syllabifies as a rhyme in Ahtna-type languages and is lost in the Navajo-type.

(3) Summary of D-Effects

d+root-initial	Navajo-type	Ahtna-type	Koyukon-type	Hupa-type
d+ʔ	merger	merger	merger	epenthesis
d+fricative	merger	merger	epenthesis	epenthesis
d+other consonant	deletion	syllabification as rhyme	epenthesis	epenthesis

The present paper is concerned with providing an initial characterization of the D-Effect facts across the language family within the constraint-based framework of Optimality Theory (Prince and Smolensky forthcoming) To this end we will focus primarily on accounting for the alternations exhibited by the /d/ classifier when it combines with a root-initial stop or glottal stop, leaving the fricative alternations as a topic for future research (see Lamontagne and Rice, in preparation). We will show that interactions between the /d/ classifier prefix and the root-initial segment follow from the interactions between a small number of universal constraints which may be ranked on a language-specific basis. Hence, the present work may be taken as support for the optimality theoretic characterization of particular grammars as the reorganization of universal constraints.

The structure of the paper is as follows: In Section 2 we provide some background on the structure of Athapaskan languages relevant to the current discussion; in Section 3 we outline the claims underlying the theoretical framework in which we couch our analysis of the D-Effect; finally in Section 4, we provide an analysis of the prosodic and segmental alternations exhibited by the /d/ classifier prefix in combination with a root-initial stop (4.1) and glottal stop (4.2).

2.0 The Relevant Structure of Athapaskan Languages

The /d/ classifier is one of four voice/valency markers found in languages of the Athapaskan family. These morphemes have both productive and non-productive uses. In its productive capacity, the /d/ classifier marks, for example, passives (a) and reflexives (b). All examples are drawn from Slave (Rice 1989), and are typical of the family. Root-initial segments, both underlying and resulting from the D-Effect, are in bold face.

(4) Active marker of voice/valency (examples from Slave, Rice 1989)

a. sómba néʔį 's/he stole money'
money
/ne + ´ + ʔį/
steal

sómba néh**t'**į 'money was stolen'
money
/ne + ʰ + d + ʔį/
d steal

b. enį**ð**ę 's/he thinks'
/e + ne + n + ðę/
think

ʔedene**dð**ę 's/he thinks of him/herself'
/ʔede + ne + d + ðę/
d think

The d-classifier is also lexically frozen with some verb stems, as in (5).

(5) -jį̌ 'sing' cf. šį 'song'
/d+Šį/ /Šį/

Athapaskan languages have large consonant inventories. An example of an inventory is given in (6), this one from Ahtna. The inventories of the languages differ primarily by the number of distinctive places of articulation found.

(6) Ahtna (Alaska) consonant inventory (Kari 1990, modified transcription)

	labial	alveolar	lateral	alveo-palatal	velar	uvular	glottal
stops/affricates							
voiceless unaspirated	b	d	dl	dz	g	G	
voiceless aspirated		t	tɬ	ts	k	q	
glottalized		t'	tɬ'	ts'	k'	q'	ʔ
non-stops							
voiceless			ɬ	s	x	χ	h
voiced	m	n	l	z	ɣ	ʁ	

With the exception of the labial place of articulation, all places of articulation include stops of different laryngeal qualities. All places of articulation include voiced non-stops: a nasal or fricative, depending on the place of articulation. The labial and alveolar places of articulation aside, all places of articulation also have a voiceless fricative, labelled voiceless non-stop.[2]

3.0 Theoretical Assumptions

In this section we present the theoretical assumptions essential to our analysis of the D-Effect in Athapaskan languages. First we present a brief description of the general framework assumed (3.1) and then we outline our assumptions concerning the representation of stricture features (3.2).

3.1 Optimality Theory

As noted above, we assume the Optimality Theory framework presented in the work of Prince and Smolensky (forthcoming). For reasons of space, the present discussion of Optimality Theory (OT) is extremely condensed, hence the reader is referred to the more comprehensive discussion of the foundations of OT found in the above work as well as in Prince and Smolensky (1991), McCarthy and Prince (forthcoming), McCarthy and Prince (forthcoming), and references cited within these works.

In OT the pairing of an underlying form with a (unique or *optimal*) surface form is achieved by evaluating a large set of potential (or *candidate*) surface forms with a set of universal constraints. The universal constraints are assumed to be violable and ranked in a hierarchy of domination-- i.e., an optimal surface form may violate several (low ranked) constraints so long as it satisfies other more highly ranked constraints. In this framework, particular grammars differ only in the ranking of universal constraints and, of course, in the form of their underlying representations. A schematic example is given in (7).

(7) Schematic Example:

Constraint Tableau, A >> B, /in$_k$/ --> {k-cand$_1$, ...}

	Candidates	A	B
a)	k-cand$_1$	*!	
b) ☞	k-cand$_2$		

In the above Constraint Tableau, the potential surface forms (candidates *k-cand$_1$* & *k-cand$_2$*) are GENerated from the input form /in$_k$/. These candidate surface forms are then evaluated by a language specific ranking of the universal constraints A and B -- in this case A is higher ranked than B (A>>B), hence A is positioned to the left of B in the tableau. Candidate *k-cand$_1$* violates constraint A -- this is indicated with an asterisk in the appropriate cell of the tableau. Candidate *k-cand$_2$* does not violate A, hence the blank cell, but it does violate B-- again this is indicated with an asterisk. Reading the tableau from left to right, we see that candidate *k-cand$_1$* violates constraint A while candidate *k-cand$_2$* satisfies it. This difference with respect to the satisfaction of constraint A is enough to distinguish the two candidates -- indicated in the tableau with an exclamation mark. Even though candidate *k-cand$_2$* violates constraint B, it is still the optimal surface form for /in$_k$/ since, unlike candidate *k-cand$_1$*, it satisfies the higher ranked constraint A.[3]

In Optimality Theory, each underlying form is GENerated into a possibly infinite number of candidate analyses. The function which generates an underlying form into a candidate set is restricted as follows:

(8) Three Principles underlying GEN (Prince & Smolensky forthcoming, McCarthy & Prince forthcoming)

a. Freedom of Analysis. Any amount of structure may be posited.
b. Containment. No element may be literally removed from the input form. The input form is thus contained in every candidate form.
c. Consistency of Exponence. No change in the exponence of a phonologically-specified morpheme are permitted.

3.2 The representation of stricture

We follow Steriade (1992, forthcoming) in assuming that stops have two slots, closure and release, while continuants have a single slot. These slots are represented phonologically as aperture positions, indicated by the symbol 'A' (for aperture). The representations that are relevant to this paper are given in (9).

(9) AoAmax = stop (o = maximal closure; max = approximant release)

Amax = glottal stop
|
[cg]

AoAmax = ejective
|
[cg]

When two A positions are present, the first represents closure and the second release; when a single position is present, it represents release. The only exception to this is unreleased stops, which are represented simply as Ao. See Lamontagne &

Rice (in preparation) for arguments for the role of aperture positions in the D-Effect.

4.0 The Account

In this section we focus on accounting for the interactions of the /d/ classifier prefix with (i) a root-initial stop, and (ii) a root-initial glottal stop. For an account of the interactions of /d/ with root-initial fricatives, see Lamontagne and Rice (in preparation).

4.1 Case 1: d + stop

From the table in (1) we see that /d/ may be affected three different ways when it is followed by a root-initial stop. In Navajo, the /d/ deletes. In Ahtna, the /d/ syllabifies as the coda of a preceding syllable. Finally, in Koyukon and Hupa, an epenthetic vowel is inserted between the prefix and the root-initial stop. These effects are summarized in (10).

(10) Navajo: d+stop --> stop
Ahtna: d+stop --> d.stop (d+stop --> stop if stop is coronal))
Koyukon, Hupa: d+stop --> dV.stop

These alternations can be accounted for in terms of the following constraints:

(11) The Constraints:

(a) No-Coda *C]$_\sigma$, i.e. codas are not allowed. (P&S forthcoming)

(b) Parse Any element of phonological representation must be dominated by an appropriate node. (P&S forthcoming; cf. prosodic licensing in Itô 1986, 1989)

(c) Fill Every non-terminal node must have a daughter. (P&S forthcoming)[4]

(d) Align-L (Root)
[$_{Root}$ = [$_\sigma$ (cf. P&S 1991, forthcoming, M&P 1993, forthcoming)
This constraint requires coincidence of left root edge and left syllable edge.

In Ahtna, /d/ syllabifies as a coda and does not delete. The prohibition on codas (No-Coda) may be violated to ensure that all segments are parsed. This is captured by the tableau in (12), where No-Coda is ranked lower than Parse. The displays in the remainder of the paper are arranged as follows. First the effect is shown, next an example is given, third the input is presented, and finally the tableau is shown.

(12) Ahtna: d+stop --> d.stop
/qw+D+ba'/ --> [qɷd.ba'] 'it became twilight' (Kari 1990:650)
Input: /...d + b.../ = /...Ao + [AoA].../
| |
cor non-cor

Candidates	Parse	No-Coda
a. ☞ VAo.[AoA]V		*
b. V<Ao>.[AoA]V	*!	

Note that complex onsets are not allowed in Athapaskan languages, eliminating the candidate V.AoAoV.

In Navajo, unlike Ahtna, not all of the input is parsed--i.e., the /d/ deletes. This is accomplished by a strong avoidance of codas over faithfulness to the input. In this language-type, No-Coda is ranked above Parse.

(13) Navajo: d+stop --> stop
/ʔi+ii+D+kááh/ --> [ʔiikááh] 'we make a sandpainting' (Kari 1973:53)
Input: /...Ao + [AoA].../

Candidates	Align-L	No-Coda	Parse
a. VAo.[AoA]V		*!	
b. ☞ V<Ao>.[AoA]V			*
c. V.Ao<[AoA]>V	*!		*

Notice that an Alignment constraint governing the coincidence between morphological (root) and prosodic (syllable) categories is relevant here. It is this constraint which ensures that the candidate with an unparsed /d/ (13b) is favored over one with the root-initial stop unparsed (13c).

The crucial difference in the rankings of the universal constraints between the Ahtna-type and the Navajo-type patterns is given below in (14).

(14) crucial rankings:
Navajo: No-Coda >> Parse
Ahtna: Parse >> No-Coda

Here the difference between the two types of languages is characterized by the re-ranking of the two constraints No-Coda and Parse.

In the Koyukon and Hupa patterns, an epenthetic vowel appears between the /d/ and the root-initial stop. This follows from a low ranking of the faithfulness constraint Fill (11c). If Fill is ranked below Parse and No-coda, the optimal candidate will be one which exhibits an epenthetic vowel (15c).

(15) Koyukon, Hupa: d+stop --> dV.stop
/no + ghə + D + nəG/ --> [naghədənəG] 'it (string, seam, cloth) unravelled' (Koyukon; Axelrod 1993:38)
Input: /...Ao + [AoA].../

Candidates	No-Coda	Parse	Fill
a. VAo.[AoA]V	*!		
b. V<Ao>.[AoA]V		*!	
c. ☞ V.Ao❑.[AoA]V			*

In (16) we present a summary of the constraint rankings which account for the cross-language alternations of the /d/ classifier prefix when followed by a root which begins with a stop. Crucial here is the re-ranking of Faithfulness constraints (Fill and Parse) with the constraint No-Coda.

(16)	(a) Navajo:	No-Coda Fill	>>	Parse
	(b) Ahtna:	Fill Parse	>>	No-Coda
	(c) Koyukon/ Hupa	No Coda Parse	>>	Fill

4.2 Case 2: /d/ + glottal stop

In this section we focus on the segmental alternations exhibited by the /d/ when it precedes a glottal stop. In three of the four language groups, /d/ combines with a root-initial glottal stop to form a glottalized coronal [t'], while in the fourth group, epenthesis is found. These facts are summarized in (17).

(17)	Navajo/Ahtna/Koyukon	D + ʔ --> t'
	Hupa	D + ʔ --> dVʔ

To account for these effects we assume that the interaction between constraints prohibiting the proliferation of both prosodic and segmental structure are at play.[5] The first constraint, which we call *Single-Segment*, favors representations where two *compatible* aperture positions are fused into a single segment. In other words, following Steriade (1992), we assume that if a sequence of segments (like Ao and A) can be interpreted as a single segment, they must fuse to form a single segment -- thus the single segment [AoA[cg]] (i.e. an ejective) will be favored over the sequence Ao + A[cg]. This constraint thus favors complex segments over sequences. In essence this entails a reduction of 'complex' prosodic structure.[6]

(18)	Single-Segment:	A sequence of different aperture positions must be interpreted as a single segment: [AxAy]

The second constraint which plays a role here characterizes the marked status of complex and contour segments. Such segments are marked by an excess of structure when compared with simple segments -- for example, branching under a place node in the case of complex segments, or a combination of two aperture positions (like Ao & Af [fricative release], or Ao & A[cg]) in the case of contour segments. This constraint, which we call **Seg-Structure*, governs the richness of structure at the segmental level.

(19)	*Seg-Structure	*X /\ Y Z	Where X,Y, and Z are feature geometric nodes.

4.2.1 Navajo and Ahtna

We turn now to the individual cases. In Navajo and Ahtna the /d/ merges with the root-initial glottal stop to form an ejective, [t']. This follows from the effects of Single-Segment and Parse.

(20) Navajo/Ahtna: d + ʔ--> [t']
Navajo: /y + ii + D + ʔi̯/ --> /yiit'i̯] 'we see it' (Kari 1973:54)
Ahtna: /na + ʔi + D + ʔaan/ --> [naʔit'aan] 'it was found' (Kari 1990:650)
Input: /...d + ʔ.../ = /...Ao + A[cg].../

Candidates	Single-Segment	Parse
a. VAo.AV | [cg]	*!	
b. V.AoAV | [cg]	*!	
c. ☞V.[AoA]V | [cg]		
d. V<Ao>.AV | [cg]		*!

(20c) is the optimal candidate since it is faithful to the input in containing all input features and it violates neither Single-Segment nor Parse.

4.2.2 Koyukon

In Koyukon, as in Navajo and Ahtna, merger is found. Since in other contexts Koyukon-type languages exhibit epenthesis (see (1)), the ranking of Single-Segment and Parse with respect to Fill must be established. In this case the latter constraint is ranked low:

(21) Koyukon: d + ʔ--> [t']
/niɬ + to + u + D + ʔiɬ/ --> [niɬtoʔut'iɬ] 'they are mating' (Thompson 1977:73)
(b) Input: /...d + ʔ.../ = /...Ao + A[cg] .../

Candidates	Single-Segment	Parse	Fill
a. VAo.AV | [cg]	*!		
b. V.AoAV | [cg]	*!		
c. ☞V.[AoA]V | [cg]			
d. V<Ao>.AV | [cg]		*!	
e. V.Ao❑.AV | [cg]			*!

Candidate (21a) violates Single-Segment since it is two segments with compatible aperture positions; this is also true of candidate (21b). Candidate (21d) presents a parse violation since one of the segments, Ao, remains unparsed. Finally, candidate (21e) contains an epenthesis site, creating a Fill violation. Candidate (21c) violates no constraints, with Ao and A[cg] combined to form a single segment. It is thus the favored candidate.

4.2.3 Hupa

Finally, in Hupa the /d/ and the glottal stop do not merge -- instead we see epenthesis. In fact, contour segments never surface across morpheme boundaries in Hupa-type languages. This fact is accounted for in following Constraint Tableau by ranking *Seg-Structure, the constraint from (19) that prohibits complex and contour segments, above Fill.

(22) Hupa: d + ʔ--> [dV.ʔ]
Input: /...d + ʔ.../ = /...Ao + A[cg] .../

Candidates	Single-Segment	Parse	*Seg-Struct	Fill
a. VAo.AV | [cg]	*!			
b. V.AoAV | [cg]	*!			
c. V.[AoA]V | [cg]			*!	
d. V<Ao>.AV | [cg]		*!		
e. ☞V.Ao❑.AV | [cg]				*

Here the optimal candidate is the one with an epenthetic vowel between the /d/ and the glottal stop, (22e). Candidates (22a) and (22b) both violate Single-Segment in that two compatible aperture positions are parsed as distinct segments. Candidate (22c) violates *Seg-Struct with the /d/ and the root-initial glottal stop merged to form the contour segment [tʔ]. Finally, the candidate where /d/ (or for that matter the glottal stop of the root) is deleted violates Parse which is itself ranked above *Seg-Struct.[7]

Although the Koyukon and Hupa patterns exhibit epenthesis in the /d/ plus root-initial stop cases (see (1)), they differ here in that only the latter exhibits epenthesis when /d/ is followed by a glottal stop. This fact suggests the following grammar particular ranking differences:

(23) crucial rankings
Koyukon: Fill >> *Seg-Struct
Hupa: *Seg-Struct >> Fill

5.0 Conclusions

In this paper we have provided a cross-family survey of the Athapaskan D-effect, and examined in particular the ways in which the /d/-classifier combines with a stem-initial stop and a stem-initial glottal stop, leaving the combination with a stem-initial fricative for later study. The prosodic differences in the family follow form different rankings of constraints on structure (No-Coda) and faithfulness (Parse, Fill). We have examined one of the segmental markedness constraints as well, *Seg-Struct. The differences between the languages are easily captured in Optimality Theory, with the languages differing in the rankings of a small number of general constraints.

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[1] A partial classification of Athapaskan languages according to language type is given below:

Navajo-type: Navajo, Apache, Slave, Chipewyan, Sekani, Beaver, Sarcee, Dogrib, Oregonian Athapaskan, Gwich'in, Athapaskan languages in Yukon territory

Ahtna-type: Ahtna, Tanaina

Koyukon-type: most of Alaskan Athapaskan

Hupa-type: California Athapaskan

Data is drawn from the following sources: Axelrod 1993, Golla 1970, Howren 1971, Kari 1973, Kari 1990, Rice 1989, Thompson 1977, Young & Morgan 1987. Thank you to Victor Golla for his assistance.

[2] Whether a consonant is realized as a stop or an affricate is predictable from its place of articulation. The primary contrast in stricture is between stop and non-stop.

[3] The shading in the tableau indicates that the cells in question play no role in determining the optimal form.

[4] Fill and Parse belong to the set of Faithfulness constraints identified by Prince and Smolensky forthcoming.

[5] Such constraints ultimately belong to the class of constraints *Struct (see Prince and Smolensky, forthcoming; McCarthy and Prince, forthcoming, for discussion)

[6] This constraint is similar in spirit to Prince and Smolensky, forthcoming, *Complex.

[7] This ranking between Parse and *Seg-Struct follows from the fact that contour segments are allowed in the inputs of all languages under investigation. Hence, Parse >> *Seg-Struct.

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Information Compatibility and Resultative Verb Compounds in Mandarin*

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1. Introduction

A resultative verb compound (henceforth RVC) in Mandarin is composed of two free verbal morphemes with the second verb indicating a logical result caused by the action or process represented by the first verb. Examples of RVCs are given in (1).

(1) a. Zhangsan pao-lei le.
Zhangsan run-tired LE
'Zhangsan was tired as a result of his running.'

b. Zhangsan chi-bao fan le.
Zhangsan eat-full rice LE
'Zhangsan felt full as a result of his eating rice.'

c. Zhangsan chi-wan fan le.[1]
Zhangsan eat-finish rice LE
'The rice was gone as a result of Zhangsan's eating.'

d. Zhangsan qi-lei-le ma le.
Zhangsan ride-tired-LE horse LE
'Zhangsan was tired as a result of his riding the horse.'
or
'The horse was tired as a result of Zhangsan's riding it.'

e. Zhangsan xia-ying-le na-pan qi.
Zhangsan play-win-LE that-CL chess
'Zhangsan won the chess game as a result of his playing.'

The RVCs shown in (1a) through (1e) can be: a one-place predicate and a one-place predicate together form a one-place compound (e.g. *pao-lei* 'run-tired' in (1a)), a two-place predicate and a one-place predicate together form a two-place compound (e.g. *chi-bao* 'eat-full' in (1b), *chi-wan* 'eat-finish' in (1c), and *qi-lei* 'ride-tired' in (1d)), or two two-place predicates form a two-place compound (e.g. *xia-ying* 'play-win' in (1e)), as is summarized in (2).

(2) 1a: $V_{<1>}$ $V_{<1>}$ => $RVC_{<1>}$
1b,c,d: $V_{<2>}$ $V_{<1>}$ => $RVC_{<2>}$
1e: $V_{<2>}$ $V_{<2>}$ => $RVC_{<2>}$
(The number in the brackets indicates the number of arguments the verb can take.)

Apparently, the number of the arguments that the compound can take is not the total of the number of the arguments that its constituents can take. Therefore, to find a way to predict the derivation of the argument structure of the RVC is the first purpose of this study.

Also, the RVCs in (1) do not behave consonantly in the *ba* construction, in which the object is preposed to the preverbal position, as shown in (1').

(1') b. *Zhangsan ba fan chi-bao le.
Zhangsan BA rice eat-full LE

c. Zhangsan ba fan chi-wan le.
Zhangsan BA rice eat-finish LE
'The rice was gone as a result of Zhangsan's eating.'

d. Zhangsan ba ma qi-lei le.
Zhangsan BA horse ride-tired LE
'The horse was tired as a result of Zhangsan's riding it.'
*'Zhangsan was tired as a result of his riding the horse.'

e. *Zhangsan ba na-pan qi xia-ying le.
Zhangsan BA that-CL chess play-win LE

As shown in (1'b) and (1'e), *chi-bao* and *xia-ying* cannot appear in the *ba* construction, but *chi-wan* and *qi-lei* can, as shown in (1'c) and (1'd). But, in the *ba* construction, *qi-lei* can only have the reading that the horse was tired as a result of Zhangsan's riding it. Therefore, to find a way to explain the *ba* construction phenomenon is the second purpose of this study.

Besides, in the sentences in (1), we can see that the second constituent verb of the RVC sometimes pairs up with the subject and sometimes with the object of the sentence in interpretation. For example, in (1b), the second constituent of the RVC *chi-bao* pairs up with the subject *Zhangsan*. Therefore, (1b) indicates that the result of the eating action was Zhangsan's being full. Whereas, in (1c), the second constituent of the RVC *chi-wan* pairs up with the object *fan* 'rice'. Therefore, (1c) indicates that the result of the eating action was the rice being gone. But in (1d), the second constituent of the RVC *qi-lei* can either pair up with the subject to form the first reading that Zhangsan's being tired was the result of his riding the horse, or pair up with the object to form the second reading that the horse's being tired was the result of Zhangsan's riding it. However, in the *ba* construction, the second verb of the RVC in (1d) must pair up with the object and not with the subject in interpretation, as shown in (1'd). Hence, to find a way to predict the interpretations of the RVCs is the third purpose of this study.

2. An information-based analysis

The resultative verb compound in Mandarin has been widely studied. It has been analyzed as derived by transformational rules in Hashimoto (1965) and Lu (1977), by structural reanalysis in Huang (1984), and derived by a lexical rule in Thompson (1973). Li (1990) is the one that solely focuses on the derivation of the argument structure. These analyses, however, are all inadequate to explain the argument structure derivation and the *ba* construction phenomenon of the RVCs (see Li 1993 for details). In this section, We are going to propose a more plausible analysis for the RVCs based on Shieber's (1986) information unification theory and on the LFG system proposed by Kaplan & Bresnan (1982). In section 2.1, the rule of information merging is introduced to deal with the derivation of the semantic structure of the RVC. In 2.2, the rule of information mapping is presented, by way of which the arguments of the RVC are mapped correctly to their syntactic positions in the active sentence structure and in the *ba* construction. In 2.3, we show that by way of the rules of information merging and information mapping, the RVCs can be properly interpreted.

2.1 Information merging

Before presenting the analysis, let's examine the properties of the constituent verbs of the RVCs first. We can see that the first constituents of the RVCs such as those introduced in (1a)-(1e) and those listed in (3) are activity verbs according to Vendler's (1967) classification, the second constituents are achievement verbs, and the compounds themselves are accomplishment verbs.[2]

(3) da-pao 'hit-break' si-pao 'tear-break'
tuei-kai 'push-open' wei-bao 'feed-full'
du-ni 'read-bored' ma-lei 'scold-tired'

We suggest that the compounding of the RVC is a morphological process[3] in which an activity verb takes an achievement verb to form a resultative verb:[4]

(4) The Compounding Rule of RVCs

V_{act} : V_{ach} --> V_{result}

Accompanying the compounding rule is the rule of information merging, which is proposed to deal with the semantic feature structures of the two constituent verbs in order to derive the correct semantic feature structure of the compound.

The semantic structure considered here consists of three features: the argument structure (ARG), the selectional restriction (SR), and the aspect (ASP). The argument structure refers to the thematic roles that a verb can assign. The only feature of the selectional restriction considered here is animacy. As for the aspect, Vendler's definition and classification are adopted. Examples of the semantic feature structure are given in (5). In (5a), *chi* 'eat' is shown to take two arguments, the Agent and the Theme. The Agent is animate and the Theme is inanimate. *Bao* 'full', as shown in (5b), only takes one argument, the Experiencer, which is animate. And *wan* 'finish' in (5c) is shown to take one argument, the Theme, which is inanimate. Besides, the aspect of *chi* is activity and that of *bao* and *wan* is achievement.

(5) a. *chi* 'eat':
SEM: <ARG: Agent, Theme>
<SR: [+animate], [-animate]>
<ASP: activity>

b. *bao* 'full':
SEM: <ARG: Experiencer>
<SR: [+animate]>
<ASP: achievement>

c. *wan* 'finish'
SEM: <ARG: Theme>
<SR: [-animate]>
<ASP: achievement>

The rule of information merging is a modification of Shieber's (1986) information unification theory.[5] It is used to deal with the semantic feature structures of the verbs to derive the correct semantic feature structure of the RVC. The rule consists of two parts, one for the merging of the arguments and the other for the merging of the aspects. The rule is given in (6).

(6) Information Merging

i) If the arguments and the selectional restrictions are compatible:
a. if V_{ach} and V_{act} both have two arguments, merge the first argument of V_{ach} with the first argument of V_{act} and the second argument of V_{ach} with the second argument of V_{act};
b. if V_{ach} has one argument and V_{act} has two, merge the argument of V_{ach} to either argument of V_{act};
c. if both V_{ach} and V_{act} have one argument, merge them;
otherwise, create a second position for the argument of V_{ach};
otherwise, the process fails.

ii) Merge the value of ASP of V_{ach} with that of V_{act} if they are compatible with each other.

Compatibility of arguments and selectional restrictions means that there is no contradictory feature between two arguments and the selectional restrictions. For example, an Experiencer may be compatible with an Agent or a Theme if the Theme is [+animate], but an Agent may not be compatible with a Patient. As for the compatibility of aspects, we assume, in terms of Vendler's system, an activity together with an achievement constitutes an accomplishment, which is exactly the phenomenon of the RVCs in Mandarin. Hence, activities are compatible with achievements and this is the only case of aspects concerned in this study. Examples of the application of the information merging rule are given in (7).

In (7a), the compound is composed of *xia* 'play' and *ying* 'win'. Both of the verbs are two-place predicates. By rule (6ia), the first argument of *xia* (i.e. the Agent) merges with the first argument of *ying* (i.e. the Experiencer) and the second argument of *xia* (i.e. the Theme) merges with the second argument of *ying* (i.e. the Theme). Thus, the compound *xia-ying* has two arguments: the Agent-Experiencer and the Theme.

(7) a. *xia-ying* 'play-win':
xia 'play':
SEM: <ARG: $\text{Agent}_{[+ani]}$, $\text{Theme}_{[-ani]}$>
<ASP: activity>
ying 'win':
SEM: <ARG: $\text{Experiencer}_{[+ani]}$, $\text{Theme}_{[-ani]}$>
<ASP: achievement>
xia-ying 'play-win':
SEM: <ARG: $\text{Agent-Experiencer}_{[+ani]}$, $\text{Theme}_{[-ani]}$>
<ASP: activity-achievement>

The compound in (7b) is composed of *chi* 'eat' and *bao* 'full', whose semantic feature structures were given in (5). With the compounding rule, the rule of information merging applies and the semantic feature structures merge with each other. The Experiencer of *bao* merges with the Agent of *chi* and not with the Theme by rule (6ib), because the Experiencer is [+animate] and the Theme of *chi* is [-animate]. Thus, the compound *chi-bao* has two arguments: the Agent-Experiencer and the Theme. In (7c), the two constituents of the compound are *chi* 'eat' and *wan* 'finish', whose semantic feature structures were also given in (5). By rule (6ib), the Theme of *wan* merges with the Theme of *chi* and not with the Agent because both of the Themes are [-animate]. After informaiton merging, the compound *chi-wan* has two arguments: the Agent and the Theme.

(7) b. *chi-bao* 'eat-full':
SEM: <ARG: $\text{Agent-Experiencer}_{[+ani]}$, $\text{Theme}_{[-ani]}$>
<ASP: activity-achievement>

c. *chi-wan* 'eat-finish':
SEM: <ARG: $\text{Agent}_{[+ani]}$, $\text{Theme}_{[-ani]}$>
<ASP: activity-achievement>

In (7d), both *pao* 'run' and *lei* 'tired' have one argument and they are compatible with each other; therefore, by rule (6ic), the arguments of the two verbs merge with each other to form Agent-Experiencer, which is the only argument of the compound *pao-lei.*

(7) d. *pao-lei* 'run-tired':
pao 'run':
SEM: <ARG: Agent>
<SR: [+animate]>
<ASP: activity>
lei 'tired':
SEM: <ARG: Experiencer>
<SR: [+animate]>
<ASP: achievement>
pao-lei 'run-tired':
SEM: <ARG: Agent-Experiencer$_{[+ani]}$>
<ASP: activity-achievement>

Cases in which the arguments of the two constituent verbs of the compound are incompatible with each other are rare. But, this is not a problem in our present system. For example, in (8a) *chi* 'eat' and *huai* 'bad' are both one-place predicate (the Theme of *chi* is optional) but the compound has two arguments. As we can see, the arguments of *chi* and *huai* are not compatible with each other because one is [+animate] and the other [-animate]. This is a special case of information merging and a last resort is needed, i.e. the second part of rule (6ic). With the last resort in (6ic), a new argument position of the compound is created and the argument structure of *chi-huai* is correctly derived as <Agent, Theme>, as shown in (8b). And the compound can also appear in the *ba* construction as shown in (8c), which is discussed in 2.2.

(8) a. Ta chi-huai duzi le
he eat-bad tummy LE
'He got some problem with his tummy as a result of his eating.

b. *chi* 'eat':
SEM: <ARG: Agent>
<SR: [+animate]>
<ASP: activity>
huai 'bad':
SEM: <ARG: Theme>
<SR: [-animate]>
<ASP: achievement>
chi-huai 'eat-bad':
SEM: <ARG: Agent$_{[+ani]}$, Theme$_{[-ani]}$>
<ASP: activity-achievement>

c. Ta ba duzi chi-huai le.
he BA tummy eat-bad LE

As for the aspect, the only case in question here is the merging of activity and achievement, which, as discussed above, are compatible with each other in Vendler's system and can be merged with each other to form an accomplishment verb.

With the present system, only the correct semantic structure of the RVC is derived. Besides, the mechanism used is inherent to the arguments, i.e. the properties of the arguments and compatibility between arguments. Hence, our system here has a constrained, economical and principled way to derive the semantic structure of the RVC.

2.2 Information mapping

In the framework of LFG developed by Kaplan & Bresnan (1982), the argument structure of a lexical item plays a crucial role in the grammatical description of that lexical item. Each argument in this system is associated with a grammatical function (e.g. subject, object, etc.) by a lexical rule. In this way, a word with a particular lexical form will be able to associate with a particular sentence structure. This system has been adopted by Selkirk (1982) to deal with the formation and interpretation of verbal compounds in English, for example, and is adopted here in this study to deal with the *ba* construction phenomenon.

Based on the LFG system and the semantic structure developed in 2.1, we now can construct the syntactic structure which the resultative verb compound in Mandarin may be associated with. The rule involved is called information mapping, which deals with the mapping between the argument structure and the grammatical functions (GFs) of the RVC. The grammatical functions concerned here are those in the active sentence and in the *ba* construction in Mandarin. The active sentence is of SVO order and the *ba* construction is of S *ba*+O V order. In the mapping,[6] the first argument is mapped to the subject of the active sentence and the second argument, if there is one, is mapped to the object. In the *ba* construction, the first argument is mapped to the subject and the second argument to the *ba*-object only when the following two conditions are satisfied: first, the aspect of the verb must be accomplishment (i.e. activity-achievement here) (Liu 1992); second, the first argument must be of full agency.[7] Full agency means that it must be Agent and does not combine with other thematic roles such as Experiencer, Theme, etc. (i.e., Agent-Experiencer and Agent-Theme are not instances of full Agent). The rule of information mapping is given in (9).

(9) Information Mapping:

Active:

ARG:	Arg1	Arg2
	|	|
GF:	SUBJ	OBJ

Ba construction:

Condition:	i) ASP: accomplishment (i.e. activity-achievement)	
	ii) ARG1: Full Agency (e.g. *Agent-Experiencer)	
ARG:	Arg1	Arg2
	|	|
GF:	SUBJ	*Ba* OBJ

With the rule of information mapping, we can explain why some RVCs can appear in the *ba* construction and some cannot. As shown in (10a) through (10d), the first arguments of *chi-bao* 'eat-full', *chi-wan* 'eat-finish', *chi-huai* 'eat-bad', and *xia-ying* 'play-win' (whose semantic structures were given in (7) and (8)) all map to the subject and the second arguments to the object in the active structure. However, in the *ba* construction, only *chi-wan* and *chi-huai* are allowed and *chi-bao* and *xia-ying* are not because the first arguments of *chi-wan* and *chi-huai* are Agent, which satisfies the second condition of the *ba* construction, but the first arguments of *chi-bao* and *xia-ying* are Agent-Experiencer, i.e. not of full agency, which does not satisfy the second condition of the *ba* construction. This explains why sentences such as (1'c) and (8c) are grammatical and (1'b) and (1'e) are not.

(10) a. *chi-bao* 'eat-full':
Active:
ARG: Agent-Experiencer Theme
GF: SUBJ OBJ
Ba construction:
Condition i) accomplishment: satisfied
ii) full agency: not satisfied

b. *chi-wan* 'eat-finish':
Active:
ARG: Agent Theme
GF: SUBJ OBJ
Ba construction:
Condition i) accomplishment: satisfied
ii) full agency: satisfied
ARG: Agent Theme
GF: SUBJ *Ba* OBJ

c. *chi-huai* 'eat-bad':
Active:
ARG: Agent Theme
GF: SUBJ OBJ
Ba construction:
Condition i) accomplishment: satisfied
ii) full agency: satisfied
ARG: Agent Theme
GF: SUBJ *Ba* OBJ

d. *xia-ying* 'play-win':
Active:
ARG: Agent-Experiencer Theme
GF: SUBJ OBJ
Ba construction:
Condition i) accomplishment: satisfied
ii) full agency: not satisfied

Thus, with the present system, the phenomenon of the *ba* construction is explained and predicted.

2.3 The interpretation of the RVC

With the mechanism of information merging and information mapping, we can also give the RVCs appropriate interpretations. For example, in sentence (1b), the argument of the second constituent of the RVC *chi-bao* 'eat-full' is paired up with the subject of the sentence in interpretation, which is predicted by the rules of information merging and information mapping. First, the rule of information merging merges the argument of the second verb *bao* to the first argument of the first verb *chi* in terms of information compatibility to form the first argument of the compound, as previously shown in (7b). Then, the rule of information mapping

maps the first argument of the compound to the subject in the active sentence; as previously shown in (10a). This explains why (1b) has the interpretation that the result of the eating action was Zhangsan's being full instead of the rice's being full.

(1) b. Zhangsan chi-bao fan le.
Zhangsan eat-full rice LE
'Zhangsan felt full as a result of his eating rice.'

Whereas, in sentence (1c), the argument of the second verb *wan* 'finish' is paired up with the object of the sentence in interpretation. This is because the rule of information merging merges the argument of *wan* to the second argument of the first verb *chi* to form the second argument of the compound, as previously shown in (7c), and then the rule of information mapping maps this argument of the compound to the object in the active sentence, as previously shown in (10b). Therefore, (1c) has the interpretation that that the rice was gone was the result of Zhangsan's eating and does not have the interpretation that that Zhangsan was gone was the result of his eating the rice.

(1) c. Zhangsan chi-wan fan le.
Zhangsan eat-finish rice LE
'The rice was gone as a result of Zhangsan's eating.'

With the present system, we can also explain why sentences like (1d) have two readings while in the *ba* construction it only has one reading.

(1) d. Zhangsan qi-lei-le ma le.
Zhangsan ride-tired-LE horse LE
'Zhangsan was tired as a result of his riding the horse.'
or
'The horse was tired as a result of Zhangsan's riding it.'

(1') d. Zhangsan ba ma qi-lei le.
Zhangsan BA horse ride-tired LE
'The horse was tired as a result of Zhangsan's riding it.'
*'Zhangsan was tired as a result of his riding the horse.'

As shown in (11a), the first constituent of the compound, i.e. *qi* 'ride', has two arguments: the Agent and the Theme. The Agent is animate and the Theme can be either animate or inanimate. The second constituent of the compound, i.e. *lei* 'tired', has only one argument: the Experiencer, which must be animate.

(11) a. *qi-lei* 'ride-tired':
qi 'ride':
SEM: <ARG: Agent$_{[+ani]}$, Theme$_{[\pm ani]}$>
<ASP: activity>
lei 'tired':
SEM: <ARG: Experiencer$_{[+ani]}$>
<ASP: achievement>

By the rule of information merging, the argument of *lei* can merge with either the first argument or the second argument of *qi*. If it merges with the first argument of *qi* to form the first argument of the compound *qi-lei*, the argument structure of the compound is like that in (11b). Then the rule of information mapping maps the first argument of the compound to the subject in the active sentence; thus, the Experiencer of the tiredness is the subject *Zhangsan*. In this case, the first argument is Agent-Experiencer, which does not satisfy the second condition of the *ba* construction; therefore, (1'd) does not have this reading.

(11) b. *qi-lei* 'ride-tired':

SEM_1: <ARG: Agent-Experiencer$_{[+ani]}$, Theme$_{[\pm ani]}$>
<ASP: activity-achievement>

Active:

ARG:	Agent-Experiencer	Theme
	|	|
GF:	SUBJ	OBJ

Ba construction:

Condition i) accomplishment: satisfied
ii) full agency: not satisfied

If the argument of *lei* merges with the second argument of *qi* to form the second argument of the compound, the argument structure of the compound is like that in (11c). Then, the rule of information mapping maps the second argument of the compound to the object in the active sentence; thus, the Experiencer of the tiredness is the object, i.e. the horse. And as both conditions of the *ba* construction are satisfied, the compound can appear in the *ba* sentence with this reading, which is the only reading of (1'd).

(11) c. *qi-lei* 'ride-tired':

SEM_2: <ARG: Agent$_{[+ani]}$, Theme-Experiencer$_{[+ani]}$>
<ASP: activity-achievement>

Active:

ARG:	Agent	Theme-Experiencer
	|	|
GF:	SUBJ	OBJ

Ba construction:

Condition i) accomplishment: satisfied
ii) full agency: satisfied

ARG:	Agent	Theme-Experiencer
	|	|
GF:	SUBJ	*Ba* OBJ

In summary, the rules of information merging and information mapping not only can correctly derive the argument structure of the RVC from those of its constituents and map the arguments to the right structural positions, they can also correctly predict the interpretations of the RVCs.

3. Conclusion

In this paper, we have suggested that by the rules of information merging and information mapping, the issues of resultative verb compounds in Mandarin—the argument structure of the compound, the grammaticality of the compound in the *ba* construction, and the interpretation of the compound—can be derived, explained and predicted. But, the compatibility of arguments, selectional restrictions, and aspects of the verbs in the rule of information merging is only sufficiently defined for the cases studied in this paper. Refinement may be needed for other cases. Also, the system presented in this paper is sufficient to explain the phenomena of the resultative verb compounds in Mandarin. Whether it is also applicable to other V-V compounds in Mandarin or in other languages is a topic for future research.

NOTES

*I would like to thank Susan Steele and Richard Oehrle for giving me helpful comments. Of course, all the errors are mine.

[1] *Chi-wan* 'eat-finish' is ambiguous in two ways. It can be said to be composed of an action verb and a verb indicating the result of that action, or composed of an action verb and an aspectual marker of completion (i.e. the eating was completed, but the rice was not necessarily gone), because *wan* can be a verb or an aspectual marker (Lu 1975). Only the first interpretation is of concern here.

[2] According to Vendler (1967), verbs or verb phrases can be classified into four categories according to the time schemata:

a. Activities: Continuous tenses with no set terminal point.
b. Achievements: Lacking continuous tenses, predicated only for single instants of time.
c. Accomplishments: Continuous tenses with set terminal point.
d. States: Lacking continuous tenses, predicated for a shorter or longer period of time.

Sometimes, the distinction is subtle. For example, *bao* 'full' in Mandarin can be a state, as in (i), or an achievement, as in (ii).

i) Wo hen bao.
I very full
'I am very full.' (I am in the state of being full.)

ii) Wo bao le.
I full LE
'I became full.' (I turned into the state of being full.)

[3] See Li (1993) for the argument against the suggestion that the compounding of the RVC is a syntactic process.

[4] The rule here follows the categorial grammar tradition. The purpose is to give the compound a structure and a way to interpret it (Bach 1983). But instead of having more categorial types for the verbs, we follow Steele (1990) and put it in the way shown in (4). Also, that the activity verb is the functor in the rule does not mean that it is the head of the compound. We would leave it an open question as to whether there is a head in the resultative verb compounds.

[5] By information unification, the information of two elements must be identical or the information of one element must subsume that of the other; otherwise, they cannot be unified. In the case of RVCs, normally the arguments of the two constituent verbs are not identical; therefore, the unification theory is not applicable without modification.

[6] The mapping concerned here is that of the RVCs. If it is not an RVC, the mapping may be different, which will not be discussed in this study.

[7] The *ba* construction is traditionally called the disposal form, which states how an object is manipulated, handled and dealed with (Wang 1947). Therefore, the requirement of full agency of the subject in the *ba* construction can be inferred (also see the footnote in Liu (1992)). Aside from these two conditions, other requirements of the *ba* construction, e.g. the presuppositionality of the object, are irrelevant to the morphological issue in question.

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On Nominal Extraposition: A Constructional Analysis

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0. Introduction. In this paper, we will examine a type of extraposition construction which is widely attested in spoken English but which has received little attention in either generative or functionally oriented frameworks.[1] Some attested examples, mostly from spontaneous oral productions, are given in (1). Prosodic peaks are marked by small caps:

(1) a. God, isn't it AMAZING the things MARRIAGES break UP over?

b. It's just AMAZING his lack of willingness to do ANYTHING for me.

c. A: Where's Butsy?
B: He's slipped in to see Senator What's-his-face.
A: It's AMAZING the ACCESS he's got! (Doonesbury 3/13/93)

d. Announcer: Hear what denture wearers all over America have to say.
Denture wearer: It's AMAZING the DIFFERENCE! (Fixodent commercial)

e. "The cops? Are they friends of yours?" "Hardly", I said, but I sat there smiling. It was TERRIBLE, really, the JOY I took at the notion of skunking PIGEYES. I already had a few ideas. (S. Turow, *Pleading Guilty*)

f. It's ASTONISHING the age at which they become skilled LIARS. (Parent's comment on lie told by five-year-old child)

g. It's STAGGERING the number of BOOKS that can pile up.

h. Just walking in the street [is difficult]. I mean, it's UNBELIEVABLE the people who are verbally abusive to FAT people. (Obese interviewee, 'The Famine Within')

On superficial inspection the sentence type illustrated in these examples appears to be a type of RIGHT DISLOCATION (RD): that type which involves coreference between the postverbal NP and a pronominal subject. Like RD sentences of this type, the examples in (1) contain (i) a pronominal subject, (ii) a verb phrase carrying the focus accent, and (iii) a sentence-final definite NP which apparently corefers with the pronominal subject. We are going to argue, however, that the sentences in (1) instantiate a sentence type that must be distinguished from RD on syntactic, semantic, and pragmatic grounds. We will argue that this type has a number of unique properties, and that a satisfactory account of these properties must attribute them to a distinct grammatical construction. We will refer to this construction as NOMINAL EXTRAPOSITION (NE). Although our label suggests that the NE construction is a type of extraposition, we will argue that it can in fact not be subsumed under the ordinary extraposition construction, confirming its status as a separate construction in the grammar of English.

We will be employing the CONSTRUCTION GRAMMAR (CG) framework here, as laid out in Fillmore & Kay 1993. We think this framework is particularly well suited for describing the NE construction, because what defines this construction is an interaction of parochial constraints on form, meaning, and use. This unique constellation of facts can be given a unified treatment only in a monostratal framework like Construction

Grammar, which allows for simultaneous representation of syntax, semantics, and pragmatics. What is new in our analysis is the attempt to encode in the Construction-Grammar formalism properties and relations of INFORMATION STRUCTURE--specifically the ACTIVATION and IDENTIFIABILITY properties of the denotata of sentence constituents and the TOPIC and FOCUS relations between these denotata and the propositions in which they occur. The theory of information structure we will be using is that presented in Lambrecht 1994. In what follows, we will look in turn at properties of STRUCTURE, MEANING, and USE.

1. Syntax: Nominal Extraposition vs. Right Dislocation. The NE construction, unlike the relevant type of RD, does not involve COREFERENCE between the pronominal subject and the extraposed NP. This is shown most clearly in the fact that the extraposed NP and the subject pronoun do not AGREE in number. We see lack of number agreement in (1a) and (1h). In (1h), for example, the subject is the singular pronoun *it* while the postpredicate constituent is the plural NP *the people*. By contrast, notice the anomaly of the RD construct (2b) as against (2a):

(2) a. They're red LEATHER, the shoes she's wearing.
b. *It's red LEATHER, the shoes she's wearing.

The pronominal subject in NE sentences must be *it*. Notice the anomaly of (3), which is a variant of (1a):

(3) *They're AMAZING the things MARRIAGES break UP over.

As (2a) shows, the RD construction is not so restricted.

In RD, the sentence minus the dislocated constituent is always syntactically and semantically well-formed and a POTENTIALLY COMPLETE SENTENCE. In NE this is not the case, although this is not always obvious from a merely structural point of view. Since the *it* in NE is nonreferential, a sentence like *It's amazing*, obtained by omitting an extraposed NP, is at least semantically ill-formed, since the predicator *amazing* requires a subject with a theta role. The fact that such sentences do not give the impression of being ungrammatical is a coincidence of English morphology. Evidence from French bears on this issue. Notice the contrasts in (4):

(4) a. C'est EVIDENT, qu'elle a tort. 'It's obvious, that she's wrong.' (RD)
b. C'est EVIDENT. 'It's obvious.'
c. Il est EVIDENT qu'elle a TORT. 'It's obvious that she's wrong.' (EXTRAP)
d. *Il est EVIDENT. 'It's obvious.'

In the version with *il*, the main predicate must be followed by a complement clause, as shown in the contrast between (c) and (d); the version with *ce*, on the other hand, does not have to contain such a clause. This is because *il* in this context is nonreferential, hence does not fulfill the valence requirement of the predicate *évident*, whereas *ce* denotes a discourse referent.[2] Likewise, when the sequence *it* + copula + AP is licensed by the NE construction, this sequence alone is ungrammatical, just like the sequence **It seems* or **It occurred to me*. We conclude that the subject pronoun in NE is nonreferential.

Features of PROSODY support our argument. In RD, the post-predicate NP has a low and "flat" intonation contour, the preceding accent indicating the end of the VP focus domain. In NE, on the other hand, this NP is necessarily accented. A referential constituent that lacks prosodic prominence is ipso facto topical, insofar as the role of its referent in the proposition is treated as recoverable (to the point that in many languages such constituents may be phonologically null). Therefore, in the case of RD sentences, the version without the dislocated NP is also a complete sentence. In the case of NE, this

argument cannot be made: the necessary presence of an accent on the rightward NP entails a focus relation of the NP denotatum to the proposition, i.e. non-recoverability on the discourse level and, as a corollary, intraclausal status of the NP (see Lambrecht 1994, Chapters 4 and 5). We will return to the issue of the pragmatic relation between the extraposed NP referent and the proposition in Section 3.

Another argument for the non-identity of NE and RD has to do with the types of DETERMINERS that may occur in the two constructions. Fillmore & Kay (1993:10.20) observe the following contrasts:

(5) a. It's amazing the things children say. (NE)
b. It's amazing what things children say. (NE)
c. They're amazing, the things children say. (RD)
d. *They're amazing, what things children say. (RD)
e. *It's amazing, what things children say. (RD)

As (5b) shows, the determiner *what* may occur in NE sentences, the NP *what things* being semantically similar to the NP *the things* in (5a) (for reasons to be explained below). In RD, on the other hand, this determiner may not occur, as shown by (5d) and (5e). As a corollary, the interpretation of the NP *the things* in (c) must be different from that in (a), given that (b) is a grammatical paraphrase of (a), while (d) is not a grammatical paraphrase of (c). As we will show in the section on semantics, the determiner *what* is licensed in NE because of the particular kind of SPEECH ACT this type represents. The constraints on possible determiners in NE will be taken up again in the section on pragmatics.

In the case of NE, as against RD, there is a constraint requiring ADJACENCY of the main predicator and the following NP. Notice example (6):

(6) A: Did you notice the difference when you were in Germany?
B: It was AMAZING[+foc], in Germany[-foc], the difference[-foc] (RD)
B': It was AMAZING[+foc], the difference[-foc], in Germany[-foc] (RD)

In the case of RD, as shown in (6), the topic constituents appear after the focal VP, and they may appear in either order. This is consistent with the nature of extra-clausal topic constituents (both left-dislocated and right-dislocated), as noticed e.g. in Lambrecht 1981 for French, Bresnan & Mchombo 1987 for Chicheŵa, and Lambrecht 1990 for English. By contrast, consider (7):

(7) A: Apparently Grandma took her MEDICATION when she was in GERMANY.
B: *It was AMAZING, in Germany, the DIFFERENCE. (NE)
B': It was AMAZING the DIFFERENCE, in Germany. (NE)

This adjacency requirement of predicator and NP in NE suggests a relation between the verb and the subject analogous to that normally found between the verb and its (nominal) direct object. Notice the examples in (8) and (9):

(8) *I noticed, in Germany, the DIFFERENCE.

(9) ?? I could SEE, yesterday, the JOY she took in her work.

One way of stating the adjacency condition shown in (7) would be to say that in NE the rightward NP must lie within the VP focus domain, preventing any topical constituent from intervening between this NP and the main predicator. However, we have no evidence for the presence of a VERB PHRASE in the NE construction. In fact, anomalous coordinate structures like (10a) suggest that the main predicator and the postpredicate NP do not form a constituent:

(10) a. ?? It's AMAZING the DIFFERENCE and REMARKABLE the PRICE.
b. She's AMAZING in MATH and REMARKABLE in PHYSICS.

(10a) contrasts with the ordinary subject-predicate construction in (10b), where the predicate adjectives form single constituents with their complements. The constraints illustrated in (7) and (10) suggest that NE is a kind of subject-verb inversion construction, comparable mutatis mutandis to VS structures in languages like Italian. This would accord with the facts of focus structure which we will discuss in Section 3. However, the evidence provided above is insufficient to support a VS analysis and further arguments would have to be adduced to support it. (We are aware, in particular, that evidence from conjoined coordinate structures, as provided in (10), is notoriously unreliable.)

We then propose that the NE construction represents a FLAT STRUCTURE, in which the main predicator licenses two valence elements: the empty subject *it* and the definite NP, which is assigned the theta role 'content'. In the case of RD, we propose only the independently motivated subject-predicate syntax and semantics, augmented by the requirement of semantic unification between a referential pronominal element and a post-predicate, post-clausal definite NP or other constituent. (See the representation of the differences between NE and RD with respect to semantic unification in Figures 1 and 2 below.)

Another syntactic distinction between RD and NE concerns restrictions on EMBEDDING. NE, unlike RD, appears to be a MAIN-CLAUSE PHENOMENON. Notice the contrast in (11):

(11) a. Since it was so AMAZING, that difference, he changed his mind. (RD)
b. *Since it was so AMAZING the DIFFERENCE, he changed his mind. (NE)
c. Since it was so OBVIOUS that there was a DIFFERENCE, he changed his mind. (EXTRAP)

This preference for NE to appear in main clauses, which it does not share with ordinary extraposition sentences (see (11c)), is in accord with the special type of speech act this construction represents (see the discussion in Section 2).

NE fits the traditional definition of extraposition insofar as it licenses the empty subject *it* without necessarily licensing a corresponding sentence containing the extraposed material in canonical subject position. So, in some sense, sentences (12a) and (12b) fail for the same reason:

(12) a. *That Irving is here seems.
b. *The things marriages break UP over is AMAZING.

However, the similarity between ordinary extraposition and NE ends here. Although extraposition is obligatory with raising predicates such as *seem*, most extraposition sentences do have a canonical subject-predicate counterpart (hence the term 'extraposition'). Moreover, this counterpart has always the same logical meaning (though not the same information structure) as the extraposed sentence. In NE, on the other hand, the lack of a synonymous canonical counterpart is systematic and constitutes a defining criterion of the construction.

In Figures 1 and 2, respectively, we give CG diagrams of the NE construct *It's AMAZING the DIFFERENCE* and the RD construct *It's AMAZING, the difference*. The representation of the internal syntax of the sequence *is amazing* is simplified. With Fillmore & Kay (1993), we assume that *be* is a raising predicate, i.e. that its subject instantiates the understood subject of the predicate which serves as its complement (here the predicate *amazing*). The valence description for the predicate *amazing* is also simplified in that we have ignored the EXPERIENCER argument of this predicate, which is

null-instantiated in the NE construction, but which is necessarily present at the conceptual level (for there to be amazement, there is necessarily someone experiencing it). The attribute *act* in the boxes for referential arguments stands for the ACTIVATION STATUS of the NP referent, i.e. for the assumed status of this referent in the consciousness of the addressee at the time of the utterance (Chafe 1987, Lambrecht 1994:Chapter 3). This activation attribute is to be distinguished from the PRAGMATIC ROLE attribute, whose value is [focus +] in the case of NE and [focus -] in the case of RD.

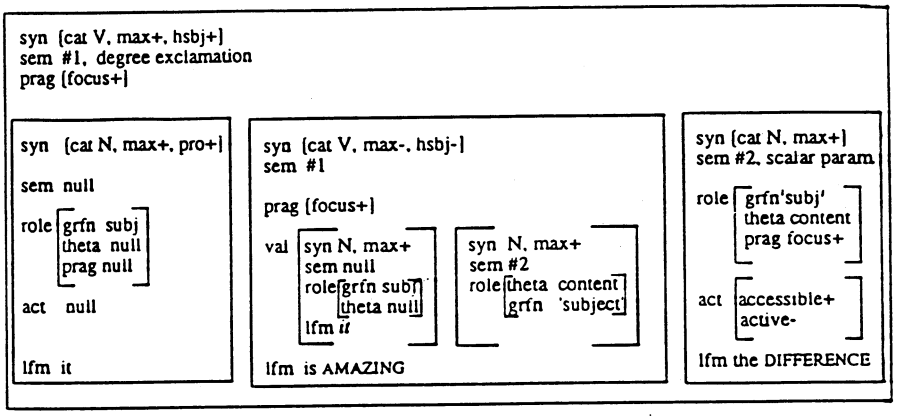


Figure 1: Nominal Extraposition

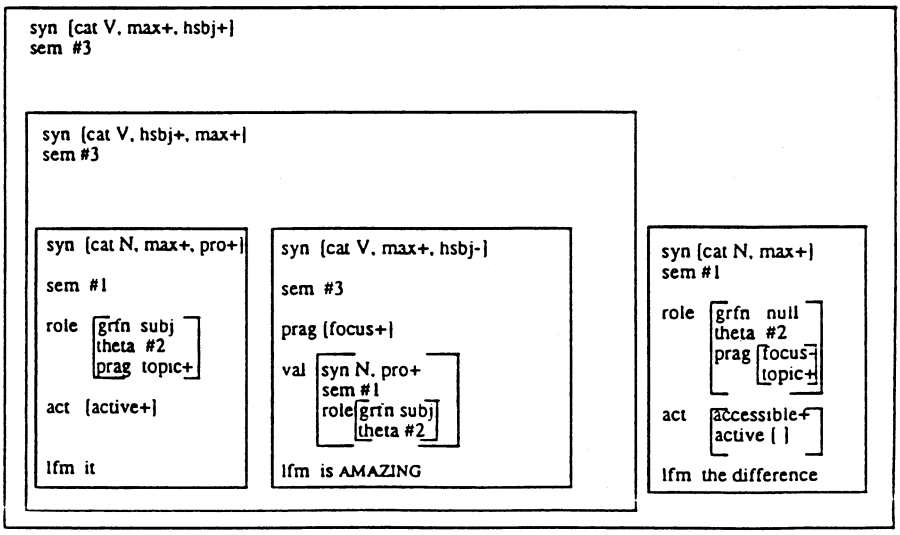


Figure 2: Right Dislocation

2. Semantics. The NE construction has an EXCLAMATIVE function, which explains its SCALAR properties. Let us define exclamative utterances as those in which the speaker places some entity or state of affairs at an advanced point on a property scale. Notice the semantic parallels among (13) through (15):

(13) My SISTER knows so many odd PEOPLE!

(14) It's AMAZING how many odd people my SISTER knows.

(15) It's AMAZING the odd people my SISTER knows! (NE)

All three sentences assert that the set of odd people known by my sister ranks unexpectedly high on a numerical scale. Sentence (14) exemplifies what we will call (perhaps somewhat misleadingly) an INDIRECT-EXCLAMATIVE construction. As (16) shows, this construction must be distinguished from the INDIRECT-INTERROGATIVE construction illustrated in (16a):

(16) a. How many people she saw is unknown to us.
b. ?How many people she saw is amazing.
c. *I believe where she went.
d. I don't believe where she went!

The clause introduced by a wh-element can occupy subject position in (16a), an indirect interrogative sentence, but it cannot occupy that position in the exclamative sentence (16b). The contrast between (16) (c) and (d) shows us a further distinction between indirect exclamatives and indirect interrogatives. Sentence (16c) is anomalous because the verb *believe* does not license a clausal object representing an indirect question. Sentence (16d) contains a negated version of this main verb, which signals expectation contravention. In this negated form, the predicate is welcome in exclamative contexts and in particular licenses clausal objects representing indirect exclamatives. This is so because under the right circumstances the proposition 'I don't believe X' is interpretable in the same way as the proposition 'X is unbelievable', whose predicate can be scalar in the same way as that of the proposition 'X is amazing.'[3]

The exclamative nature of NE appears clearly in the class of ADJECTIVES that may occur as main predicators in NE constructs. A large proportion of our examples contain the adjective *amazing*. In general, the adjectives are scalar predicates indicating expectation contravention, like *astonishing*, *incredible*, and the above-mentioned *unbelievable*. Exclamative utterances indicate that a situation is noncanonical, insofar as some entity or state of affairs manifests a given property to a higher degree than the speaker and/or the hearer has generally been given to expect. The fact that NE requires scalar predicates accords then with the exlamative function of this construction.[4]

Let us look again at sentences (13) through (15). An important difference between what is conveyed by (13) and (14) and what is conveyed by (15) is the following: in (15), we must INFER the relevant scalar parameter, as well as the corresponding property scale. The scalar parameter relevant for the interpretation of (15) could in fact be the VARIETY rather than the NUMBER of strange acquaintances. Therefore, sentence (15) has either of two paraphrases, given in (17):

(17) a. It's amazing the variety of odd people my sister knows!
b. It's amazing the number of odd people my sister knows!

The rightward NP in the NE sentence type may underdetermine what property scale the interpreter will invoke. This follows from a metonymic principle of reference that we will describe later on.

The denotatum of the rightward NP represents thus a SCALEABLE PARAMETER: one locatable on a property scale. And this scaleable parameter involved in the interpretation

of an NE construct does not have to be directly denoted by the rightward nominal. When it is not, it must be reconstructed by the interpreter. For example, notice (1f), which we repeat here for convenience:

(1f) It's ASTONISHING the age at which they become skilled LIARS.

In (1f), it is not the case that the property of being astonishing is attributed to the particular life stage invoked, which in this case is the age of five. Instead, what is astonishing is the early eventuation of this life stage. The point of eventuation of this stage ranks high on a scale of prematurity in child development. A similar situation obtains in (1h):

(1h) Just walking in the street [is difficult]. I mean, it's UNBELIEVABLE the people who are verbally ABUSIVE to FAT people.

In the case of (1h), we can say that the NP *the people who are verbally abusive to fat people* 'stands for' the high number of such people. In accordance with Fillmore & Kay (1993), who make a similar observation, we can note that it is not these people per se who are amazing, but the cardinality of the set to which they belong. Likewise, the definite NP *the difference* in the relevant part of (1d)

(1d) Announcer: Hear what denture wearers all over America have to say.
Denture wearer: It's AMAZING the DIFFERENCE!

can be said to 'stand for' the high degree of difference between two states.

It is important to observe that this inferred scalar meaning of the extraposed NP referent is normally absent in the corresponding canonical versions of such sentences, in which the subject NP appears in initial position and triggers number agreement on the verb. Compare:

(15') The odd people my sister knows are amazing.

(1h') The people who are verbally abusive to fat people are unbelievable.

(1f') The age at which they become skilled liars is amazing.

(1d') The difference is amazing.

In (15') the property of being amazing is predicated of the set of odd people known by my sister, not of the variety or number of such people, as in (13), (14), (15), and (17). In (1h') it is the people who are verbally abusive to obese people that are characterized as being 'unbelievable', not the high number of such people. The situation is perhaps less clear in examples (1f') and (1d'). Sentence (1f') is difficult to interpret as non-scalar because one does not ordinarily characterize a life stage (e.g. age 5) as being amazing in itself. The interpreter of (1f') is therefore likely to resort to a scalar interpretation by default. And (1d') is ambiguous between a scalar and a non-scalar reading because the noun *difference* is normally (but not necessarily) interpreted as scalar independently of the construction in which it occurs. What (15') through (1d') above have in common is that they are topic-comment sentences rather than degree exclamations. This difference between NE sentences and their non-extraposed counterparts confirms our analysis of NE as a construction in its own right, which differs not only from RD but also from the ordinary extraposition construction.[5]

3. Pragmatics. RD and NE share an important discourse-pragmatic property: both are appropriately used only when the referent of the rightward NP is not only identifiable (justifying use of the definite article) but also somehow RECOVERABLE from context. In the case of RD, pragmatic recoverability of the referent is a corollary of its status as a topic, topic referents being recoverable by definition (see Lambrecht 1994:Chapter 4). In this construction (as opposed to left-dislocation) the topic referent is also relatively high

on the accessibility scale--often to the point of being discourse-active.

In the case of NE, the extraposed NP denotes a previously INACTIVE and yet pragmatically ACCESSIBLE discourse referent. The difference between NE and RD with respect to the activation status of the NP referent is demonstrated in the following minimal pair, a variant of (1d):

(18) Announcer: Hear what denture wearers all over America have to say about the difference Fixodent has made in their lives.
Denture wearer: a. It's AMAZING, the difference. (RD)
b. #It's AMAZING the DIFFERENCE. (NE)

At first glance, the inappropriateness of (18b) seems puzzling, since the NP referent cannot be less active in (b) than in (a), given the identity of discourse context. This inappropriateness is explained by the semantics of the NP as discussed in Section 2. In NE, unlike RD, the NP denotatum is not merely a specific topical referent (e.g. in (18) the difference between two states), but the value of this referent on a property scale. This scalar value has not been previously activated in the context, hence the necessary presence of an activation accent falling at some point within the definite NP.

Though not discourse-active, the NP referent in NE must be pragmatically accessible. Accessible referents are those identifiable referents which are not currently under discussion but which are recoverable from the linguistic or extralinguistic context (Chafe 1987, Lambrecht 1994:Chapter 3). Notice examples (19) through (23) (some of which were used earlier):

(19) A: Where's Butsy?
B: He's slipped in to see Senator What's-His-Face.
A: It's AMAZING the ACCESS he's got!

(20) A: With saffron, a little goes a long way, right?
B: It's AMAZING the power of the YELLOW.

(21) Just walking in the street [is difficult]. I mean, it's UNBELIEVABLE the people who are verbally abusive to FAT people.

(22) Announcer: Hear what denture wearers all over America have to say.
Denture wearer: It's AMAZING the DIFFERENCE!

(23) Garbo could turn almost every sentence into a joke on the one before. It was FASCINATING the way she wove her verbal TAPESTRY. (Vanity Fair 2/94)

The pragmatic accessibility of each of these referents follows from the fact that it represents an aspect of the superordinate discourse topic (Van Oosten 1984). Thus, for example, meeting with senators involves access to those senators (19). A salient property of saffron is its yellow color (20). For an obese person, walking in public may involve encountering various hostile people (21). An improvement involves a difference between a previous state of affairs and a subsequent one (22). Finally, the action of weaving a tapestry is a readily available metaphorical envisionment of Garbo's verbal dexterity, to which the reader has previously been introduced (23).

The discourse status of the extraposed NP referent in NE is directly reflected in the constraints on the DETERMINER. Notice the contrasts in (24):

(24) a. It's AMAZING, {*a/the/that} difference. (RD)
b. It's AMAZING {*a/the/*that} DIFFERENCE. (NE)
c. There's {an/*the/*that) amazing DIFFERENCE. (PRESENT)

(The presentational sentence (24c) is to be taken in the existential rather than the deictic reading.) In some sense, NE represents a compromise between RD and the existential

assertion of (24c). (24b) differs from (24a) and resembles (24c) in that the referent of the NP is non-active (see (18b) above). Unlike (24a), (24b) cannot contain anaphoric reference to some recently introduced discourse entity, nor deictic reference to some entity in the text-external world. This explains the inappropriateness of the determiner *that* in (b). But (b) resembles (a), and differs from (c), in that the post-predicate NP referent cannot be inactive, let alone unidentifiable, as it is in (c); hence the inappropriateness of the indefinite article in (a) and (b). As we mentioned before, in NE the post-predicate NP must refer to an aspect of the current superordinate discourse topic.

The definiteness constraint on the postpredicate NP in NE and RD illustrated in (24a) and (24b) is motivated by similar factors. Grammatical definiteness normally reflects the cognitive status 'identifiable'.[6] Identifiable referents are those for which a shared representation exists in the minds of speaker and hearer (Lambrecht 1994:Chapter 3). In the case of RD, the identifiability requirement stems from the topic function of the dislocated NP. As argued in Lambrecht 1994 (Chapter 4), topic referents must be identifiable because of a basic cognitive constraint on property attribution: the entity to which a property is attributed must be familiar to the interlocutors. Note the peculiarity of the sentences in (25):

(25) a. *A car is a MAZDA.
b. ??What a nice PERSON someone is.

In the case of NE, the definiteness constraint is based on a similar cognitive principle. One cannot communicate to an interlocutor one's amazement at something unless the interlocutor has prior knowledge of that thing. If no such prior knowledge obtains, use of a presentational construction is required (see (24c) above).

In another respect, however, RD and NE are not comparable pragmatically. The PRAGMATIC RELATION between the NP referent and the proposition is that of a TOPIC in the former, but of a FOCUS in the latter. RD is akin to ordinary predication types, and the dislocated NP has the straightforward referential properties of a discourse topic. The relation between the NP referent and the proposition is treated as pragmatically recoverable, and the proposition is interpreted as conveying information ABOUT this referent. NE is a degree exclamation. Accordingly, it is not the cognitive status of the postpredicate NP referent as a potential topic that is exploited in NE but the ability of this NP to invoke a position on a property scale. This position on a scale is treated as unpredictable, hence the NP referent has a focus relation to the proposition. In RD, the predicate alone is in focus. In NE, both the predicate and the argument are focal. We claim that it is this focus role of the NP referent within the proposition that motivates the non-canonical ('inverted') position of the subject argument in the sentence (see the discussion of (15') etc. above).

The appropriateness conditions for the postpredicate NP in NE are captured by the principle in (26):

(26) INTERPRETIVE PRINCIPLE FOR NOMINAL EXTRAPOSITION: The postpredicate definite NP either (a) directly encodes or (b) metonymically refers to a scaleable feature representing an aspect of the superordinate discourse topic.

We claim that NE can be appropriately used only in contexts in which the interpretive principle in (26) applies.

We said earlier that NE is synonymous with INDIRECT EXCLAMATIVES. That is, there are paraphrase relations like that in (27):

(27) a. It's UNBELIEVABLE how little she CARES. (IND. EXCL.)
b. It's UNBELIEVABLE her lack of CONCERN. (NE)

One pragmatic distinction between the two constructions in (27) had to do with the need to recover a scaleable parameter in the case of NE. Recall, for example, the contrast between (14) and (15), which we repeat here for convenience:

(14) It's AMAZING how many odd people my SISTER knows!

(15) It's AMAZING the odd people my SISTER knows!

Another pragmatic distinction between NE and indirect exclamatives involves the POTENTIAL FOR NARROW-FOCUS INTERPRETATION of the postpredicate constituent. Note the contrast in (28):

(28) a. A: Is there something remarkable about this case?
B: Well, it's remarkable [how many PEOPLE were IMPLICATED].
B': ??Well, it's remarkable [the number of PEOPLE who were IMPLICATED].

In (28), A's question sets up a narrow-focus context. The constituent in brackets in the reply 'fills in' the variable in the propositional function *X is remarkable*. Speakers report that the second response in (28) is less felicitous than the first. It seems, then, that NE does not license a postpredicate NP representing a narrow-focus argument. The explanation for the oddity of the second response in (28) follows from the focus structure we have postulated for NE: the predicate *is remarkable* is part of a presupposed proposition in (28), but, as argued above, the NE construction requires that the main predicator be in focus.

In (29), we give a representation of the information structure of an NE construct, using sentence (1c) as an example. The format chosen for (29) is that adopted in Lambrecht 1994:

(29) Sentence: *It's AMAZING the ACCESS he's got!*
Presupposition:
(i) of knowledge: 'Butsy has x amount of access (in Washington)'
(ii) of consciousness:
a. 'presupposition (i) is accessible at time of utterance'
b. 'referent Butsy is active at time of utterance'
(iii) of relevance: 'referent Butsy is topical in the discourse'
Assertion: 'speaker is amazed at the high value of x'
Focus: 'value of x is amazingly high'
Focus domain: S

In NE, the focus spans the entire proposition, therefore the syntactic focus domain is the entire sentence. The NE construction represents thus a special instantiation of what is referred to in Lambrecht 1994 as the 'sentence-focus construction'.

By their nature, NE constructs provide a rhetorical effect unavailable in the case of RD. An NE sentence elaborates some aspect of a superordinate discourse topic. By contrast, RD simply resumes a basic-level discourse topic. Note the NE example in (30):

(30) The mere sight of Henry...lifted her spirits. It was FRIGHTENING the way her adoration seemed to flow OUT of her like ink into water, staining everything, hiding everything. (J. Smiley, *Duplicate Keys*)

The first sentence establishes as a superordinate topic the protagonist's strong affection for Henry. The NE construct following this sentence directs the reader to regard this affection as a particularly intense profusion of feelings. By grammatical convention, the postpredicate NP represents an accessible referent. Thus, a metaphorical reenvisionment of the superordinate topic can be packaged as the righward NP. This accords with the generally observable fact that postverbal position is conducive to further development, while preverbal position is constrained to already available material.[7]

4. Conclusion. It seems that a satisfactory account of the structure, meaning, and use of sentences like those in (1) requires recourse to construction-particular semantic, pragmatic, and syntactic properties and constraints. In our analysis, we have emphasized the necessity to integrate the categories of INFORMATION STRUCTURE into the grammatical description, as the discourse-pragmatic properties of the NE construction are inextricably intertwined with its semantic, syntactic, and intonational properties. Following the assumptions of CG, we take the features listed in the information-structure description in (29) to be inherent properties of our construction. We have presented an attempt to encode these information-structure features in the CG formalism. We conclude that the data validate the Construction-Grammar approach, in which the grammar includes as minimal symbolic units syntactically complex forms having idiosyncratic meanings and highly specialized communicative functions.

Notes

1. Jespersen (1933/1964, pp. 154ff) mentions an instance of this construction among a number of examples involving what he calls a "preparatory *it*" and a group of words in "extraposition". A preliminary analysis of our construction is offered in Fillmore & Kay 1993 (Chapter 10).

2. Example (4d) is not strictly speaking ungrammatical, since *il* could in principle also be referential, e.g. it could stand for *son courage* 'her courage' (see *Son courage est évident* 'Her courage is obvious').

3. In future work, we plan to extend our analysis to a semantically and pragmatically related exclamative sentence type, in which the postverbal NP is a direct object:

(i) Dade County - you wouldn't believe the rise in crime! (Dade County sheriff)
(ii) I can't believe the things she did!

Both (i) and (ii) contain negated sentences, which, like (16d), lend themselves to an exclamative interpretation. And as in (16c), the corresponding declarative sentences (*you believe the rise in crime, I can believe the things she did*) would be ill-formed.

4. There are some bothersome exceptions to this semantic generalization. One of the coauthors of the present paper spontaneously uttered the following NE sentences, in which no scalar interpretation seems possible. Sentence (i) was uttered in reference to the presence of twelve jurors' chairs next to the speaker's table in the BLS conference room, and (ii) referred to the greyish-whitish matter covering the window sill outside a classroom:

(i) It's weird the set-up of that room!
(ii) It's gross all those pigeons out there!

What links these examples to those in (1) is that they involve the speaker's belief that the situation denoted (e.g., the presence of some number of pigeons) is NONCANONICAL. Judgements of noncanonicity also play a role in the examples in (1), since the scalar degree attained also represents a remarkable or unexpected situation. See Slobin and Aksu 1982 and Michaelis 1994 for further discussion of the manner in which degree exclamations are related to the general function of flagging a situation as surprising.

5. The need to recover a scaleable feature is perhaps not unique to the NE construction, but characteristic of other exclamative sentence types. Notice (i):

(i) What a question!

In (i), the nominal is unaccompanied by a modifer encoding the property scale upon which this question token is supposed to be placed. Therefore, the interpreter of (i) must adduce the relevant scale, i.e., whether the question at issue is particularly smart or dumb or inappropriate.

6. The information-structure representation in Figures 1 and 2 contains no indication of the identifiability value of the NP referent since identifiability (hence, generally, definiteness of the NP) is entailed by activeness and accessibility (Lambrecht 1994, Chapter 3).

7. For the purpose of the argument we are treating (30) as an instance of NE. It would perhaps be more appropriate to categorize (30) as an indirect exclamative, given the possible use of *the way* as a subordinator in modern English. Certain NE examples containing the postpredicate NP *the way* bring up the same problem as that mentioned in footnote 4. Many of these examples do not represent degree exclamations, but instead comments on the remarkable nature of some situation. Note the following example (from the Wall Street Journal corpus):

(i) Meanwhile, Larry Thornton, Iowa's deputy treasurer, said he thought it was "kind of cute the way investment banks will always try to be the first to do something".

Here, the quoted speaker signals that certain proclivities of investment banks are exceptional in their capacity to merit his bemusement.

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Reconstructing Semantics*
Or, A Bad Case of the Bends

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By and large, semantic reconstruction has not been approached as methodically as either phonological reconstruction or syntactic reconstruction. In fact, most introductory textbooks in historical linguistics (e.g., Hock 1991, Jeffers and Lehiste 1979) leave the subject almost completely unaddressed. Indeed, some scholars have suggested that precise semantic reconstruction may be impossible; as Watkins (1985) notes,

> It is perhaps more hazardous to attempt to reconstruct meaning than to reconstruct linguistic forms, and the meaning of a root can only be extrapolated from the meanings of its descendants. Often these diverge sharply from one another, and the scholar is reduced in practice to inferring only what seems a reasonable, or even merely possible, semantic common denominator. The result is that reconstructed words and particularly roots are often assigned hazy, vague, or unspecific meanings...The apparent haziness in meanings ...often simply reflects the fact that with the passage of several millennia the different words in divergent languages derived from this root have undergone semantic changes that are no longer recoverable in detail (Watkins 1985:xvii).

This is not to suggest that semantic reconstruction has never been done well; indeed, scholars such as Watkins and Benveniste have often posited semantic reconstructions of subtlety and insight. The following passage, taken from Benveniste (1972), illustrates the detail it is possible to obtain in reconstruction:

> Within the framework of a grand-scale comparison of several languages, one often observes that forms that are obviously related are each distinguished by a particular variety of meaning...Such, for instance, is the case of the term for 'road'...The Indo-Iranian, Slavic, and Baltic words mean 'road,' But Gr. *póntos* signifies 'sea'; Lat. *pons* designates 'bridge,' and Arm. *hun*, 'ford.' ... [In Vedic] The *pánthāḥ* is thus neither plotted in advance nor regularly trod. It is indeed rather a "crossing" attempted over an unknown and often hostile region...in short, a way into a region forbidden to normal passage...In Greek, the "crossing" is that of an arm of the sea (cf. *Hellḗs-pontos*), then more broadly, of an expanse of water serving as a "passage" between two continents; in Armenian, it is a "ford"; and in Latin, *pons* will designate the 'crossing' of a stream of water (Benveniste 1972:256).

Reconstructions such as the preceding one, however, are usually presented to the student as the result of inspiration or genius, and inspiration is essentially a black box: its workings aren't amenable to inspection, and its methods can't be evaluated and criticized. What is needed is a methodology of semantic reconstruction. In this paper I will suggest such a methodology, and will illustrate some of its strengths

and weaknesses by testing it on a group of Proto-Indo-European verbal roots, most of which are reconstructed with the meaning 'bend.'

Recent work on polysemy and on semantic change has done a lot to dispel the idea that semantic change is unpredictable. Brugman (1988), for example, argues that a lexical item such as *over* can be viewed as a category of senses related in chains of meaning; she finds image-schematic structure useful to characterize these meaning chains. Sweetser (1990) and Traugott (1986), among others, have argued that semantic change is considerably more regular than had previously been thought, and that it must have as one of its mechanisms polysemy. These claims make it possible to outline a means of doing comparative semantic reconstruction. Consider the relationship between a set of attested forms and the proto-meaning. Semantic change will have proceeded at different rates in the daughter languages; in addition, the languages themselves are attested at different time depths. If it is true that certain directions of change are likelier than others, then it ought to be the case that many of the reflexes of a form in the daughter languages have moved along similar pathways of change. The attested forms will be situated at different points along these pathways, so that it is possible to relate one cognate to another in likely chains of meaning, creating a kind of artificial radial category in the sense described in Lakoff (1987). The various radii will converge on a central meaning, which can be posited as the reconstructed proto-meaning.

The model described above thus provides a way of incorporating recent work on directionality in semantic change (e.g., Sweetser 1990; Traugott 1982) in the act of reconstruction by structuring the radii to reflect that directionality. For example, if one cognate form is attested with the meaning 'misshapen body' and another is attested with the meaning 'evil character,' our understanding of semantic change allows us to claim that the latter meaning must have developed out of the former. As our understanding of semantic change continues to be refined, new insights can be incorporated into the task of reconstruction.

It should be emphasized that although I am borrowing the concept of structured radial categories from Lakoff (1987) and Brugman (1988), the categories are not meant to suggest that the range of meanings attested in the daughter languages was present in the proto-language, nor should the reconstructed meaning be viewed as the prototypical member of the category; rather, I am using these devices as a useful formalism for viewing the semantic range covered by the cognates in the daughter languages. The semantic value reconstructed at the center of the artificial category thus obtained is the point at which the chains of meanings converge, but it is not the prototypical member of a true radial category (though it is possible that these artificial categories do reflect some of the polysemy which must have been present in the proto-language). In this respect my use of artificial radial categories differs from that of Jurafsky (1993). Jurafsky uses artificial radial categories as a way of capturing cross-linguistic generalizations concerning the structure of diminutives in a variety of languages,

making the point that although any particular language may use a variety of morphological mechanisms to express the diminutive and related meanings, the range of meanings can be understood as corresponding to an abstract universal structure for the semantics of the diminutive. His model is similar to mine in that it offers a way of incorporating notions of directionality in semantic change; we differ, however, in that Jurafsky's radial categories are not tied to a single morphological expression of the diminutive, whereas in my model the radial category posited makes claims about the historical development of the reflexes of a particular root.

The forms which I will use to test this model are 15 reconstructed Proto-Indo-European roots which are generally glossed with the meaning 'curve' or 'bend.' I will cite both the gloss given in Pokorny's *Indogermanisches Etymologisches Wörterbuch* (IEW) and that given in Watkins (1985). The massive synonymy that the reconstructed glosses suggest is highly unlikely. A further drawback to the abstract reconstructions normally posited for these forms is that they aren't falsifiable in the way that phonological reconstructions are; that is, it's difficult to really prove or disprove an extremely vague reconstructed proto-meaning.

In applying the approach suggested here, I will argue for more detailed reconstructions but the language used to describe those reconstructions will sound very abstract, since I wish to highlight those aspects of meaning in the proto-form that were important in the developments seen in the daughter languages. In many of the cases I could have used a less abstract English word; for example, in one case I reconstruct the proto-meaning 'three-dimensional object bend in a convex manner' but I could have reconstructed the verb 'bulge' instead. My reconstruction serves merely to highlight the important aspects of the reconstruction, but to a real speaker of Proto-Indo-European the word probably had the abstractness of 'bulge.'

The cognate sets given below are not exhaustive; they cover most of the semantic values associated with the set, and they are the forms attested with the most transparent derivational morphology. Due to space limitations I cannot discuss in detail the effect that derivational morphology has on these forms, but obviously it must play some role. Although the roots reconstructed are all verbs, many of the attested cognates are nouns and adjectives; the deverbal morphology seen in the cognates must have played some role in the semantic shifts seen in these cases.

The first example, given in Figure 1[1], is found with the verbal meaning 'to bend' in Old Indic. Nominal forms meaning things like 'fishhook,' 'spine,' 'loop,' and so forth, are attested in a variety of other languages. In image-schematic terms, all the nominal forms refer to a linear, manipulable object which is bent roughly in the middle and which remains bent; an English near-equivalent would be 'crease,' which differs only in referring to a three-dimensional rather than a two-dimensional object.

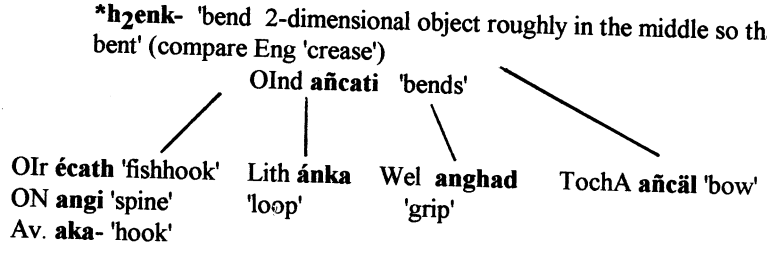


Figure 1 ***h2enk-, *h2eng-** [IEW 45 'biegen'; Watkins 3 'to bend']

The root seen in Figure 2 is attested in Albanian with the meaning 'bow' and in Indic in the compound 'bend the knees.' Metaphorical and metonymic extensions show up in the Germanic forms meaning 'prayer,' in the Tocharian form meaning 'honor,' and in the Lithuanian form meaning 'hunger'; all of these can be understood as extensions of the image of a bent human body, which is the meaning I reconstruct[2]. The Indic forms meaning 'oppression' and 'presses' might be analyzed as being similar to the Lithuanian form in referring to a cause of bending.

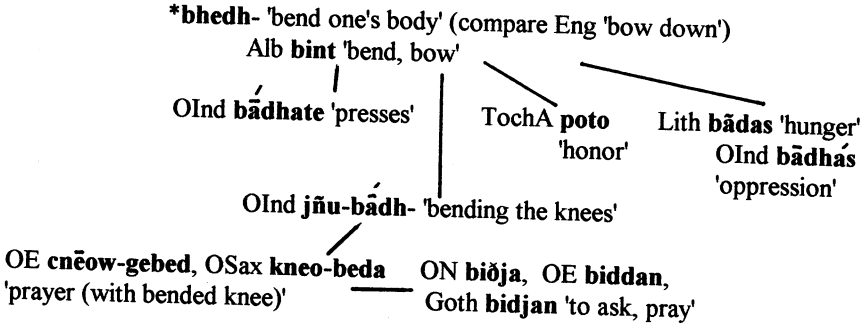


Figure 2 ***bhedh-** [IEW 114 'krümmen, beugen']

In Figure 3 the Old Irish forms 'soft' and 'break' point to the bending of a manipulable object; this is the meaning I reconstruct as original. Note that Latvian 'hill' is hard to fit into this category.

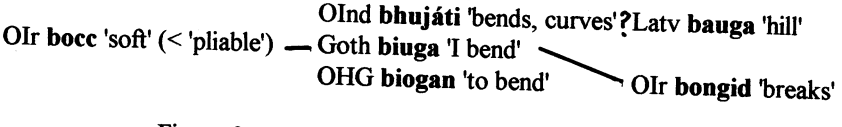


Figure 3 ***bheu̯g-** [IEW 152 'biegen'; W 8 'to bend']

In Figure 4, Lithuanian 'corner; region,' Latin 'field' and Greek 'bend in a river' and 'turning point in a race course' all refer to objects in a terrain. In Greek, in particular, the object doing the bending is linear; this interpretation is supported by the metaphorical use of *kampē̄* to mean 'inflection in a line of music.' The Lithuanian meaning can be understood as a metonymic extension from the proto-meaning 'bend in a linear object' to the area circumscribed by such an object. In Latin the shift from the linear object to the terrain against which the object is viewed is complete. The meaning I reconstruct, 'be bent (linear object in terrain)' must originally have applied to something like a river or cliff line.

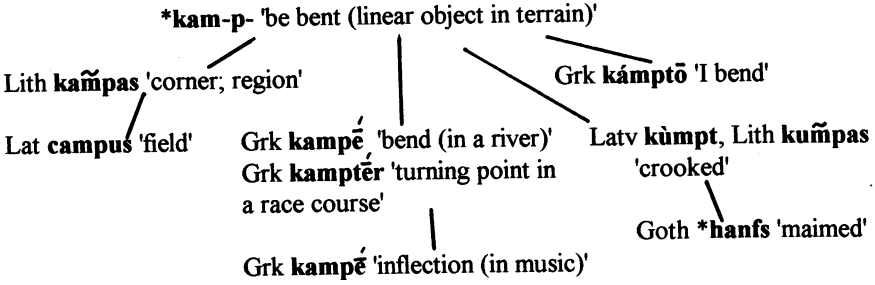


Figure 4 ***kam-p-*** [IEW 525 'biegen'; W 26 'to bend']

The forms in Figure 5 meaning 'high ground,' 'female breast,' 'curve-nosed,' 'boil,' and 'hump' all refer to three-dimensional convex objects seen against a flat background. In Tocharian and Germanic, the meaning 'high' has developed, picking out the top point of such an object. In Lithuanian and Latvian the meaning 'hobgoblin' or 'gnome' has developed; one path of development would be to go metonymically from a physical deformity such as a boil or a hump to a creature characterized by such a hump. In addition, the forms suggest a metaphor that physical deformity corresponds to moral deformity; hobgoblins aren't "straight" with you.

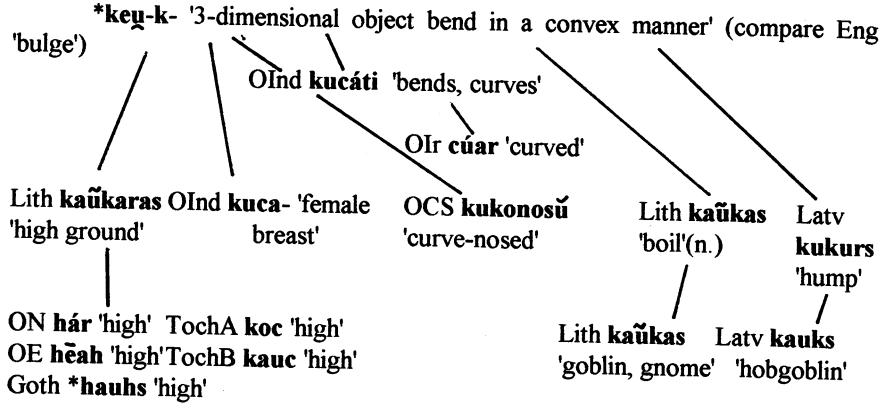


Figure 5 ***keu̯-k-*** [IEW 589 'biegen'; W 30 'to bend'; derivatives 'a round or hollow object']

The nominal forms in Figure 6 meaning 'link of chain' and 'mount, setting' share the notion of connecting one thing with another; this meaning is also reflected in the Latin verbal form meaning 'I gird.' A shift from the meaning 'mount, setting' to the meaning 'hip joint' is unsurprising; the OCS verbal form 'I kneel' can be viewed as an extension of the meaning 'joint.' The meaning 'put in fetters' or 'be fettered' seen in Norse can be posited as the step prior to the Latvian meaning 'to limp.' The Lithuanian form "to go fast' is difficult to connect with this group of forms.

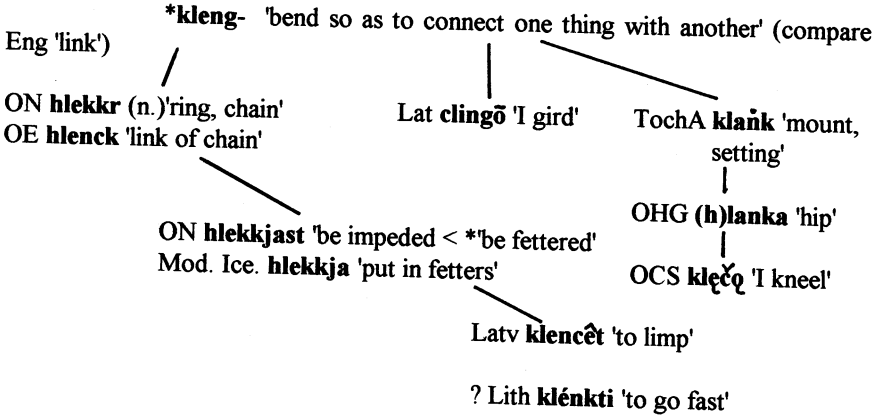


Figure 6 ***kleng-*** [IEW 603 'biegen, winden'; W 31 'to bend, turn']

The root in Figure 7 is only attested in western Indo-European; its meaning must have involved bending or inclining the body or some body part. As the cognates in Figure 8 show, the root **k^{w}elp-* must originally have referred to the bending of a three-dimensional object oriented so that the object is concave; contrast this root with that seen in Figure 5, in which the object is seen as convex.

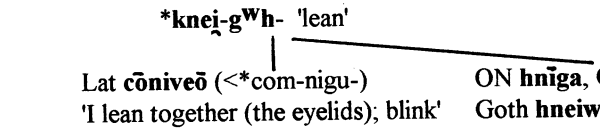


Figure 7 ***kneį̂-g^{w}h-** [IEW 608 'neigen, sich biegen'; W 32 'to lean on'] (western IE)

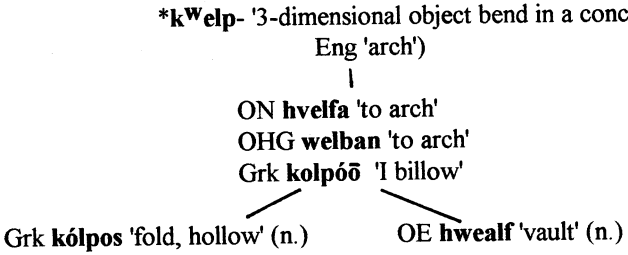


Figure 8 ***k^{w}elp-** [IEW 630 'wölben'; W 34 'to arch']

The forms seen in Figure 9 illustrate one of the shortcomings of any kind of comparative methodology: reconstruction is difficult when few cognates are attested. It is very difficult to see how the Lithuanian and Latvian meanings could have developed out of the proto-meaning.

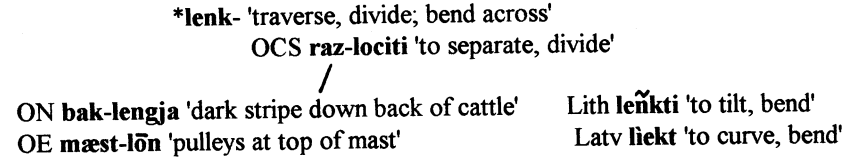


Figure 9 ***lenk-** [IEW 676 'biegen'; W 36 'to bend'] (western IE)

The forms in Figure 10 again illustrate the metaphor that physical deformity corresponds to moral deformity; both the cognates referring to bodily deformity and the Old English form meaning 'to cheat' suggest that the proto-form was originally applied to the body as well.

***lerd-**, ***lord-** 'be crooked (human body)'

Scots-Gaelic **lorcach** 'lame'
Grk **lordós** 'stooped'
Arm **lorç-k'** 'twisted or deformed bodies' (?meaning uncertain)

OE **be-lyrtan** 'to deceive, cheat'

Figure 10 ***lerd-** [IEW 679 'verkrümmen'; W 36 'bent, curved']

The forms in Figure 11 share the image of bending together two flexible objects. This meaning is present in the Latin form meaning 'I wrestle,' in the Old English form meaning 'lock of a door,' and in the Old Irish form meaning 'supports,' since things that are bent together support each other. The meaning 'pliable,' seen in Lithuanian, could be the source of the Greek form meaning 'willow tree' and the Germanic forms meaning 'lock of hair.'

***leu̯g-** 'bend together, entwine'

Grk **lugízō** 'I fold, bend'

Lat **luctō** "I wrestle, struggle'
(<'entwine limbs in a struggle'?)

Lith **lùgnas** 'flexible, pliable'

OIr **fo-long-** 'sustains, supports'

Grk **lúgos** 'willow tree'

On **lokkr**, OE **locc** 'lock of hair'

OE **loc** 'lock of a door'
< 'a bending together, shutting' (Watkins 1985:37)

Figure 11 ***leu̯g-** [IEW 685 'biegen'; W 37 'to bend, turn, wind']

The forms in Figure 12 clearly point to the meaning 'fold.' It is interesting to note the metaphorical extension of 'single' (or 'one-fold') to the meaning 'simple' seen in Germanic, and the extension of 'double' (or 'two-fold') to the meaning 'doubt' seen in Gothic.

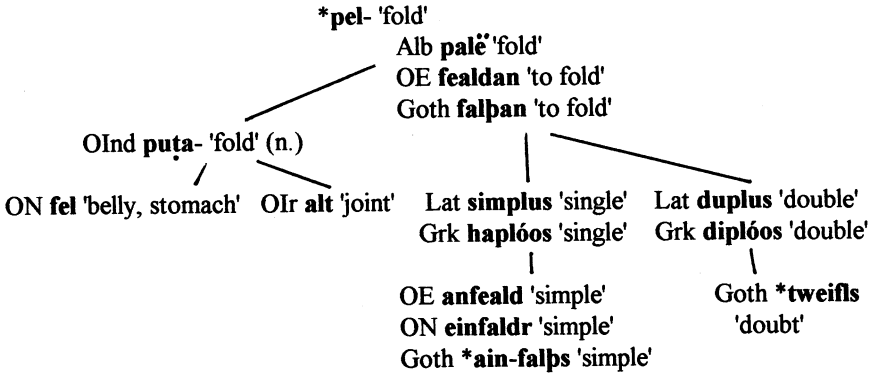


Figure 12 * **pel-** [IEW 802-3 'falten'; W 48 'to fold']

The cognates in Figure 13 point to a meaning component of flexibility; this flexibility underlies the shift to the meaning 'thin' and then to 'hungry'. The forms in figure 14 also involve a notion of flexibility; the Latin form 'I tie' and the Lithuanian form 'tape-worm' suggest that the flexible object may originally have been a cord or thong. The idea of flexibility is seen in the Old Norse form meaning 'pliant; weak'; this meaning must have been prior to the Greek meaning 'I yield, give way.'

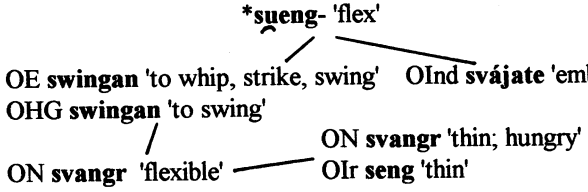


Figure 13 ***sueng-** [IEW 1047 'biegen; drehend schwingen'; W 68 'to swing, turn, toss']

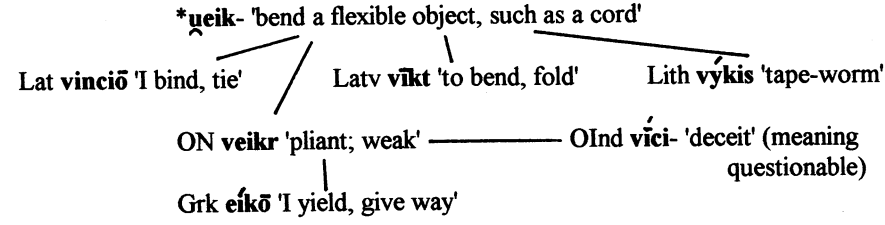


Figure 14 ***ueik-** [IEW 1130 'biegen, winden'; W 75 'to bend, wind']

The forms in Figure 15 seem to refer to motion which is sudden; the Lithuanian meaning 'to try to avoid' and the Old Norse meaning 'to stray, wander about' suggest the motion of bending from a linear path. This meaning must be prior to the meaning 'inconsistent,' seen in Old English, and 'limps' seen in Old Indic. The meaning 'trick' can be seen as an extension of the meaning 'inconsistent.'

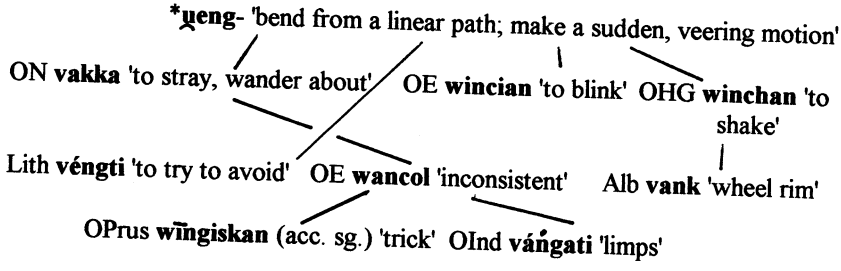


Figure 15 ***ɥeng-** [IEW 1148 'gebogen sein'; W 'to bend, curve']

As the above cognate sets demonstrate, certain aspects of meaning seem to persist longer than others. These include whether an object is two-dimensional or three-dimensional, whether it is a human body or not, whether the verb is stative as in 'the river bends' or transitive as in 'I bend the stick,' whether the object remains bent or flexes, and the orientation of the bend relative to the speaker (that is, whether it is convex or concave). Such elements, of course, are precisely those aspects of meaning characterized by image-schemas; this observation offers further evidence of the cognitive salience of image-schematic structure. It is also interesting to note that these same elements are present in a radically different context: the verbal prefixes of Atsugewi[3]. Talmy (1972) cites such prefixes as *uh-* 'from a linear object moving circumpivotally against the Figure' and *ra-* 'from a linear/planar object moving laterally over/through FIGUROID.' The fact that these elements of meaning play a role in such a radically different context suggests that they may have universal importance in human cognition.

The methodology I've outlined thus gives us a means and a justification for reconstructing much more precise proto-semantics for each of these forms. Again, it is important to note that these artificial radial categories need not represent any actual polysemy in the proto-language; rather, they offer a way of simultaneously viewing all the paths of semantic development attested in the daughter languages and of projecting those paths back to a single starting point. It is also important to note that this methodology is not meant as a substitute for careful philological work; rather, it provides a backdrop against which a more careful study of the textual uses of a particular cognate can take place. For example, I've provided a justification for reconstructing fairly precise meanings for each of these forms; an important next step would be to verify these more precise meanings by looking at

the textual uses of forms such as Old Indic *bhujáti* 'bends' (seen in Figure 3 as a descendant of the form **bheu̯g-* 'bend an object'), Old Indic *kucáti* 'bends' (seen in Figure 5 as a descendant of the form **keu̯-k-* 'three-dimensional object bend in a convex manner'), and Old Indic *añcati* 'bends' (seen in Figure 1 as a descendant of the form **h₂enk-* 'bend two-dimensional object roughly in the middle so that it stays bent'). My model makes the testable prediction that these three forms must have been differentiated in Old Indic, and that their different uses will correspond to the semantic values reconstructed for these cognate sets.

A further benefit of the methodology outlined in this paper is that as it offers the possibility of reconstructing more precise semantic values, it also offers the possibility of reconstructing much more natural proto-languages. Phonological and syntactic reconstructions are routinely evaluated on the basis of their naturalness or unnaturalness (for example, the "glottalic theory" of Indo-European consonantism arose largely because of the alleged unnaturalness of the reconstructed system of Proto-Indo-European stops); in contrast, reconstructed semantic values are still largely abstractions. As a consequence linguists can argue over the precise phonetic detail of reconstructed roots while still reconstructing unnaturally large numbers of abstract synonyms for the proto-language. The methodology suggested in this paper offers the possibility of reconstructing more natural semantic systems as well.

The model undoubtedly oversimplifies the actual historical developments exemplified by these forms. For instance, the points along the radii exemplified by the attested forms must themselves be polysemic in their own languages, and might themselves show unexpected meaning shifts as a consequence. Still, it is no serious criticism of the model to note that it doesn't do everything; after all, in phonological reconstruction establishing regular sound correspondences is the starting point rather than the ending point of reconstruction, yet it's a necessary and powerful starting point.

The methodology outlined in this paper is eminently teachable, offering the possibility of moving semantic reconstruction from the periphery of historical linguistics to a more central position. It also makes it easy to evaluate the likelihood of posited semantic correspondences. For example, in the cognate set cited in Figure 6, Lithuanian *klénkti* 'to go fast' has generally been included by other scholars in the cognate set, yet it doesn't readily fit into the radial structure constructed from the other cognates; this potentially might be grounds for rejecting the form as a cognate.

Finally, as Figure 16 illustrates, the model provides a useful representation of Benveniste's analysis of the Proto-Indo-European root **pónt-eH-*, mentioned at the beginning of the article. The model makes Benveniste's argument more explicit: the meaning of the cognate forms, viewed in image-schematic terms, points to a precise reconstruction of the proto-meaning 'crossing attempted over an unknown and often hostile region...in short, a way into a region forbidden to normal passage.'

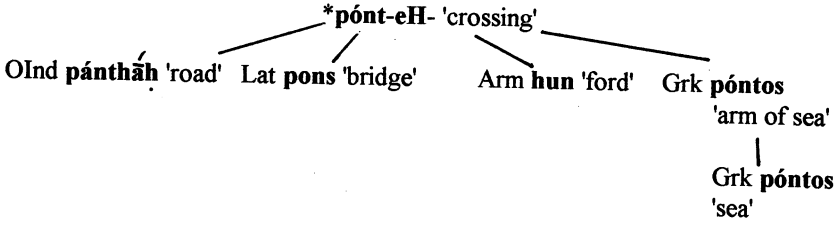


Figure 16 ***pónt-eH-**

Notes

* I would like to thank the large number of people who offered suggestions and discussion of this paper, including the following: Claudia Brugman, Michele Emanatian, Orin Gensler, Gary Holland, Dan Jurafsky, Joe Salmons, and Eve Sweetser.

[1] Note that in some cases the reconstructed root has been altered to agree with current views on the Proto-Indo-European phonemic inventory.

[2] Note that the metaphors motivating extensions of meaning may be cross-linguistic or culture-specific; see Matisoff (1978) for examples of both kinds of semantic change in a non-Indo-European context.

[3]This observation was offered to me by Eve Sweetser.

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The Marking of Possession in Northern Pomo: Privative Opposition and Pragmatic Inference

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Pairs of lexemes like (a)-(d) below share the property that at some level of description the meaning of the second term is included in the meaning of the first term. In each case, the second term is more informative, more specific, or more limited in its extensional range. It has been observed that when such an opposition exists, the more general term can be understood in two ways: as signalling the general meaning of the entire category, or as signalling the contents of the category minus those contents that could be more directly signalled by the use of the second term (in other words, the complement set of the second term). It has been suggested for at least some such pairs that the two meanings of the more general term can be understood in terms of generalized quantity implicatures (Levinson 1987,1991; Reinhart 1983; Horn 1984, 1988; Huang 1991, O'Connor 1993; but cf. Richardson & Richardson 1990). If S uses the first term, H infers that use of the second (potentially more informative) term was avoided for some reason, and thus that S is conversationally implicating (indicated by +->) that the utterance meaning specifically precludes the special contribution made by the second term.

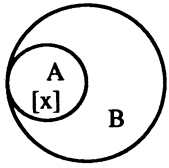
(a) < *finger, thumb* >
"I bruised a finger."
+-> NOT thumb
cf. "I have ten fingers."

(b) < *some, all* >
"I ate some of the cookies."
+-> NOT all
cf. "At least some of them will go."

(c) < *animal, human* >
"No animals allowed."
+-> NOT human
cf. "Animals nurture their offspring."

(d) < *him, himself* >
"John likes him."
+-> NOT coreference
cf. "John saw it near him."

The interpretive complexities of privative oppositions in the grammar were of course explored by members of the Prague school and their students (Jakobson 1939, 1957; Waugh 1982), and were defined in terms of markedness. When two elements A and B are in a structural relationship such that A is a subset of B, and A carries a "mark", i.e. is specified for some feature [x], while B is unmarked--unspecified for feature [x]-- then use of the unmarked term B may be taken to signal either the entire set or only the complement set of A, that is, NOT [x].[1] Thus the lexeme dog denotes the set of canines without regard to sex; however when in opposition to the lexeme bitch it is taken to signal the meaning 'male canine'. Jakobson called the latter interpretation of dog the "minus-interpretation". In at least some cases, the minus-interpretation would be viewed by the neo-Griceans as a consequence of generalized quantity implicatures derived from the greater informativeness of the marked element.



"B" +-> NOT [x] within context of opposition

"B" signals {[x] / NOT [x]} outside context of opposition

Figure 1. Interpretation of privative opposition

Jakobson saw in the privative formulation a potential explanation for alternations of purely grammatical meaning, such as aspectual and case-marking oppositions. Both Jakobsonian and neo-Gricean accounts of the "minus interpretation" face two unanswered questions. One is a question about the general availability of this interpretation, given the privative structural configuration. Is it the case that a "minus interpretation" will be available for the unmarked member of any two lexemes or grammatical morphemes in a suitable opposition?[2] If not, when does it become available? I will not deal with this question here, except to note that research on implicature and the grammar will inevitably confront it.

The second question concerns cases where a particular privative opposition does evidence two interpretations for its unmarked member, both the general interpretation (Jakobson's "zero-interpretation") and the minus interpretation. In these cases, what circumstances trigger the minus interpretation of B, the unmarked element? What circumstances result in the general interpretation of B? Clearly, the answer depends upon the mark that is carried by element A. Its contexts of use provide the frame within which the opposition will hold. In the disjoint reference analysis of Reinhart, Levinson and others, the opposition's activation and neutralization contexts are a central part of the argument: the pronoun "him" takes on the specific meaning of disjoint reference only when it is in an opposition with the element "himself." When the syntactic environment does not license use of the reflexive, the opposition is no longer active, and the disjoint reference implicature disappears: the hearer can no longer use the potential choice of the reflexive as a background against which to evaluate the speaker's choice of the regular pronoun. "Him" may either be construed as coreferent or disjoint in reference with a particular antecedent.

In many cases, these activation and neutralization frames are not easy to state. (For example, the specification of the oppositional context of a pronoun and anaphor pair may require statements about both syntax and discourse pragmatics, see e.g. O'Connor 1992, 1993). Jakobson saw the specification of the oppositional context as a complication in using this structural inference mechanism to explain grammatical phenomena. The same task is inherited by the neo-Griceans: in order to use this form of implicature to do grammatical work, the analyst must fully specify the context of opposition and its neutralization. This is one of the most interesting aspects of the neo-Gricean approach to grammatical oppositions: knowledge of language must include knowledge of when the opposition is available and when it is neutralized.

In this paper I will explore the framing question for privative oppositions within the context of a pair of grammatical constructions.[3] Northern Pomo, a native language of Northern California, displays an alternation between two constructions that encode possession. These two constructions are in a privative opposition and evidence the kinds of interpretations discussed above. The nature of the opposition provides new data for consideration of the framing question.

I. Possessor Raising ~ Regular Possession alternation: basic facts

Example (1a) shows the normal means of marking possession in Northern Pomo, irrespective of what is possessed. The possessor, marked in the oblique case, is to the left within the NP (marked with brackets). The possessor and the possessed object form one (obligatorily) contiguous noun phrase. Examples (1b) and (1c) display an opposition that is licensed just in case the possessed object is a body part. (1b) is the regular form of possession, and (1c) is an instance of *possessor raising*, where the possessor and the body part become separate constituents, demonstrably independent of each other. The possessor is no longer marked with the Oblique case, instead appearing in the case that marks direct objects and some subjects (O'Connor 1992). In O'Connor (to appear) I have described this alternation in detail. Space constraints do not permit discussion of the syntax and morphology of PR beyond the statement that in its syntactic behavior it is similar to possessor raising constructions found in other languages (Aissen 1979, Davies 1981, Baker 1988).

(1a) REGULAR POSSESSION (ALIENABLE)
me:di [**mo:w-a?** **kami:sa** **-nam**] phaley-ka
Mary.A 3sm-Obl shirt -spec burn-caus
"Mary burned his shirt."

(1b) REGULAR POSSESSION (BODY PART)
me:di [**mo:w-a?** **yasis** **-nam**] phaley-ka
Mary.A 3sm-Obl knee -spec burn-caus
"Mary burned his knee."

(1c) POSSESSOR RAISING (BODY PART ONLY)
[yasis -nam] me:di [**mo:w-al**] phaley-ka
knee -spec Mary.A 3sm.-P burn-caus
"Mary burned his knee."

In this Possessor Raising construction, body part and possessor are both accessible to focus, modification and specification. In (2a) the scopal adverb "only" picks out the possessor to be in focus, and in (2b), it picks out the body part.

(2a) POSSESSOR RAISING
[**mo:w-al**] yɛ? [**yasis**] dalam-?a
3sm-P only knee cover -pass
"He's the only one whose knees they covered."

(2b) POSSESSOR RAISING
[**yasis**] yɛ? [**mo:w-al**] dalam-?a
knee only 3sm-P cover -pass
"It was only his knees they covered."

II. The Possessor Raising ~ Regular Possession alternation: contributions to utterance interpretation

What are the interpretive consequences of using one or the other form? Truth conditionally, the regular possession construction and the Possessor Raising construction are equivalent, but the PR construction does add another sort of interpretive signficance to the utterance. In (3a) below, the speaker asserts that the addressee's hair looks nice. (3b) also asserts that the addressee's hair looks nice, but it further adds emphasis to the significance of that fact for the possessor. The attractiveness of her hair propagates to her whole countenance, whereas in (3a), it is specifically a compliment about the hair itself. (Comments in square brackets below the translation were spontaneously provided by the consultant during elicitation and text translation sessions.)

(3a) REGULAR POSSESSION

[**mi?** **ʔeɪ-nam**] k'edi phiṭ'a
2s.Obl hair-spec good appear

"Your hair looks nice."
["That would mean that its color, or something about the hair was pretty."]

(3b) POSSESSOR RAISING

[**miṭo**] [**ʔeɪ**] k'edi phiṭ'a
you.P hair good appear

"You look nice with that hairstyle."
["That would mean it LOOKED pretty ON her, not particularly the color or anything, just that she looked nice."]

Similarly, (4a) and (4b) both assert that the subject hit the dog's eye with a rock, but (4b) also conveys that the possessor of the eye was particularly affected by this event.

(4a) REGULAR POSSESSION

[**hayu yaču?** **ʔuy-nam**] moːw xabe wih baneh
dog Obl eye-spec 3sm.A rock inst. hit

"He hit the dog's eye with a rock."

(4b) POSSESSOR RAISING

[**hayu yačul**] moːw xabe wih [**ʔuy**] baneh
dog P 3sm.A rock inst. eye hit

"He hit the dog's eye with a rock."
["That means the eye might be destroyed"]

The use of the Possessor Raising construction appears to contribute a special focus on the consequences for the possessor of the state of affairs that the predicate-body part combination describes. What is the nature of these consequences? With some verb-body part combinations, a first approach might be to draw those consequences from the entailments concerning the possessor. In (5a) and (5b) it appears that the consequences for the possessor may stem from the entailment that if she cuts his foot, she cuts him.

(5a) REGULAR POSSESSION

man [morw-a? xama: -nam] čaxa
3sf.A 3sm-Obl foot-spec cut
"She cut his foot." (Entailment: "She cut him.")

(5b) POSSESSOR RAISING

man [morw-al] [xama:] čaxa
3sf.A 3sm.-P foot-spec cut
"She cut his foot."

But in (6), there is no analogously useful entailment associated with the regular possession version of the utterance (not given here). It's not entailed that she is thin, for example. However, there are consequences to what the predication describes in (6): she may look weak, she may not be able to run very far, she may look attractive, she may look unattractive. The interpretation of the salient consequences depend upon the hearer's culturally situated interpretation of the scene that the utterance invokes.

(6) POSSESSOR RAISING

bic'u-c'ay [ma:d-al] [ya:] na
small-pl 3sf-P leg cop
"Her legs are small/thin."

In (7), a similar point can be made. Here the speaker is talking to the addressee about a terrible accident the addressee had recently had, in which she was hit by a pick-up truck and the back of her hand was almost ripped off. The speaker says "So your skin was just hanging there." The entailment that 'some body part was hanging there' is not particularly informative, but the utterance itself points to numerous consequences that any person could adduce for such a possessor: pain, feelings of fear, vulnerability, disgust, etc.

(7) POSSESSOR RAISING

nan [siyan-nam] [mi̱o] phidima-n
and skin-spec 2s.P hang-prog
"So your skin was just hanging there."

In each of these cases, the speaker's choice of the Possessor Raising construction has in some sense signalled an intention to communicate that the hearer should search for some significant consequences--significant for the possessor--of the circumstances described by the predicate, and add them into the ongoing representation of the discourse. This focus on the consequences has the status of a conventional implicature attached to the PR construction itself. Its interpretive import is not calculable nor cancellable and might be informally stated as follows.

(8) MEANING CONVEYED BY USE OF PR CONSTRUCTION

Consider the scene that is created or activated by this utterance: a scene in which a possessor and one of its body parts are the target of some predication. Consider the compositional total of the linguistic meanings, and query that scene for the range of consequences of those circumstances for the body part possessor. The consequences in question may be social, physiological, psychological, functional, etc. Find one or more such consequences that S would be likely to want you to be aware of, and let that further structure your understanding of the scene.

Frame semantics (Fillmore 1982) provides a natural perspective for thinking about the interpretive processes that this construction requires. Lexical items evoke complex scenes carrying both an array of specific knowledge not mentioned in the utterance, and often a perspective on that scene.

(9) "The interpreter's envisionment of the text world assigns that world both a perspective and a history. A report of somebody buying something evokes the frame of the commercial event, but sees that event, for the moment at least, from the point of view of one of its participants. Describing somebody as being ON LAND locates the scene in the history of a sea voyage, by noticing that it is relevant to describe the location in this way only if this period is seen as an interruption of a period of sea travel."

(Fillmore 1982. p. 122)

So in these cases, by choosing to use the PR construction, the speaker is giving the hearer a perspective from which to envision the text world. The hearer is instructed to envision the text world in such a way that the consequences for the body part possessor are foregrounded over the consequences for the body part itself. (See O'Connor (to appear) for a fuller discussion of the semantic and pragmatic processes involved in the interpretation of this construction.)

I have claimed that the PR construction has attached to it a conventional implicature directing the hearer to search for contextually salient consequences of the situation for the body part possessor. To return to the formulation given at the beginning of the paper, the intention to highlight the consequences, i.e. the conventional implicature itself, is the "mark", the [x], associated with the PR construction. The regular possession construction is neutral or unspecified with respect to the mark: when the regular possession construction is used, there may or may not be any intention to highlight consequences for the possessor.

Given the Jakobsonian and neo-Gricean formulations discussed above, we might predict that use of the unmarked construction (in this case, the regular possession construction), would trigger a Q-implicature that the speaker was avoiding the use of the PR construction, and thus, that the "mark" (the search for consequences for the possessor) are somehow being denied. This is Jakobson's "minus-interpretation", derived by the neo-Griceans from a Q-implicature. The next examples demonstrate this phenomenon. Example (10) involves a complex set of cultural and interpersonal consequences of body part possession. What is most important for current purposes, however, is that the speaker achieves her communicative aims by avoiding the use of the PR construction.

(10) REGULAR POSSESSION

[kawi -yaču?	**ʔuy]**	c'axat'ʔ	-ay	na
child-Obl	eye	blue	-pl	cop

"The kid's eyes are blue..."
["The kid's eyes may be blue, but she is Indian"]

The speaker, a Pomo Indian, took her great-granddaughter to the supermarket. The child has blue eyes and light hair. The speaker encountered another Pomo woman who made a somewhat snide remark about the girl's phenotype. The speaker

countered by saying "the kid's eyes are blue" using the regular possession form. The linguistic meaning of the sentence is that the child has the property of having blue eyes. If the speaker had used the Possessor Raising construction, she would have been on record as wanting the hearer to consider the consequences for her great-granddaughter of having blue eyes, at least one of which vulnerability to inferences about ethnic heritage. In this case, in avoiding the PR construction, she set up another kind of implicature: she conveys that she avoided the PR expression, and that the hearer should explicitly not draw any conclusions from the evidence of the girl's blue eyes about her ethnic heritage.

(11a) and (11b) give a similar pair. When the PR construction is used, as in (11a), the speaker is intending that the consequences of having ugly feet—global unattractiveness, say—are part of the conveyed message about the subject. On the other hand, use of the Regular Possession construction Q-implicates that the speaker avoided the PR construction. This conversational implicature then results in the hearer's subsequent context-specific inference that the speaker intends to convey something positive about the possessor in (11b), since the consequences highlighted in the PR version are implicitly denied.

(11a) POSSESSOR RAISING

[**moɪw-al**]	[**xama -nam**]	ɬiyiš	na
3sm-P	foot -spec	ugly	copula

"His feet are ugly."
["He looks bad."]

(11b) REGULAR POSSESSION

[**moɪw-a?**	**xama -nam**]	ɬiyiš	na
3sm-Obl	foot -spec	ugly	copula

"His feet are ugly."
["Well, his feet may be ugly, but the rest of him looks pretty good"]

In summary, in each of these examples, it is clear how the minus interpretation arises. Utterances employing the Possessor Raising construction are more informative than utterances that employ the regular possession construction. At the level of linguistic meaning they assert the same thing. But at the level of conventional pragmatics, the PR construction adds something extra: a direction to the hearer to actively find and take up some real-world consequence of the basic compositional meaning. The neutral term in this privative opposition of constructions thus receives--at least in these cases--a minus interpretation. In neo-Gricean terms, it triggers a Q-implicature that for some reason the PR construction has been avoided and thus does not apply.

We might expect this Q-implicature to be triggered each time the speaker uses the regular possession construction. However, in fact, use of the regular possession construction does not always trigger the minus interpretation. In the next examples, use of the regular possession construction doesn't seem to signal much of anything. For that matter, neither does the use of the PR construction itself.

(12a) POSSESSOR RAISING [**xamabuisa**] [**moiwal**] šit'ay-miti
big.toe 3sm.P crooked-lie
"His big toe is crooked."

(12b) REGULAR POSSESSION [**moiwa?** **xamabuisa-nam**] šit'ay-miti
3sm.Obl big.toe -spec crooked-lie
"His big toe is crooked."

Despite the fact that the minus interpretation is seemingly absent in (12), it is still the case that the PR construction is both syntactically marked and more informative (via its conventional implicature) than the regular possession construction, so the basis for the privative opposition still holds. Thus current accounts of generalized conversational implicature in the grammar (see especially Levinson 1991 and Huang 1991 regarding Q- and M-implicatures) would likely predict that the implicature patterns should be fairly stable.

To figure out why the implicature "Speaker is avoiding A" is cancelled here (or alternatively, why the opposition is neutralized), we must consider the frame: the conditions that favor or require the use of the marked member, the PR construction. This is basic to the logic of such oppositions: when the speaker uses B, and the hearer infers the minus interpretation ("Not A"), the hearer must assume that the speaker could have used or should have used A. Otherwise the implicature of avoidance will not be warranted.

III. Frames that activate the opposition

There are two sources of evidence regarding the availability of the privative opposition. The first is obviously the availability of the minus reading itself, or the Q-implicatures described above. The second is the speakers' preference for or avoidance of one or the other alternant. Contexts in which the speaker prefers to use the PR construction constitute the frame in which the opposition is active and available. In environments that do not require or favor the PR construction, the implicature should tend to disappear. What are these contexts?

Examples (13a-d) indicate that there is a strong preference to use the Possessor Raising construction when the possessor is human, and particularly when the possessor is well-known to the speaker. (Form choices displayed below are those offered first upon elicitation and those found in texts. Examples marked # are dispreferred or rejected by the speaker.)

(13a) POSSESSOR RAISING [**?ami-dei -l**] **[?uy-nam]** moiw xabe wih baneh
my-older.sis-P eye-spec 3sm.A rock inst. hit
"He hit my older sister's eye with a rock."

(13b) POSSESSOR RAISING
[**kawiya ba-nam moiw-al**] **[?uy-nam**] moiw xabe wih baneh
child boy -spec 3sm- P eye-spec 3sm.A rock inst. hit
"He hit the boy's eye with a rock."

(13c) REGULAR POSSESSION

[kawiya ba-nam moːw-a? ʔuy-nam] moːw xabe wih baneh
child boy -spec 3sm.-Obl eye-spec 3sm.A rock inst. hit

"He hit the boy's eye with a rock."

(13d) REGULAR POSSESSION **[hayu yaču? ʔuy-nam]** moːw xabe wih baneh
dog Obl eye-spec 3sm.A rock inst. hit

"He hit the dog's eye with a rock."

There is also a detectable preference for using the PR construction when the circumstances described have a significant impact on the possessor. Thus in (14), where the speaker is feeling pain in a sensitive body part, the regular possession construction is rejected.

(14a) POSSESSOR RAISING [ɟoː] [ʔuy] dithal-e
1s.P eye hurt-pres

"My eye hurts."

(14b) REGULAR POSSESSION # [**khe** **ʔuy-nam**] dithal-e
1s.Obl eye -spec hurt-pres

"My eye hurts."

These examples contrast with (15), in which a first person possessor and the same sensitive body part does <u>not</u> disfavor use of the regular possession construction, due to a low-impact predicate.

(15a) POSSESSOR RAISING [ɟoː] [**ʔuy-nam**] šikišiki-m-a
1s.P eye -spec twitch-asp -pres

"My eye is twitching."

(15b) REGULAR POSSESSION **[khe** **ʔuy -nam**] šikišiki-m-a
1s.Obl eye -spec twitch-asp-pres

"My eye is twitching."

And the next examples demonstrate that there is even a contribution made by the nature of the body part. The more significant body parts, like the face, seem to call for use of the PR construction, even with low-impact predicates, whereas the knee or the fingernails, for example, do not.

(16a) POSSESSOR RAISING **[maɪd-aɪ]** **[ʔuymo]** mina c'amoː čima
3sf-P face upon fly sit

"A fly is sitting on her face."

(16b) REGULAR POSSESSION **# [maɪd-a? ʔuymo -nam]** mina c'amo čima
3sf-Obl face -spec upon fly sit

"A fly is sitting on her face."

(16c) POSSESSOR RAISING **[maɪd-al] [yaɪsis]** mina: c'amo: čima
3sf-P knee upon fly sit
"A fly is sitting on her knee."

(16d) REGULAR POSSESSION **[maɪd-a? yaɪsis-nam]** mina c'amo čima
3sf-Obl knee -spec upon fly sit
"A fly is sitting on her knee."

(17a) POSSESSOR RAISING ba-de: **[maɪd-al] [?uymo]** datoy
3's-oldr.sis.A 3sf-P face design
"[Her older sister]$_k$ painted her$_j$ face."

(17b) REGULAR POSSESSION # ba- de: **[maɪda? ?uymo-nam]** datoy
3's- oldr.sis.A 3sf-Obl face -spec design
"[Her older sister]$_k$ painted her$_j$ face."

(17c) POSSESSOR RAISING ba-de: **[maɪd-al] [ṯhana-heč mul]** datoy
3's-oldr.sis.A 3sf-P fingernails dem design
"[Her older sister]$_k$ painted her$_j$ fingernails."

(17d) REGULAR POSSESSION ba- de: **[maɪd-a? thana-heč mul]** datoy
3's- o.sis.A 3sf -Obl fingernails dem design
"[Her older sister]$_k$ painted her$_j$ fingernails."

Although a statement regarding the animacy of the possessor is required to make some of these generalizations, the generalizations themselves do not seem to be typical of grammaticized animacy hierarchy effects. Rather, choice of possession construction seems to be computed anew for each particular utterance, depending upon the particular combination of body part, possessor, and predicate. The speaker appears to be considering the entire scene of possession, integrated with the scene contributed by the verb. Thus the frame which activates the opposition between the regular possession construction and the PR construction is complex, and is rooted in speakers' understandings of the scenes evoked by particular lexical elements.

The next examples show that if we understand the pattern of usage preferences that form the background to the speaker's intentions and hearer's interpretations, we can understand the source of the range of implicatures we see. Given the preferences just described, (18a) is not surprising. The possessor is human, the body part is highly innervated and functionally important, and burning is something that has a significant impact on the possessor of the body part. So we expect the speaker to choose to describe those circumstances using the Possessor Raising construction, which functions as a sort of index that those drastic consequences are being registered by the speaker. (18a) is thus the default choice. If the speaker uses the regular possession form, as in (18b), an apparently robust implicature is formed that the arm must already be detached.

(18a) POSSESSOR RAISING [**šaɪ -nam**] [**morw-al**] man phaley -ka
arm -spec 3sm-P 3sf.A burn -caus
"She burned his arm."

(18b) REGULAR POSSESSION [**morw-a?** **šaɪ -nam**] man phaley -ka
3sm-Obl arm -spec 3sf.A burn -caus
"She burned his arm."
["Sounds like his arm is detached."]

In (18b), upon hearing this disastrous circumstance cast within the regular possession construction, the hearer searches for some particular envisionment of the scene that would preclude any consequences for the possessor. One possible explanation is that the arm is detached from its possessor, thus the possessor does not suffer any consequences of the current action. Example (19) reflects this interpretive path in use within a traditional narrative text. Bear Woman has killed her daughter-in-law, and has plucked out the daughter-in-law's eyeballs. She is going to roast them and eat them, but first she puts them on top of a pile of clover that her daughter-in-law had picked. The speaker uses the regular possession construction here, and reports that the PR construction would be inappropriate.

(19) REGULAR POSSESSION
so-nam mil mina [**ma-?od-a?** **?uy-xabe -nay**] mul mičam-hɛ
clover-spec. dem.Obl on LDR's-D.in.law-Obl eye-stone -spec. dem put-adv
"[Bear woman]...having put her daughter-in-law's eyeballs on top of the clover.."

The next examples illustrate further the complexities of the frame that activates the opposition. It seems that the speaker and hearer take into account not just the contents of the possession scene, but the stance of the speaker with respect to the possessor. Not surprisingly, considering its content, this construction has picked up a significance within normal conversational politeness conventions. For third person reference as well as direct address (e.g. "Did your feet get cold?"), part of the preference for the Possessor Raising construction when the possessor is human can be attributed to a cultural convention of honoring the positive face needs of other humans (Brown and Levinson 1987). If someone's body parts are having something done to them, it is likely that there will be salient consequences, simply due to human anatomy and nervous system, and human interactional symbolic life. As a member of this culture, it may be that one is required to indicate regard for other people's experiences by using the construction that acknowledges those experiential consequences.[4]

In (20), the speaker is telling someone that a particular person is not dancing because his foot hurts. She uses the regular possession construction to mark this. However, politeness norms of the type just described would favor use of the Possessor Raising construction. So what does the hearer make of the speaker's avoidance of this norm? She infers that the speaker is implicating either disrespect for the possessor, or that the possessor's foot pain is minimal. Either way, the final inference is that the speaker is belittling the third person subject for not dancing due to his aching foot.

(20) REGULAR POSSESSION

[ɬi-ʔ xama-nam] dithal - kan mo:w khemane -nha
LDA-Obl foot -spec hurt - Acomp 3sm.A dance -NEG

"He's not dancing because his foot hurts."
["Sounds like you're belittling him."]

What about the cases where either the possessor is not human, or the predicate is so minimally significant to the human possessor that the PR construction does not seem to be preferred? As anticipated, use of the regular possession construction in these cases does <u>not</u> implicate the negation of what the PR construction implies. There is no minus interpretation available for the regular possession construction. Instead, use of the PR construction itself contributes a special significance to the utterance. In (21a), use of the regular possession construction to convey that the cat's eyes are blue does not suggest anything out of the ordinary. Use of the PR construction, however, carries with it an implication that the cat somehow has a special status, and is being talked about as though it were more than a mere animal.

(21a) REGULAR POSSESSION [xadalom -nam yaču? ʔuy] c'axat'ʔ -ay na
cat -spec Obl eye blue -pl cop

"The cat's eyes are blue."

(21b) POSSESSOR RAISING [xadalom nam yačul] [ʔuy] c'axat'ʔ -ay na
cat -spec P eye blue -pl cop

"The cat's eyes are blue."
[The cat has a special status]

Example (22) and (23) provide further evidence of the context-dependent nature of both the possibility for implicature and its eventual contents. In (22), the speaker is telling about a relative getting shot at by a police officer. She uses the Possessor Raising construction, but there is no implication that his hand was particularly badly damaged. On the other hand, in (23), when the possessor is a dog, we have the implicature--against the background that this construction is <u>not</u> the default choice in this communicative setting--that the dog must really have been affected.

(22) POSSESSOR RAISING

nan nan [morw-al] [ɬhana] kay mo:w-al čhok-na -n -way khap-nam mo:w
and and 3sm.-P hand also 3sm-P shoot-cop.-adv.d.m. cop-spec 3sm.A

"And and ...in the hand, too, he shot him, the cop."
[Neither implicates or precludes that hand was destroyed]

(23) POSSESSOR RAISING

[hayu yačul] [ʔuy-nam] mo:w xabe wih baneh
dog Obl eye-spec 3sm.A rock inst. hit

"He hit the dog's eye with a rock."
[Implicates that eye was destroyed]

In a context of utterance like this where there is no strong preference for the PR

construction, the PR construction itself becomes noticeable, triggering implicatures that the speaker must be particularly concerned with the consequences of the predication situation for the possessor. But where the contextual frame has activated the opposition, the speaker can achieve subtle conversational effects through avoidance of the PR construction, as in (3) (repeated here as (24)). Here the ordinary expression of the proposition "your hair looks nice" would call for the Possessor Raising construction due to politeness. Such a remark is personal and positive, but does not necessarily indicate raving enthusiasm about the appearance of the addressee. Against this background, however, use of the regular possession construction imbues the compliment with a distinct faintness.

(24a) POSSESSOR RAISING [**miṭo**] [**ʔeɪ**] k'edi phiṭ'a
you.P hair good appear
"Your hair looks nice/You look nice with that hairstyle."
["That would mean ...just that she looked nice."]

(24b) REGULAR POSSESSION [**mi-ʔ** **ʔeɪ-nam**] k'edi phiṭ'a
2s-Obl hair-spec good appear
"Your hair looks nice."
["How do I look?" "Well, dear, your hair looks nice..."]

In (17c-d) above, on the other hand ("Her older sister painted her fingernails"), the opposition seems to dissolve altogether. In those cases, the opposition between Possessor Raising and regular possession no longer carries the same communicative significance, and the use of the regular possession construction goes unremarked. In just these cases we have no obvious tropic factors favoring one construction over the other. (It is, however, likely that there are subtle communicative consequences which are beyond the resolution power of these relatively crude methods of linguistic elicitation and examination of texts.)

IV. Conclusion

Examination of a pair of clausal constructions in privative opposition highlights several facts of potential interest. In this case the privative opposition is grounded in the syntactic, semantic and conventional pragmatic dimensions of the constructions. The grounds for saying that the opposition is privative hold for all examples here. Yet the availability of the minus interpretation for the regular possession construction, the implicature that "speaker is avoiding A", must be calculated for each utterance occasion. In other words, the frame that will determine whether this privative opposition is active includes both the circumstances being described and the current context of utterance.[5]

In general, linguistic objects in the marked pole of a privative opposition will have characteristic sorts of conditions on their preferred environments of use. Their social history as expressions, as it were, will form the background or frame for any inferences that hearers will draw. Grammatical morphemes will differ from lexemes, and from clausal constructions, in their characteristic framing conditions. Nevertheless, when implicature is brought to bear as an explanatory device at any level of grammatical analysis, a heterogenous and rich set of conditioning factors will likely require our consideration.

Notes

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1 In Jakobson's words: "...one of two mutually opposite grammatical categories is "marked" while the other is "unmarked". The general meaning of a marked category states the presence of a certain (whether positive or negative) property A; the general meaning of the corresponding unmarked category states nothing about the presence of A, and is used chiefly, but not exclusively, to indicate the absence of A. The unmarked term is always the negative of the marked term, but on the level of general meaning the opposition of the two contradictories may be interpreted as "statements of A" *vs.* "no statement of A", whereas on the level of "narrowed", nuclear meanings, we encounter the opposition "statement of A" *vs.* "statement of non-A." (Jakobson 1957, p. 136).

Waugh (1982) explains the notion in the following way: "...in paired grammatical categories there exists the same type of asymmetry between correlated elements, with one of the elements conceived of as endowed with a mark and the other conceived of as nonendowed with that same mark...the marked term necessarily conveys a more narrowly specified and delimited conceptual item than the unmarked. As a consequence, the marked element signals a certain grammatical concept that the unmarked leaves unsignaled....[e.g.] in most European languages (e.g., English), with the grammatical distinction past tense ~ present tense, the marked past tense specifies 'past time' [footnote omitted] (time that is past with respect to the speech situation); the unmarked present tense specifies neither 'past time' nor 'present time', nor does it deny 'past time', if we take into account the full range of its usage... *two and two are four, I teach at Cornell University*....the opposition is between the presence of *x* [the mark] and the nonnecessary presence (presence or absence or even nonpertinence) of *x*" (Waugh 1982, p. 301).

2 Horn, in a wonderfully varied survey of lexical and sentence semantic privative oppositions (1984) suggests that this cannot be the case.

3 For a discussion of "grammatical construction" see Fillmore, Kay and O'Connor 1988. For current purposes the term "construction" may be understood according to the usage suggested in traditional grammars: a structure that may have idiosyncratic syntactic, semantic and pragmatic properties. For a discussion of the grammatical status of this particular construction in Northern Pomo, see O'Connor 1992 and to appear.

4 This suggestion is in accord with other politeness phenomena observed in association with other grammatical subsystems of Northern Pomo, particularly case-marking and long-distance reflexives. See O'Connor 1992 for further discussion.

5 It also includes syntactic factors associated with constraints on the PR construction. As has been observed for other languages with PR, only possessors found within absolutive arguments (roughly, subjects of intransitives and objects of transitives) can be 'raised'. Thus the privative opposition is available only in certain syntactic environments.

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Unattached NPs in English Conversation*

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1. Introduction

A number of recent studies have confirmed that an understanding of syntax depends in large part on an understanding of its role in the interactional settings in which language is used.[1] In line with these studies, we have been working towards a way of integrating syntax and interaction. In a recent paper (Ono and Thompson to appear), we have proposed a model of syntax based on conversation, the most ordinary and mundane form of human language. We suggest there that, while the syntax of a language may be constantly being shaped by cognitive and interactional factors, we still need to recognize a relatively stable aspect of grammar. Following Langacker 1987, 1991, we show that the syntax one finds in conversational data can be accounted for by template-like syntactic schemas, or prototypes. We also demonstrate with a number of striking examples from English conversations that the realization of these relatively stable schemas interacts second-by-second with cognitive and interactional factors.

Since our conclusions could have been reached only by examining actual conversational data, we have also demonstrated the value of studying conversation if our goal is to understand and eventually be able to provide representations of grammatical mechanisms and the way in which they are called into action in human interaction. Our research thus shows that an understanding of how syntax works might depend at least partially on an account of how social interaction works.

The present paper represents one further step toward the goal of integrating syntax and interaction. By discussing the syntactic, semantic, pragmatic, as well as prosodic characteristics of a type of grammatical construction which we have found in our conversational database, we aim to arrive at a deeper understanding of the nature of syntax, and the way syntactic resources are called into play in conversational interaction. In particular, we seek to understand a small piece of English syntax, namely noun phrases which are not in any grammatical relation with any predicate, what we are calling 'unattached NPs'.

2. Transcription and database

Before we look at some examples, we should comment on our transcription system and our database. The transcription system we are using is that of Du Bois et al. 1993 with minor modifications. This system takes an intonation unit (roughly a single intonation contour, but see Chafe 1987, 1992, 1993, 1994, Du Bois 1991, Du Bois et al. 1993, and Du Bois and Schuetze-Coburn 1993 for discussion) as a basic unit of spoken language, so each line represents one intonation unit. Each line ends with a punctuation mark indicating

the shape of the intonation contour: a comma indicates a continuing contour, a period indicates a final contour, and a question mark indicates an appeal contour. Other transcription conventions seen in the examples are glossed in the chart in the appendix.

Our database consists of eight American English conversational extracts, each between 5 and 15 minutes long. All the conversations were among people who knew each other well and involved between two and five participants, and all have been transcribed by trained transcribers in conjunction with the Santa Barbara Corpus of Spoken American English. We have found 101 unattached NPs in this database. Each of our unattached NPs is at least one intonation unit long; some take two intonation units.

3. Examples of unattached NPs[2]

Unattached NPs in our conversational English database fall into roughly two major types, according to the conversational role they are playing. There is a minority which function in the negotiation of referents which will be tracked in the ensuing discourse. We call these 'referential'.

The majority of unattached NPs in these English data, however, perform social actions as the following:

(1) Social actions performed by the majority of unattached NPs:

characterizing	assessing
ascribing	identifying
labeling	classifying
summarizing	encapsulating
recapitulating	specifying

a situation or a referent.

Our cover term for these various interactional functions will be 'predicating'; in other words, what the unattached NPs in this second group do is something like what stative predicates do, not what NPs typically do in English. For example, in (2),

(2) assessing with predicate (Goodwin and Goodwin 1987, 1992):

N: Jeff made an asparagus pie
--> it was s:::so goo:d

we can see N using a predicate adjective construction to assess the asparagus pie. Predicate nominals are another kind of stative predicate which has the same sorts of 'predicating' functions. Our claim is, then, that the majority of our unattached NPs function in a similar way to perform the interactional predicating functions

listed in (1).

In this paper we will focus on examples of this second type and present arguments to convince you that they are indeed doing this predicating kind of work.

Before proceeding to our claim, let's look at some examples of each of these two types of unattached NPs. First, consider (3):

(3) Afrika 5

```
--> 1 A: and this la=dy,
    2      ... (H) nobody knows yet why.
    3      and most of us think,
    4      she probably fainted.
    5      ... but she fell,
```

The NP at the arrow, *this lady*, cannot itself be associated with any predicate in the context, although of course its referent is the same as the referents of *she* in lines 4 and 5. This is the type of unattached NP which in syntactic discussions has been referred to under headings such as 'topicalization' or 'left-dislocation', but which has more recently come to be explained in terms of its function of negotiating the identification of a referent (see, e.g, Ashby 1988, Geluykens 1987, 1988, 1992, Keenan and Schieffelin 1976a, b, Kim 1992, Ochs 1983, Ochs and Schieffelin 1983, Tao 1992, 1993).

Here are further examples of this referential type:

(4) Cuz 18

```
--> 1 A: this party I went to Friday night,
    2      where Jane was jamming on that harmonica?
    3      that was absolute- --
    4      well first of all,
    5      it's %paddlers.
```

(5) Farm 3

```
    A: ...() (TSK) then one afternoon,
       ...() this van pulls in there,
    B: .. [yeah,
       a white van]?
    A:     [Jeannie wasn't home].
       .. yeah.
-->    ...() and this guy,
       .. he went,
       .. and he <X knew X> .. Smokey,
       .. an=d you know he knew what was going on,
       .. and he worked around there in the yard,
       and I knew that%,
       ... he had spent some time around there.
```

(6) Cuz 3 (talking about a car radio which had been stolen)

```
--> A: Franklin's radio=,
       with --
       i- it was bro=ken,
       we were going to s-=--
       take it out and send it back to the factory,
       to get a new factory,
       .. (H) radio,
       we never got a chance,
```

In each of these instances, the unattached NP is being used as part of the process of establishing or tracking a discourse referent.

Now consider an example of the other type, the type we are calling 'predicating':

(7) Car 12

```
    1  D: right down the street,
    2       .. they have the Dodge dealer.
    3  G: ... oh they have the% .. d --
    4       ... Jack Ellis?
    5       ...() no.
    6  D: ...() Pete Ellis.
    7  G: ... Pete Ellis.
    8  D: ... yeah.
    9       ...() yeah,
    10      it's right down the street,
    11      ...() see so um --
--> 12      ...() nothing to be ashamed of,
    13      I'm- I'm a professional salesman.
    14 G: ... % yeah.
```

D and G are talking about D's new profession as a car salesman. Lines 1 - 10 are a digression about where Dodges are sold in the neighborhood, but in lines 11 and 12, after two long pauses, D returns to the topic of his profession; in line 12 he characterizes the situation with *nothing to be ashamed of.*

Here are some further examples of predicating unattached NPs.

(8) Dinner 1

```
A: ...() I feel really wei=rd being in California,
   .. I can tell you that.
S: ... really?
A: ... you're a native,
   ...() but,
   .. when you come from Washington,
   ...() and Seattle,
B: ... [by way of Georgia],
```

```
    A:      [XXXX] --
-->     .. all these problems,
        ... yeah,
        I was in Seattle though for a lo=ng time.
```

Here A characterizes the situation resulting in his moving to California with *all these problems.*

```
(9)  Cuz 7

    A: (H) .. they all live down like in Del Mar?
-->     ...() (SWALLOW) (TSK) w- super ritzy area.
```

In (9), A characterizes the place where 'they' live with the unattached NP *super ritzy area.*

```
(10)  Car 1

     G: ...() so,
-->     .. cold start regulator,
        .. is [that it]?
     D:       [oh,
        .. man],
        I just had one put in.
-->     .. two hundred bucks.
        .. [for that].
     G:    [o=h],
        fuck.
```

In (10), at the first arrow, G, overhearing D's telephone call, proposes a candidate characterization of what D's car problem is. At the second arrow, D's *two hundred bucks* characterizes the impact on him of his own new cold start regulator.

```
(11)  Cuz 11

     A: @@@ @so @she wants to [go out on the balcony],
     L:                       [(H)]
     A: I grab her again,
        [and I go],
     L: [(Hx)]
--> A: (H) no kids on the balcony.
```

In (11), A specifies the situation which A wants to impose on the child with the unattached NP at the arrow.[3]

```
(12)  Car 8  (talking about the type of customers D has in his car
sales business)
```

```
D: .. basically they're .. Caucasians.
    G: .. yeah,
       it% doesn't seem like uh --
       .. uh,
       ... you know,
       .. T.J.'s,
       .. @N buy% ... Chryslers.
    D: no.
       .. [no.
       we're talking --
       .. people that are making] th --
    G:    [@@@@@@@@@@ (H) (H)]
    D: maybe over thirty thousand a year.
    G: .. [yeah],
    D:    [in the] thirty,
       .. thirty-five thousan=d --
--> G: (0) yups,
       .. and <% u=h %>,
       [uh%],
    D: [exactly].
```

At the arrow, G's unattached NP *yups* (= yuppies) is a collaborative restatement of the type of customers D has said he has, and is ratified as such by D's *exactly*.

In each of these instances, the unattached NP serves in one of the ways listed in (1), to characterize, label, identify, etc. a referent or situation, and not to establish or track a referent.

4. Claim

Of these two types of unattached NPs, as mentioned above, the first one has been discussed at some length in the literature, either in terms of 'topic' or 'left-dislocation' constructions, or in terms of referent-introduction. What is striking to us is that it is the second type which predominates in the data; it is thus the second type upon which we wish to focus in this paper.

This second type of unattached NP, as illustrated in (7), functions consistently in the ways we listed above in (1), to characterize, ascribe, assess, identify, label, or classify a situation or referent. The claim, then, which we will argue for in this paper is that given in (13):

(13) Claim: In conversational English, there is a substantial number of unattached NPs. Of these, a minority (20%) function to negotiate discourse referents. But the majority (fully 80%) function not in discourse referential roles but assume a function similar to predicates. We will distinguish these by referring to the first type as 'referential' and the second type as 'predicating'.

There are three interesting points about this predicating function for

unattached NPs. First, compared to the referential type, the predicating type has, as far as we know, essentially not been noticed before. An important exception is Helasvuo to appear, which identifies a similar function for unattached NPs in Finnish conversation.[4]

Second, this predicating function is not the function that NPs typically have in discourse. It has been argued that the primary function of NPs as a grammatical resource is a 'referential' one, to track referents in the discourse (Hopper and Thompson 1984). Indeed, an examination of our English conversational data shows that most of the NPs that function as *arguments* do in fact serve referential roles, introducing and tracking referents, as expected. But when used BY THEMSELVES, the majority of unattached NPs, about 80% in our database, appear to be playing a predicating role.

We are claiming, in other words, that these two types of unattached NPs function differently in conversational interaction. While the referential unattached NPs are used by speakers in the service of establishing referents, the predicating NPs are typically used to summarize, assess, characterize, label, encapsulate, or identify a situation or referent. Thus, as shown in (3) - (6), each of the referential unattached NPs, *this lady*, *this party I went to Friday night*, *this guy*, and *Franklin's radio*, is part of the negotiation of the referent to be discussed in the ensuing conversation. But the predicating unattached NPs typically have a NON-referential function, doing the work of predicates, as listed in (1). Thus, in (9), *super ritzy area* characterizes the place where 'they' live. In (10), *cold start regulator* is a candidate characterization of D's car problem which was overheard in the preceding telephone conversation. The third point we wish to emphasize about these predicating unattached NPs is that they are NOT best analyzed as instances of ellipsis. We ourselves wondered whether they were somehow truncated predicate nominals, or even whether they could be thought of in terms of an ellipted 'light verb'. But two arguments convinced us that this wouldn't work.

First, the range and variety of the set of predicating unattached NPs, that is, those serving one of the predicating functions listed in (1) above, shows that no single or uniform fully specified predicate could account for all of them. In fact, if one tries to relate our predicating unattached NPs to some fully specified predicate, each one we have seen so far takes a different predicate, as illustrated in (14):

(14) a. **it's** nothing to be ashamed of
OR
there's nothing to be ashamed of
OR
I have nothing to be ashamed of

b. **we have** people who are making thirty thousand a year
OR
they are people who are making thirty thousand a year

c. **it's the** cold start regulator

d. **it cost** two hundred bucks
OR
I paid two hundred bucks
e. **there can be** no kids on the balcony
OR
no kids **allowed** on the balcony
f. **they are** yups
OR
it's (mostly) yups
OR
you mean yups

etc.

Further, for many of them, as seen in (14), we can't tell which of several predicates we should postulate for a given unattached NP. This indeterminacy strongly suggests the inappropriateness of an analysis which claims that something has been 'deleted' or 'ellipted'.

Second, and just as important, we claim that there is a crucial interactional difference between using a fully specified clausal predicate and using a predicating unattached NP. In other words, speakers use predicating unattached NPs where specifying a full predication is inappropriate. A full demonstration of this point would take us beyond our page limit, but let's consider one example:

(15) Car 6

D: I'm not eating a lot of fattening foods or anything,
.. and uh=,
--> G: .. no carnitas,
@@@@@@ [@]
D: [no I] have them every now and then,

In this example, at the arrow, G could have said something like *you're eating no carnitas*, but this clause sounds strange in this context. We would say something more like *you're not eating any carnitas*. Not only are the NP and clausal versions syntactically, semantically, and pragmatically different, but the negative unattached NP in fact does the job and allows G to avoid taking the floor with a concise short and to-the-point predicating NP.

Similarly, if we go back to example (11), we can see that no clausal version of the unattached NP *no kids on the balcony* would have the same meaning or pragmatic force as the unattached NP does; in this context it has the force of a strong prohibition. Or in (12), when G says *yups*, this is not the same as if he had said *they are yups*, since what G does say, *yups*, is a candidate characterization which he proposes to check his understanding, but a clause like *They are yups* is pragmatically more like an assertion.

Our claim, then, is that these predicating NPs have a life of their own in interaction; they are not 'fragments' and cannot be thought of as related in any

useful way to other kinds of grammatical construction types.

In sum, in terms of their role in the conversation, these two types of unattached NPs are quite different: the referential unattached NPs consistently play a role in establishing or tracking referents, while the predicating unattached NPs serve to label, assess, identify, encapsulate, or recapitulate a previous referent or situation.

5. Arguments

In what follows we will briefly present six arguments in favor of this claim.

Argument 1: Prosody. The functional difference we are proposing is reflected in a prosodic skewing. As you can see in Table 1, the referential unattached NPs universally have continuing intonation contours. In (6), for example, *Franklin's radio* has a continuing intonation contour, signalled by the comma. The predicating unattached NPs, on the other hand, often (70% of the time) have a final intonation contour, as you can see in (9), where the Predicating NP *super ritzy area* has a final intonation contour, as signalled by the period. These prosodic facts support our claim that unattached NPs are used in two strikingly different ways in English conversation.[5]

TABLE 1: REFERENTIAL AND PREDICATING UNATTACHED NPs WITH FINAL AND CONTINUING INTONATION CONTOURS

	final	continuing
Ref.	0 (0%)	20 (100%)
Pred.	56 (70%)	24 (30%)

Argument 2: Form. There is also a striking difference between the form of the referential and the predicating NPs. As shown in Table 2, the referential NPs are 100% fully specified NPs, either proper nouns or NPs with such determiners or genitive modifiers. For example, if we look at (3) - (6) again, we see that (3) - (5) contain the demonstrative *this* and (6) has a genitive modifier *Franklin's radio.* The predicating NPs, on the other hand, 65% of the time are 'bare', that is, contain no determiners, or contain quantifiers which neutralize the possibility of other NP determiners, just like predicate nominals. So, for example, in (10), we find *cold start regulator* in 'bare' form, without any determiners.

TABLE 2: REFERENTIAL AND PREDICATING UNATTACHED NPs WHICH ARE FULLY SPECIFIED VS. BARE

	fully specified	bare
Ref.	20 (100%)	0 (0%)
Pred.	28 (35%)	52 (65%)

This is consonant with the claim made in Hopper and Thompson 1984:710:

(16) To the extent that a linguistic form is carrying out this prototypical function [to introduce participants and 'props' and deploy them in the discourse], it will be coded as N, and will manifest the full possible range of nominal trappings conventional in the language. Forms which fail in some way to refer to concrete, deployable entities will typically lack some or all of these trappings.

This morpho-syntactic difference further supports our claim that unattached NPs perform at least these two different functions in discourse.

Argument 3: Proper Nouns and Pronouns. Given the referential vs. predicating distinction we have been arguing for, we would expect that there would be no occurrences of the most highly referential NPs, namely proper nouns or pronouns, doing predicating work. And indeed, in our entire database, of the more than 80 predicating NPs, we found only a handful which have the form of a proper noun or pronoun. Because the expected prediction does not hold 100% of the time in our data, however, it is worth examining one such case to see how it can be that such NPs are performing a predicating function. Consider (17):

(17) Cuz 27 (talking about V's work situation)

```
    L: who does he work with [now].
    A:                       [(H)]
       ... [Kenny].
    L:     [Rosen]tha[l].
    A:               [Ke-]
       .. no.
       .. uh well,
       [yeah.
    L: [(H=)]
    A: Rosenthal's down the] hall,
       (H) and <X then it's X> --
       Kenny's his assistant,
    L: (SWALLOW)
    A: and then .. they don't have the third editor.
       ...() (TSK) but it's so ni=ce.
--> L: .. him and Ken[ny].
    A:              [(H)=[=)]
    L:                   [essentially].
```

The compound NP *him and Kenny* at the arrow is not being mentioned here to track these referents, or to refer to them as people, but to characterize the situation with the two of them working together.

Argument 4: Process of Interpretation. We have claimed that the referential unattached NPs are used for referential purposes; as can be seen from the examples in (3) - (6), these referential unattached NPs are interpreted in terms of what FOLLOWS them, which is typically a clause or predicate with which they can be associated and in terms of which they can be interpreted. These referential NPs could thus be said to be 'forward-looking'. The predicating unattached NPs, on the other hand, are interpreted in terms of what PRECEDES them; that is, they offer a characterization, ascription, classification, or assessment of situation or referent inferable from preceding talk. The predicating NPs could be said to be 'backward-looking', as summarized in (18):

(18) - Referential: 'forward-looking'

- Predicating: 'backward-looking'

Argument 5: Sequential position with respect to turns. These facts regarding the forward-looking vs. backward-looking nature of these two types of unattached NPs are also reflected in their position with respect to turns (as suggested in Ford and Thompson to appear). As shown in (19), the referential unattached NPs never come at the end of a turn, except when the turn is broken off for some interactional reason. This is clearly related to their function in negotiating referents to be tracked in the ensuing conversation. The predicating NPs, on the other hand, often come at the ends of turns, or are followed by a discourse marker which ends a turn, as the NP *cold start regulator* in (10) shows.

(19) - Referential: never occur at turn end

- Predicating: tend to occur at turn end

Further support for this distinction shown in (19) can be seen in (20), the fact that the predicating NPs are found in a type of sequence that the referential NPs are never found in. Namely, predicating NPs, with their encapsulating, summarizing functions, can be used as a type of lexical 'backchannel' device, but we found no referential NPs used this way.

(20) - Referential: never used as 'backchannel'

- Predicating: can be used as 'backchannel'

Examples can be seen in (21), (22).

(21) Lunch 5 (talking about C's kidney infection)

M: ...() (H) and she's not ...() (H) going to the bathroom,
as often as she should,
even though she's drinking gallons of water,

```
R: ...() she's going to get fat.
       .. if she does that.
--> L: @N water [balloon].
   M:          [no],
      she's going to get bloated.
```

L's NP at the arrow, *water balloon*, characterizes what C will be like if she keeps drinking too much water. This NP is used like a backchannel token; we might suggest that, since she isn't making a floor-taking move, a predicating unattached NP is even more appropriate than a full clause: partly because of its phonologically small size, it can do characterizing work without taking a full turn.

(22) Africa 3

```
   A: .. they got out,
      of the Land Rove%r,
      which wasn't [a very] .. (H) smart thing to do.
--> B:               [first mistake].
```

In (22), B's NP at the arrow, *first mistake*, is again like a backchannel token, characterizing and assessing the getting out of the Land Rover. It is 'sneaked in' in overlap with A's talk SO AS not to take the floor. Again, the non-floor-taking nature of this conversational contribution makes it especially appropriate to use just an NP rather than a full clause.

When G says *yups* in (12), a similar 'backchannel' function can be seen.

We suggest, then, that this turn-final tendency of unattached predicating NPs is motivated by the predicating work they do - the interactional moves listed in (1) are the sorts of moves that frequently serve to yield the floor to another speaker.

Argument 6: Independence from clause grammar. Our sixth argument has to do with the ways in which these two types of unattached NPs are 'outside' the grammar. Referential unattached NPs, as we just noted, typically depend on a following predication for their interpretation. They have often been described as 'outside the clause', but they are pragmatically bound up with clause grammar to some extent. Thus, to go back to (4), the referent of the unattached NP *this party I went to Friday night* is mentioned again in line 3 as *that*, which is an argument of the predication *was absolute--*. This predication is broken off before being finished, but enough has been said to make it clear that it was begun as a predication in terms of which the NP in line 1 would be interpreted.

A charming example from one of our conversations supports this argument and reveals the extent to which speakers may be consciously aware of the relationship between a referential unattached NP and a following predication:

(23) Lam 10 (begins discussion of a new topic)

```
    M: ...() those two top ma=sks,
       .. there.
    H: ...() yep,
    J: @@@
--> H: [we need a verb].
    M: [I guess the] [ones below are women],
    P:               [@@@@@]
    J:               [@@@(H)]
    M: is that why they look so different,
```

In this example, M produces an unattached NP in the first line, without immediately providing a predication. After a long pause (signalled by '...( )' in line 3), H says 'yep', acknowledging M's candidate referent, and then at the arrow, overtly comments on the fact that no predication has been provided. Overlapping with this comment, M then provides a predication which could be interpreted as the predication whose absence H had commented on.

In contrast, the predicating type of unattached NP seems to have nothing to do with clause GRAMMAR. Predicating NPs are neither grammatical predicates nor are they arguments of any grammatical predicates. For example, consider (10) again. Prior to this example, G has been listening to D talking on the phone about a problem with his car. When he hangs up, G says *cold start regulator, is that it?*, inferring from D's part of the telephone call that the problem has to do with the cold start regulator. His question asks D to confirm that the car problem can be characterized as one involving the cold start regulator. But this is very different from claiming that that NP is the predicate of some argument. So we are suggesting that these predicating unattached NPs are not predicates in a grammatical sense, but that they are functionally doing predicating work.

We hope the six arguments which we have presented above have demonstrated that there are two kinds of unattached NPs, each of which is characterized by its own discourse function: referential and predicating. Before closing this paper, we would like to discuss one more example which can be taken to further support our claim.

6. Predicating NPs which serve to establish referents

Our database contains a few predicating unattached NPs which also seem to play a role in establishing referents. Consider our favorite example:

(24) Farm 1 (talking about painting the house)

```
    A: I thought you were going to spray it.
--> B: .. oh that gutless ... sprayer.
       it --
       ...() the wind blows,
       .. and heck it doesn't --
```

```
   .. it just [blows it] away.
A:            [o=h]?
B: ...() that sprayer's gutless.
```

Here at the arrow, the fully specified NP *that gutless sprayer* epithetically characterizes the situation that explains why the house painting isn't being done by spraying, and can thus be considered a predicating unattached NP. But at the same time, it is referential, being introduced for possible referent tracking. In fact, this NP is referred to twice again in this extract, by the *it* in the very next intonation unit and by *that sprayer* at the end. We suggest that we might think of this as a predicating NP which is also being used in the service of establishing a referent. The existence of such 'bi-functional' unattached NPs, we argue, reinforces our claim that unattached NPs serve these two functions in English - the same two functions can sometimes be observed in the same NP at a given point in a conversational interaction.

7. Conclusions

In sum, in this paper, we have examined a particular syntactic phenomenon, namely unattached NPs, and we have argued that there are two primary interactional functions that they can be seen to have in conversation: a referential function and a predicating function. We have further argued that predicating NPs accomplish the interactional work of characterizing, assessing, ascribing, identifying, labeling, classifying, summarizing, encapsulating, recapitulating, or specifying but are neither grammatical predicates themselves nor are they related to grammatical predications.

In a broader perspective, we have tried to show in this paper that insight into the way syntax works can be gained by considering the way in which syntactic resources are brought into play in conversational interaction.

NOTES

*We wish to thank John Du Bois for his untiring work in bringing the Santa Barbara Corpus of Spoken American English to fruition. We are also grateful to him and to Wallace Chafe, Patricia Clancy, Susanna Cumming, Carol Genetti, Paul Kay, Gene Lerner, Knud Lambrecht, Marianne Mithun, Danae Paolino, R. McMillan Thompson, and the participants of the Language, Interaction, and Social Organization seminar at UCSB for helpful comments on an earlier version of this paper. We take responsibility for the ways in which we have chosen to make use of these comments. Authorship is shared jointly.

1. For a selection of relevant references, readers are referred to Ono and Thompson to appear.

2. For the purposes of this discussion, we are not including the following types of NPs, interesting though they may be:

- vocatives
- answers to questions where the argument-predicate relation is clear
- discourse markers such as *or something* which have the form of NPs
- NPs which clearly serve as repairs

3. Many people who have heard this paper delivered as a talk have objected to this example, saying that *no kids on the balcony* seems to be grammaticized as a kind of prohibitive quote, as if on a sign. We agree, but, since it is an unattached NP by our criteria, we see no reason to remove it from our database. On the contrary, we take its grammaticized use as a prohibition as supporting our claim that predicating NPs have a life of their own apart from any clause structure (see below).

4. In addition, there is one other mention of unattached NPs that we are aware of in the literature: this is in a short list in Curme 1931:2 of a single word conveying our meaning and constituting 'a complete sentence': *Glass. Handle with care.* We imagine a written, rather than a spoken, context for the unattached NP *glass* (e.g., on the outside of a box), but it is easily interpreted as an example of a predicating unattached NP, serving to IDENTIFY the contents of the box.

5. Some colleagues have suggested that this is prima facie evidence that the predicating unattached NPs are directly related to clauses, since these too would presumably have final intonation contours. But we would counter such a suggestion in two ways:

a) By no means do all clauses have final intonation contours; many have continuing contours.

b) Whatever unattached NPs and clauses may share prosodically we would seek to explain in terms of the shared interactional role of such instances of final intonation contours rather than in terms of unattached NPs being derived from clauses.

Our argument here is in line with the feelings of Curme (1931:2), speaking of the situation in which 'a single word in connection with the proper tone or the situation conveys our meaning and thus constitutes a complete sentence':

> In all such cases, the expression of the thought is perfect. The sentences, though brief, are complete. In the setting in which they appear, not a word, not a syllable is lacking. A learned grammarian with mistaken enthusiasm

might desire to expand these brief utterances into full sentences, but in spite of his grammatical skill the language would be bad, for it would violate good usage. We do not here usually employ full sentences, and for a good reason. Fuller expression would be incomplete expression, for it would mar the thought, take something vital away from it.

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APPENDIX: SYMBOLS FOR DISCOURSE TRANSCRIPTION

from Du Bois et al. (1993)

UNITS	
Intonation unit	{carriage return}
Truncated intonation unit	--
Word	{space}
Truncated word	-
SPEAKERS	
Speaker identity/turn start	:
Speech overlap	[]
TRANSITIONAL CONTINUITY	
Final	.
Continuing	,
Appeal	?
LENGTHENING	=
PAUSE	
Long	...()
Medium	...
Short	..
Latching	(0)
VOCAL NOISES	
Vocal noises	()
Alveolar click	(TSK)
Inhalation	(H)
Exhalation	(Hx)
Glottal stop	%
Laughter	@
Nasal laughter	@N
QUALITY	
Creaky	<% %>
TRANSCRIBER'S PERSPECTIVE	
Uncertain hearing	<X X>
Indecipherable syllable	X

Constraints on the theory of Vowel Height*

Frederick Parkinson
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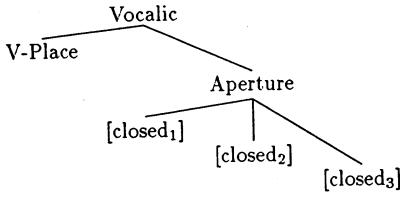
In this paper I propose a model of vowel height features which, while able to account for the full range of attested variation in vowel height phenomena found in the world's languages, is more constrained than existing models which incorrectly predict unattested patterns. This model is constrained in two ways: by the adoption of privative features which limits possible assimilation processes by ruling out partial lowerings, and by imposing an implicational relation on these features which prohibits all but a unique representation for any given vowel height.

Assumptions.

To constrain the model in the ways mentioned above, I propose that the theory of vowel height should include the following assumptions; (a) vowel height features are scalar, (b) vowel height features are privative, (c) vowel height is characterized by the feature [closed], and (d) an implicational relation is imposed on vowel height features.

I additionally assume that all assimilation is accomplished by spreading single elements from a universal feature geometry. Single terminal features may spread, or an organizing node may be spread which allows for constituents of features to assimilate. Following Clements (1989), I also assume that vowel features are organized as in (1) following Clements (1989), where vowel height features form an independent constituent, separate from vowel place. (See also Odden 1991, Clements and Hume to appear, Wiswall 1991, and Goad 1993 who motivate this separation.)

(1) Organization of Vowel Features.



Scalar vs. Multiple Features.

Throughout this paper I will compare the model proposed here to two widely accepted approaches to vowel height, that of Sagey (1986, 1990) and that of Clements (1989). Sagey characterizes vowel height with the features [high] and [low], an approach I refer to as the multiple feature model. Clements argues that the multiple feature account should be abandoned since it cannot account for 'stepwise' harmonies like that found in Nzɛbi.

(2) Nzɛbi (Guthrie 1968) 'stepwise' vowel raising. (Showing front vowels only.)

/-bis-i/	→	[bis]	'to refuse'	/-βoom-i/	→	[βuum]	'to breathe'
/-bet-i/	→	[bit]	'to carry'	/-kolən-i/	→	[kulin]	'to go down'
/-suɛm-i/	→	[suɛm]	'to hide oneself'	/-tɔɔd-i/	→	[tʊʊd]	'to arrive'
/-sal-i/	→	[sɛl]	'to work'	/-βangən-i/	→	[βɛŋgin]	'to promise'

The examples in (2) illustrate Nzɛbi stepwise raising. The addition of the suffix /-i/ to verb stems raises the root vowel one 'step' so that /e/ surfaces as [i], /ɛ/ becomes [e], and /a/ raises to [ɛ].[1]

(3) Nzɛbi assimilation within the Multiple Feature framework (Sagey 1990).

e ə o	→	i u	[–high]	→	[+high]
ɛ ɔ	→	e o	[–ATR]	→	[+ATR]
a	→	ɛ	[+low]	→	[–low]

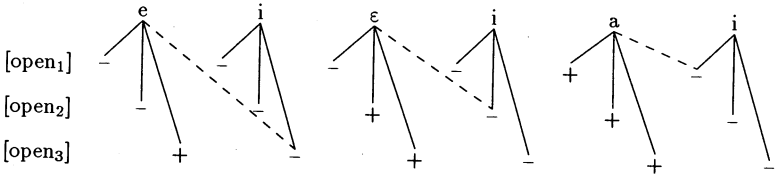
Clements (1991) argues that the multiple feature model should be abandoned since it cannot characterize the changes in (2) as a single process because each target requires that a different feature spread. He proposes that scalar features be adopted to account for Nzɛbi, specifying Nzɛbi vowels as in (4).

(4) Nzɛbi vowel height in Clements (1991:36).

	iu	eəo	ɛɔ	a
$open_1$	–	–	–	+
$open_2$	–	–	+	+
$open_3$	–	+	+	+

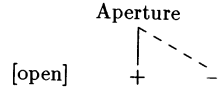
In Clements' analysis, [+] specifications for [open] indicate that a vowel is more open (ie. lower), and [–] specifications characterizes higher vowels. The vowel [a] is specified entirely by [+open], while [i] is characterized exclusively by [–open]. Note that scalar models do not require a stipulation to prohibit a single vowel from bearing the conflicting specifications of [+high] and [+low].[2]

(5) Spreading [–open].



As shown in (5), to account for step raising in Clements' approach, the trigger spreads a specification of [-open] for which the target vowel has a [+open] specification. In this way, *i* spreads its value of [–$open_3$] to /e/ to derive [i], spreads [–$open_2$] to /ɛ/ to create [e], and [–$open_1$] to /a/ which then surfaces as [ɛ]. Clements formalizes this rule as in (6).

(6) Vowel Raising: A Structure Preserving process.



Since multiple feature models cannot account for the Nzɛbi facts, I follow Clements' suggestion, adopting scalar features.

Privative vs. Binary features.

I will now address the question of the privativity of vowel features, suggesting that privative features predict fewer types of assimilations. Binary systems predict that both values of a feature are active cross-linguistically (in essence, creating two features e.g. [+high] and [–high]), while privativity allows reference to only one feature value. For example, since it has been argued that no phonological process refers to [–labial], the privative feature [labial] has been adopted (see Selkirk 1993 and references therein).

I propose that privativity be adopted for height features as well, positing that [closed] characterize vowel height contrasts. Assuming the geometry in (1), two types of vowel height assimilations are possible; complete and partial height harmony. In complete height harmony, the Aperture node spreads to the target so that it is raised or lowered to the same height as the trigger. The adoption of a privative feature [closed] predicts that partial height harmony will *raise* the trigger.

(7) A prediction of this proposal.
All partial height assimilations *raise* the target to a height intermediate to it and the trigger.

These predictions are borne out by attested vowel height phenomena. While complete harmonies may raise or lower their targets, all partial harmonies crucially raise their targets.

Implementation.

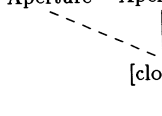
To illustrate how the model I am proposing can be implemented, I will present a brief analysis of three languages exhibiting height assimilations. First is Nzɛbi, which was discussed earlier. Nzɛbi vowels are specified in the model proposed here as in (8) where specifications for [closed] correspond to higher vowels. The lowest vowel, *a*, lacks a specification for [closed].[3] The highest vowels, *i* and *u*, have three specifications for [closed].

(8) Nzɛbi vowel height in privative features.

	i u	e o	ɛɔ	a
$closed_1$	•	•	•	
$closed_2$	•	•		
$closed_3$	•			

Nzɛbi step raising is accomplished by adding a value of [closed] to the target vowel so that /a/ gains a specification for [$closed_1$], /ɛ/, which is specified only for [$closed_1$], gains [$closed_2$], and /e/ assimilates for [$closed_3$]. Such spreading succeeds in raising the target one 'step.' Nzɛbi stepwise Raising is formalized as spreading a value of [closed] for which the target is not specified, as in (9).

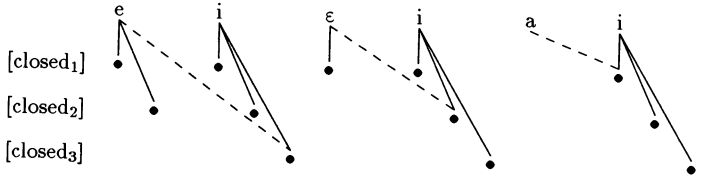
(9) [closed] spreading: spread a value of [closed] for which the target is not specified.



Conditions i. feature filling
ii. structure preserving

A structure filling constraint is imposed which requires that a 'new' specification of [closed] be spread, and not a value for which the target is already specified. The structure preserving constraint prohibits spreading a value of [closed] when the target is not specified for all lower values of [closed].

(10) Nzɛbi Raising.



I will later make the structure preserving constraint superfluous with the imposition of an implicational relation for [closed], but in the meantime, (9) ensures that the trigger *i* spread [closed$_3$] to /e/ since that vowel is already specified for [closed$_1$] and [closed$_2$]. /ɛ/ is specified for [closed$_1$] so the feature filling constraint prevents this feature from spreading, while the structure preserving constraint prevents [closed$_3$] from spreading, leaving only [closed$_2$] to spead. The structure preserving constraint allows only [closed$_1$] to spread to /a/.

Kimatuumbi (Odden 1991, to appear), which has the four phonological heights seen below, provides an example of complete height assimilation.

(11) Kimatuumbi vowels.

	i̱	ʉ̱	i	u	e	o	a
closed$_1$	•	•	•	•	•	•	
closed$_2$	•	•	•	•			
closed$_3$	•	•					

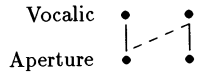
The harmony process exhibited in (12)where the height of the root is copied onto a suffix, is found in some form in many Bantu languages. In this case, the /i̱/ of the passive suffix surfaces with the same height as the stem initial vowel (/ʉ̱/ undergoes glide formation).

(12) The passive suffix /-i̱lʉ̱-/ harmonizes with non-low vowels.

base	passive	gloss
asi̱m-a	asi̱m-i̱lw-a	'borrow'
kʉ̱n-a	kʉ̱n-i̱lw-a	'dance'
twiik-a	twiik-ilw-a	'lift a load'
uug-a	uug-ilw-a	'bathe'
keengeemb-a	keengeemb-elw-a	'uproot tubers'
bool-a	bool-elw-a	'tear bark off a tree'

Since the suffix vowel surfaces with height identical to the root, this process is a complete harmony in which the entire Aperture node is spread. Kimatuumbi Height Harmony is formalized as (13) where Aperture spreads from the root to the suffixal vowel.

(13) Kimatuumbi Harmony with Privative features: Spread Aperture.



Some languages exhibit both complete and partial height harmony. KiKuria[4] (Odden 1992, pc), which has the vowels in (14), is one such example.

(14) KiKuria Vowels.

	iu	eo	ɛɔ	a
closed$_1$	•	•	•	
closed$_2$	•	•		
closed$_3$	•			

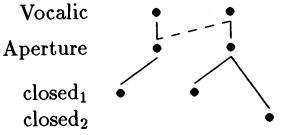
KiKuria has a complete lowering, as seen in the examples in (15). The applicative suffix, /era/, is lowered to [ɛra] after a root with a lower mid vowel.

(15) Complete Assimilation in KiKuria:/e o/ to [ɛ ɔ].

a.	/u-gu-suraaŋg-era/	→	u-gu-suraaŋg-era	'to praise for'
	/o-go-taaŋgat-era/	→	o-go-taaŋgat-era	'to lead for'
	/o-ko-baamb-era/	→	o-ko-baamb-era	'to fit a drum head for'
	/o-ko-hoor-era/	→	o-ko-hoor-era	'to thresh for'
b.	/o-ko-rɔg-era/	→	o-ko-rɔg-ɛra	'to bewitch for'
	/o-ko-gɔɔg-era/	→	o-ko-gɔɔg-ɛra	'to slaughter for'
	/o-ko-sɔk-era/	→	o-go-sɔk-ɛra	'to poke for'
	/o-ko-tɛrɛk-era/	→	o-go-tɛrɛk-ɛra	'to brew for'

Since the height of the target and the trigger are identical as a result of this process, Mid Vowel Lowering must be a complete harmony involving the spreading of the entire Aperture node as in (16).

(16) Mid Vowel Lowering: spread Aperture of [ɛ ɔ] to suffix.



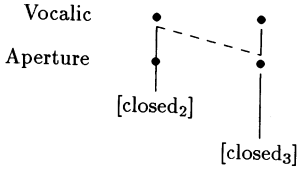
KiKuria also has a complete raising as seen in (17) where a high root vowel raises the prefix from /o/ to [u]. The first set of examples demonstrates that the noun class prefixes and the infinitive marker normally surface with mid vowels. The second group of forms illustrates that these prefixes are raised if the root vowel is high.

(17) Complete Raising: /e o/ to [i u].

/egesaka/	→	egesaka	'stream'
/okogɛɛca/	→	okogɛɛca	'to chop'
/omomura/	→	umumura	'young man'
/omoriisya/	→	umuriisya	'boy'
/eketuumbe/	→	igitumbe	'stool'
/okosiika/	→	ukusiika	'to close a door'
/okohiiŋgira/	→	ukuhiiŋgira	'to shave'

Since the target and trigger surface with identical heights, this process is formalized in (18), where Aperture spreads from the high root vowel to the prefix.

(18) Mid Vowel Raising: prefixal /e o/ completely assimilate for height to [i u].



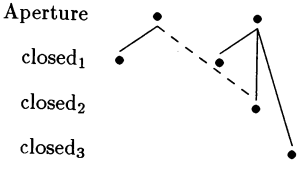
KiKuria also has a partial harmony whereby lower mid vowels in a root are raised to upper mid vowels before a high vowel. In the examples in (19), the trigger is the causative suffix /i/ which undergoes an independent rule of Glide Formation.

(19) Partial Harmony: Raising of ɛ and ɔ.

plain infinitive	causative	gloss
okorɔga	okorogya	'bewitch'
okogɔɔga	okoroogya	'slaughter'
okosɔka	ogosokya	'poke'
okogɛsa	okogesya	'harvest'
okosɛɛnsa	ogoseensya	'winnow'
okotɛɛma	ogoteemya	'hunt mushrooms'

Since the target does not completely assimilate to the trigger, this is a process in which only a single feature is spreading. Therefore, Low Vowel Raising is formalized as in (20) where [closed$_2$] spreads from [i] to /ɛ ɔ/.

(20) Low Vowel Raising: spread [closed] from [i u] to /ɛ ɔ/ in root.



The three languages discussed thus far are consistent with the prediction made in (7), that all partial assimilations are raisings.

Implicational Relation among vowel height features.

To further constrain this model of vowel height, an implicational relation is imposed upon height features as in (21).

(21) An Implicational Model for [closed].

$$[\text{closed}_3] \rightarrow [\text{closed}_2] \rightarrow [\text{closed}_1]$$

Clements (1989) discusses an implicational relation among height features, but abandons it in some cases. Kinande is one such example, where he provides the specifications in (22) which reflect that the parenthesized vowels are derived in Kinande.

(22) Height in Kinande (Clements 1991:44): implication suspended for derived height.

	ɨʉ	i u	(ɐɞ)	e o	(ʌ)	a
open$_1$	–	–	–	–	+	+
open$_2$	–	–	+	+	+	+
open$_3$	–	+	–	+	–	+

Halle (1959) argues that phonological representations should not be burdened with making such distinctions. In addition, suspending the implicational relation to differentiate derived from underlying inventories allows for a proliferation of representations as below, where a four height system may have 54 possible representations.

(23) Six (of the 54) representations of four heights without an implication relation.

	a.				b.				c.			
	iu	eo	ɛɔ	a	iu	eo	ɛɔ	a	iu	eo	ɛɔ	a
closed$_1$	•	•	•		•	•	•		•	•		
closed$_2$	•	•			•				•	•	•	
closed$_3$	•				•	•			•			

	d.				e.				f.			
	iu	eo	ɛɔ	a	iu	eo	ɛɔ	a	iu	eo	ɛɔ	a
closed$_1$	•	•			•				•			
closed$_2$	•				•	•			•	•	•	
closed$_3$	•	•	•		•	•	•		•	•		

With the implicational relation enforced, only the representation in (23.a) is permitted. As seen in (24), multiple feature models are not exempt from this problem since a two height system allows for four representations.

(24) Representations of two heights with Multiple Features.

	iu	a	iu	a	iu	a	iu	a
high	+	–			+			–
low			–	+		+	–	

To limit a height system to a unique representation, I propose that (21) is in effect cross-linguistically.[5]

Cross-height Harmony and Pseudo Cross-height Harmonies.

Clements proposes that his model of vowel height can account for cross-height harmony, providing an analysis of Kinande. In fact, I will show that Kinande exhibits height harmony, but is different from real cross-height harmony systems such as those found in Akan (Lindau 1975) and DhoLuo (Jacobson 1978). Kinande has the vowels presented in (25), following Hyman (1988).[6]

(25) Kinande (Hyman 1988) Vowels.

	ɨʉ	iu	ɐɞ	eo	a
closed$_1$	•	•	•	•	
closed$_2$	•	•	•		
closed$_3$	•	•			
closed$_4$	•				

The examples in (26) illustrate that Kinande exhibits complete height harmony in some suffixes like that discussed above in Kimatuumbi. Here, the applicative suffix harmonizes for height to the root vowel.

(26) Height Harmony in Kinande (cf. Bantu, e.g. Kimatuumbi).

eriɻiɱiɽa	'exterminate for'	eriɦuɣkiɽa	'cook for'
erilimira	'cultivate for'	erihumira	'beat for'
erihekera	'carry for'	eribohera	'tie for'

The examples in (27.a) show that super-high [ɻ ɣ] contrast with [i u], while the forms in (27.b) illustrate that this contrast is neutralized in some suffixal environments such as the perfective.

(27) Kinande Vowel Alternations: [ɻɣ] trigger raising.

a. Contrast between [ɻɣ] and [iu], but not for mid vowels.

eriɻiɱa	'to exterminate'	eriɦuka	'to cook'
erilima	'to cultivate'	erihuma	'to beat'

b. Contrast between high and superhigh is neutralized in some context

mɋtwakiɻiɱiɽe	'we exterminated it'	mɋtwakiɦuɣkiɽe	'we cooked it'
mɋtwakiɻiɱiɽe	'we cultivated it'	mɋtwakiɦuɣmiɽe	'we beat it'

c. [eo] are raised to [ɐɋ] when followed by superhigh suffixes.

eriheka	'to carry'	mɋtwakiɦɐkiɽe	'we carried it'
eriboha	'to tie'	mɋtwakiɓɋhiɽe	'we tied it'

d. Agentive suffix neutralizes high vowels, and raises mid vowels.

omuɻiɱi	'exterminator'	omuɻiɱi	'farmer'
omuɦɐki	'porter'	omuɓɋhi	'one who ties'

The forms in (27.c-d) show that the mid vowels /e o/ are raised to [ɐ ɋ] when followed by the perfective or agentive suffixes. While the fact that /e/ raises to [ɐ] and /i/ raises to [ɻ] resembles a cross height harmony, in fact these assimilations are familiar height assimilations. In a true cross-height assimilation, one feature distinguishes /ɻ ɣ/ from /i u/ as well as /e o/ from /ɛ ɔ/, while another contrasts high vowels and mid vowels.

This is not so in Kinande since the feature that distinguishes /ɻ ɣ/ from /i u/ also distinguishes the high vowels from /e o/. This is seen in the harmony displayed in (26) where the feature that distinguishes /ɻ/ from /i/ forms a constituent with the feature distinguishing /i/ from /e/ since both are assimilating in (26). This model can account for height harmony (like Kinande), but real cross-height harmonies (like Akan) require further study.

Another language which exhibits a partial raising similar to that in Kinande is Gitonga (Odden pc), which has the vowels specified in (28) where [e o] are derived from /ɛ ɔ/.

(28) Gitonga vowels.

	i u	e o	ɛ ɔ	a
closed$_1$	•	•	•	
closed$_2$	•	•		
closed$_3$	•			

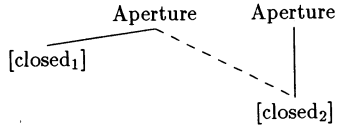
In Gitonga, like Kinande, the high vowels raise mid vowels in the root in various contexts including the locative as shown in (29).

(29) Gitonga: /ɛ ɔ/ are raised by locative suffix.

root	gloss	'In X'	'Where the X are'
sɔmbɔ	clothes	somboni	sombotunu
gilatɔ	shoe	gilatoni	gilatotunu
gipɛtɔ	circle	gipetoni	gipetotunu
ndzɛvɛ	ear	ndzeveni	ndzevetunu

This process raises the root vowel to a height intermediate to it and the triggering high vowel, and so must be a partial harmony. This harmony is formalized as in (30) where the [closed$_2$] of a high vowel spreads to a lower mid vowel, which is any vowel specified only for [closed$_1$].

(30) Gitonga Mid Vowel Raising.



The partial harmonies of Gitonga and Kinande are different only in the number of heights affected by the harmony; Gitonga has one, and Kinande two.

Tswana (Cole 1955) has six vowel heights and exhibits the partial harmony seen in Kinande and Gitonga. The two heights [i u] and [e o] are derived in Tswana. Cole provides a detailed phonetic characterization of the vowels which have the phonological specifications in (31).

(31) Specification of Tswana Vowel height.

	ɨɥ	iu	ɪʊ	eo	ɛɔ	a
closed$_1$	•	•	•	•	•	
closed$_2$	•	•	•	•		
closed$_3$	•	•	•			
closed$_4$	•	•				
closed$_5$	•					

The agentive suffix /-ɨ/ raises root vowels as seen in the first set of examples in (32). The second group illustrates the same raising in the locative, which may be derived from historical **nɨ*.

(32) Raising ɪ ʊ before agentive [ɨ].

lɪɸa	'to pay'	muliɸɨ	'payer'
rʊka	'to sew'	murukɨ	'tailor'
tʃʊma	'hunt'	mutʃumɨ	'hunter'
mʊsɪpɪlɪ	'journey'	musipiliŋ	*locative*
bʊtlh ʊkʊ	'pain, bitterness'	butlhukuŋ	*locative*
sɪmɪ	'whip'	simiŋ	*locative*
mʊthʊ	'person'	muthuŋ	*locative*
kʊkʊ	'fowl'	kukuŋ	*locative*

The mid vowels [ɛ ɔ] also are raised before high vowels as seen in the examples in (33).

(33) Raising /ɛ ɔ/

rɛka	'to buy'	mʊrekị	'buyer'
lɔa	'bewitch'	mʊloị	'witch'
bɔla	'rot'	sɪbɔɹɣ	'rotten thing'
ɛma	'stand'	kɪemɪ	'I am standing'
bɔna	'see'	xakɪbonɪ	'I do not see'
ɛpa	'dig'	epʊlʊla	'dig out'
bɔɸa	'tie'	boɸʊlʊla	'untie'

This process is stated as spreading [closed] from the highest vowel to any other vowel specified for [closed] (which excludes /a/). There are a number of reasons to exclude the possibility that this process is a matter of phonetic implementation, including the existence of forms like those in (34).

(34) Foreign words as exceptions.

sɪkolo, sikole, sikwele > Africaans *skool*

dʒoko, dʒokwe > English *yoke*

boro > Africaans *boor* 'drill'

These examples illustrate that the higher, 'derived' vowels do exist in loanwords independently of a trigger suggesting that these allophones are not restricted to environments in which the tongue is raised in anticipation of a following high vowel target. This discussion shows that the model proposed here is able to account for even elaborate height inventories like that of Tswana.

Conclusion.

We have seen that the proposal described here constrains the theory of vowel height by assuming that vowel height is characterized by scalar values of the privative feature [closed]. Assuming scalar features allows for a straightforward account of 'stepwise' raisings, such as is found in Nzɛbi, and structurally prohibits the simultaneous specification of [high] and [low] for a single vowel which requires a separate stipulation in other models. Assuming privative features predicts fewer types of partial assimilations, since only one value may spread. Positing that the height feature is [closed] correctly predicts that all partial height assimilations will raise the target vowel. Imposing an implicational relation on values of [closed] limits the characterization of a vowel system to a unique representation, and eliminates the need to separately invoke a structure preserving constraint.

Notes.

* I owe many thanks to Kevin Cohen, Sussane Gahl, Rebecca Herman, Kathleen Hubbard, Beth Hume, Keith Johnson, Nasiombe Mutonyi, and David Odden whose feedback contributed greatly to this paper. Inconsistencies, errors, etc. are all my own.

1. See Guthrie for motivation of the suffix /-i/ which does not surface phonetically.
2. See Archangeli and Pulleyblank (1994), and Goad (1993) *inter alia* for other means of ruling out *[+high] [+low].
3. While *a* lacks a specification for [closed], it is necessary that it have an Aperture node to allow for complete assimilations to this height.
4. KiKuria exhibits two complete lowerings, a complete raising, and a partial raising. For the interaction of these four processes, see Odden (1992).
5. See Parkinson (1994) for a discussion of why geometric dominance of height features is not tenable.
6. Hyman describes a variety of Kinande that does not crucially differ from that in Valinande (1984) and Clements (1991).

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Agency, Inversion, and Thematic Alignment in Ojibwe

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1. Preliminaries.[1] In this paper I will explore some problems arising at the syntax-semantics interface in the Ottawa dialect of Ojibwe, an Algonquian language of the Great Lakes area. Algonquian languages are well known for having a construction in which the morphology of the verb suggests a thematic alignment reversed from what is expected. This construction is known as an INVERSE. The following examples contrast the morphology of a normally aligned clause in (1a), known to Algonquianists as DIRECT, with that of an inverse in (1b).

(1) (a) *Ngii-waabmaanaanig.* 'We *excl* saw them.'

ni	- *gii*	- *waabam*	- Ø	- *aa*	- *naan*	- *ig*
1	PAST	see	AN STEM	3 AN OBJ	1PL	3PL

(b) *Ngii-waabmignaanig.* 'They saw us *excl*.'

ni	- *gii*	- *waabam*	- Ø	- *igo*	- *naan*	- *ig*
1	PAST	see	AN STEM	INVERSE	1PL	3PL

In the direct clause in (1a), the prefix, *ni-* 'first person', indexes the agent of the clause, as does the first of the two plural suffixes, *-naan* 'first person plural', and the theme is indexed by the suffix immediately following the stem, *-aa* 'third person animate', and by the second plural suffix, *-ig* 'third person plural'. But in the inverse clause in (1b), the prefix, *ni-* 'first person', and the first of the two plural suffixes, *-naan* 'first person plural', index the theme, while the agent is indexed only by the second plural suffix, *-ig* 'third person plural'. The suffix immediately following the stem marks that the clause has this inverse alignment (and, by its allomorphy, that a third person is involved).

1.1 Distribution of inverses. The distribution of inverse morphology in transitive clauses is determined by a combination of two independent kinds of conditions. One class of conditions is related to the fact that in Ojibwe, as in Algonquian languages in general, every verb shows two distinct but synonymous agreement forms whose distribution is determined by conditions of external syntax. One of the agreement forms is called INDEPENDENT, occurring in most simple independent clauses. The other is called CONJUNCT, occurring in most kinds of subordinate clauses, in connection with certain adverbials, and in certain discourse environments. Some examples are given in (2).

(2)

Independent	Conjunct
ngiiwe	*giiweyaanh*
ni - *giiwe*	*giiwe* - *yaanh*
1 go home	go home 1SG-SUBJ
ggiiwe	*giiweyan*
gi - *giiwe*	*giiwe* - *yan*
2 go home	go home 2SG-SUBJ

(2)

giiwewag
giiwe - w - ag
go home 3 3PL

giiwewaad
giiwe - waa - d
go home 3PL 3SUBJ

nwaabmaa
ni - waabam - aa
1 see 3AN OBJ

waabmag
waabam - Ø - ag
see 3AN OBJ 1ERG

wwaabmaan
o - waabam - aa - an
3ERG see 3AN OBJ OBV

waabmaad
waabam - aa - d
see 3AN OBJ 3SUBJ

gwaabam
gi - waabam - i
2 see 1OBJ

waabmiyan
waabm - i - yan
see 1OBJ 2SG-SUBJ

nwaabmig
ni - waabam - igo
1 see INV

waabmid
waabam - i - d
see 1OBJ 3SUBJ

gwaabmin
gi - waabam - ini
2 see INV

waabminaanh
waabam - in - aanh
see 2OBJ 1SG-SUBJ

The second class of conditions determining the distribution of inverses depends on the person and animacy of the core participants. Note that in Algonquian languages there is a two gender system of animate/inanimate. There is a three-part grammaticized agency scale, summarized in (3).

(3) Algonquian Agency Scale (AAS)

Part I: Second person > first person > third person

Part II: Animates > inanimates

Part III: High topic rank animates > low topic rank animates

The choice of direct and inverse clauses is determined by the relative position of the core participants on these hierarchies and the agreement type of the verb. The facts are summarized in (4).

(4)

	independent	conjunct
1st, 2nd person involved	obligatory	direct only
2nd acts on 1st (AAS Part I)	direct	
1st acts on 2nd (AAS Part I)	inverse	
only 3rd person animates involved	optional	optional
determined by relative topic rank (AAS Part II)		
with inanimate involved	obligatory	obligatory
animate acts on inanimate (AAS Part III)	direct	direct
inanimate acts on animate (AAS Part III)	inverse	inverse
inanimate acts on inanimate	ungrammatical	ungrammatical

Most Algonquianists hold that the different clauses of the AAS are part of a single scale (e.g. Rogers, 1976), The fact that Part I is sensitive to verb agreement type and Parts II and III are not constitutes a strong argument that at least Part I is a separate clause.

1.2. The problem. The syntax of clauses containing inverse verb forms is a matter of significant controversy in Algonquian circles. One camp (Rhodes 1976, Perlmutter and Rhodes 1988 (Ojibwe); LeSourd, 1976 (Fox); Jolley, 1982 (Plains Cree)) holds that the surface grammatical relations of inverse clauses like that in (1b) are reversed from those of (1a). The other (Dahlstrom, 1987 (Plains Cree), Anderson, 1977, 1992 (Potawatomi)) holds that the surface grammatical relations are identical in both direct and inverse clauses, and that the difference is only a matter of morphology.

The purpose of this paper is to throw some light on the syntax of inverse clauses in construction grammar terms. I will show that there are four distinct patterns in the alignment of semantic roles with syntax. They are:

Pattern I agent (experiencer) of direct, patient (theme, recipient) of inverse, and patient (theme, recipient) of passive pattern alike, AND
patient (theme, recipient) of direct and agent (experiencer) of inverse pattern alike.

Pattern II agent (experiencer) of direct and agent (experiencer) of inverse pattern alike, AND
patient (theme, recipient) of direct, patient (theme, recipient) of inverse, and patient (theme, recipient) of passive pattern alike.

Pattern III agent (experiencer) of direct, agent (experiencer) of inverse, and patient (theme, recipient) of passive pattern alike, AND
patient (theme, recipient) of direct and patient (theme, recipient) of inverse pattern alike.

Pattern IV agent (experiencer) of direct and patient (theme, recipient) of inverse pattern alike, AND
patient (theme, recipient) of direct and, agent (experiencer) of inverse, and patient (theme, recipient) of passive pattern alike.

The number of syntactic phenomena that manifest each of these patterns is different. In Ottawa, most phenomena uniquely manifest Pattern I, only a few phenomena uniquely manifest Patterns II, III, and IV. There are, however, two phenomena showing a syntactic dialect split. In both splits one dialect has Pattern I and the other Pattern III. Throughout the rest of the paper I will tacitly assume an automatic equivalence of agent and experiencer and of patient, theme, and recipient.[2] Ojibwe, like all Algonquian languages, has very tightly knit syntactic functions, making such an identification relatively uncontroversial.

2. Pattern I. The position I am taking here is that the patterns we find are a matter of syntax which cannot be accounted for merely by elaborate morphological analysis. In this section I will sketch the syntactic phenomena manifesting Pattern I.[3] There are five: 1) a ban on inanimates, 2) control of obviation within a clause, 3) word order, 4) raising and 5) control of obviation in adverbial adjunct clauses.[4] Also, as suggested by example (1) the morphology of verb agreement manifests Pattern I, but since we are interested in syntax we will not count the morphology.

2.1. Inanimate Ergative Ban. Inanimates are banned from certain syntactic positions in transitive clauses. This ban follows Pattern I.

(5) (a) the agent (experiencer) of direct, patient (theme, recipient) of inverse, and patient (theme, recipient) of passive may not be inanimate, AND

(b) the patient (theme, recipient) of direct and agent (experiencer) of inverse may be either animate or inanimate.

Examples of banned inanimates are given in (6). (6a) has an example of a banned agent of a direct clause. In this example, the word *mtig* 'tree' is a member of the small class of notionally inanimate grammatically animates, but it is nonetheless banned from this construction.[5] This shows that however this ban is formulated it cannot depend on the morphology. The synonymous direct form is grammatical, so the ban cannot be simply semantic. (6b) has a parallel banned theme of inverse. But (6c) is perhaps the most interesting. Ojibwe has two distinct passive constructions. One is built on the transitive stem that agrees with animate objects. Let us call it a Type I passive. The other is built on the transitive stem that agrees with inanimate objects. Let us call it a Type II passive. While Type II passives can be freely predicated of both animates and inanimates, Type I passives can only be predicated of animates. (6c) exemplifies this.

(6) (a) **Wgii–miigshkawaan nJohnan mtig.* 'The tree hit John.'

o -	*gii* -	*miigishkaw* -	*aa* -	*an*	*nJohn* -	*an*	*mitigw*
3ERG	PAST	hit the mark	3AN OBJ	OBV	John	OBV	tree

(but OK in inverse: *Wgii-miigshkaagoon mtigoon nJohn.* 'The tree hit John.')

(b) **Wgii–miigshkaagoon nJohnan mtig.* 'John hit the tree.'

o -	*gii* -	*miigishkaw* -	*igo* -	*an*	*nJohn* -	*an*	*mitigw*
3ERG	PAST	hit the mark	INV	OBV	John	OBV	tree

(but OK in direct: *Wgii-miigshkaan mtigoon nJohn.* 'John hit the tree.')

(c) **Gii–miigshkawaa mtig.* 'The tree was hit.'

gii -	*miigishkaw* -	*aa* -	*w*	*mitigw*
PAST	hit the mark	PASS	3SUBJ	tree

(but OK as Type II passive: *Gii-miigshkigaazo mtig.* 'The tree was hit.')

Examples of allowed inanimates are given in (7). (7a) has an example of an allowed patient of a direct clause. This is the grammatical synonym of (6b). (7b) has a parallel allowed agent of inverse and is the grammatical synonym of (6a).

(7) (a) *Wgii–miigshkawaan mtigoon nJohn.* 'John hit the tree.'

o -	*gii* -	*miigishkaw* -	*aa* -	*an*	*mitigw* -	*an*	*nJohn*
3ERG	PAST	hit the mark	3AN OBJ	OBV	tree	OBV	John

(cf. *(6b).)

(b) *Wgii–miigshkaagoon mtigoon nJohn.* 'The tree hit John.'

o -	*gii* -	*miigishkaw* -	*igo* -	*an*	*miigw* -	*an*	*nJohn*
3ERG	PAST	hit the mark	INV	OBV	tree	OBV	John

(cf. *(6a).)

2.2. Clause internal obviation. Within a clause a third person animate obligatorily triggers the overt mark of disjoint reference known as the OBVIATIVE in another third person animate according to Pattern I.

(8) (a) the agent (experiencer) of direct, patient (theme, recipient) of inverse, and patient (theme, recipient) of passive control the obviation of all other arguments, AND

(b) the patient (theme, recipient) of direct and agent (experiencer) of inverse can only control the obviation of secondary objects.

Only animates show explicit marking for obviation. Any noun that is not obviative is called PROXIMATE.

In order to understand the following examples we need to note that Algonquian languages have two distinct kinds of objects, primary objects (= RG 2's) and secondary objects (=RG 3's). Secondary objects are different from indirect objects in that rather than being prototypically animate recipients, they are prototypically inanimate themes of ditransitives. A fuller discussion of the properties of objects in Ojibwe can be found in Rhodes (1991).

Examples of agents of directs controlling the obviation of both the primary object (i.e. the patient/theme/recipient) and secondary objects is given in (9). In all the following examples the overt marking of obviation on the noun is given in boldface for clarity.

(9) (a) agent of direct proximate, theme of direct obviative

Wgii–zaaghaan nmishoomsan nookmis.

o–gii - zaagih-aa-an	*ni–mishoomis–**an***	*n-ookomis*
3ERG–PAST-love–3AN OBJ-OBV	1–grandfather–**OBV**	1–grandmother

'My grandmother loved my grandfather.'

(b) agent of direct proximate, secondary object obviative[6]

Wgii–daawenan semaan nmishoomis.

ni–gii - daawe-n-an	*asemaa–**an***	*ni–mishoomis*
1–PAST-give–N-OBV	tobacco–**OBV**	1–grandfather

'My grandfather sold tobacco.'

An example of a recipient of an inverse controlling the obviation of the agent is given in (10).

(10) patient of inverse proximate, agent of inverse obviative

Wgii–zaaghigoon nmishoomsan nookmis.

o–gii - zaagih-igo-an	*ni–mishoomis–**an***	*n-ookomis*
3ERG–PAST-love–INV-OBV	1–grandfather–**OBV**	1–grandmother

'My grandfather loved my grandmother.'

It is impossible to give an unambiguous example of the recipient of an inverse controlling the obviation of a secondary object, because a third person recipient must be in a clause with a third person agent to form a grammatical inverse. In such a case one cannot tell whether it is the recipient or the agent which is triggering the obviation of the secondary object. But the facts are at least consistent with (8a).

An example of a recipient of a passive controlling the obviation of a secondary object is given in (11).

(11) recipient of passive proximate, secondary object obviative

Gii–miinaa semaan nmishoomis.

ni–gii - miin–aa-w	*asemaa–**an***	*ni–mishoomis*
1-PAST-give–PASS-3	tobacco–**OBV**	1–grandfather

'My grandfather was given tobacco.'

Examples supporting (8b) are given in (12). In (12a) is an example of a recipient of a direct controlling the obviation of a secondary object, and in (12b) is an example of an agent of an inverse controlling the obviation of a secondary object.

(12) (a) recipient of direct proximate, secondary object obviative

Ngii–miinaa semaan nmishoomis.

ni–gii - miin–aa	*asemaa–**an***	*ni–mishoomis*
1–PAST-give–3AN	tobacco–**OBV**	1–grandfather

'I gave my grandfather tobacco.'

(b) agent of inverse proximate, secondary object obviative

Ngii–miinig semaan nmishoomis.

ni–gii - miin–igw	*asemaa–**an***	*ni–mishoomis*
1–PAST-give–INV	tobacco–**OBV**	1–grandfather

'My grandfather gave me tobacco.'

2.3. Neutral word order. Ojibwe, like other Algonquian languages, has what is commonly known as "free" word order. However, closer inspection shows that much of the variability of Ojibwe word order follows from definiteness, (Tomlin and Rhodes (1979 [1992]), Rhodes, 1989). The following examples all contain ditransitive clauses with three NPs, all with definite readings. The relative degree of acceptability of such clauses varies with the word order. The details are complex and the acceptability of a particular order differs depending on the grammatical animacy of the secondary object/theme. But the pattern follows Pattern I, as summarized in (13).

(13) (a) the agent (experiencer) of direct, patient (theme, recipient) of inverse occupy the same slot in the neutral word order, AND

(b) the patient (theme, recipient) of direct and agent (experiencer) of inverse occupy the same slot in the neutral word order.

The data are laid out in (14) through (17), and summarized in (18) where it can be seen that (13) holds true. To facilitate comparison between examples, the roles of (13a), agent of direct and recipient of inverse, are printed in boldface, and the roles of (13b), recipient of direct and the agent of inverse, are underlined.

(14) Order in direct clauses with (grammatically) inanimate secondary objects

(a) *Wgii–shamaan miinan kwe binoojiinyan.* [P theme **agent** recip]
she fed him blueberries woman child

(b) *Wgii–shamaan kwe miinan binoojiinyan.* [P **agent** theme recip]
(c) *?Wgii–shamaan miinan binoojiinyan kwe.* [P theme recip **agent**]
(d) *?Wgii–shamaan binoojiinyan miinan kwe.* [P recip theme **agent**]
(e) *?*Wgii–shamaan binoojiinyan kwe miinan.* [P recip **agent** theme]
(f) **Wgii–shamaan kwe binoojiinyan miinan.* [P **agent** recip theme]

'The woman fed the child the blueberries.'

(15) Order in direct clauses with (grammatically) animate secondary objects

(a) *Wgii–shamaan kwe binoojiinyan mshiimnan.* [P **agent** recip theme]
she fed him woman child apple

(b) *Wgii–shamaan kwe mshiimnan binoojiinyan.* [P **agent** theme recip]
(c) *?Wgii–shamaan binoojiinyan kwe mshiimnan.* [P recip **agent** theme]
(d) *?Wgii–shamaan binoojiinyan mshiimnan kwe.* [P recip theme **agent**]
(e) *?*Wgii–shamaan mshiimnan binoojiinyan kwe.* [P theme recip **agent**]
(f) **Wgii–shamaan mshiimnan kwe binoojiinyan.* [P theme **agent** recip]

'The woman fed the child the apple.'

(16) Order in inverse clauses with (grammatically) inanimate secondary objects

(a) *Wgii–shamgoon miinan binoojiinh kwewan.* [P theme **recip** agent]
she fed him blueberries child woman

(b) *Wgii–shamgoon binoojiinh miinan kwewan.* [P **recip** theme agent]
(c) *?Wgii–shamgoon miinan kwewan binoojiinh.* [P theme agent **recip**]
(d) *?Wgii–shamgoon kwewan miinan binoojiinh.* [P agent theme **recip**]
(e) *?*Wgii–shamgoon kwewan binoojiinh miinan.* [P agent **recip** theme]
(f) **Wgii–shamgoon binoojiinh kwewan miinan.* [P **recip** agent theme]

'The woman fed the child the blueberries.'

(17) Order in inverse clauses with (grammatically) animate secondary objects

(a) *Wgii–shamgoon binoojiinh kwewan mshiimnan.* [P **recip** agent theme]
she fed him child woman apple

(b) *Wgii–shamgoon binoojiinh mshiimnan kwewan.* [P **recip** theme agent]
(c) *?Wgii–shamgoon kwewan binoojiinh mshiimnan.* [P agent **recip** theme]
(d) *?Wgii–shamgoon kwewan mshiimnan binoojiinh.* [P agent theme **recip**]
(e) *?*Wgii–shamgoon mshiimnan kwewan binoojiinh.* [P theme agent **recip**]
(f) **Wgii–shamgoon mshiimnan binoojiinh kwewan.* [P theme **recip** agent]

'The woman fed the child the apple.'

(18) (a) inanimate secondary object

	direct	inverse
(i)	[P theme **agent** recip]	[P theme **recip** agent]
(ii)	[P **agent** theme recip]	[P **recip** theme agent]
(iii)	[P theme recip **agent**]	[P theme agent **recip**]
(iv)	[P recip theme **agent**]	[P agent theme **recip**]
(v)	[P recip **agent** theme]	[P agent **recip** theme]
(vi)	[P **agent** recip theme]	[P **recip** agent theme]

(b) animate secondary object

	direct	inverse
(i)	[P **agent** recip theme]	[P **recip** agent theme]
(ii)	[P **agent** theme recip]	[P **recip** theme agent]
(iii)	[P recip **agent** theme]	[P agent **recip** theme]
(iv)	[P recip theme **agent**]	[P agent theme **recip**]
(v)	[P theme recip **agent**]	[P theme agent **recip**]
(vi)	[P theme **agent** recip]	[P theme **recip** agent]

2.4. Raising. In Ottawa, as in all Algonquian languages certain verbs of mental activity, including *gkendang* "to know", appear in constructions with a copy of a argument of the embedded clause as the primary object of the verb of the matrix clause. Although I am taking the position that such constructions simply exist and are not derived from any more basic structure, let me nonetheless use the transformational terminology of raising to describe them and their parts. Different Algonquian languages impose different conditions on a potentially raised participant. Ottawa is very restrictive. To be raised, an argument must be: 1) animate, 2) a high-ranked discourse topic, and 3) be an instance of the first clause of Pattern I, as in (19a).

(19) (a) the agent (experiencer) of direct, patient (theme, recipient) of inverse, and the patient (theme, recipient) of passive are raisable, AND

(b) the patient (theme, recipient) of direct and agent (experiencer) of inverse are not.

The basic facts summarized in (19) are shown in (20) and (21). In (20a) the agents of the direct verbs in the embedded clauses are raised. In (20b) the patient of an inverse verb is raised as is the patient of the passive in (20c).

(20) (a) agent of direct raised

(i) *Ngikenmaa gii-baashkzok.*

ni	- *gikenim*	- *aa*	*gii*	- *baashkizw*	- *ik*
1	know	3AN OBJ	PAST	shoot	2OBJ-3SUBJ

'I know that he shot you.' (lit. I know him that...)

(ii) *Ggikenmin gii-baashkzwad.*

gi	- *gikenim*	- *ini*	*gii*	- *baashkizw*	- *Ø*	- *ad*
2	know	INV	PAST	shoot	3AN OBJ	2SUBJ

'I know that you shot him.' (lit. I know you that ...)

(20) (a) (iii) *Ngikenmaag$_i$ ninwag$_i$ gii-baashkzwaawaad$_{i\rightarrow j}$ Maagiiyan$_j$.*

ni	*gikenim*	*aa$_i$*	*ag*	*aniniw$_i$*	*ag*
1	know	3AN OBJ	3PL	man$_i$	3PL

gii	*baashkizw*	*aa$_j$*	*waa*	*d$_i$*	*Maagii$_j$*	*an*
PAST	shoot	3AN OBJ	3PL	3SUBJ	Marge$_j$	OBV

'I know that the men shot Marge.' (lit. I know them that ...)

(b) patient of inverse raised

Ngikenmaa$_j$ Maagii$_j$ gii-baashkzogod$_{j\rightarrow i}$ ninwan$_i$.

ni	*gikenim*	*aa$_j$*	*Maagii$_j$*
1	know	3AN OBJ	Marge$_j$

gii	*baashkizw*	*igo*	*d$_j$*	*aniniw$_i$*	*an*
PAST	shoot	INV	3SUBJ	man$_i$	OBV

'I know that the men shot Marge.'

(c) patient of passive raised

Ngikenmaa gii-baashkzond.

ni	*gikenim*	*aa$_i$*	*gii*	*baashkizw*	*ind$_i$*
1	know	3AN OBJ	PAST	shoot	3AN PASS

'I know that he was shot.' (lit. I know him that...)

In contrast the sentences of (21), constructed as parallels to those in (20), are ungrammatical. Those in (21a) show that the patients of direct clauses are unraisable, as are the agents of inverses as shown by (21b).

(21) (a) patient of direct unraisable

(i) **Ggikenmin gii-baashkzok.*

gi	*gikenim*	*ini*	*gii*	*baashkizw*	*ik*
2	know	INV	PAST	shoot	2OBJ-3SUBJ

'I know that he shot you.' (lit. I know you that...) (cf. [20a(i)])

(ii) **Ngikenmaa gii-baashkzwad.*

ni	*gikenim*	*aa*	*gii*	*baashkizw*	*Ø*	*ad*
1	know	3AN OBJ	PAST	shoot	3AN OBJ	2SUBJ

'I know that you shot him.' (lit. I know him that...) (cf. [20a(ii)])

(iii) **Ngikenmaa$_j$ Maagiiyan$_j$ gii-baashkzwaawaad$_{i\rightarrow j}$ ninwag$_i$.*

ni	*gikenim*	*aa$_j$*	*Maagii$_j$*	*an*
1	know	3AN OBJ	Marge$_j$	OBV

gii	*baashkizw*	*aa$_j$*	*waa*	*d$_i$*	*aniniw$_i$*	*ag*
PAST	shoot	3AN OBJ	3PL	3SUBJ	man$_i$	3PL

'I know that the men shot Marge.' (lit. I know her that...) (cf. [20a(iii)])

(21) (b) agent of inverse unraisable

**Ngikenmaag$_i$ ninwan$_i$ gii-baashkzogod$_{i\rightarrow j}$ Maagii$_j$.*

ni	*- gikenim*	*- aa$_i$*	*- ag*	*aniniw$_i$*	*- an*
1	know	3AN OBJ	3PL	man$_i$	OBV

gii	*- baashkizw*	*- igo*	*- d$_j$*	*Maagii$_j$*
PAST	shoot	INV	3SUBJ	Marge$_j$

'I know that the men shot Marge.' (cf. [20b])

2.5. Obviation into adjunct clauses. Only third person animate nominals in the roles of the first clause of Pattern I can trigger OBVIATIVE in the subjects of adjunct clauses. This is summarized in (22).

(22) (a) the agent (experiencer) of direct, patient (theme, recipient) of inverse, and the patient (theme, recipient) of passive can trigger obviation in adjunct clauses, AND

(b) the patient (theme, recipient) of direct and agent (experiencer) of inverse cannot.

Obviation is marked as optional in the following sentences cited in isolation, because Ottawa triggers of cross-clausal obviation must be construed as high-rank discourse topics. Since these sentences can be read either way, the obviation appears to be optional. In (23) both verb forms are direct by virtue of being conjunct (which is triggered by the adverbial particle *mii*, here translated as 'then'[7]). Note that the third person animate recipient in (23a) cannot trigger obviation, but the third person agent in (23b) can.

(23) (a) agent of direct controlling obviation

Mii-sh naagshi(ni)g mii gii-shamid. 'Then in the evening, he fed me.'

naagoshi	*- (ini)*	*- g*	*gii*	*- asham*	*- i*	*- d*
be evening	(OBV)	3 INAN	PAST	feed	1 OBJ	3 SUBJ

(b) patient of inverse controlling obviation

Naagshi(ni)g wgii-bzikaagon doopwin. 'In the evening, the table fell on him.'

naagoshi	*- (ini)*	*- g*	*o*	*- gii*	*- bizikaw*	*- igo*	*- n*
be evening	(OBV)	3 INAN	3ERG	PAST	strike	INV	OBJ

(c) patient of passive controlling obviation

Naagshi(ni)g gii-baashkzwaa. 'Then in the evening, he was shot.'

naagoshi	*- (ini)*	*- g*	*gii*	*- baashkizw*	*- aa*	*- w*
be evening	(OBV)	3 INAN	PAST	shoot	PASS	3 SUBJ

But in contrast to (23b) in the inverse clause in (24b) the third person agent in cannot trigger obviation.

(24) (a) obviation not triggered by recipient of direct

*Naagshi(*ni)g ngii-shamaa.* 'In the evening, I fed him.'

naagoshi	-	(**ini* OBV)	-	*g*	*ni*	-	*gii*	- *asham*	-	*aa*
be evening				3 INAN	1		PAST	see		3 AN OBJ

(b) obviation not triggered by agent of inverse

*Naagshi(*ni)g ngii-shamig.* 'In the evening, he fed me.'

naagoshi	-	(**ini* OBV)	-	*g*	*ni*	-	*gii*	- *asham*	-	*igo*
be evening				3 INAN	1		PAST	see		INVERSE

3. Pattern II. The second pattern is given in (25).

(25) (a) agent (experiencer) of direct and agent (experiencer) of inverse pattern alike, AND

(b) patient (theme, recipient) of direct, patient (theme, recipient) of inverse, and patient (theme, recipient) of passive pattern alike.

To the best of my knowledge there is only one syntactic phenomenon that manifests Pattern II. There is a class of loosely bound verbal prefixes known to Algonquianists as preverbs. One subclass of preverbs have auxiliary-like meanings, at least some of these can only bind agent/experiencers. Examples are given in (26).

(26) (a) agent of direct bound by an auxiliary preverb

Ngii-booni-gnoonaa. 'I stopped talking to him.'

ni	- *gii*	- *booni*	- *ganoon*	- *aa*
1	PAST	stop	converse with	3AN OBJ

(b) agent of inverse bound by an auxiliary preverb

Ngii-booni-gnoonig. 'He stopped talking to me.'

ni	- *gii*	- *booni*	- *ganoon*	- *igo*
1	PAST	stop	converse with	INV

(c) patient of passive not bindable by an auxiliary preverb

**Ngii-booni-gnoon'goo.* 'They stopped talking to me.'

ni	- *gii*	- *booni*	- *ganoon*	- *igoo*
1	PAST	stop	converse with	PASS

The data for this pattern are at best only suggestive since there is no clear way to test for the non-bindability of patient/recipient/themes in transitive clauses.

4. Pattern III. On the other hand Pattern III is better attested. There are four phenomena that follow it. Pattern III is given in (27).

(27) (a) agent (experiencer) of direct, agent (experiencer) of inverse, and patient (theme, recipient) of passive pattern alike, AND

(b) patient (theme, recipient) of direct and patient (theme, recipient) of inverse pattern alike.

The four phenomena that manifest it are the 1) binding of floated

quantifiers, 2) the binding of certain auxiliary preverbs, 3) a variant of raising, and 4) a variant of control of obviation into adjunct clauses.

4.1. Floated Quantifiers. Quantifiers freely float off of certain post-verbal nominals and appear at the front of clauses. The limits on which nominals can be bound to these floated quantifiers is defined by Pattern III.

(28) (a) agent (experiencer) of direct, agent (experiencer) of inverse, and patient (theme, recipient) of passive cannot bind floated quantifiers, AND

(b) patient (theme, recipient) of direct and patient (theme, recipient) of inverse can bind floated quantifiers.

Examples are given in (29).

(29) (a) agent of direct cannot bind a floated quantifier, patient can

Niizh ngii-nsaanaanig giigoonyag. (i) *'Two of us caught fish.'
(ii) 'We caught two fish.'

niizh	*ni* -	*gii* -	*nis* -	*aa* -	*naan* -	*ig*	*giigoony* -	*ag*
two	1	PAST	kill	3AN OBJ	1PL	3PL	fish	3PL

(b) agent of inverse cannot bind a floated quantifier, theme can

Niizh ngii-waabmignaanig ninwag. (i) *'Two of the men saw us.'
(ii) 'The men saw two of us.'

niizh	*ni* -	*gii* -	*waabam* -	*igo* -	*naan* -	*ig*	*aniniw* -	*ag*
two	1	PAST	see	INV	1PL	3PL	man	3PL

(c) patient of passive cannot bind a floated quantifier

Niizh gii-baashkzwaawag ninwag. *'Two of the men were shot.'

niizh	*ni* -	*gii* -	*baashkizw* -	*aa* -	*w* -	*ag*	*aniniw* -	*ag*
two	1	PAST	shoot	PASS	3 SUBJ	3PL	man	3PL

This argument parallels one made for Cree quantifiers by Dahlstrom (1987). There is, however, more complexity to this than at first appears. There is some suggestive evidence that this binding is semantically driven. For example, intransitive verbs with implied objects can have their virtual object bound to certain general quantifiers appearing in the floated position, as in (30).

(30) *Niibna ngii-wiisin.* 'I ate a lot.'

niibina	*ni* -	*gii* -	*wiisini*
much	1	PAST	eat

(NB ≠ *Niibna ngii-miijin.* 'I ate a lot of it.' [transitive])

4.2. Auxiliary Preverbs. Some preverbs with auxiliary-like meanings manifest Pattern III rather than Pattern II. This is exemplified in (31). Notice that (31c) is grammatical while the structurally parallel (26c) is not.

(31) (a) agent of direct bound by an auxiliary preverb

Ngii-bi-gnoonaa. 'I came to talk to him.'

ni -	*gii* -	*bi* -	*ganoon* -	*aa*
1	PAST	come	converse with	3AN OBJ

(31) (b) agent of inverse bound by an auxiliary preverb

Ngii-bi-gnoonig. 'He came to talk to me.'

ni	- *gii*	- *booni*	- *ganoon*	- *igo*
1	PAST	stop	converse with	INV

(c) recipient of passive bound by an auxiliary preverb

Ngii-bi-shamgoo. 'I came to be fed.'

ni	- *gii*	- *bi*	- *asham*	- *igoo*
1	PAST	come	feed	PASS

4.3. Syntactic dialects for raising and obviation. Although many speakers have restrictions on raisability and control of adjunct clause obviation that manifiest Pattern I, there are speakers for whom raiseability and/or control of adjunct clause obviation manifests Pattern III. The appearance of Pattern III instead of Pattern I for Raising is independent of its appearance for control of adjunct clause obviation. Thus there are four kinds of Ottawa speakers with respect to raising and adjunct clause obviation:

(32)

	Raising	Adjuct Clause Obviation
A Speakers	Pattern I	Pattern I
B Speakers	Pattern I	Pattern III
C Speakers	Pattern III	Pattern I
D Speakers	Pattern III	Pattern III

For speakers of the Pattern III Raising dialect, (20b) is bad and (21b) is good. Dahlstrom (1987) reports this as the raising pattern in Plains Cree.

For speakers of the Pattern III Adjunct clause obviation dialect, (23b) is bad with downstairs clause obviative agreement and (24b) is good with downstairs clause obviative agreement .

5. Pattern IV. Pattern IV is the weakest attested pattern. Only one phenomenon manifests it, and it is morphological. Pattern IV is given in (33).

(33) (a) agent (experiencer) of direct and patient (theme, recipient) of inverse pattern alike, AND

(b) patient (theme, recipient) of direct and, agent (experiencer) of inverse, and patient (theme, recipient) of passive pattern alike.

The phenomenon that manifests it is the suppression of the morpheme *-n(aa)* from transitive verb forms. Verbs with objects all show *-n(aa)* in the independent except where the patient of direct, agent of an inverse, or patient of a passive is animate. Since the data are quite complex, and the pattern is not particularly important, we leave it here with just this mention.

6. Conclusion. Previous works dealing with semantic-syntactic alignments in Algonquian languages, including my own, have suffered from too narrow a focus. Each has concentrated on particular details of morphology or syntax which support their favorite analysis. This paper has two goals: 1) to get as much of the full range of facts out as is possible in this short time frame, which we have already accomplished, and 2) to suggest an alignment system which will allow

for a principled account for each of the patterns.

I suggest that all four patterns can be readily accounted for by assuming that the grammatical relations of inverse clauses are reversed from those of the direct. Under this account the four patterns have the following interpretations:

Pattern I agent (experiencer) of direct, patient (theme, recipient) of inverse, and patient (theme, recipient) of passive are SUBJECTS, and

patient (theme, recipient) of direct and agent (experiencer) of inverse are PRIMARY OBJECTS.

Phenomena manifesting Pattern I are sensitive to grammatical relations.

Pattern II agent (experiencer) of direct and agent (experiencer) of inverse are AGENTS, and

patient (theme, recipient) of direct, patient (theme, recipient) of inverse, and patient (theme, recipient) of passive are PATIENTS.

Phenomena manifesting Pattern II appear to be directly sensitive to semantic roles. What is important for construction grammar is that this pattern suggests the need to define role equivalences not only for distinguished argument (agent or experiencer) but also for the second argument (patient, theme, or recipient). In derivational terms these would be called underlying subject and underlying primary object.

Let me skip Pattern III for the moment and look at Pattern IV.

Pattern IV agent (experiencer) of direct and patient (theme, recipient) of inverse are ERGATIVES, AND

patient (theme, recipient) of direct and, agent (experiencer) of inverse, and patient (theme, recipient) of passive are ABSOLUTIVES.

Phenomena manifesting Pattern IV are sensitive to grammatical relations.

Pattern III is more difficult. It was on the basis of the existence of Pattern III that Dahlstrom (1987) claimed that the agent (experiencer) of an inverse is a subject, because it patterns with the unequivocal subjects, agent (experiencer) of direct and patient (theme, recipient) of passive. But the existence of Patterns I and IV means that such an interpretation makes less sense. So, taking a cue from relational grammar, let me propose that Pattern III represents a FIRST AVAILABLE SUBJECT, that is, the first argument, as defined above, unless there is none, in which case it is the (surface) subject.

Pattern III agent (experiencer) of direct, agent (experiencer) of inverse, and patient (theme, recipient) of passive are FIRST AVAILABLE SUBJECTS, and

patient (theme, recipient) of direct and patient (theme, recipient) of inverse are NON-DISTINGUISHED ARGUMENT-SUBJECTS.

The implications of this analysis for construction grammar is that, in some languages thematic alignments can be made based on a grammaticized scale such as the AAS given in (3), and we can understand why an agent can appear as a syntactic object in an Ojibwe sentence. It also means that there can be no universal thematic alignment in Construction Grammar.

NOTES

[1]This paper represents a further development of the non-theoretical parts of Perlmutter and Rhodes (1988), the theoretical line of inquiry of which died for lack

of clear knock-down arguments. But I owe David Perlmutter particular thanks for his input in driving the refinement of the analyses presented here. I would also like to thank Chuck Fillmore, Paul Kay, Eve Sweetser, and Fred Lupke for various discussions that have contributed significantly to this paper. The usual disclaimers apply.

[2]This is actually somewhat simplified, particularly with respect to objects:

Ngii-dbaajmaa nJohn. 'I talked about John.' (agent-topic)
Nmiswinwaa Maanii. 'Mary turns me on.' (experiencer-stimulus)
Ngii-gmoodmaa mzinhigan mdimooyenh. 'I stole a knife from the old lady.' (agent-affected source-theme)

et al.

Nonetheless, all those semantic roles that are realized as the subject of a direct or those that are realized as the primary object of a direct function equivalently with respect to the syntactic phenomena under discussion.

[3]These patterns form the basis of the arguments in Perlmutter and Rhodes (1988) for the reversal analysis of inverse clauses.

[4]Both raising and the control of obviation in adjunct clauses show variation in syntactic dialects. For now we will explore only one dialect. In §4 below we will discuss the other.

[5]For most speakers this ban is on notional inanimates regardless of grammatical animacy. But for some speakers the ban is based only on grammatical animacy.

[6]The verb *daawed* 'sell s.t.' belongs to a small class of verbs that take a secondary object rather than a primary object. Outside of this class of verbs, secondary objects are only found as the other object of ditransitive verbs.

[7]The syntax of Ottawa requires that if an adjunct clause is preposed the sentence initial *mii* be repeated at the begining of the main clause. Sentences without the repetition are grammatical but somewhat stilted.

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Two from's?

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"Upon those who step into the same rivers flow other and yet other waters."

Heraclitus

The present paper addresses a problem which starts out with the preposition from, but which ends up involving us in waters with a universal taste, waters which seem to be deep indeed. From the point of view of from, we can see the problem arise in the fact that we would like to be able to say that the basic sense of this preposition, a sense which specifies the Source of a physical movement, as in (1),

(1) Valmir moved the rocks from the car.

can be extended to more and more metaphorical uses, some of which we see examples of in (2):

(2) a. Ted learned calculus from Vânia.
b. I can see from this article that we are doomed.
c. We benefited from Otimar's experience.
d. Cleuza prevented Mônica from committing a worse gaffe.

Somewhere in such sequences, we will probably want to say things about from being grammaticalized; for the present, let us leave open just where we might feel that from has cut its ties with its basic motional sense. What I want to show is that even in a sentence like (3),

(3) Ileen cleared the snow from the hood.

where it is clear that we are talking about the movement through physical space of a semantic Theme (the snow), and also that the hood denotes the place where that movement starts, even in such a sentence, we find that what look like the seeds of grammaticalization have been sown. While we might feel no queasiness about saying that there are two from's in (1) and (2d), say – can we really be happy if we have to say that there is a third one in (3)? The discussion to follow can be localized conceptually by calling it some reflections on emergent grammaticalization, where I use emergent as it has been used in work on discourse and grammar, such as that of Du Bois (1987) and Hopper (1988).

I. Basics about paths

Before we can talk about how (1) might be different from (3), let us observe some basic facts about the grammar of motion. I see all motion clauses as involving a Theme, Jeff Gruber's seminal term for "that which moves," and a Path, a term which I believe Len Talmy was the first to use in this context. Let us look in some detail at the structure of paths.

(4) Paths are macroconstituents which break down into three legs: an (optional) initial leg (a **Source**) [e.g., from Prince George], then any number of optional medial legs (**Trajectories**) [e.g., PP's headed by P's like past, along, by, through, etc. – e. g., along Route 1 past Sebastopol through the Napa Valley]], and finally an (optional) final leg (a **Goal**) [e.g., to Berkeley]. Each leg can be modified by PP's of **Extent** [e.g., (for) two miles] and of **Direction** [e.g., (towards the) north, up(wards), in(wards), and so on. An example of a fairly developed Path would be

[out from LA] [65 miles north along the coast] [down back east for 13 kilometers into San Gofer]

(5) Here and there (and now and then) are restricted to appearing in spatial (or temporal) paths. Thus (a), which is spatial, is OK with there, but not (b), which is not spatial:

a. Max was interred in the back yard / there.
b. Max was interested in the back yard / *there.

Similarly, since the from-phrase in (c) is part of a temporal path, it can be pronominalized by then, a possibility which does not exist for the non-path from of (d):

c. Terry worked from Christmas / from then to March.
d. Terry separated Hanukkah from Christmas / *from then.

(6) Right can only modify PP's in paths:

a. Max was interred (right) in the back yard / (right) there.
b. Max was interested (*right) in the back yard / (*right) there.

(7) The ends of paths [i.e., their initial and final legs] are much richer in structural variety, in many ways, than are their medial legs. Thus the two end-prepositions from and to cooccur with many structures that medial prepositions cannot be followed by.

For instance, end-prepositions can be followed by there preceded by modifying directional particles like up, down, in, out, etc., while medial P's like past can't:

a. Mrs. Smithson hopped from (up) there / from (in) there / to (back) there.
b. Mrs. Smithson hopped past (*up) there / past (*in) there / past (*back) there.

End-prepositions can be followed by PP's, medial P's can't. Thus from and to can be followed by certain locative PP's, as in (c).

c. Mrs. Smithson hopped from under the bridge / to behind the old oaktree.

Since the phrases from under the bridge and to behind the old oaktree represent whole path constituents in (c), they can appear in inverted structures like those in (d) and (e):

d. From under the bridge hopped Mrs. Smithson.
e. To behind the old oaktree hopped Mrs. Smithson.

However, medial prepositions like past cannot be followed by PP 's, as we see in (f) and (g).

f. (*)Mrs. Smithson hopped past under the bridge.
g. (*)Mrs. Smithson hopped past behind the old oaktree.

It is not that (f) and (g) are ungrammatical on all readings, for they have an interpretation under which they are understood as reduced forms of something like (h) and (i):

h. Mrs. Smithson hopped past me (us, them, . . .) under the bridge.
i. Mrs. Smithson hopped past me (us, them, . . .) behind the old oaktree.

The rule which deletes the anaphoric expressions which are the objects of past is restricted: it only applies if past is after the verb. Thus if we prepose the entire path structures in (h, i), we preserve grammaticality,

h'. Past me (us, them, . . .) under the bridge hopped Mrs. Smithson.
i'. Past me (us, them, . . .) behind the old oaktree hopped Mrs. Smithson.

but not if we try to reduce these preposed forms:

h''. *Past under the bridge hopped Mrs. Smithson.
i''. *Past behind the old oaktree hopped Mrs. Smithson.

Thus we can see that while it would be correct to say that the PP under the bridge appears as (part of) the object of from in (c) [I say "part of" because I believe things are a bit more complicated here than I can discuss in detail], with the phrase from behind the old oaktree representing a complex Source, no such story will serve in the case of a sequence like past under the old oaktree, which does not represent a single PP, but rather a concatenation of two of them, the first one having its object, an anaphoric pronoun, deleted.

(8) The objects of end-prepositions can be adverbial non-specific indefinite expressions like some / any / no / every + -where / -place, or the spatial question where. Such words do not follow medial prepositions:

a. Crickets were hopping from everywhere / *past everywhere.
a'. Where were crickets were hopping from / *past?
b. Our company is not retreating to anyplace / *through anyplace.
b'. Where is our company retreating to / *through?

(8) c. Mrs. Smithson did not hop from anywhere / *by anywhere.
c'. Where did Mrs. Smithson hop from / *by?

II. Two types of adverbial proforms

I would like to expand briefly on one of the points made above in (5) – the behavior of proforms such as there and then. For it turns out that there are two types of these proforms – one which I will call PP-proforms and another which I will call NP-proforms. The former type is only found after the two end-prepositions from and to (and as free-standing adverbs, as in I lived there then), with the latter type occurring in all other contexts. The former type is more florescent, allowing modification by right, and, for spatial proforms, premodification by the small group of what I call directors – words like up, down; in, out; over, under; around, back, and possibly a few more. Thus we find contrasts like the following:

(9) a. Fernandão jumped from (right) there / from (down) here.
b. (Right) now, Fernandão lives (right) there / (back) here.

(10) a. Fernandão jumped through ((*)right) there / ((*)down) here.
b. Through (*right) there / Through (*down) here jumped Fernandão.

I have starred the versions of (10a) which include modifiers for the same reasons as those which led me to star the interpretations of (7f,g) under which through represents a reduced Trajectory, a possibility which the inverted order of (10b) excludes. While it would take me beyond the scope of this paper to justify this suggestion, I believe the route to an adequate understanding of such contrasts as those we see between (9) and (10) will lie in allowing that an anaphoric object of any preposition in a spatial path can be there, and further, that a deeper structure of a phrase like from there will contain a locative preposition like at, whose object is the there: [from [at there]]. By contrast, a comparable structure for a medial PP would be just [through there]. It is the "embedded" at-phrase which is allowing premodification by right and the directors in (9) – such words can never modify non-PP adverbial NP's such as the objects of medial prepositions.

It is of great interest that when a verb like depart, which can occur with an end-preposition like from, comes to lose this preposition, presumably via a syntactic rule, the properties of the there-object of the deprepositionalized verb become those of an NP-proform, and not those of the PP-proform there which follows the unreduced verb depart from. This we can see from the contrast in (11).

(11) a. We will depart (from) Des Moines at noon.
b. We will depart from (right) there / from (down) here at noon.
c. We will depart (*right) there / (*down) here at noon.

The interested reader can find a more fleshed out version of an analysis involving a deleted at in the objects of end-prepositions in Ross (to appear). In (12) below, I summarize the differences one finds between the two types of adverbial proforms, as well as those between the two types of spatial prepositions.

(12) The two **there**'s

Adverbial there	Nominal there
[after end-prepositions]	[after other spatial P]
from (right) there	along (*right) there
to (up) here	past (*up) here
from behind the tree	*past behind the tree
from somewhere	*through somewhere
	[and after deprepositionalized verbs]
depart from (right) there	depart (*right) there
depart from (up) there	depart (*up) there

III. Two (?) **from**'s

I believe that we can now profitably address the question as to the ways in which verbs whose semantics involves the physical motion of a theme from a Source can differ from each other. I am at present unclear as to how many differing types of such verbs English manifests. It may be that it will be possible to establish some such hierarchy as that suggested in (13), or further study may show that we are here dealing with some small number of discrete categories. For now, I can only leave this matter open.

(13)

Purely spatial		¤		Less spatial
move	sweep	empty	clear	steal
carry				
lug				
lift [= cause to rise]				lift [= steal]

What is important is to recognize that while there is some number of verbs which are purely motional (those on the left side of (13)), whose emphasis is on the Theme, and only secondarily on the NP's in the legs, there are others which shift this focus from the Theme to the effects of the motion on the NP in the Source leg. These latter verbs, which I propose to call privative verbs, will deemphasize the fact that this Source constituent is the first in a path, sometimes to such an extent that other types of path-constituents cannot even be expressed. I will use move as an example of a prototypical motional verb, and steal as a prototypically privative one. Those who like examples which contain lexical minimal pairs may want to compare the basic sense of lift with its idiomatic sense, on which it is identical to steal.

What are the types of contrasts that we might expect? First of all, with move, there should be no restriction whatsoever on the number or kind of legs which its Theme is described as traversing, nor on the internal structures of such legs. By contrast, with privative verbs, we may well predict that restrictions will begin to make themselves felt. In the examples below, I will contrast these two verbs, and sometimes others, with respect to various parameters. The judgements, which are often subtle, are my own, as best as I can tell. I will prefix each example sentence with an indication of its degree of acceptability to me, though I do not

expect any other speaker to agree in detail with my judgements. What I hope that a more careful look at patterns of interspeaker variation will reveal is that the direction of preferences, which I indicate with the symbols for inequality, ' ≥ ' and ' ≤ ,' will prove to be constant. That is, if I write 'A ≥ B,' for some pair of sentences A and B, whatever individual ratings of grammaticality I have assigned to them, my claim is that if any speaker feels there to be a difference between the two, that speaker should find A to be superior to B. My claim will be counterexemplified only if there are speakers who judge in the opposite direction – that is, for them, B is better than A. I remark in passing that I think that such judgements are probably the most that we can expect to survive intersubjective testing. Thus it is such inequalities, rather than the rarely attainable judgements of total grammaticality, or total impossibility, for all speakers, which should be the basic coin of the realm of syntax.

With this in mind, let us look at some of the inequalities that from offers to our inspection.

Basic, motional **from** [full path possibilities]		Privative **from** [fading spatiality]

Predicted differences

(14)	Full path structures		Defective paths
a.	move it from LA along 405 to SF	≥	steal it from him (**along 405) (*to me)

[Here we find, as predicted, that while move allows paths with all types of legs, steal only allows the specification of a Source. While mentioning the destination of the theft is terrible, for me, trying to specify its Trajectory attains Larry Horn's category of "splendid ungrammaticality," though it seems that certain Trajectories (I am thinking here of through the window) escape this fate.]

b.	Where did he move it from?	≥	?Where did he steal it from?

[Here, I sense a slight distinction, characterizable perhaps along the following lines. While move foregrounds the Theme, backgrounding the path, steal foregrounds the Source, which is prototypically a human. The basic function of the morpheme -ere (used in here, there, and where [and in compounds like therein, whereafter, etc.]) is to signal that it is part of a path – to be precise, part of a backgrounded path. Thus the contrast between -ere, on the one hand, and third-person forms like she, it, he, they, and also what and who, on the other, is fundamentally one of focus.

If these speculations are on the right track, the best question-word, for motional verbs, should be where. What should be slightly dispreferred, since it is a member of the set of in-focus proforms, and who should be the least preferred, for reasons of topicality, since human NP's will always be more salient, and thus topical, than will non-humans. By contrast, since the prototypical Source for steal should be human, where should be the worst question-word, with who being the best, and what being intermediate. These considerations are confirmed by the inequalities in (b') and (b") below.]

b'. What did he move it from?	≥	?What did he steal it from?
b". ??Who did he move it from?	≤	Who did he steal it from?

Ceteris paribus, the same will hold for the anaphoric adverbial proform there. In (c), I believe that for me, there are even small differences between the various items in (13)'s progression from more to less spatial verbs.

c. move them from there	≥	?sweep the dirt from there ≥ ?empty the ale from there ≥ ??steal his car from there
d. move them from (behind) the garage	≥	sweep the dirt from (?behind) the garage ≥ steal his car from (??behind) the garage

[I am unclear as to how to treat these examples. I believe it to be correct to claim that the more motional a from is, the easier it is to find it followed by PP's in surface structure. Whether this brute fact should be taken to mean that a rule to delete the locative preposition which follows from must become more and more obligatory, as the PP becomes less and less spatial, is something which I at present do not know.]

Preposing rules

[I see the sequence of verbs which take from-phrases in (13) as a change from verbs in whose objects the PP is more important, being a part of the path constituent, to verbs in whose objects the NP which follows the from is more important, since it comes to be the Patient of the verb. Said in another way, the more motional a verb is, the more its Theme will be foregrounded, and the more its path backgrounded. As a backgrounded constituent, a path will tend to resist being broken up, will function as a unit. By contrast, the more privative a verb is, the less the object NP of its from-phrase should be glued to it, the freer it should be to move around in a clause, and the less it should insist on its from being with it on its peregrinations. For fronting a PP is emphasizing its adverbial roots, while fronting an NP out of a PP is cutting them.]

PP Fronting

e. From the car I moved the rocks ?*(to the house)	≥	??From the car I cleared the snow.

[Here, the prediction seems to be confirmed, though it remains a mystery as to why the motional variant of (e) seems to require that its Goal-phrase be present in case there is a preposing operation, since there is no such requirement in non-preposed cases. There seems to be no way to save a preposed privative from-phrase from ungrammaticality, though.]

Topicalization

f. ?The car I moved the rocks from.	≤	The car I cleared the snow from

[Here, for the NP-preposing operation of Topicalization, the proposed explanation seems confirmed.]

g. From Tom I stole $20.
g'. Tom I stole $20 from.

[Here, the proposed explanation is totally disconfirmed – (g) should be significantly worse than (g'), yet I detect no difference whatsoever between them. I have no idea what causes (e) and (f) to be different from (g) and (g').]

Affectedness

h. *What I did to the car was to move the rocks from it.	≤	What I did to the walk was to clear the snow from it.

[If we make the assumption that pseudo-cleft sentences which have at their center a clause of the form X do something to Y will require that the Y be a patient, and that the verb which is the head of the focalized constituent after the copula contain a proform which refers to Y, where this proform is also a patient of the head verb, we see clearly the difference between the objects of motional from and privative from: only the latter is a patient of the verb, is affected by its action.]

Source Advancement

i. *I moved the car of the rock. i'. I moved the rock from the car.	≤	I cleared the walk of snow. I cleared the snow from the walk .

[We are not surprised that it is the patient of clear that can advance to become its direct object, thus chômeurizing snow, the Theme and deep object of clear. The reason that the object of a motional from, like the car in (i'), the putative source of the lefthand sentence in (i), cannot advance is that its primary "allegiance" is to the path of which it is a part. It is only related to the verb move derivatively: move takes a path as one of its arguments, and the car is merely a subconstituent of one of the legs of that path.]

IV. What's in a place?

I think that it may prove helpful to try to look at what may be a minimal pair: two very basic senses of clear. The first is the almost purely motional one which is used in soccer and hockey, and the second is the kind of privative one that we have encountered above in examples (14e, f, h, i, i'):

(15) a. The Bruins cleared the puck from their end of the rink.
b. The Bruins cleared the beer cans from their end of the rink.

For the purposes of this discussion, let us refer to the first of these as the "sports-clear," and to the second as the "clean-clear." There are at least the following differences that can be perceived between these two.

(16)	Sports	Clean
a. Source	few restrictions (possibly the area must be seeable as being bounded?)	pretty much of a patient
b. Theme	focus of play (puck, ball)	any undesirable material
c. Path	few restrictions	perhaps limited to only the Source
d. Proforms for Source	[there preferred, it difficult, if at all possible]	[it preferred; there generally difficult, if at all possible]

Examples such as those to follow are the basis for the generalizations in (16). In the case of (16a), while I currently know of only sports like hockey and soccer which actually make use of clear to describe actions which characteristically happen in them, it seems to me that any similar sport or game which involves the temporary removal of objects of one kind or another from any kind of (probably necessarily bounded?) space would permit the usage of (16a) to be extended – cf. (17):

(17) a. Billy cleared the marbles from his end of the bed to Jeffy's end of the bed.
b. The winning player in Intergalactic Planet Polo is the zblorg which can clear its opponent's pktrczes from its neutron mretches past the Supreme Arbiter's neurocosmological throne to its opponent's mretches in the smallest number of nanofpwerks.

By contrast, the clean-clear seems strange in contexts in which it is difficult to imagine the action of clearing having a permanent effect on the Source of the clearee's movement. This seems to be the case for big Sources, like cities, countries, etc. (cf. (18a)), and for scattered examples like those in (18b,c), which I have no good characterization of:

(18) a. ?It may take us a while to clear the snow from Boston,
b. ?They want us to clear the canoes from the lake.
c. ?I have already cleared the raindrops from the hood.

In the case of (16b), it is not hard to show that the sports-clear is only acceptable when its Theme is what I am calling the "focus of play" – cf. (19).

(19) The Cruzeirenses cleared the ball / *the Atléticos from their half of the field.

With respect to the clean-clear, the necessity of the clearee being undesirable emerges from an inspection of the weird variants in (20):

(20) a. You have to clear the weeds / ?!carrots from your garden.
b. Yes, Insta-Lime will quickly clear the pimples / !!! dimples from your cheeks.
c. Farmer Brown wants to clear the caterpillars / ?* apples from his orchard.

This last restriction on clear arises from a consideration of the semantics of the most basic form of clear, which I take to be adjectival uses having to do with light, and having a meaning involving that of "transparent," like those in (21):

(21) a. The sky is clear (of (any) clouds).
b. The water is clear (of (any) mud).

The adjective clear contains an implicit negative, which accounts for the possibility of the polarity item any as a modifier of its object. Its meaning is only similar to that of transparent, for while this latter is a unary predicate, as witnessed by the fact that such sentences as those in (21) have no analogues like *(22),

(22) a. The sky is transparent (*of (any) clouds).
b. The water is transparent (*of (any) mud).

clear is always implicitly a predicate of at least two places, the relation it describes being between a **light**, which is thematically a Source, and a **darkness**, which does not succeed in preventing the light from being perceived. This negation of success is the source of the any's of (22). I believe, in fact, that a deeper analysis of clear would hold it to be ternary, the third argument being for the Perceiver, a perceiver which cannot be expressed in non-metaphoric uses like those in (21), but which we see in such abstract extensions of clear as those in (23), where I have underlined the constituents whose role is that of this Perceiver.

(23) a. The facts were clear to them.
b. That they were indignant was clear to us.
c. You will have to clarify your assumptions for me.

To return now to the sentences in (20), which launched this discussion of clear's deep arguments, the reason that the themes in (20) are always undesired is that they are always to be identified with the argument which expresses the **darkness** of the basic meaning of clear, which will always be present in examples like (15) and (20), for these represent a kind of causative. Thus a rough paraphrase of (15b) would be (24):

(24) The Bruins caused their end of the rink to become clear of beer cans.

It is at present mysterious to me as to how to account for the semantactic (rough) equivalence between a semantically biclausal structure such as (24) and a

sentence like (15b), which contains a path. (15a) seems less puzzling – it has (25) as a rough paraphrase:

(25) The Bruins caused the puck to go from their end of the rink (to someplace).

It may be that what (15b) and similar examples involve is another level of embedding, such as that suggested in (26a) or (26b):

(26) a. The Bruins caused their end of the rink to go from having beer cans to not having beer cans.
b. The Bruins caused their end of the rink to go from there being beer cans there to there not being beer cans there.

However, this is like explaining a riddle with an enigma, and is too speculative to be worth much. Let us return to the generalization in (16c), which is linked to the contrast between move and steal that I pointed out in (14a). There we saw that steal is ungrammatical with a Goal specified; (27) shows us that clean-clear also has difficulties with such a specification:

(27) a. I cleared the snow from my driveway (?into my neighbor's yard).
b. I cleared the snow from the front of my garden (?to the back of it).

To my ear, these examples are less impossible than is the steal-variant of (14a), but it seems to me that they are tending in the same direction. And Trajectories also seem hopeless:

(28) a. I cleared the snow from my garden (*through the cellar window).
b. I cleared the snow from my driveway (*past Officer Snodgrass).

Not all PP-objects of clean-clear sound perfect, though some seem fine. Adding directors appears to be in general dispreferred (cf. (29d, e)):

(29) a. I cleared the snow from under the car.
b. ? I cleared the snow from inside (??of) the trailer.
c. ??I cleared the snow from by / near the shredder.
d. I cleared the snow from (?back) under the car.
e. I cleared the snow from (??out) behind the tree.

The tendency here is that commented on in (14a): the more florescent a path structure is, the more flamboyantly spatial, the less happy will clean-clear be to take it as its object.

Finally, let us look at the proforms which are found after the two clear's. We can use the quasi-minimal pair of (15) as our point of departure:

(30) a. The Canadiens sent a long slapshot deep into the Bruins' end of the rink, but the Bruins cleared the puck from there /*it in the twinkling of an eye.
b. The fans littered the Bruins' end of the rink badly, but the Bruins cleared the beer cans from it / there in a trice.

Let us expand our angle of vision slightly, to include a number of more metaphorical uses of clear. After each, I indicate the degree of grammaticality with which a from-version of the sentence would be greeted.

(31) a. Sam cleared the table (?of (??a lot of) dishes).
[from: OK]
b. Moacyr cleared his throat (of the accumulated mucus).
[from: ?]
c. Judge Whitney cleared the courtroom (of spectators).
[from: ?]
d. Melanie cleared her agenda (*of committee meetings).
[from: ?*]
e. This treaty clears the way (**of obstructions) for disarmament.
[from: **]

This list provides more of examples of the type of (14a). As we proceed from (31a) to (31e), we find fewer and fewer traces of the syntax of space, and correspondingly, greater and greater semantic abstraction. The reason that (31) is relevant in the present context is that it suggests the following principle:

(32) Travel Light

The more degenerate a path you cooccur with,
the further you can go semantically.

This principle should probably be derivable from general principles of markedness; intuitively, it feels closely related to the fact, observed, I believe, by Joseph Greenberg, that unmarked phonemes have more allophones than do marked phonemes. Morphologically, masculines cover sets which contain both genders, while the more marked feminine can be used only for sets all of whose members are feminine. Etc., etc. I thus claim no particular originality for "Travel Light," except perhaps for the attempt to apply a markedness principle to the domain of metaphorical extension.

I return now to the question: how many from's? I think that this question may lack a discrete answer. I have formulated (32) in a gradient, or squishy, fashion, for I do not think that we are likely to be able to get by by saying that some from's are followed by locational NP's, while others are followed by Patients. I think that there is both more and less than a grain of truth in this – look, for instance, at the following sentences:

(33) a. *What he did to the car was to move the snow from there. ≤
b. ??What he did to the car was to move the snow from it.

(34) a. ??What he did to the car was to clear the snow from there. ≤
b. What he did to the car was to clear the snow from it.
c. What he did to the car was to clear it of snow.

We see that when we use it instead of there, there is a rise in the paciency of the object of from, no matter how motional the verb is. I am only at the beginning of what promises to be a long and complex voyage into the mysteries of what language views as one of the many different kinds of "spaces" that it countenances, and thus uses (some part of) the machinery of the grammar of space to express, but as far as I can currently see, it is rare for there to be sharp lines between the spatial and the not – it is an area of pushes and pulls, of shadings and nuances, of negotiabilities. It is not a (very) binary place.

"I think there's a personality that goes with this kind of thing," Arthur says. "It's people who like process and pattern, as opposed to people who are comfortable with stasis and order. I know that every time in my life that I've run across simple rules giving rise to emergent, complex messiness, I've just said, 'Ah, isn't that lovely!' And I think that when other people run across it, they recoil."

In about 1990, he says, at a time when he was still struggling to articulate his own vision of a dynamic, evolving economy, he happened to read a book by the geneticist Richard Lewontin. And he was struck by a passage in which Lewontin said that scientists come in two types. Scientists of the first type see the world as being basically in equilibrium. And if untidy forces sometimes push a system slightly out of equilibrium, then they feel the whole trick is to push it back again. Lewontin called these scientists "Platonists," after the renowned Athenian philospher who declared that the messy, imperfect objects we see about us are merely the reflections of perfect "archetypes."

Scientists of the second type, however, see the world as a process of flow and change, with the same material constantly going around and around in endless combinations. Lewontin called these scientists "Heraclitians," after the Ionian philosopher who passionately and poetically argued that the world is in a constant state of flux. Heraclitus, who lived nearly a century before Plato, is famous for observing that "Upon those who step into the same rivers flow other and yet other waters," a statement that Plato himself paraphrased as "You can never step into the same river twice."

"When I read what Lewontin said," says Arthur, "it was a moment of revelation. That's when it finally became clear to me what was going on. I thought to myself, 'Yes! We're finally beginning to recover from Newton.'"
(Waldrop, pp. 334-335)

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An Integrational Approach to Possessor Raising, Ethical Datives, and Adversative Passives

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1 Introduction

In her recent paper entitled 'The situated interpretation of possessor raising,' O'Connor (to appear) identifies several basic problems pertaining to the analysis of the Possessor Raising construction, exemplified here with her own Northern Pomo example in (1b) together with its non-PR paraphrase (1a).

(1) a. man mo:w-a? yasis-nam phaley-ka (Non-PR form)
3SF.A 3SM-OBL knee-DET burn-CAUS
'She burned his knee.'

b. mo:w-al man yasis-nam phaley-ka (PR form)
3SM-P 3SF.A knee-DET burn-CAUS
'She burned his knee.'

In her own words: 'One puzzle is ...the nature of the syntactic relationship between the raised possessor and the verb, between the possessed object nominal and the verb, and between the possessor and possessed nominals themselves'(p.2). Instead of answering this rather longstanding question that has been addressed in formal treatments, O'Connor takes one giant step toward answering another, pragmatically formulated question that 'concerns the contextually situated interpretation of the construction: although the two sentence alternants [a PR form and its non-PR paraphrase] are truth conditionally equivalent, the very existence of an alternation raises the question whether there are expressive differences that distinguish the two.'(p.2)

In this paper I wish to tackle the issue concerning the relationship between the possessor and possessed nominals mentioned in the first quotation from O'Connor. Contrary to her formulation of this relationship as a syntactic relationship, and contrary to the syntax-based formal treatments in terms of relation-changing processes as in Relational Grammar and Baker's Incorporation Analysis (Baker 1988), I would like to advance a semantico-pragmatic account that places the PR construction within a larger framework that embraces other constructions such as ethical datives in Indo-European languages and elsewhere, adversative passives in Asian languages, and 'double subject' or topic constructions in diverse languages. In the course of our investigation, it becomes apparent that the popular relation-changing accounts, which derive PR forms from the corresponding non-PR counterparts, are overly simplistic. Indeed, the facts point to the integrational account proposed here that assembles clausal elements in terms of the semantic contribution they make toward the (re)construction of the described scene. We are thus using the term 'PR construction' simply as a label for the construction in question without subscribing to a derivational account that 'raises the possessor' out of the adnominal position.

2 The body-part reading and the adversity reading

A first clue to our problem is found among those languages in which the analogs of the PR construction are not isolated constructions but constitute

subconstructions within a larger construction type. The construction type in question is the dative construction of various kinds widely seen among Indo-European languages. First observe the relevant body-part expressions illustrated here by the German and French examples below:

(2) a. Man hat ihm den Arm gebrochen.
'They broke his arm.'
b. Sie wäscht dem Paul die Haare.
'She washes Paul's hair.'

(3) a. On lui a cassé le bras.
'They broke his arm.'
b. Elle lave les cheveux à Paul.
'She washes Paul's hair.'

Notice that, under normal circumstances, the referents of the body-part nominals in these expressions are understood to belong to, or, more accurately, to be inalienably possessed by, the referents of the dative nominals, despite the fact that the body-part nominals are marked by the definite, rather than the genitive, articles. This body-part reading, however, is not the only possibility with these IE analogs of the PR construction. For example, the following syntactically identical dative constructions involve no body-part expressions.

(4) a. Otto hat ihr ihren Teller zerbrochen.
'Otto broke her plate on her.'
b. Man hat ihm seine Frau getötet.
'They killed his wife on him.'

(5) a. Jean lui a cassé sa vaisselle.
'Jean broke her dishes on her.'
b. On lui a tué sa femme.
'They killed his wife on him.'

As the translations of the above examples indicate, these dative constructions with no body-part nominals convey a sense of adversity or inconvenience befalling the referents of the dative nominals. Dative constructions with these features appear to be a widespread Indo-European trait as they are also observed in Slavic languages (see Wierzbicka 1988). But they are also seen elsewhere; e.g. in modern Hebrew we again notice expressions parallelling those seen above in German and French (Berman 1982).[1]

(6) ima raxaca le dan et ha panim
Mom washed to Dan OM the face
'Mom washed Dan's face.'

(7) ha tinok lixlex li et ha xulca
the baby dirtied to-me OM the shirt
'The baby dirtied the shirt on me.' (Berman 1982)

An important point to notice here is the fact that the dative nominals systematically receive distinct interpretations depending on whether or not a body-part is involved. That is, when a body-part is involved, as in (2), (3), and (6), no adversative interpretation is forced, while when a non-body part expression is involved, the adversity reading accrues, as in (4), (5), and (7). The adversity meaning discussed here and below should be distinguished from the adversity meaning expressed lexically. That is, in (2a),(3a), and (7) the verbs themselves convey a negative meaning. But the adversity meaning relevant to our discussion is something conveyed by the expression as a whole whose sense is closer to that of inconvenience or misfortune.

Many languages also allow these dative constructions to express benefactive readings. But since the adversity reading seems to be dominant in the relevant types of construction discussed in this paper, I shall focus on the adversity reading. For now, our point is that these adversative meanings emerge when the body-part reading is not possible and that they are either absent or very slight when the body-part reading is possible.[2]

A similar situation appears to hold even in those languages in which the PR construction results from noun incorporation. Observe the following examples from Mohawk (Mithun 1984:868) and Chukchee (Polinskaja & Nedjalkov 1987:259).

(8) Wa-hi-'sereht-anv́hsko. (Mohawk)
PAST-he/me-car-stole
'He car-stole me.' = 'He stole my car.'

(9) a. ətləg=in ətlʔa wʔi=gʔi (Chukchee)
the=father's mother died
'The father's mother died.'
b. ətləg=ən ətlʔa=wʔe=gʔe
father=ABS mother(inc.)=died=3S(aor.)
'The father's mother died.'

It is said that in Iroquoian languages 'possessor stranding' is generally restricted to inalienably possessed objects, with the results whereby the stranded nominals and the incorporated nominals are related in terms of the notion of inalienable possession. The situation observed in (8), involving alienable possession, is characterized as 'pragmatically conditioned' by Mithun; i.e., the adversative connotation supports the stranded pronominal.[3]

Polinskaja and Nedjalkov call our attention to the parallel reading between the PR form in (9b) and the Japanese adversative passive expression *Titi wa haha ni sinareta* 'The father had his mother die.[4]

Indeed, the so-called adversative or indirect passives in Japanese and other Asian languages that have parallel constructions exhibit the very meaning contrast under discussion. When a body-part is involved, no obvious adversative meaning is detected, while the adversity reading is associated with a non-body part passive form. Compare the following Japanese examples:

(10) a. Taroo-wa Hanako-ni atama-o nagur-are-ta.
-TOP -DAT head-ACC hit-PASS-PAST
'Taro was hit on the head by Hanako.'

b. Taroo-wa Hanako-ni piano-o hik-are-ta.
-TOP -DAT piano-ACC play-PASS-PAST
'Taro was adversely affected by Hanako's playing the piano.'

c. Taroo-wa Hanako-ni nagur-are-ta.
-TOP -DAT hit-pass-past
'Taro was hit by Hanako.'

(10a) and (10b) are formally identical in that they exhibit the valency-increasing property characteristic of indirect passives. Yet, while (10b) yields the adversity reading, (10a), with the body-part possessor interpretation, does not. There is no noticeable difference between (10a) and the regular direct passive form in (10c), where the adversative connotation, due to lexical meaning, is qualitatively different from the adversative meaning observed in (10b). The adversity reading obtains with respect to (10a) only when the head in question is understood to be somebody else's than Taro's.

The extent to which the valency-increasing, indirect passive construction obtains varies from one language to another—Japanese, Even and Evenki being on the wider side and Korean and Chinese being on the restricted pole—but the adversity reading in such a construction obtains across languages when body-part expressions are not involved. For example:

(11) a. Etiken nugde-du gia-o-j ma-v-ra-n. (Even)
oldman.NOM bear-DAT friend-NOM-REF POS S G kill-PASS-NONFUT-3SG
'The old man had his friend killed by the bear.' (Malchukov 1993)
b. Na-nun sensayngnim-eykey ilum-ul cek-hi-ess-ta. (Korean)
I-TOP teacher-DAT name-ACC write-down-PASS-PAST-IND
'I had my name written down by the teacher.' (Kim to appear)
c. Wǒ bèi Zhāng Sān tōukànle rìjì (Chinese)
I PASS steal.look.ASP diary
'I had my diary read by Zhang San.'

The point of all this comparison between the body-part reading and the adversity reading is to show that the possessive relationship between the possessor and possessed nominals ascribed to the PR construction is not something that is inherent in the construction but something motivated by the construction just like the adversative meaning observable in related constructions. Just to bring this point home, let us look at topic constructions in Japanese and other languages.

The topic constructions of the following type also impose an interpretation in which a relationship of inalienable possession obtains between the topic and the body-part nominals.

(12) a. Zoo-wa hana-ga nagai. (Japanese)
elephant-TOP nose-NOM long
'As for the elephant, its nose (=trunk) is long.'
(Cf. Zoo-no hana-ga nagai. 'The elephant's nose is long.'
b. Neì-xie shùmu shù-shēn dà. (Chinese)
those trees tree-trunk big
'Those trees, the trunks are big.' (Li & Thompson 1976)
(Cf. Nèi-xie shùmu de shù-shen dà 'The trunks of those trees are big.)

c. Si Juan dako ang ulu. (Cebuano)
TOP big TOP head
'Juan, the (his) head is big.'
(Cf. Dako ang ulu ni Juan. 'Juan's head is big.')
d. Ali kepala-nya besar. (Indonesian)
head-3P big
'As for Ali, his head is big.'
(Cf. Kepala-ku besar. 'My head is big.')

For example, in Indonesian example (12d), the nominal for 'head' is marked by the third person pronominal clitic whose referent can be anybody, but the sentence cannot mean something like 'As for Ali, his (e.g. Ketut's) head is big.' However, the possessive relationship observed here is not an inherent property of the topic construction in these languages, as the following topic constructions with no stipulated possessive meanings are all possible.

(13) a. Hana-wa sakura-ga itiban ii. (Japanese)
flower-TOP cherry-NOM first good
'As for flowers, cherry blossoms are the best.'
b. Dòngwu wǒ zǔzhang bǎo-shoǔ zhèngce. (Chinese)
animal I advocate conservation policy
'Animals, I advocate a conservation policy.' (Li & Thompson 1977)
c. Si Maria mi-duol sa babaye. (Cebuano)
TOP AF-approach DIR woman
'Maria, (she) approached the woman.'
d. Anak itu, Ali pukul dia. (Indonesian)
child that hit him
'The child, Ali hit him.'

What we have observed above with regard to the PR construction, its dative analog, and the indirect passive construction is the trade-off relationship between the body-part reading and the adversity reading. I consider this to be an important observation that forces us to treat all these constructions in a unified manner so that the semantic peculiarities and specific restrictions observed with respect to each construction fall out naturally from the general analysis.

3 The semantic integration of extra-thematic arguments

A widely observed characteristic of the relevant dative constructions is the extra-thematic nature of the dative nominals in question. By 'extra-thematic,' I mean a situation where an argument exists that is not part of the case frame of the verb with which it occurs, or that does not bear a theta role specified by the verbal head. Thus, Kliffer (1973:41) agrees that the Spanish dative of interest is 'not an argument of the surface main verb in deep structure.' Likewise, Berman (1982:39) characterizes the 'ethical' dative of modern Hebrew as the dative 'which introduces a grammatically and pragmatically extraneous argument, a nonparticipant in the event's occurrence...' In French linguistics the kind of dative being considered is termed the 'datif étendu' with the recognized extra-thematicity (Leclère 1976, 1978).

In the GB framework, too, researchers (e.g. Borer & Grodzinsky 1986 and Authier & Reed 1992) have been concerned with ways of assigning theta roles to these extra-thematic datives. Jaeggli (1986:23) remarks:

> The requirement that clitic pronouns be thematically interpreted raises a question concerning ethical dative clitics. They are clearly not linked to a θ role which is assigned to an argument position of the verbs that they appear attached to. In fact...their thematic interpretation is vague with respect to the predicate they are associated with.

A similar concern has also been expressed by O'Connor (to appear:13) working on a 'true' PR construction. Thus, with regard to the thematic role of the 'raised possessor' in (14b) (her 24b), she remarks that:

> The verb *lok* 'to fall or collapse,' if predicated of a whole person, e.g. 'the man,' means that the person fell down or collapsed. If predicated of a body-part, as in the examples below, it means that the body-part fell off the human possessor's body. Thus if the verb *lok* in example [(14b)] took *mo:wal* 'him' as its Theme argument, it would mean 'He fell.' Example [(14b)], however, continues to mean that the person's toe fell off, not that he himself fell or collapsed, with or without the toe.

(14) a. mo:wa? xamabu:sa-nam lok'-a (Non-PR form)
3SM.OBL big toe spec fall/drop
'His big toe fell off.'

b. mo:waw-al xamabu:sa lok'-a (PR form)
3SM.P big toe fall/drop
'His big toe fell off.'

A widely adopted solution to the above problem is to posit either a case role (-like feature) such as [affect] or AFFECTEE as in Kliffer (1973) and Berman (1982) or to assume special mechanisms that assign the possessor theta role and the benefactive/affected theta role as in Jaeggli (1986), Borer & Grodzinsky (1986), and Authier & Reed (1992). A similar solution has been advanced for the subject theta role of the passive constructions in Japanese such that when that subject does not instantiate any role defined by the verb, as in the case of indirect, adversative passives, a thematic role such as 'experiencer' or 'affectee' is posited as a way of licensing what I call extra-thematic arguments (Miyagawa 1989, Washio 1993). I find all these approaches problematic.

The analysis that assigns two separate theta roles as in the GB framework divides up the dative construction into two types, while its form and the semantic trade-off relationship discussed earlier indicate its uniform character (cf. Tuggy 1980). That is, the analysis called for is the one that tells us why certain constructions yield the body-part possessor reading while others are associated with the adversity reading rather than the one that simply assigns separate theta roles, without seeking a unified treatment over the entire range of the relevant constructions. The analysis that posits a case role (-like feature) has problems of its own. Firstly it is not clear what licenses such a role. Since it is not licensed by a verb, we must assume that the construction itself is associated with the feature. But what construction? The constructions with which the particular dative nominals occur are both varied and limited. As will be seen subsequently, they can be intransitive constructions or transitive constructions, but only of particular kinds. Furthermore, a vague role such as [affect] or AFFECTEE must be interpreted

anyway, as it sometimes represents a body-part possessor and sometimes a person more indirectly affected negatively or positively. In fact, more important are a descriptive account of the semantics of the relevant dative nominals and their realization patterns and a theoretical account for the phenomenon than an argument over whether or not a case role like [affect] is appropriate.[5]

As it turns out, a closer observation reveals that the PR construction and the relevant dative construction are neither general nor stable enough to be submitted to the formal treatments in terms of well-defined theta roles or in terms of general syntactic relation-changing rules. As will be detailed in the next section, these constructions across languages are constrained by various factors, such that, for example, the PR construction is limited to body-part possession in Northern Pomo (O'Connor, to appear) and the dative construction is constrained by various factors such as person features. Furthermore, there is a great deal of individual variation over the acceptability judgment of dative constructions. Thus Kliffer (1973) found that while three of his informants said 'sí' to the Spanish form in (15a), the other five replied 'no'. The situation is similar in French such that according to Iguchi's (1991) survey, only one person each accepted and rejected (15b), while three informants considered the sentence questionable.

(15) a. ?Mi marido se me compró un pantalón nuevo.
'My husband bought himself a new (pair of) pants on me.'
b. ? On a cassé le bras à ce garçon.
'They broke the arm on the boy.'

Berman (1982) remarks that ethical datives in modern Hebrew are a recent innovation and that some consider them to be non-normative, a situation in which a great deal of variation in acceptability is expected.

Similarly, adversative passives in Japanese and other languages regularly require extraneous semantic support such as an intimate connection between the referent of the subject and that of the person responsible for bringing about the adverse effect. Thus, in (16a) below, it is normally understood that Taro and Hanako were in a special relationship such as being a married couple or lovers. No such stipulation is called for in such constructions as the causative and the direct passive, whose arguments are licensed by clearly defined theta roles, or even in a construction involving an actual experiencer, as in (16d).

(16) a. Taroo-wa Hanako-ni sin-are-ta.
-TOP -DAT die-PASS-PAST
'Taro had Hanako die on him.'
b. Taroo-wa Hanako-ni hon-o yom-ase-ta.
-TOP -DAT book-ACC read-CAUS-PAST
'Taro had Hanako read a book.'
c. Taroo-wa Hanako-ni nagur-are-ta.
-TOP -DAT hit-PASS-PAST
'Taro was hit by Hanako.'
d. Taroo-wa Hanako-ga suki-da.
-TOP -NOM like-COP
'Taro likes Hanako.'

On the basis of these facts I contend that these constructions involve no theta-roles such as the possessor and the affectee roles; instead I maintain that the meanings suggested by these roles are imputed to these constructions as a way of integrating the extra-thematic nominals into clausal semantics. I think that all the proposals for case roles such as [affectee] and mechanisms for assigning theta roles to these arguments in question originate in the state of mind that is so captivated by the charm of Fillmorean Case Grammar or the Chomskyan theta criterion. What these extra-thematic arguments call for is a theory of semantic integration of sentential elements much broader than that countenanced in the framework of Case Grammar or GB syntax. Perhaps the following modified version of the slogan formulated by Fillmore and Kay (1992:4.22) might be a good first approximation:

(17) a. We must find everything we need;
b. we must account for everything we find.

All the constructions discussed in this paper challenge the second part of the slogan as they contain extra-thematic arguments, which by definition fail to be accounted for in terms of the theta roles associated with the verbal head. The most straightforward account for them is in terms of semantically integrating them into the propositions stated by the rest of the sentences such that the referents of these extra-thematic arguments are integrated into the scenes evoked by the propositions. The major factor holding the key to such an integration is the relevance that the referent of the extra-thematic argument has to the described scene.

The notion of relevance must be defined, and we will attempt to do so in the next section. But for now, it is intuitively seen that the possessor of an inalienably possessed body-part is by far the most relevant to the scene of the described event when that event involves a body-part. When an inalienably possessed head is hit, for example, its possessor is at the scene and is directly affected by having his head hit. Thus integrating an extra-thematic argument as the possessor of an inalienably possessed body-part is the simplest way of accounting for or justifying the existence of that argument. The PR construction, the dative construction, the indirect passive construction, and the topic construction all permit the possessor of an inalienably possessed body-part as an extra-thematic argument in their most restrictive domains; that is, these constructions in some languages may not permit any other types of extra-thematic arguments than those construable as the possessor of an inalienably possessed body-part (see below).

When the body-part reading is available, no additional semantic support or augmentation is needed. But when no such reading is possible, an additional meaning relationship must be sought in integrating the extra-thematic argument in the described scene. The adversity reading is tied to the integration of its referent as an indirect participant being (negatively) affected by the described main event. The trade-off relationship between the body-part reading and the adversity reading discussed in the preceding section is a reflection of this situation. Namely, when the semantic integration of an extra-thematic argument is possible on the account of the body-part and the possessor relationship, no additional semantic support is required, but when such an account is not possible, semantic augmentation is required that doctors up the relevance of the referent of the extra-thematic argument to the described scene. (Cf. Croft 1985 for a semantic analysis similar to ours in spirit.)

Our account predicts that a greater amount of semantic augmentation is required as the ostensible relevance between the referent of an extra-thematic

argument and the described scene gets smaller. This prediction is borne out. For example, among the following Japanese indirect passives, the amount of semantic stipulation needed differs significantly.

(18) a. Taroo-wa Hanako-ni atama-o nagur-are-ta
-TOP -DAT head-ACC hit-PASS-PAST
'Taro was hit on the head by Hanako.'
b. Taroo-wa Hanako-ni kiteiru huku-o yogos-are-ta.
-TOP -DAT wearing clothes-ACC dirty-PASS-PAST
'Taro had the clothes he/she was wearing dirtied by Hanako.'
c. Taroo-wa Hanako-ni gohan-o zenbu tabe-rare-ta.
-TOP -DAT meal-ACC all eat PASS-PAST
'Taro was adversely affected by Hanako's eating all the meal.'

No adversity meaning is imputed to (18a), as pointed out earlier. (18b) dramatically shows the effect of the proximity, a component feature defining the notion of relevance. When the clothes are understood to have been worn by Taro, we can easily see his relevance to the scene and the negative effect he received is easily established without further semantic stipulation. But when the clothes are construed to be those worn by Hanako, then we must immediately search for the justification for Taro's being relevant to the scene; e.g. Taro was responsible for keeping Hanako's clothes clean or he was obliged to pay for Hanako's laundry, etc., etc. By the same token, for an expression like (18c), we normally assume that Taro was hoping to eat at least some meal ---the assumption that justifies the integration of Taro in the described scene as an adversatively affected party. Perhaps discriminating French speakers might find themselves making similar efforts in interpreting the following examples.

(19) a. Pierre lui a coupé les cheveux.
'Pierre cut her hair.'
b. Le gosse lui a démoli son pull.
'The kid ruined her/his sweater on her.'
c. Jean lui a mangé tout le fromage.
'Jean ate all the cheese on him/her.'

We have more to say about the semantics of all these sentences involving extra-thematically licensed arguments in later sections. And we shall now turn to specific factors controlling the well-formedness of this type of sentence. These factors are again consistent with our view that the problems of the PR construction and the adversative constructions are better handled in terms of a broader notion of semantic integration as outlined above than in terms of thematic roles or relation-changing syntactic machinery. In particular, they all point to the conclusion that: 1) the higher the relevance of the extra-thematic argument is to the described scene, the easier it is to integrate it, and 2) the more difficult to integrate an extra-thematic argument is, the more required are semantic augmentation and morphological trappings supporting and overtly indicating its relevance.[6]

4 Factors controlling the integration of extra-thematic arguments

Hyman (1977) is among the rare early works on the PR phenomenon examining not only its syntactic patterns but also the semantic factors controlling the phenomenon. Specifically he identifies the following conditions.

(20) Creation of a possessor object depends on:
  a. the nature of the possessed noun
  b. the nature of the verb
  c. the nature of the possessor. (Hyman 1977:104)

As it turns out Hyman's formulation hits the bull's-eye of the relevant conditions for the PR construction. However, as we are treating the PR construction as an instance of the broader phenomenon involving extra-thematically licensed arguments, the scope of some of Hyman's conditions must be broadened. More significantly, our discussion makes it clear that the relevant conditions are not conditions on the PR construction (or noun incorporation) per se; rather they are conditions on the integration of extra-thematic arguments that apply not only to the PR construction but also to the dative analog of the PR construction, the indirect passive, and to some extent the topic construction.[7]

As the foregoing discussion shows, the concept that plays the key role in the integration of extra-thematic arguments is 'relevance'. The higher the relevance of the referent of an extra-thematic argument is to the described scene, the easier it is to integrate it. But the notion of relevance must be defined. We will do this by delineating the properties of the optimally relevant participants. The participants constituting the event itself, say an agent and a patient of a scene construed as involving a prototypical transitive activity, are optimally relevant to the scene of the event. They show two characteristic features. One is their physical presence and the other, the affecting and affected roles they play in constituting a transitive event. These two features, physical proximity and the affecting or the affected role can be used as parameters defining the notion and the degree of relevance. The phenomena we are considering are crucially related to the parameters of physical proximity and affectedness, the affecting role being relevant to other semantic situations such as causatives. These two parameters are related such that one who is present in the scene is more directly affected than one that is not attendant on the scene.

Relevant to our discussion here is the pioneering work on body-part syntax by Bally (1926), who discussed similar concepts in terms of the notions of 'solidarity' (*solidarité*) and 'personal sphere' (*sphère personnelle*). The notion of solidarity relates to the transitive relationship of affectedness; that is when an action is exerted on a part, the whole is also affected. The concept of personal sphere defines the range over which the affectedness relationship extends between the affected object and the person transitively affected; e.g. a body-part and its owner, kinsmen and their relations, etc. We shall see below that various factors controlling the integration of an extra-thematic argument are specific manifestations of these two key concepts defining the relevance of the referent of an extra-thematic argument to the described scene.

4.1 Inalienability and physical proximity

As pointed out above and in all the relevant literature, the possessor of an inalienably possessed object, typically a body-part, is the most preferred target for the PR construction and the related constructions studied here. This is easily

understandable from our point of view. Namely, the possessor of a body-part is the easiest to integrate into the scene because it has high relevance to the described scene; when a body-part is affected in an event, its possessor is present at the scene and is also affected by the transitivity effect. Our approach, in fact, trivializes the notion of inalienability in the relevant constructions, as the condition based on it is derivable from the proposed theory of semantic integration, which crucially hinges on the notion of relevance (see also Fox 1981 for a similar view).

Our approach predicts that when the relevance to the scene is guaranteed, the possessor of a detachable object can easily be integrated, more readily, in fact, than the person whose kin is involved in the event. Thus, Newari allows (21a.b), but not (21c).

(21) a. Ji dhaaten chon syaa.
I really head hurt
'I really hurt in the head.'
(Cf. Ji-gu chon dhaaten syaa. 'My head really hurts.')
b. Ji dhaaten wosa phohar.
I really clothes dirty
'I am really dirty-clothed.'
(Cf. Ji-gu wosa dhaaten phohar. 'My clothes are really dirty.')
*Ji baa dhani.
I father rich
(Cf. Ji-mi baa dhani. 'My father is rich.')

(21b) illustrates one of the favorite scenes discussed by most of the researchers working on the PR and related constructions (see Diffloth 1974, García 1975, Hyman 1977, Tuggy 1980, Berman 1982, Wierzbicka 1988, Kim, to appear). They all agree that the person to be integrated into the scene must be actually wearing the clothes in question; PR is difficult or impossible when the clothes are hanging in the closet. The crucial factor here, then, is not really the absolute relationship between the possessor and the possessed, as is often assumed when discussion of the issues of inalienability is carried out in terms of an alienability hierarchy,[8] but is rather whether or not the possessor is physically involved in the scene.

That this constraint applies equally to the PR construction and to the indirect passive is seen in Korean, where both these constructions are possible when the referents of the extra-thematic arguments are construed to be present in the scene. Thus, the following Korean PR sentence and indirect passive sentence are possible only when 'John' was wearing the clothes and the shoe when the described events happened.

(22) a. Mary-nun John-ul os-ul ccic-ess-ta.
-TOP -ACC clothes-ACC tear-PAST-IND
'Mary tore the clothes off of John.'
b. John-un Mary-ekey sinpal-ul pal-hi-ess-ta.
-TOP -DAT shoe-ACC step on-PASS-PAST-IND
'John had his shoe stepped on by Mary.' (Kim, to appear)}

Chinese is not usually characterized as having the PR construction (but see Fox 1981), but it is well-known for the omission of the associative marker *de*,

which, among others, connects the possessor and the possessed (see Chapell & Thompson 1992 for the details on the ommissibility of *de*. However, when this particle is absent in certain positions such as subject and object positions, the expressions receive interpretations characteristic of the PR construction in other languages. Thus, the meaning difference between Chinese forms (23a) and (23b) parallels that between Northern Pomo examples (24a) and (24b).[9]

(23) a. Tā de tóu téng
he ASSOC head hurt
'His head hurts.'
b. Tā tóu téng
he head hurt
'He hurts in the head/He has a headache.'

(24) a. mo:wa? xama:-nam dithal-e
3SM.OBL foot-DET hurt-PRES
'His foot hurts.'
b. mo:wal xama: dithal-e
3SM.P foot hurt-PRES
'He has foot pain.' (O'Connor, to appear)

Now, when the associative *de* is missing in the object position of certain expressions, the possessor is likely construed to be physically involved in the scene. The same also applies to the indirect passive as in the Korean PR and indirect passive constructions. Thus, in (25a,b) the speaker is assumed to have been wearing the clothes.

(25) a. Zhāng Sān sībòle wǒ yīfu.
tear-ASP I clothes
'Zhang San tore my clothes.'
b. Wǒ bèi Zhāng Sān sībòle yīfu.
I PASS tear-ASP clothes
'I had the clothes torn by Zhang San.'

Languages differ in the extent to which the notion of relevance is stretchable. Those (e.g. Northern Pomo) permitting PR only to the body-part expression are most restrictive. In other languages that permit the integration of extra-thematic arguments other than a body-part possessor, the cutoff point varies from one language to another, and even within a single language a great deal of individual variation over the acceptability judgment is observed (see the discussion regarding the previous examples in (15)). In cross-linguistic comparison, the two parameters of proximity and affectedness must be considered together so that the specific effects of each parameter for the displayed pattern can be recognized. This point can be illustrated by the following patterns exhibited by French, German, and Spanish.

(26) a. *Sa femme lui est morte. (French)
'His wife died on him.'
b. Mir ist meine Mutter gestorben. (German)
'I had my mother die on me.'

c. Se me murió mi madre. (Spanish)
'I had my mother die on me.'

(27) a. *Son bébé lui a pleuré toute la nuit. (French)
'Her baby cried on her all night.'
b. ?Mein Baby hat mir die ganze Nacht geweint. (German)
'My baby cried on me all night.'
c. Mi bebé me lloró toda la noche. (Spanish)
'My baby cried on me all night.'

(28) a. *El bebé del vecino me lloró toda la noche. (Spanish)
'The neighbor's baby cried on me all night.'

Both Spanish and German show a greater latitude in the affectedness dimension, as they show a greater range of the adversative datives (or Dativ Incommodi) than French. This is demonstrated by the fact that both Spanish and German permit intransitive-based forms as in (26), while French doesn't. But, as shown in (27), Spanish and German too are sensitive, to a different degree, to the difficulty in establishing the relevance of an extra-thematic argument. The German form (27b) is highly questionable, while the Spanish counterpart (27c) is readily accepted. The contrast between (26b) and (27b) indicates that the gravity of the effect upon the referent of the dative nominal plays a role in its integration. That is, not only physical impact but mental impact controls the relevance of the affected party to the described scene. By asterisking (28), we are making a crucial assumption regarding the scene of description; namely, the neighbor's baby cried in its house, while I was trying to sleep in my house. Should our assumption have been that the neighbor's baby cried clutching my leg, the sentence would have been all right. That is, the proximity dimension of relevance is playing a crucial role here.

The Japanese indirect passive, allowing the greatest latitude in the satisfaction of the relevance requirement, permits all these forms that are prohibited to varying degrees in these different languages. Thus, in (29a), unlike Korean and Chinese, the shoe in question needn't be on my foot; it could be the one that I had polished and left at the door. Indeed, it needn't even be mine, it could be Hanako's. By the same token, unlike Spanish form (28), (29b) is possible even if the baby had cried three houses away.

(29) a. Boku-wa Hanako-ni kutu-o hum-are-ta.
I-TOP -DAT shoe-ACC step on-PASS-PAST
'I had the shoe stepped on by Hanako.'
b. Boku-wa tonari-no akatyan-ni hito ban zyuu nak-are-ta.
I-TOP neighbor-GEN baby-DAT one night throughout cry-PASS-PAST
'I had the neighbor's baby cry on me all night.'

However, even in Japanese some connection must be stipulated between the referent of the extra-thematic argument and the described event. For example, if the shoe in (29a) had belonged to Hanako, we would assume that Taro had something to do with the shoe such as his having an obligation to polish Hanako's shoes regularly. And in (29b), the speaker must have been actually bothered by the neighbor's baby crying; and so if the speaker could not hear it cry, then there will be no necessary connection to integrate the speaker to the scene of the baby's

crying. The adversative constructions, thus, obtain on a delicate balance between the direct involvement and the remoteness of relevance. The direct involvement as a body-part possessor necessitates no semantic augmentation and no adversity reading obtains. But a person too removed from the scene of an event cannot be integrated as an affected party and under such a circumstance the adversative construction cannot be sustained.

4.2 Transitivity and affectedness

Even though with sufficiently convoluted logic any event can be construed as affecting an individual, many languages require some obvious indication as to how such an individual can be an interested party to the described event. As is clear from the observations so far, the possessive relationship between a possessor and an alienable object is next to the inalienable possessive relationship that helps to establish the relevance of the possessor to a scene crucially involving the possessed object. That is, when the possessed object is affected, its owner, though he may not be physically present at the scene, is also affected; e.g. he may have lost his possession or he may have been annoyed by something undesirable happening to his possession. Most of the relevant examples given so far in this paper, thus, receive an interpretation that the referent of an extra-thematic argument is a possessor of an object directly affected. Indeed, in some languages, overt marking of such a relation is favored for the integration of an extra-thematic argument, as can be seen in the contrast in the following French examples (see section 4.4. below on a related phenomenon).

(30) a. On lui a cassé sa vaisselle.
'They broke her dishes on her.'
b. ?On lui a cassé la vaisselle.
'They broke the dishes on her.'

Transitivity is crucially related to the notion of affectedness. The greater the impact, the greater the effect upon the interested party; e.g. the more radical a change an object undergoes, the more affected its possessor. But the concept of transitivity relevant to the notion of affectedness is not directly correlated to syntactic transitivity. We already noted that French in general does not permit adversative datives with intransitive verbs (see (26a) and (27a)). But when the referent of a dative clitic is physically involved in the described scene, or when the negative effect upon the interested party is clearly perceived, adversative expressions are possible, as shown below.

(31) a. Les insectes lui couraient sur les jambes.
'The insects crawled on his legs.'
b. Des pierres lui tombaient sur la tête.
'Stones fell on his head.'

(32) a. 'Le chiot lui a pissé dans ses laitues.
'The puppy peed on his lettuce on him.'
b. Les gosses lui ont gribouillé sur tous les murs.
'The brats scrawled all over the walls on her.'

Indeed, the concept of transitivity relevant here is not that of syntactic transitivity, as even syntactically transitive clauses fail to permit adversative datives when the referent of a dative clitic is not physically involved in the event. Thus, the following forms are not possible.

(33) a. *Elle lui pensait aux oreilles.
'She was thinking about his ears.'
b. *Tu lui aimes bien les jambes.
'You really like her legs.'

The transitivity effect is also observed in languages with a true PR construction, and, thus, Yeon (1993) observes the following pattern of acceptability gradation in Korean.

(34) a. John-i Mary-lul son-ul ttayli-ess-ta.
-NOM -ACC hand-ACC hit-PAST-IND
'John hit Mary on the hand.'
b. ?John-i Mary-lul tali-lul po-ess-ta.
-NOM -ACC leg-ACC see-PAST-IND
'John saw Mary's leg.'
c. *John-i Mary-lul moksolu-lul tul-ess-ta.
-NOM -ACC voice-ACC hear-PAST-IND
'John heard Mary's voice.'

Again, this notion of semantic transitivity has an interesting correlation with the general semantics of the constructions with extra-thematic arguments. As seen in (33), a weak transitive scene, in which the referent of a dative object nominal is not physically affected, the clitic is difficult to integrate. However, when a weak transitive sentence is augmented with the adversity reading, so that the relevance of the referent of the clitic is implicated, then such a sentence may successfully incorporate the dative clitic. Thus, Diffloth (1974) tells us that the following French sentences in (35) imply a sense of advertence or inconvenience in relation to the referent of the dative clitic; i.e. 'I saw her navel against her consent, or without her knowledge, my seeing it somehow affecting her... perhaps in a negative way,' and 'I saw his head although he was trying to hide himself.' (133) In the same vein, Hyman (1977) elaborates on his translation of the Haya PR sentence in (35) that it 'implies that what I saw of the child was only his arm, possibly also that I wasn't supposed to see it.' (105) (See also the relevant discussion by García 1975:282.)

(35) a. Je lui ai vu le nombril.
'I saw her navel.'
b. Je lui ai vu la tête.
'I saw his head.'

(36) ŋ-ka-bón' ómwáán' ómukôno.
I-P3-see child arm
'I saw the child's arm.'

So, again we see the adversative meaning coming in to augment the relevance of an extra-thematic argument when its integration is more difficult on other accounts.

This correlation between the adversity reading and the degree of affectedness is also seen in indirect passives. Thus, when the verb involved is one of high impact, no adversity reading, other than the lexically conveyed negative meaning, is detected, while the involvement of a verb of low impact entails a strong adversity reading, as observed in the following contrast:

(37) a. Hanako-wa Taroo-ni hoppeta-o nagur-/har-/tuner-are-ta.
-TOP -DAT cheek-ACC hit/slap/pinch-PASS-PAST
'Hanako had her cheek hit/slapped/pinched by Taro.'
b. Hanako-wa Taroo-ni hoppeta-o sawar-/nader-/mitume-rare-ta.
-TOP -DAT cheek-ACC touch/stroke/stare-PASS-PAST
'Hanako was adversely affected by Taro's touching/stroking/staring at her cheek.'

The parameters of affectedness and physical proximity show an interesting trade-off relationship in German such that when the transitivity is low and hence the affectedness is less clearly perceived, a more direct involvement of the referent of a Dativ Incommodi is required, while when the transitivity is high, a remoter involvement is permitted. This can be illustrated by *brennen* 'to burn' and its high transitivity derivative *verbrennen* 'to scorch, to burn out' (see Abraham 1971 and Ogawa 1989).

(38) a. Der Hut, den ich auf dem Kopf trug, brannte mir.
'The hat, which I carried on the head, burned on me.'
a' *Der Hut, der auf dem Hutständer hing, brannte mir.
'The hat, which hung on the hat stand, burned on me.'
b. Der Hut, den ich auf dem Kopf trug, verbrannte mir.
'The hat, which I carried on the head, burned out on me.'
b' Der Hut, der auf dem Hutständer hing, verbrannte mir.
'The hat, which hung on the hat stand, burned out on me.'

Certain Chukchee adversative PR forms seem to require both the affectedness and the physical proximity parameters satisfied to appropriate degrees. Thus, Vladimir P. Nedjalkov (p.c.) informs me that (39b) from Polinskaja & Nedjalkov (1987) is possible only when the father was at the scene, witnessing his reindeer's running away; hence ungrammaticality results when the reindeer had run away from his son's place. And if the reindeer wasn't the father's, he couldn't care less, and the adversative expression wouldn't be called for.[10]

(39) a. ətləg=in qaa= (akka=ypə) gəntek=w$^{?}$e=t
father=GEN reindeer=ABS son-ABL ran away
'The father's reindeer ran away (from the son).'
b. ətləg=ən (*akka=ypə) qaa=gəntak=w$^{?}$e
father=ABS son=ABL reindeer=run=off=3S.AOR
'The father lost his reindeer (*from the son).'

4.3 Person hierarchy

The key notion in our treatment of extra-thematic arguments is that of relevance, whose affectedness dimension underpins the notion of personal interest in the described scene. In fact, constructions similar to what we have been examining were discussed in terms of the concept of the *personne intéressée* by Bally (1926). In the case of inalienable possession, the involvement of the possessor as an interested person is obvious. But as the solidarity between a possessed object and its possessor becomes weaker, the identification of an interested person becomes more difficult. Likewise, when no possessive relation can be established, the relevance of the described scene to anyone other than those directly involved in the event, i.e. those thematically licensed, becomes far more difficult to determine. However, such an event can be highly relevant to the discourse participants, especially to the speaker, as he is the one speaking about it.

Our approach, with the claim that the extra-thematic argument is pragmatically integrated into clausal structure on the basis of the notion of relevance, makes a prediction that the person hierarchy plays a role in the relevant constructions. This is borne out at a general level in PR constructions, as they obtain more generally with first and second person possessors (Hyman 1977, Blake 1984, O'Connor, to appear). Person features, in fact, have a far-reaching effect on the displayed pattern in the integration of extra-thematic arguments. The general pattern is this. When the integration of an extra-thematic argument is highly motivated, as in the case of the possessor of an inalienably possessed body-part, any type of noun is permitted. But as the establishment of the relevance becomes more difficult, only pronouns, or first and second person pronouns, or only first person pronouns are integrable.

First, French shows that when the interpretation of a body-part possessor is possible, both full nouns and pronominal clitics are integrable, though the latter are preferable particularly with less conventional activities (see the difference between (40b) and (41b)). However, when the interpretation of body-part possessor is not possible, only pronominal clitics are readily integrable. Thus, whereas the (a) forms in (42) and (43) receive a high acceptability rating, the corresponding (b) forms are rejected by far more speakers than those accepting them (see Iguchi 1991 as well as Authier & Reed 1992).

(40) a. Elle lui lave les cheveux.
'She washes his hair.'
b. Elle lave les cheveux à Jean.
'She washes Jean's hair.'

(41) a. On lui a cassé le bras.
'They broke his arm.'
b. ?On a cassé le bras à ce garçon.
'They broke the boy's arm.'

(42) a. Jean lui a cassé sa vaisselle.
'Jean broke her dishes.
b. *Jean a cassé sa vaisselle à Marie.
'Jean broke Marie's dishes.'

(43) a. Le chiot lui a pissé dans ses laitues.
'The puppy peed on his lettuce on him.'
b. *Le chiot a pissé dans ses laitues à Paul.
'The puppy peed on his lettuce on Paul.'

The same kind of restriction applies to what Borer & Grodzinsky (1986) call 'ethical datives' in modern Hebrew, by which they mean those datives that cannot be construed either as possessors or as reflexives. But modern Hebrew is more lax than French in that they permit the integration of a full noun that is construable as a possessor.

(44) a. *hem mitxatnim l-Rani kol ha-zman
they marry to-Rani all the-time
'They marry on Rani all the time.'
b. ha-yalda kilkela l-Dan 'et ha-radio
the-girl spoiled to-Dan ACC the-radio
'The girls broke the radio on Dan.' (Borer & Grodzinsky 1986)

Spanish seems to be more restrictive than French and modern Hebrew in that it is said to allow only first and second person clitics with the non-possessive, i.e., ethical dative, construction (Jaeggli 1986:25). This restriction appears to be an original Indo-European feature (see Kliffer 1973:3). German, though it permits a wide range of dative constructions, allows only first and second person pronouns in what is called the Dativ ethicus construction in the relevant literature. The Dativ ethicus occurs in exclamatory sentences, as shown below, and in such expressions only *mir/uns, dir/euch* are permitted (Wegener 1989, Ogawa 1991). Furthermore, the German Dativ ethicus in the imperative mood, as illustrated in (46), is limited to first person singular.

(45) Der war mir/dir wieder betrunken! (Wegener 1989:57)
'He was drunk again (to my/your surprise)!'

(46) a. Fall mir nicht!
'Don't fall (for my sake)!'
b. Du gehst mir jetzt sofort nach Haus!
'You go home right now (for my sake)!'

Spanish also has a construction that permits only the first person singular clitic. This is the so-called 'outer' dative in a sequence of clitics. The example used to illustrate this point by Kliffer (1973:42) is (47), but my informant from Madrid rejects this sentence.

(47) El perro se me le escapó a Luis.
'The dog escaped from Luis on me.'

However, García (1975) makes the same point more cautiously in connection with the following sentences, about which she says that the progression from (48a) to (48c) 'moves from difficult to barely tolerable to impossible, as the extra relevance-giving Dative sinks from first to second to third person.' (443)

(49) a. Me le pintaste la mesa.
'You painted his table "on" me.'
b. Te le pinté la mesa.
'I painted his table "on" you.'
c. Se le pinté la mesa.
'I painted his table "on" her.'

What these restrictions indicate is that with respect to those situations whose relevance to a third party is difficult to establish, only discourse participants are or only the speaker is authorized to claim their or his relevance.[11]

The relevant restrictions extend beyond person features such that between an animate and an inanimate entity, the PR construction obtains more freely with the former, while the adversative constructions are only limited to sentient beings who can feel the sense of adversity (see Bally 1926, Hyman 1977, Fox 1981, O'Connor, to appear).

4.4 Possessor marking

In some languages the possessor has a marker indicating it as a possessor even in PR constructions. Thus, the Guugu Yimidhirr form in (49b) has the genitive marker *aga* on the possessor even though it is discontinuous to the possessed nominal.

(490 a. Biiba yarrga-aga-mu-n gudaa gunda-y
father boy-GEN-mu-ERG dog.ABS hit-PAST
'The boy's father hit the dog.'
b. Yarrga-aga-mu-n gudaa gunda-y biiba-ngun
boy-GEN-mu-ERG dog.ABS hit-PAST father-ERG
'The boy's father hit the dog.' (Haviland 1979)

A form like (49b) appears to give prima facie evidence for the raising analysis that lifts the possessor nominal from a NP complex containing an adnominal, genitive-marked possessor nominal. However, the facts are slightly more complex and they, in fact, argue for our integrational analysis. In line with Dixon's (1980) observation, the Guugu Yimidhirr pattern observed in (49) obtains only with respect to alienable possession, including the relationships between kinsmen, and when inalienable possession is involved, no possessor marking occurs. E.g.:

(50) Dyidyii-nda nganhi dyinda-y ngaabaay
bird-ERG 1SG.ACC peck-PAST head-ABS
'The bird pecked me [in the] head.' (Haviland 1979)

In another Australian language, Kalkatungu, the possessor of an inalienable object can be extra-thematically integrated without possessor marking, but the integration of the possessor of an alienable object requires the goal marking in the verb in addition to the optional marking on the possessor (also notice the adversative meaning of (51b)).

(51) a. kalpin-tu ngai lha-yi-nha ityintyi
man-ERG me hit-Ø-PAST nose
'The man hit me on the nose.'
b. kuntu gnai wairra nuu a-nghi thuma-nytyami yalkapari nga-tyi
not I heart lie AUX-me break-GOAL boomerang me-GEN
'I don't want him to break my boomerang on me.' (Blake 1984)}

A similar pattern of the possessor marking in PR constructions is reported for a Hachijôjima dialect of Japanese by Kaneda (1993), where the combinations of the genitive marker and the case marker are observed. In fact, the forms corresponding to the following standard Japanese forms are possible in this dialect. (Standard Japanese allows neither (52b) nor (52c).)

(52) a. taiko-no kawa-o yabut-ta.
drum-GEN skin-ACC break-PAST
'(I) broke the drumhead of a drum.'
b. taiko-no-o kawa-o yabut-ta.
drum-GEN-ACC skin-ACC break-PAST
lit. '(I) broke (of) the drum (of) its drumhead.'
c. taiko-o kawa-o yabut-ta.
drum-ACC skin-ACC break-PAST
lit. '(I) broke the drum (of) its drumhead.'

Kaneda (1993:174) reports that the genitive marker, as seen in (52b), is more omissible, as in (52c), as the relationship between the possessor and the possessed is predictable as in body-part possession and the whole-part combination.

Finally, possessor marking interacts with person features in Newari, such that, as predicted, first and second persons may omit the possessor marking, but not the third person. Observe:[12]

(53) a. Ji-gu dhaaten chon syaa.
I-GEN truly head hurt
'I truly hurt in the head.'
(Cf. Ji-gu chon dhaaten syaa 'My head truly hurts.')
b. Ji dhaaten chon syaa.
I truly head hurt
'I truly hurt in the head.'

(54) a. Chan-gu dhaaten chon syaa la?
you-GEN truly head hurt Q
'Do you really hurt in your head?'
b. Chan dhaaten chon syaa la?
you truly head hurt Q
'Do you really hurt in your head?'

(55) a. Wo-yu dhaaten chon syaa hon.
he-GEN truly head hurt I.hear
'I hear that he truly hurts in his head.'

b. *Wo dhaaten chon syaa hon.
he truly head hurt I.hear
'I hear that he truly hurts in his head.'

This observation, in fact, all the observations in section 4, are highly consonant with our integrational approach. The marking on the possessor is required where the integration of the extra-thematic argument requires more effort. To put it the other way around, the more predictable the relevance of the extra-thematic argument to the described scene is, the less need there is for morphologically indicating its relevance.

5 Remaining problems

Space limitations do not permit us to pursue them, but we should briefly touch upon those remaining problems that must be addressed in a full treatment of extra-thematic arguments. A first problem is the range over the adversity/benefactive reading. As noted earlier, a fair number of languages permit both adversity and benefactive readings with regard to extra-thematic arguments. Whether the construction permits such an option depends on a number of factors. Firstly, when an extra-thematic argument occurs in a construction with a semantic constraint of its own, its occurrence may be licensed by satisfying such a constraint, and therefore it requires no further semantic augmentation leading to the adversity/benefactive reading. A case in point is the topic construction. As we saw earlier, the 'double subject' or topic construction permits extra-thematic arguments in topic position. But they are not associated with the adversity reading even when they are not possessors of a body-part. This has to do with the general condition associated with the topic construction. Namely, the topic construction must satisfy the so-called 'aboutness condition' such that the comment-part must appropriately characterize the topic. As long as the topic expression satisfies this condition, no further semantic support is required (see note 9).

Whether the extra-thematic argument construction is exclusively associated with the adversity reading or it permits the benefactive reading depends to a great extent on whether or not a given language has a distinct benefactive construction. Japanese, for example, has a distinct benefactive construction, and therefore its indirect passive is typically associated with the adversity reading. In languages like German and Spanish, in which the benefactive construction involves dative nominals just like body-part datives and ethical datives, the range of the adversity/benefactive reading seems to be determined on the basis of how widely the benefactive construction has encroached on the domain of dative constructions. When the benefactive construction remains severely limited, as in German, by the basic give-schema, which stipulates the transfer of an object to a goal (beneficiary) (see Shibatani, to appear), a larger portion of extra-thematic dative constructions is associated exclusively with the adversity reading, while if the benefactive construction has been generalized, as in Spanish, then extra-thematic dative constructions tend to be more freely given the benefactive reading, though the adversity reading still seems to be predominant even in such a situation. The contrast under discussion is illustrated by the following Spanish example, which yields both adversity and benefactive readings. German, however, only permits the adversity reading for such an expression.

(56) Le tomé la sopa a Mamá. (Kliffer 1973)
'I drank soup on Mom/I drank soup for Mom.'

There are several syntactic problems associated with the constructions involving extra-thematic arguments. One issue has to do with the syntactic position of an argument with which an extra-thematic argument may hold a possessive relationship. This problem arises only in those constructions in which an extra-thematic integration is carried out in terms of the possessive relationship. This problem has been addressed in Relational Grammar in terms of the host for PR. Many languages (e.g. Northern Pomo, see O'Connor, to appear) seem to restrict the host argument to absolute positions, e.g. the object of a transitive clause and the subject of inactive intransitive clause ---the positions encoding a patient role. Yet some other languages, e.g. Newari, restrict the host to be the patientive subject. A possible explanation for this restriction may be obtainable from the notion of the affectedness discussed in this paper and that of the 'aboutness condition' of the topic construction just noted above.[13]

Finally, another syntactic problem has to do with the syntactic status of extra-thematic arguments. Again, there has been a considerable amount of literature, especially the Relational Grammar literature, on the problem. Though there appears to be a fair amount of variation on the syntactic effect of the integration of an extra-thematic argument, a general tendency seems to emerge. That is, the syntactic status of an integrated argument firstly depends on how entrenched the construction permitting it is. In those languages in which PR is a well-established phenomenon, the integrated argument tends to hold the grammatical relation of the host (see the Relational Grammar literature). Secondly, the syntactic status of an integrated argument depends on the ease and the stability of the integration. For example, those arguments integrated in terms of the possessive relationship hold a stronger syntactic relation to the clause than those that are integrated as adversely affected entities. Thus, Borer & Grodzinsky (1986) note that the ethical datives, as opposed to the possessive datives, in modern Hebrew cannot be questioned. And the same point is made by Authier & Reed (1992) with regard to what they call affected datives in French. This is reminiscent of the fact that even in English, an extra-thematically licensed argument cannot be readily questioned (see Goldberg 1993 and Shibatani, to appear for the discussions bearing on this point). Compare:

(57) a. John gave Bill a CD.
b. Who was given a CD by John?

(58) a. John bought Bill a CD.
b. ?Who was bought a CD by John?

These syntactic facts are consistent with our analysis of extra-thematic arguments; namely those that are integrable easily, e.g. a body-part possessor, acquire a firmer syntactic status than those that are integrated on the basis of a flimsier semantic relationship. Thus the integrational approach advocated in this paper offers promising leads to these remaining problems, which seem to have been approached from wrong angles in the past.

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NOTES

[1] But Berman (1982:36) notes that the relevant usage 'is quite generally attributed to Slavic-Yiddish influence...'

[2] Transitivity also plays some role for the distinction here; see section 4.2 below.

[3] Anticipating our conclusion, it is not correct to impose 'lexical' restrictions (e.g.body-part items only) on PR (Baker 1986, O'Connor, to appear, and others). The restriction is not on PR per se, but rather on the integration of extra-thematic arguments (see section 4).

[4] See also Wierzbicka (1988, Chaps. 2 and 4), where, in a spirit similar to ours, she compares the Japanese adversative passive with the IE dative constructions.

[5] See García (1975), who also argues against a treatment of the Spanish ethical dative clitics in terms of thematic roles. The domain designated by the term 'ethical dative' varies from one linguistic tradition to another. But for our purposes, we can call 'ethical datives' those extra-thematic dative arguments whose referents are not construed to be possessors of body-parts and other objects.

[6] Cf. Kuno (1983:204ff) for a similar account in terms of the notion of 'involvement'.

[7] In fairness to Hyman, we should mention that he also compares the PR construction and its dative analog in European languages and draws cross-constructional similarities.

[8] See, for example, Polinskaja & Nedjalkov (1987). The discussion here points out the importance of the situated interpretation of the relevant constructions; cf. O'Connor (to appear).

[9] The expression in (23b) is normally characterized either as a double-nominative/subject or topic construction. Indeed, Northern Pomo examples like (24b) involving an extra-thematic argument in relation to a subject nominal are treatable as a topic construction, and their semantic properties can be made to follow from the general property of a topic construction, which stipulates that the topic and the remaining portion of the sentence must be related in terms of the aboutness condition; i.e. the comment portion must describe a property that appropriately characterizes the topic.

[10] Recall Diffloth's French example, *On lui a tiré dans les pneus* 'People shot in his tires,' which requires the understanding that 'he was in the car, in fact in the driver's seat, at the time of shooting, with the whole vehicle, tires included, considered to be in his personal sphere.' (Diffloth 1974:132)

[11] See Iwasaki (1993) for the discussion of wide-ranging phenomena where the person hierarchy, especially the speaker's subjective involvement, plays a role.

[12] Significantly, the genitive marker does not drop in a regular adnominal expression as in; *Ta changu chon kha* 'This is your head.' In the adnominal position, the kinship relation allows greater freedom of the genitive-marker

dropping than the possession of a body-part, as in Mandarin Chinese (see Chapell & Thompson 1992)).

[13] In the object position, Newari uses a construction that grammatically licenses the body-part possessor and the body-part nominals, as in; *Won jita chenne dala* 'He hit me in the head,' where, just like English, the possessor is marked by the object marker and the body-part by the locative marker. Transitivity also plays a role in these constructions in which arguments are fully grammatically (i.e. thematically) licensed; e.g. **I saw her on the leg* (see Fox 1981 and Wierzbicka 1988, Chap. 2).

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REFERENCE TO MOVEMENT IN SPOKEN AND SIGNED LANGUAGES: TYPOLOGICAL CONSIDERATIONS[1]

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Talmy's Typology of Motion Events and their Expression

We begin with an attempt to apply Leonard Talmy's typology of motion events to sign language. This will lead us to add several more factors to the typology, as we attempt to apply it to both signed and spoken languages. This paper is thus a preliminary exploration of what can be learned about the linguistic expression of motion events when one makes crosslinguistic comparisons between types of languages in both modalities.

Talmy (1975, 1985) has proposed what he has called "an apparently exhaustive typology" (1985:62) of verbs of motion and location, based on three types of lexicalization patterns. Here we will limit ourselves to verbs of motion — that is, verbs that encode the movement of a figure through space. Talmy's three types of patterns are based on the category of information that is conflated with the "fact of motion" in a verb stem. That is, given that a verb encodes motion, the typology is based on the type of additional information that is typically conveyed in a monomorphemic verb form. We will refer to the three types of languages as "path-type," "manner-type," and "figure-type."

- In path-type languages the verb encodes movement along a particular directional path (e.g., 'enter', 'descend', etc.).
- In manner-type languages the verb indicates manner of movement and is neutral with regard to path, which is encoded by elements associated with the verb (e.g., 'run in', 'fly in', 'walk down', etc.).
- In figure-type languages the verb indicates what type of object is moving (e.g., 'small-shiny-spherical-object-moves'), and path is encoded by elements associated with the verb.

In a more recent typological analysis, using morphosyntactic criteria, Talmy (1991) focuses on whether the "core schema" — in this instance, directed motion — is encoded by the main verb of a clause or by some other element.[2] Such other elements are called "satellites," defined by Talmy (1991:486) as "the grammatical category of any constituent other than a nominal complement that is in a sister relation to the verb root." Satellites include a range of forms (1991:486):

> The satellite, which can be either a bound affix or a free word, is thus intended to encompass all of the following grammatical forms...: English verb particles, German separable and inseparable verb prefixes, Latin or Russian verb prefixes, Chinese verb complements, Lahu non-head "versatile verbs" (cf. Matisoff 1973), Caddo incorporated nouns, and Atsugewi polysynthetic affixes around the verb root.

Languages can be categorized according to the type of form that typically is used to map a figure to a path — a satellite or a verb. Talmy proposes a bipartite typology of construction types on this basis (1991:486):

> Languages that characteristically map the core schema into the verb will be said to have a **framing verb** and to be **verb-framed** languages. Included among such languages are Romance, Semitic, Japanese, Tamil, Polynesian, most Bantu (for the qualification, cf. Schaefer 1987), most Mayan, Nez Perce, and Caddo. On the other hand, languages that characteristically map the core schema onto the satellite will be said to have a **framing satellite** and to be **satellite-framed** languages, and included among them are most Indo-European minus Romance, Finno-Ugric, Chinese, Ojibwa, and Warlpiri.

Putting the two typologies together — the lexical and the constructional — path-type languages are verb-framed, and both manner- and figure-type languages are satellite-framed. This flows naturally from Talmy's definition of framing: The core schema of a motion event is movement along a path, and this information can be expressed either by a verb or a satellite.

The encoding of information about **manner of movement** differs in the two types of languages. In a satellite-framed language like English, manner is conveyed by the main verb: *He **walked** into the house, **ran** into the house, **crawled** into the house*, etc. In a verb-framed language like Spanish, manner is conveyed by additional means, such as a gerundive: *Entró **corriendo** a la casa* '(He) entered **running** to the house'. There are apparently no languages in which the dominant pattern consists of verbs that conflate path and manner.

Verbs of Motion in Sign Language

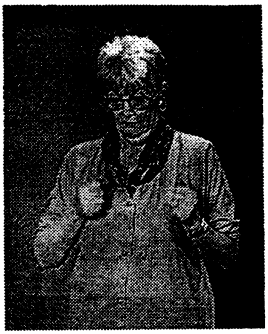
We have been studying narratives in the Sign Language of the Netherlands (SLN). This language, like ASL, is descended from Old French Sign Language. In this analysis, we focus on verbs of **directed motion** and **manner of locomotion**. These are intransitive verbs expressing the movement of an animate or inanimate figure. The characteristics of the verbs that we have studying seem to correspond quite closely to comparable forms in ASL.

A verb of directed motion in a gestural language, of necessity, moves through space. That is, space is used to represent space, and motion is used to represent motion. This is not to say that sign languages are iconic. There is, by now, ample evidence that the natural languages of the deaf are symbolic and

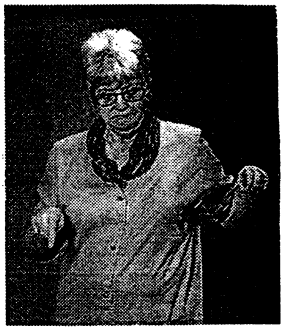
schematized systems of representation, consisting of conventionalized, discrete morphemes. However, because motion is used to represent motion, it is natural in sign languages to use a directed gesture to encode directed motion. This is because once one has set up loci in signing space, one cannot separate a moving gesture from the direction in which it moves. Such gestures can be classified as verbs on the basis of several types of criteria: marking of agreement and aspect, and scope of negation and interrogation. Sign languages are thus, by their very nature, path-type and verb-framed languages in terms of Talmy's typology. We would expect all natural sign languages to be of this sort.

The linguistic literature on sign language, however, does not come to this clear conclusion. At issue is the syntactic analysis of verbs of manner and verbs of motion. Ted Supalla and Elissa Newport (Newport & Supalla 1980; Supalla 1978, 1982) have analyzed ASL verbs as consisting of one of seven discrete movement roots. We will be concerned with the two basic **path roots** that move from one point to another: the **linear** root and the **arc** root. A path root can simultaneously convey directionality of various sorts, such as up or down, ending at a point in signing space or into contact with a sign made on the other hand; it can move laterally or in a deictic direction toward or away from the signer; and so forth. It can be inflected for features of both figure and manner (as discussed below). For purposes of this brief presentation we will focus on the simple one-handed linear and arc roots moving **to** or **from** an established spatial locus, along with two complex signs, using two hands, to represent entry into and exit out of an enclosure.

Supalla (1990) has recently proposed a serial-verb analysis for verbs of motion in ASL. We think that this approach is an important contribution, but we have a somewhat different serial-verb analysis to propose. Supalla considers constructions in which a verb of manner of locomotion, such as 'run', is followed by a path verb, such as 'move forward', 'move in a circle', or 'zigzag upwards'. In such constructions, the first verb uses a large part of the upper body. We will refer to this type of verb as a **manner verb**.[3] For example, the sign for 'run' involves making loose fists, bending the arms inwards towards the chest, and making several tight rotations of the forearms, with the shoulders and head moving slightly forward at the same time, as shown in Picture 1. This is followed by a more schematized **path verb**, in which one hand traces the path, such as a lateral movement. If the moving figure is a human being, this hand will assume a particular shape. Linguists of sign language refer to such handshapes as **classifiers** — for instance, a downward V-shape for a two-legged creature (Suppala 1986). Using such a classifier, the two fingers will wiggle while tracing the path, representing two-legged movement. Pictures 2 and 3 show the beginning and end points of such a verb. Manner is thus fully encoded on the first verb, with a reduced manner morpheme on the second verb — in this case, the wiggling of the fingers.[4]



Picture 1. RUN



Picture 2. APPROACH (begin)



Picture 3. APPROACH (end)

These two verbs — the manner verb and the path verb — are articulated in a smooth and continuous fashion, with no intervening break. They have the same subject, and the scope of aspect, negation, and interrogation applies to the two verbs as a unit. They are therefore appropriately treated as serial verbs, in accord with "the traditional perspective that has defined verb serialization as two or more verbs 'acting' as one verb" (Durie n.d.:52). Supalla (1990:149) considers the path verb to be reduced in form, in comparison with the manner verb. That is, the encoding of manner is fuller or more elaborated in the full-body verb than the following one-handed verb. He also considers the first verb to be "an independent, nonserial verb." On this basis, he concludes that, in terms of Talmy's typology (1990:151), ASL is a manner-type language, like English (and, by implication, a satellite-framed language in which a "reduced serial verb" serves as a satellite).

We propose a different analysis. Although we agree that the manner verb + path verb sequence can be seen as a serial verb construction, it is still evident that the "core schema" — namely, directed motion — is encoded by a verb, and not a satellite. Both forms are verbs, and either of them can stand alone as a full verb in connected discourse. In the serial construction, neither shows unequivocal signs of being a nonfinite form with respect to the other.

It is typical — perhaps universal — in serial-verb languages that a verb of manner precedes a verb of direction (Foley, pers. comm.).[5] The ordering of the two verbs in ASL is consistent with this pattern, with no evidence that the verb of manner is the "independent, nonserial verb" in the series. That is, we see ASL as a verb-framed language in which manner can be encoded both by an independent verb, and inflectionally on a path verb in a serial-verb construction.

We are more interested in a further type of serialization in both ASL and SLN: the type of serialization that is involved when two path verbs are combined.

As a prototypical example, consider the sentence 'The man ran into the house' — first in SLN, and later in various spoken languages. To begin with, one signs that the protagonist is a man and places the house in signing space. The initial verb of manner is the same as in the preceding example, using the arms and trunk to reference a running human figure (Picture 4). This is followed by a linear path verb, moving towards locus of the house, with the wiggling fingers indicating a human being running (Picture 5). If this sign were to end at the locus of the house, it would simply mean 'The man ran up to the house'. In order to indicate that the man entered the house, a second path verb is needed. This is an all-purpose verb meaning 'enter', with no handshape classifier (i.e., flat hand) and no inflection for manner (Picture 6). The three verbs are articulated continuously, with a "hold" at the end of the sequence, indicating completion of the event. This, also, is a serial-verb construction, in which the three verbs have the same subject and fall under the same scope, and each one has the form (as far as we can tell) of an independent verb. Each one can serve as the main verb of a separate clause and can take negative, interrogative, and imperative operators.



Picture 4. RUN



Picture 5. APPROACH



Picture 6. ENTER

The verbs are shown in in three frozen snapshots in Pictures 4-6. Note that the two-legged classifier is beginning to emerge on the index and middle fingers of the right hand in Picture 5, as RUN transmutes into APPROACH. The right hand will then continue moving towards the HOUSE locus, with the two fingers wiggling, while the left hand assumes a general 'cover' handshape. Finally, as shown in Picture 6, the right hand flattens into a palm-shape and slips under the left hand, signing ENTER.

The two path verbs, articulated without an intervening pause, mean 'approach-enter', and not 'approach and then enter'.[6] As Mark Durie has said in a recent paper on universals of verb serialization (n.d.:29): "...verb serialization has as a key distinguishing property that it is used to describe (what are conceptualized by native speakers as) single events, the individual verbs embodying different components of each event." And, again, it seems to be a universal that the order of concepts encoded in such constructions is MANNER - DIRECTION - GOAL (William Foley, pers. comm.).

We propose that 'the man ran into the house' is a single event to speakers of satellite-framed languages, as in this English version, as well as to speakers of verb-framed languages using serial verbs, as in SLN. We can schematize the SLN version as:

(1) MAN HOUSE RUN APPROACH ENTER.

Similar serial-verb orders can be found in spoken languages. To offer just two examples, from Asia and Africa, found at random in the literature:

(2a) *lan chay vào vuòn* [Vietnamese, Lord 1993:147]

Lan run enter garden

'Lan ran into the garden.'

(2b) *eri weni-ni ama suo-mi* [Ijo, Sebba 1987:145]

he walk-LINKER town enter-SIMPLE.PAST

'He walked into a town.'

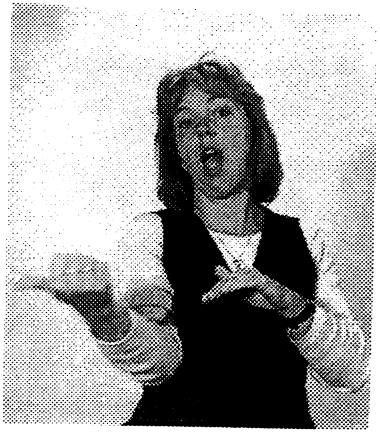
We suggest that ASL, SLN, and spoken serial-verb languages of this type, can all be characterized as **complex verb-framed languages**, in contrast to the more familiar **simplex verb-framed languages** described by Talmy.[7]

Types of Paths

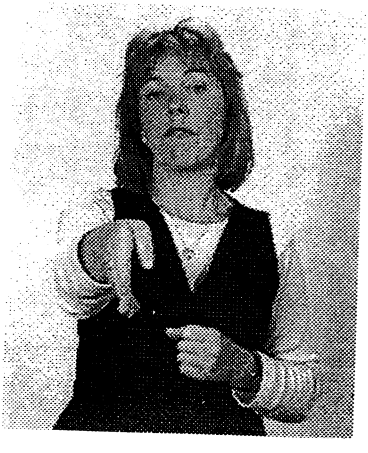
We have found only three types of serial path verbs in SLN. Two of them have to do with enclosures, as in entering a house — which we have just seen — and its opposite, leaving a house. This is signed with an all-purpose 'exit' sign followed by a linear path moving away from the source. The 'exit' verb is two-handed, with one hand forming an enclosure and the other moving out of it with a pointing thumb (Picture 7). This verb, like 'enter', does not carry a figure classifier. The following serial verb, like the 'approach' verb, is inflected for both figure and manner of motion. The third type of serial path verb indicates moving across a dividing line or boundary, such as crossing a street. Like 'enter', the first verb in the serial construction is a linear 'approach' path inflected for figure and manner, approaching the line of the street, previously set up from one side of the signing space to the other. The second verb is an arc path, with an all-purpose handshape — in this instance, a vertical, flat hand crossing over the line of the street (Picture 8). Each of these verbs can be preceded by a manner verb — such as 'walk', 'run', 'fly', 'swim' — to form a three-part serial verb construction.

Schematically:

(3) RUN-APPROACH-ENTER (='run in')
RUN-EXIT-DEPART (='run out')
RUN-APPROACH-CROSS (='run across')



Picture 7. EXIT



Picture 8. CROSS

What is special about 'enter', 'exit', and 'cross'? These are all paths that specify a particular configured relationship of figure to ground. When a figure moves to a point, it is simply **there** — located at that point in a simple relation of contiguity: If a man runs **to** a house he ends up being **at** the house; if he runs **away from** the house, he simply ends up being **not at** the house; and so forth. But if he runs **into** a house he ends up being **inside** of the house; if he runs **out of** the house, he begins by being **inside**; and if he runs across the street he is not simply **at** a point, but at a point that is **across** the street. Because location and motion are represented spatially in sign language, these configurations must be depicted — at least schematically. An interior space, as source or goal, requires a second, covering hand to provide the enclosure; crossing a boundary requires an arc, rather than a linear path, to indicate that the path is, in some sense, impeded.

On the basis of sign language, therefore, we propose that there are two kinds of path orientations. One type focuses on the path itself, moving in space from one "non-configured" point to another. We will refer to this type as **path-focused**. It corresponds to verbs such as *approach, depart, ascend, descend.* Such paths can be signed by a single, one-handed gesture, tracing the directionality of the path with regard to a starting point and an ending point. The more complex path orientation, represented by *enter, exit*, and *cross*, focuses on characteristics of the ground: enclosure or boundary. The endstate of motion is a

"configured" relation of figure to ground. Provisionally, we will refer to such paths as **ground-focused**. Such paths have a linear segment, which inflects for figure and manner (the wiggling fingers in our example), combined with a non-linear segment which is neutral with regard to both figure and manner (the special 'enter', 'exit', and 'cross' signs, with "non-classifier" handshapes).

Path Orientations in Spoken Verb-Framed Languages

Turning to spoken verb-framed languages, we find evidence for the same distinction between two types of path orientation. The evidence comes from the use of manner verbs with path expressions. Talmy's (1985:68-9) characterization of path-type languages explicitly blocks the use of a manner verb as the main verb describing a motion event:

> In the second typological pattern for the expression of Motion [i.e., path-type], the verb root at once expresses both the fact of Motion and the Path. If Manner ... is expressed in the same sentence, it must be as an independent, usually adverbial or gerundive type constituent. ... [I]t is not indicated by the verb root itself.[8]

Jon Aske (1989) has pointed out, however, that in Spanish, manner verbs can be used with path adverbials under some circumstances. For example:

(4) *La botella flotó hacia la cueva.*

'The bottle floated towards the cave.'

(5) *Juan nadó de la playa a la isla.*

'Juan swam from the beach to the island.

He suggests such manner+path expressions are licensed because they are not "telic path phrases"; that is, they do not "predicate a location ... of the Figure argument" (1989:6). Aske's identification of two types of path phrases — what he calls a "mere locative path phrase" and a "telic path phrase" — corresponds to the path-focus and ground-focus expressions that we have identified in sign language.

We have found numerous examples, in Spanish, of path-focus clauses with a main verb of manner of motion and an adverbial path phrase. The data come from elicited narratives gathered in Spain, Chile, and Argentina, and novels written in Chile, Argentina, Peru, and Colombia (Slobin in press). The following are examples of path descriptions of this sort. The first three are fairly simple, occurring in stories elicited by the picture storybook, *Frog, where are you?* (Mayer, 1969):[9]

(6) *Empezó a correr hacia el barranco.*

'(He) started to run towards the cliff.'

(7) *Camina rumbo a un precipicio.*

'(He) walks towards a cliff.'

(8) *El perro ya se ha saltado de la casa.*

'The dog already has jumped from the house.'

Such constructions, like Aske's invented examples, do not fit Talmy's typological description (or Jackendoff's constraint). They occur in all three Spanish-speaking countries, in both school-age and adult narrations. In novels, path descriptions with verbs of manner and directional adverbials can be fairly elaborate, such as the following three examples (Slobin, in press):

(9) *Los llevó a través de un laberinto de helados corredores hasta la sala que había preparado...*

'He led them through a labyrinth of icy corridors to the room that he had prepared.' (Allende 1982:213)

(10) *...Miguel se arriesgaba a entrar de día, arrastrándose entre los matorrales, como un ladrón, hasta la puerta del sótano...*

'...Miguel dared to enter by day, crawling through the bushes, like a thief, to the door of the basement...' (Allende 1982:294)

(11) *...pude caminar, sin grandes dificultades, por el callejón de entrada, entre los eucaliptos.*

'...I was able to walk, without great difficulty, along the entry lane, between the eucalyptus trees.' (Sabato 1988:129)

In all six of these examples, the verb describes only the path itself or the arrival at a goal, but without predicating a specific locative endstate except for proximity to a ground. Often the path moves through a medium — that is, the ground constitutes part of the path itself: 'through a labyrinth of corridors', 'through the bushes', 'along the entry lane between the trees'. When the ground is a goal, it is only approached, and therefore its particular locative features are neutral with regard to the verb: 'to the forest', 'towards a cliff', 'to the room'.[10]

The distinction between the two path types holds up across a range of verb-framed, path-type languages that we have checked with informants.[11] In every instance, a manner verb can be used with path-focus, but not ground-focus. Compare versions of 'The man ran into the house' and 'The man ran up to the house' in Spanish, French, Turkish, Japanese, and Korean. In the (a) versions a separate ground-focus verb is used and manner is expressed by a nonfinite verb-form, while in the (b) versions there is a manner verb combined with a path expression indicating the goal by use of an adpositional phrase or a noun with a locative marker.

Spanish:

(12a) *El hombre entró corriendo a la casa.*

'The man entered running to the house.'

(12b) *El hombre corrió hasta la casa.*

'The man ran up.to the house.'

French:

(13a) *L'homme est entré dans la maison en courant.*

'The man entered the house in running.'

(13b) *L'homme a couru jusque'à la maison.*

'The man ran up.to the house.'

Turkish:

(14a) *Adam koşarak eve girdi.*

'Man running house-DAT entered.'

(14b) *Adam eve kadar koştu.*

'Man house-DAT up.to ran.'

Japanese:

(15a) *Otoko wa ie ni hasitte haitta.*

'Man TOPIC house DAT running entered.

(15b) *Otoko wa ie made hasitta.*

'Man TOPIC house up.to ran.'

Korean:

(16a) *Ku salam-i cip-ulo ttwui-e tul-e kassta.*

'That person-SUBJ house-to run-CONNECTIVE enter-CONNECTIVE went.'

(16b) *Ku salam-i cip-ulo ttwui-e kassta.*

'That person-SUBJ house-to run-CONNECTIVE went.'

(Note that the main verb in Korean is a deictic — 'come' or 'go'. We will return to this later.)

The patterns reflected in these examples of 'enter' also apply to 'exit' and 'cross' in these languages. That is, all three of these paths must be expressed by a directional verb. Why should all of these verb-framed, path-type languages distinguish between the two types of paths, allowing manner verbs only with Aske's "locative path phrases" or our "path-focus" expressions? Aske treats prepositional phrases as non-verbal predicates, and goes on to suggest that, in Spanish, there is a general constraint against all resultative non-verbal predicates. We can reinterpret this constraint in terms of a typological tendency or preference to use a verb, rather than some other form, to indicate entry into any state. The restriction against non-verbal encoding of goal-focused locative states is simply one

instance of this tendency. Aske notes, for example, that Spanish "has nothing comparable to *Pat kicked the door open, We stood the pole erect*, or *She knocked the door down*" (1989:6).

This is, in fact, also true of SLN, and of all the spoken verb-framed languages that we have checked. Consider, for example, Aske's first example, 'He kicked the door open'. In SLN, and also in ASL, this is a two-clause construction:

(17) **Sign Language of the Netherlands (SLN):**

MAN KICK DOOR. DOOR OPEN.

In the spoken languages cited above, the main verb is 'open', and 'kick' is in a subsidiary phrase or clause:

(18) **Spanish:**

El hombre abrió la puerta de una patada.

'The man opened the door of a kick.'

(19) **French:**

L'homme a ouvert la porte avec le pied.

'The man opened the door with the foot.'

(20) **Turkish:**

Adam kapı-yı tekmeliyerek açtı.

'Man door-ACC kicking opened.'

(21) **Japanese:**

Kare wa doa o ket-te aketa.

'He TOPIC door ACC kick-COMP caused.to.open.'

(22) **Korean:**

Ku-ka mwun-ul cha-se yelessta.

'He-SUBJ door-ACC kick-CONNECTIVE opened.'

In all of these verb-framed languages we see a general preference to use a full, main verb to indicate a change of state. Rather than phrase this as a restriction against non-verbal predicates, in Aske's terms, we would rather speak in terms of a general preference toward verb-framing, across conceptual domains. That is, we take Talmy (1991:486) seriously in following his proposal that a language — overall — has a characteristic pattern of mapping the conceptual structure of events onto syntactic structure. In sign languages the pervasive pattern of verb-framing is motivated by the depictive character of the modality. We suggest that spoken verb-framed languages have a similar "depictive preference." To the extent that depiction is possible in a spoken language, it is the verb that is the most suitable vehicle for depicting changes of state.

Further Distinguishing of Path Types

We still have not adequately distinguished the depictions involved in what we have been calling path-focus and ground-focus orientations to motion scenes. Why should 'enter', 'exit', and 'cross' call for depiction by a separate verb, which apparently cannot indicate manner of movement? Talmy (pers. comm.) has suggested the answer: in all three of these cases, the figure crosses a boundary.[12] This seems to us — provisionally — to most adequately characterize the sort of configured relationship between figure and ground that we have been calling ground-focus. The SLN verbs for these three paths all have a component that indicates a boundary: (1) in signing 'enter', the active hand speeds up slightly and slips under the passive hand, coming to rest there; (2) in signing 'exit', the active hand begins in the contained location, and quickly emerges out from under the passive hand with a wrist-flick and thumb-point in the direction of exit; (3) and in signing 'cross', the active hand arcs over a boundary that has previously been traced in the air. We suggest that, in spoken verb-framed languages, the corresponding verbs have similar image-schematic, depictive qualities. Therefore, they stand alone, as main verbs, rather than in association with manner verbs. The core schema of 'enter', 'exit', and 'cross' is movement across a boundary, and not manner of movement. We therefore revise our terminology, calling the two types **path focus** and **boundary focus**.

This distinction is apparently of no interest to manner-type, satellite-framed languages. (We have no knowledge of figure-type, satellite-framed languages, such as Atsugewi.) In those languages, a great range of predicate types can be expressed outside of the main verb, in satellites. We have not yet explored possible reflections of path and boundary focus on the forms of satellites in those languages, and it is possible that the two types are distinguished by various means that we have not identified.

Varieties of Manner

When we consider the variety and richness of manner expressions across language types and modalities, we find a continuum. In the path-type languages that we have examined most closely — Spanish and Turkish — there is only a relatively small lexicon of verbs of manner (Berman & Slobin 1994). Even though such verbs can be used for the expression of path focus, they represent a marked option. Generally, pure path verbs are used — both the boundary-focus type, and non-manner path-focus verbs such as the equivalents of 'ascend', 'descend', and 'approach'. As Talmy (1985:69) pointed out in his formulation of the typology, independent constituents expressing manner, in such languages, "can be stylistically awkward, so that information about Manner ... is often either established in the surrounding discourse or omitted altogether." In manner-type languages, by contrast, there are rich lexicons of manner verbs. We have found this clearly in comparing our elicited narratives in English and German with those in Spanish and Turkish. In the Germanic languages, manner comes "free":

satellites encode path, and some non-path verb is needed to create a complete clause. Manner verbs are the neutral option in these languages.

This comparison can be clearly seen in examining translations from a path-type language to a manner-type language. In Slobin's (in press) study of novels written in English and Spanish, he also compared translations of novels in both directions. English translators often **add** manner information to Spanish originals, while Spanish translators very frequently **omit** manner information provided in English originals. He found that Spanish translators omit manner information about half of the time, whereas English translators actually add manner in almost a quarter of their translations. For example, the English translator of Vargas Llosa's simple path verb, *avanzar* 'advance, move forward', appropriately replaced it with the English manner verb, *walk*, without which the clause would sound stilted or strangely marked:

(23) *Don Federico avanzó sin apresurarse...* ('Don Federico advanced without hurrying...') (Vargas Llosa 1977:181)

Translation: Don Federico walked unhurriedly towards her... (Vargas Llosa 1982:150).

On the other hand, the Spanish translator of Michener simply found no equivalents for *bound* and *overtake*:

(24) ...he bounded up the stairs after her, overtaking her in the bedroom... (Michener 1978:615)

Translation: *...subió tras ella, alcanzándola en el dormitorio...* ('...he ascended after her, reaching her in the bedroom') (Michener 1980:458)

Sign languages provide the most elaborate expression of manner — not only manner of motion along a path, but many dimensions of manner and quality. Our presentation of the SLN version of 'The man ran into the house' does not present the full picture of the array of manner devices available to signers, because we did not attend to simultaneous information conveyed by the face and head. The position of the mouth and movement of the lips convey rate and intensity of movement, simultaneously with the manual gestures, and with scope over the entire serial-verb complex. Talmy (1985:132) has found that rate is not indicated inflectionally on verbs of motion in spoken languages, but this restraint does not apply to sign languages, with their capacity for simultaneous encoding of information on facial and manual articulators. (Rate can also be indicated by the speed of execution of the path verb.) Other aspects of facial expression, head orientation and movement, and body posture communicate dimensions of affect and evaluation in conventional ways that can only be considered linguistic rather than mimetic. In addition, the body-manner verb can indicate directionality of the path, in that the signer leans forward into the two-handed manner gesture, anticipating path orientation by means of this incipient movement. (Supalla [1991] calls this movement a "shortened path.") Thus some of the apparently universal linguistic constraints that have been identified may be due to the necessarily

linear nature of the vocal modality, rather than to inherent conceptual or grammatical constraints. That is, the use of the visual modality — with linguistic encoding marked simultaneously on hands, face, and posture — reveals a broader range of conceptual categories that can be semantically marked on verbs.

Motion + Ground

In some instances, SLN also inflects path verbs for characteristics of the ground — or perhaps characteristics of the nature of impact with a ground. We have noticed this with regard to the verb 'fall'. In our SLN elicited narratives from the picture storybook, *Frog, where are you?*, there are two different types of falling event. In one, a boy falls from a tree to the ground. This is a fall with a hard impact, and the descending arc gesture that expresses the fall ends with a sudden, rigid hold. In another scene, a boy falls from a cliff into a pond of water. Here the same gesture ends with a bounce, indicating contact with a non-solid or springy ground. The distinction is lexicalized in spoken languages, such as the distinction between *crash to the ground* and *splash into the water*. In sign — again, due to the depictive capacities of the modality — such distinctions can be inflectionally marked on the verb.

Deixis

Finally, it should be pointed out that directional deixis plays a key role in signed languages, in that a path verb moves not only with respect to source and goal, but also with respect to sender and receiver, as well as with respect to points that may be established in signing space to indicate the locations and viewpoints of protagonists set up in the discourse. Thus, for example, the signer can easily distinguish between 'The man came running into the house', as reported by an observer inside the house, and 'The man went running into the house', as reported by an outside observer. This is done by body posture, gaze direction, and sign movement with respect to locations in signing space. Furthermore, this information is conveyed simultaneously with all of the expressions of figure, ground, path, manner, rate, affect, and scope operators of tense and illocutionary force.

We noted in (16a) and (16b) that, in Korean, the main verb in motion clauses is a deictic, 'come' or 'go'.[13] This is often the case in Japanese as well. The following is an apparently more natural way to say 'The man ran into the house', with the main verb 'come' or 'go', depending on the viewpoint of the speaker:

(25a)*Otoko wa ie ni hasitte haitte kita.*

'Man TOPIC house DAT running entering came.'

(25b)*Otoko wa ie ni hasitte haitte itta.*

'Man TOPIC house DAT running entering went.'

In these verb-framed constructions the main verb does not indicate path, but deixis. We do not see this as an inherent contradiction of Talmy's typology, but rather as an inherent limitation of spoken language. If one wishes to indicate

deixis, it is done so with a separate element — a verb in Korean and Japanese, a satellite in a satellite-framed language like German (*hin-/her-* 'thither/hither'). The iconic order, if one must present verbs in linear order, seems to be to present a figure moving on a path which is, ultimately, anchored at the speaker: 'he entered the house moving toward me' or 'he entered the house moving away from me'. Following our classification of complex verb-framing, Japanese and Korean remain verb-framed languages, even if the main verb is not a path verb.

* * *

We wish to point out, in conclusion, that all of the dimensions that can be simultaneously encoded in sign languages can be arrayed in sequential morphemes in spoken languages. Given the constraints of linear presentation, however, spoken languages tend to omit many possible dimensions of expression unless they are foregrounded in discourse. This is due to modality, rather than factors inherent to the human language capacity. As Karen Emmorey (1993:156) has noted:

> Signed languages appear to have a greater capacity for expressing information simultaneously, which may be an inherent property of the visual system, compared to the auditory system, which appears to be particularly adept at distinguish fast temporal distinctions."

We would underline, therefore, that in order to fully understand the human potential for language, it is necessary to study the full range of human languages, in both the auditory and visual modalities.

NOTES

1. We thank Melissa Bowerman, William Foley, Paulette Levy, Leonard Talmy, and David Wilkins for valuable discussions of the theoretical issues raised in this paper, Ari Terpstra for serving as a skilled and insightful informant with regard to the Sign Language of the Netherlands, Martha Luining and Diny Visch for providing valuable sign language data and judgments, and Frans Gort for the photographs. This paper was prepared with support from the Max-Planck-Institute for Psycholinguistics (Nijmegen, Netherlands), the Royal Institute for the Deaf "H. D. Guyot" (Haren, Netherlands), and the Institute of Cognitive Studies of the University of California (Berkeley).

2. Talmy's analysis applies to motion, location, aspect, event realization, and accompaniment — that is, to a wide range of conceptual domains, all of which are apparently uniformly mapped onto the same construction type in a language. Here we limit ourselves to motion events.

3. Supalla (1990:136) calls such verbs "locomotion verbs involving body classifiers," noting that they refer to "manner of locomotion of the agent" (p. 143). We refer to them as "manner verbs," with the understanding that "manner" refers to a type of movement, such as walk, run, crawl, swim, fly, etc.

4. Supalla (1990:143) refers to such inflections on path verbs as "local movements that refer to the manner of movement along the path, rather than manner of locomotion of the agent."

5. Note that this universal apparently does not apply to verb-framed languages in which the path verb is accompanied by a nonfinite manner verb, such as the Spanish gerundive construction: *entró corriendo* 'entered running'.

6. These serial verbs match Gee and Kegl's (1983) characterization of "doubled verbs" in ASL. Goodhart (1984:112-3) defines this construction as "two verbs which have identical themes and where the motion of the first verb flows continuously into the motion of the second. ... The two verbs together name a complex motion or action. Thus, they get the interpretation of a single verb."

7. We would therefore suggest that languages like Lahu be reclassified as complex verb-framed types, in which "versatile verbs" function more like verbs than satellites. Matisoff (1973:199) notes, in his Lahu grammar: "The Tibeto-Burman languages in general, and Lahu in particular, are remarkable for the apparent ease with which two or more verbs may be strung together or concatenated by a simple juxtaposition to form complex verbal nuclei." Most relevant here are the verbs of motion or directionality that occur directly after the head. Matisoff notes that these verbs "are as closely welded to the [verb-head] as are such English 'particles' as 'out' or 'away'" (221), yet they are apparently still verbs in form. Compare, for example, Lahu *gɨ̀ lɔ̀* 'run enter' and its English equivalent *run in*. In Matisoff's characterization of Lahu: "The verbs in a true concatenation ... form a single verbal idea, and are all deemed to belong to the same clause. They function as a semantic/syntactic unit" (1990:403). Looking across languages, it is evident to us that a clear line cannot be drawn between the categories of verb and satellite. Rather, there is a cline of "associated elements" to the head verb, as such elements tend to lose some characteristics of full verbs over time. Matisoff (1991), for example, documents a widespread development from verb to verb-particle in Southeast Asian languages. In this paper, we focus our attention on a language's tendency to encode paths in full verbs rather than in other types of elements. Perhaps it would be more appropriate, therefore, to speak of **verb-framed** and **non-verb-framed** languages. In this sense, languages like Lahu are at the verb-framed end of the cline.

8. Jackendoff (1990:224-5) proposes a similar restriction, noting that, in Spanish and Japanese, movement verbs cannot be combined with a path phrase, such as *Willy jumped his way into Harriet's arms*. With regard to Spanish, he states: "In the present case, Spanish has the syntactic pattern Verb + PP [prepositional phrase], but this pattern cannot be mapped into a conceptual structure if the verb is a MOVE-verb, since the language has no way to license the PP."

9. Data were gathered in Madrid by Eugenia Sebastián and in Buenos Aires and Santiago de Chile by Aura Bocaz. For details see Sebastián and Slobin (1994) and Slobin and Bocaz (1988).

10. In examples (6)-(11) a prepositional phrase provides path specification in conjunction with a main verb of manner of motion — with no "satellite" in Talmy's sense. It may be more useful, in crosslinguistic comparison, to simply speak of the encoding of path by "path verbs" versus "non-verbal path phrases."

11. We thank the following for providing examples from their languages: Soonja Choi (Korean), Suzanne Fleischman (French), Seiko Yamaguchi Fujii (Japanese), Maya Hickmann (French), Sotaro Kita (Japanese), Aylin Küntay (Turkish), Paulette Levy (Spanish), Kumi Tomiki (Japanese).

12. Jackendoff distinguishes what we have been calling path and ground focus in terms of the basic conceptual categories Path and State. In his analysis (1990:46), 'enter' has both a Path and a Place-function:

$$[_{\text{Event}}\ \text{GO}\ ([_{\text{Thing}}\ ]_i, [_{\text{Path}}\ \text{TO}\ ([_{\text{Place}}\ \text{IN}\ ([_{\text{Thing}}\ ]_j)])])]$$

As he points out: "*John entered* means not just 'John traversed some Path' but 'John went into something'." In a footnote (fn. 3, p. 290) he indicates that McCawley (1988), in an unpublished paper, has suggested that *enter* means something like "go across boundary of X into X."

13. For details on Korean, with implications for acquisition, see Choi and Bowerman (1991).

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Using USENET: Gender, Power, and Silence in Electronic Discourse

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Introduction

The study of gender differences in various types of communication has become something of a national pastime, thanks in large part to Deborah Tannen's book, You Just Don't Understand (1990). Again and again, studies have shown that there are real differences in the ways that women and men express themselves verbally, especially in face-to-face interactions in mixed-sex groups (Spender 1980, Kramerae 1980, Maltz and Borker 1982, Coates 1986, Tannen 1986, Tannen 1990). There is heated debate about the explanations for these variations (see especially Freed 1992), much of it centering on the relation of gender and power, and whether external power as a variable can ever be controlled for. There is also dispute over the correlation of linguistic forms and strategies - for example, that silence can be indicative of power or of solidarity depending on context. Whether one believes that power can be gendered, or that gender is power, it does seem clear that much of the difference in expression is tied to the patriarchal structure of Western society (in particular) and the constant struggle for control within it. Interaction reproduces culturally constructed relations of gender and power; sometimes they are perpetuated, but sometimes subverted. In this paper, I want to look at a new form of interaction, computer-mediated communication, which has very few rules or models. Although it is written, it does not share all the features of written discourse, and in fact shares some features with conversation; and the ways in which it differs from these standard modes of discourse seem to hold promise for more egalitarian cross-sex communication, as discussed by Herring (1993). However, Herring looked at two academic electronic discussion lists over a one-year period, and found that there was a tendency for a minority of male participants to dominate discussion both in amount and style of talk. Claims of democratization of communication due to anonymity of participants, uninhibited expression, and the depersonalized nature of CMC are shown to be false: "Rather than being democratic, academic CMC is power-based and hierarchical" (Herring 1993:10).

The data I have collected from a non-academic source shows much the same tendency. Adversarial behavior is a valued form of academic discourse (as in law) and requires participants to view the other as the enemy and to engage in direct conflict to "overcome" opposition. This framework is also used in non-academic CMC to disguise extreme, hostile, and irrational views with authority and legitimacy - the voice of reason. Men, in particular, utilize the adversarial framework this way. And although not all men on the Net behave in this way, when the behavior occurs it is almost exclusively used by males. As Herring found, men appear to take this kind of behavior in stride and respond in kind, without calling attention to the form of language. Women, in contrast, seem not to expect or tolerate this type of interaction. Most non-adversarial communication (typical of women's contributions) was either ignored or attacked. Once the level of hostility had escalated, it was extremely difficult to return it to non-confrontational discussion; women felt they has lost control of the discourse. Even more so than Herring's example, the issue was not discussion, but dominance.

Silence

First, I want to review some of the large body of work documenting the silencing of women, and the silence of women. Beginning with Lakoff (1975), many studies have attempted to define characteristics of women's and men's oral discourse; Maltz and Borker (1982) list some of them, characterizing women as asking more questions, providing more feedback, and using pronouns which acknowledge the presence of the speaker, while men are characterized as interrupting and challenging the speech of their conversational partners, ignoring others' speech, and using these (and other) devices for controlling the topic of conversation (Maltz and Borker 1982:198). Spender (1980) sees the conversational strategies of men as part of the larger process of silencing women, pointing out that public discourse is equated with the male register, forcing women to learn the male register or remain invisible. Debate continues as to whether the discourse style of men (which some claim is better for expressing ideas clearly and directly, for making strong assertions, and for logical reasoning) is the model which women (and others without power) should try to emulate, or whether other discourse styles are just as effective, or even more so. One thing seems clear: the language of men is culturally constructed as the language of power and prestige, whatever its form.

Lakoff (1992) takes as a given that women are silenced in conversation, regularly and often casually, and that the methods that have been identified as achieving that end in informal dyadic conversation are *interrupting* and *non-response* (Lakoff 1992:344). Lakoff suggests that the means by which women are kept silent in public and in private, and the functions of silencing are similar. To silence is to achieve three ends: to appropriate the ability to name and define self and environment, to deprive others of the ability to see oneself as rational, and to punish for speaking, or deter from speaking what must not be said (Lakoff 1992:349-351). When used against women, these strategies help preserve male power and dominance.

Lakoff (1990) has also written about the power of silence in the psychoanalytic setting and in the courtroom, noting that "silence can be powerful, but mostly where the silent one has real power, or in a conversation with only two participants" (Lakoff 1990:49). In a courtroom setting, for example, a person who is testifying cannot attempt to use silence as power; a silent witness is seen as uncooperative, or worse, untrustworthy. The witness is compelled by law to answer questions, just as the jury is compelled to sit and listen silently. But Gal (1990) argues that some forms of women's silence in ordinary discourse constitute resistance and subversion of the dominant form. The difference between these two silences is in the **choice** of the speaker to be silent. But this choice is not usually available to women, and voluntary silence may not be interpreted as such.

What of other discourses? Spender (1980, 1989) has written extensively about the problems of women's writing, and work is continuing on women's discourse on the telephone and in formal context. However, as Herring (1993) points out, "the question of sex differences in computer-mediated communication has only recently begun to be raised" (Herring 1993:1). Kramerae and Taylor also call for discussion of "sex-related behavior on the networks and the impact of this kind of dominant behavior on women's participation" (Kramerae and Taylor 1993:56).

Background

Computer-mediated communication (CMC) is the fastest-growing area of information exchange. Many people are more familiar with one type of CMC -

electronic mail or e-mail - but in this paper I will focus on bulletin boards (BBS), the second most popular form of CMC. Some of the differences between e-mail and BBS postings have to do with the other types of discourse they resemble: in general, e-mail is closer to the oral dyad, while postings share more with expository prose (see Reinman, 1992 for a closer examination of e-mail). E-mail tends to be used for more informal, spontaneous, reciprocal discourse, usually (although not necessarily - email is often used for group mailings) with only one other participant as the target. BBS postings, in contrast, are often non-reciprocal (postings do not have to be in reply to anyone else, nor do they require a response), well-planned (some users reply to other posts by quoting line-by-line and replying to each sentence), and formal in the sense that they are supposed to be part of an ongoing discussion about a particular topic, and follow some basic formula for presentation (stating topic in the header, identifying quotes, signing post with name and often an affiliation and e-mail address). There are very few guidelines for BBS posting, but those that do exist caution against the very things that separate it from e-mail; a book like Krol's The Whole Internet (1992) spends several paragraphs advising the user to think carefully before posting something (which might be read by thousands of people) that is informal, spontaneous, hostile, and directed towards someone specific. This type of posting is commonly known as "flaming".

CMC is, in theory, inherently more democratic than other communication media. Anyone with a computer and a modem can enter a discussion on any of thousands of bulletin-board services or news lists and voice their opinions to everyone else who reads follows the discussion. Electronic media can provide a buffer, or a neutral, non-threatening arena for everyone to share their views. Herring (1993) discusses several characteristics of CMC which are claimed to facilitate communication that is democratic in nature. CMC is accessible, socially decontextualized, has few conventions of use, and has very little censorship (Herring 1993:2-3). Theoretically, anyone can contribute to or introduce any discussion, question any assertion, or express any attitudes, without internal or external coercion that would prevent them from doing so. Any user can contribute for as long and as often as they like, or until their funding runs out. Also, users need not provide any information about themselves, thus encouraging more equal communication in the absence of status- and gender-marked cues (Graddol and Swann 1989). Some people prefer to use their real names and affiliations in their posts, while others rely on screen names which may be designed to disguise gender, age, race, etc. It is possible to send truly anonymous postings, by using specially constructed mail-servers that strip off from a post all information about the author and place of origin. Thus, the possibility of *physical* intimidation (and danger) is greatly reduced, and perhaps even removed. As one might expect, *verbal* intimidation becomes a very important means for controlling the discussion.

To better understand the scope and importance of CMC, it may be helpful to draw a brief outline of the area I am focusing on, the USENET.

What is USENET?

Most users are connected to e-mail and BBS through the Internet, which is a global, noncommercial system with more than 20 million computers communicating through it. Currently, almost anyone can get access to the Internet: researchers in computer science, government employees, government contractors, students and faculty at most four-year colleges, and now some secondary and primary schools. Some areas of the Internet are also accessible through private online networks like America Online and Compuserve. Network news is the Internet equivalent of a

discussion group or BBS, where users from around the world can post to any news group. Different computer networks have different news groups available to their users:

> It depends mostly on what computer your news reader uses for its news server... You have your "news reader", which interrogates a news server to receive a menu of articles, and calls for the articles themselves as required. The server collects news from a number of places: USENET, local news sources, mail reflectors, and Clarinet. (Krol 1992:129)

USENET is a set of news groups generally considered to be of interest globally, and free. It is not a computer network; it does not require the Internet; it is not software. It is a set of voluntary rules for passing and maintaining news groups, and also a set of volunteers who use and respect those rules (Krol 1992:129). There are seven major news categories (*comp news, rec, sci, soc, talk, misc*), as well as groups created by local servers. These latter are known as "Alternative News Group Hierarchies", and these are distributed almost as widely as the core USENET groups. The most common alternative news groups include the group *alt,* which Krol defines as:

> Groups that discuss "alternative ways of looking at things". There are a lot of truly bizarre news groups here (including one that tracks the wanderings of an itinerant West-Coast evangelist). In a few groups, the postings lack any coherence at all, and make you wonder what, er, stimulants were influencing the authors. However, there is also a lot of useful information. Some important groups (like *alt.gopher*) were created here rather than going through the bureaucracy required to create an "official" news group. (These groups sometimes migrate to official news groups as their topics gain acceptance.) On the whole, though, discussion tends to be out of the mainstream. (Krol 1992:131)

Groups may be moderated, meaning one person takes responsibility for reading all the incoming postings and deciding which should go out to the news group. Most USENET groups are unmoderated: anything that is sent to that group is automatically posted.

Nobody knows how many people use the Internet, or USENET, but it is easily in the millions. Given the easy accessibility of USENET, the potential number of readers of any news group must be in the thousands. Of course, some news groups (like *alt.bondage*) may not be carried by every news server, and not every USENET user reads every news group. Still, a typical news server subscribes to over 1500 news groups and receives about 10 megabytes a day (Krol 1992:132).

News items are similar to e-mail messages, having a header (which gives some information about the sender, the topic of discussion, and the date and place of origin) and a body (the text of the posting). Each news item is considered part of a discussion *thread* and the act of posting a new article on a new topic creates a new thread (Krol 1992:135). Postings can be sent to more than one news group at the same time. Future posting on the same topic carry the original topic in their headers:

Article 8307 of alt.feminism:
Path:agate!spool.mu.edu!hri.com!noc.near.net!transfer.stratus.com!redondo.sw.stratus.com!dswartz
From: dswaxx@xxxxxxxxxxx.com (Dan Sxxxxxxx)
Newsgroups: alt.feminism
Subject: Re: chelsea
Message-ID: <119rm2$moi@transfer.stratus.com>
Date: 10 Feb 93 03:09:54 GMT
References:<Erika_L_B@sxxxxxx.edu>
Organization: Stratus Computer, Software Engineering
Lines: 21
NNTP-Posting-Host: redondo.sw.stratus.com

In article <Erika_L_B@sxxxxxxx.edu> Erika_L_B@qxxxx writes:
>I agree with you. That poor girl will probably grow up with the worst
>self-image problem. She didn't run for President, her father did. And I
>do think it's a feminist issue, because I bet if she were a boy people
>wouldn't be evaluating his appearance all the time.

Oh please! Like the media didn't rag on Perot about his big ears, funny haircut and beady little eyes? Like I (and many other boys) weren't constantly ragged on because we wore glasses, were skinny, and didn't act cool? Besides, *anyone* at that level is going to be under a constant magnifying glass, looking for any hint of scandal or dirt to sell papers/air time. That's the screwed-up media in this country.

#include <std_disclaimer.h>

Dan S.

Through the use of News Reader programs, users can control what groups they wish to read and the order of the postings they read; most importantly, it allows them to *kill* (ignore or delete) postings within a group. Kill criteria can be set so postings with certain strings of characters in the headers, either in the subject field or the author field, are automatically ignored when the user begins to use USENET.

One important consideration in analysis of postings is the actual number of women who use the Internet and USENET. Broadhurst (1993) estimates that some private online networks have a male: female ratio of more than 9:1. Most Internet users have access through schools (generally universities), work, or the military. Anti-discrimination laws in the U.S. theoretically allow women to attend the same schools, hold the same jobs, and serve their country in the same way that men do. So although women may (in some circumstances) have the same *physical* access to computers that men do, it is unlikely that they use it to the same extent[1]. This is due to a number of reasons, not the least of which is that women, throughout their schooling, are still not encouraged to excel in math and science. This has led to a very small number of women in computer science departments at most universities (in 1990, less than 8% of all computer science professors were female (Spertus 1992)), and has also created a "lag time" for women in terms of familiarity with hardware, software, and general computer knowledge. If boys are introduced to computers at an early age, becoming "computer literate" in several systems (as well as extremely adept at computer video games), they will find the Internet and USENET navigable, if somewhat overwhelming. But for the inexperienced user, as most women portray themselves, performing even the most basic task, like posting,

can take days to figure out[2]. Help is not always available, and help from other computer users can often seem condescending or impatient.

Turkle (1988) has written about the strong reticence women feel towards "developing a relationship" with the computer, and subsequently becoming a hacker, someone whose involvement with the computer shuts others out. Along with this reticence, Turkle claims that women dislike working in formal systems which provide only yes-or-no options: "The 'nailed-down' quality of formal systems feels unfamiliar and threatening" (Turkle 1988:57) . And in a much more basic way, women are taught to be afraid of machines: women have a nagging fear that they can break a $10,000 piece of equipment by touching the wrong key at the wrong time. Ebben and Kramerae (1993) have reviewed the factors contributing to women's late and slow entry into the area of CMC, noting that "although women are not usually deliberately excluded [from computer policy-making groups], many have been reluctant to raise concerns when they realize that few others in the group have had similar experiences with sex stratification, technology, and campus organizational structure and change" (Ebben and Kramerae 1993:15).

Although overall the number of women on the Net must be less than men, in some groups the levels of participation seems nearly equal. This is perhaps a result of the group's focus. In the groups *alt.northern-exposure* and *alt.society.generation-x,* contributions from men and women appear to be almost 50/50, based on informal surveys within the group by myself and a few others. In general, the more controversial the topic, the more gender-imbalanced the discourse seems to be. This is an area that begs for further research.

I selected the unmoderated group *alt.feminism* because I thought it would be an interesting testing ground for something like the "30% limit" introduced by Spender (1979) - that is, 30% is the upper limit of time in a conversation when women may contribute before men feel that women were contributing more than their share. Would women contribute in an amount consistent with their numbers? I thought that *alt.feminism* might be the place where women would be discussing topics of importance to them, alternative ways of looking at feminism. I also thought that even given the gender imbalance on the Net in general, this might be the place where I would find more women than men participating in the discussion (for that matter, I might have chosen *alt.sewing* or *alt. support.diet*). Following Herring (1993; Herring, Johnson, and Dibenedetto 1992), I wanted to analyze the gender-related differences in frequency of posting, discourse style, topic control, and length of posting. Herring (et al 1992) found that this limit (actually slightly lower - 20%) held for women's contribution on the MBU (Megabyte University) electronic discussion list as well as women's participation on the LINGUIST list. (Both of these are academic lists.) Herring (1993), in her analysis of manner in these postings, identifies a set of features "hypothesized to characterize a stylistic variety conventionally recognizable as 'women's language' as opposed to 'men's language'" (Herring 1993:7). These features follow quite closely those associated with male register, public discourse, and the silencing of women by men. Men use strong assertions, self-promotion, authoritative orientation, challenge, and sarcasm, while women use apologies, questions, personal orientation, and explicit justification in their discourse (Herring 1993:8). Herring also observes that "discussion on each of the lists investigated tends to be dominated by a small minority of participants who abuse features of 'men's language' to focus attention on themselves, often at the expense of others" (Herring 1993:9). This adversarial

discourse has the effect of intimidating women who want to avoid this kind of interaction.

Email and BBS studies provide a unique opportunity for linguists to study some aspects of oral communication which have heretofore been transitory and impermanent. Because CMC shows features of oral discourse in written form, we can observe adversarial aspects of male behavior that cannot normally be examined so directly. It is one of the first times we have been able to "catch in the act" these distinctions between male and female styles (tape recording has done it to some extent, but the data gathering is much more laborious).

The Adversary Paradigm

Herring feels that it is important to make a distinction between the adversarial behavior displayed on these lists and flaming. She sees flaming as the result of "spontaneously venting one's emotion, [while] adversariality is a conventionalized and accepted pattern of behavior in academic discourse" (Herring 1993:11). Adversarial behavior - aggression - is thought to be related to more positive concepts such as power, activity, ambition, authority, competence, and effectiveness. However, Moulton (1983) examines the association of aggression with success and finds that it is quite possible to be professionally competent without being aggressive. The Adversary Paradigm is based on the assumption that a thesis which has passed an "objective" test, the most extreme test possible, is more likely to be correct. But reasoning, like theory, is not value-free; tests can never be truly objective. The use of counterexample, which may be quite effective on isolated claims or arguments, is not appropriate on an interrelated system of ideas. For something like a moral issue or scientific theory, to construct an analogy with all the features and their interaction (which is not part of the issue in question) may well be impossible. "The adversary paradigm prevents us from seeing that systems of ideas which are not directed to an adversary may be worth studying and developing, and that adversarial reasoning may be incorrect for nonadversarial contexts" (Moulton 1983:161).

I argue that adversarial behavior **is** flaming; the difference is in where they fall on the aggression continuum. Academic adversarial behavior may be conventionalized aggression, but it often displays some of the same qualities as flaming, i.e. "excessive informality, insensitivity, and the expression of extreme or opinionated views, and vulgar behavior" (McCormick and McCormick, 1992:381). Flaming is unrepentantly hostile; in fact, one of the most aggressive flamers (male) on *alt.feminism* signs his posts with the phrase "He doesn't feel pain, or remorse, or pity. And he'll NEVER stop. EVER. Until you are SPANKED OFF THE NET!"

Broadhurst interviewed several systems operators (*sysops*) about the flaming phenomenon and found that all agreed flamers are usually men. "Online, as offline, women seldom come on so forcefully hostile" (Broadhurst 1993:49). Habitual flamers seems to be neurotic, perhaps using their disruptive power to manipulate others; one sysop thinks that "they often speak in highly intellectualized, but shallow prose. They have no capacity for empathizing with anyone else's point of view" (Broadhurst 1993:50). Flaming is the extreme end of adversarial behavior, using the form of accepted argumentation to present hostile, and often personal, attacks.[3] In the group I looked at, when someone flamed in an "unsophisticated" way (as did the man who posted "HEY ... YOU BORED BUNCH OF WOMEN .... QUIT WASTING BANDWIDTH AND FIX ME A HAM SANDWITCH ...

I'M HUNGRY ....." (post #8999)) they received few responses (one woman replied to this post with : "Hey Mr. CAPSLOCK, tell you what. Sandwiches (not sandwiTches) are so easy to make, a child can do it. So why don't you empower yourself in the kitchen. From the look of it your sandwich recipe would be as follows: 2 slices white bread, 1 slice bologna, 1 slice processed cheese, Miracle Whip, iceberg lettuce." (post #9007)). In contrast, when the academic model was followed, discussion continued for weeks and sometimes hundreds of posts.

Data Analysis

I collected 974 consecutive postings from the USENET group *alt.feminism*[4] (approximately 1242 pages or 2MGs of memory on my Macintosh). These postings appeared beginning on February 4, 1993 and ended on February 25, 1993; the average number of postings per day was 40 (this excludes the 2 highest days, both at 126, and the 2 lowest, having 21 and 26). There were several threads which carried most of the discussion, plus some unrelated comments and 2 unauthorized postings of news articles. Here is the relevant data on gender, presented in table form[5]:

	Male	Female	Unknown	Total
number of posters	152 (67%)	48 (21%)	32 (14%)	228
number of postings	720 (74%)	166 (17%)	88 (9%)	974
number of lines	31639(78)	5802 (14)	3141 (8%)	40582

Figure 1: Breakdown of Postings by Gender (posters = individuals contributing; postings = separate contributions) (# of posts / % of total posts)

Immediately one can see that postings by men far outnumber postings by women, and that men have many more lines posted than women do. Men represent 67% of posters, women 21%, and people of unknown gender 14%. Posts by men account for 74% of the total; postings by women, 17%, and unknowns, 9%. "Number of lines" refers to the total lines for the entire 974 posts (not including headers). The longest post was 586 lines (a magazine article) and the shortest was 1 line. It is important to note that lines per posting includes not just new discussion by the poster, but any quotes from previous discussions that the poster has included and is now addressing. I will return to this point later in the analysis.

These were the top 5 threads, in order of frequency of posting:

Topic	Total	M	F	?
Nannygate (a woman attorney general)	123	80 (65%)	39 (32%)	4 (3%)
The Dread Power of a Feminist Moderator	115	99 (86%)	9 (8%)	7 (6%)
Is Male Dominance Universal?	99	89 (90%)	10 (10%)	0
Let us never forget: ALLEN WELLS	68	50 (74%)	8 (12%)	10 (15%)
How many rapes are there?	34	26 (76%)	5 (15%)	3 (9%)

Figure 2: Top 5 Threads (# of posts / % of total posts)

In each of these threads, men were in the majority, and in the case of "Male Dominance" men's posts were *90%* of the total. The only time women came close to representing their actual numbers is in the "Nannygate" discussion, where women's posts were 32% of the total; in the other 4 threads the percentage varies from 8% - 15% of the total. So even when women did contribute, they were not part of the most active discussions.

As Herring (1993) found, a minority of users dominated discussion. 12 individuals (1 woman, 10 men, 1 gender unknown) - 5% of total users - were responsible for 45% of the posts. Within this small group, the men tended to have longer posts than the lone woman, "holding the floor" for screens at a time. A common pattern was for 2 men to debate a topic back and forth for weeks at a time, posting not only to this group but to several others as well (*soc.women, sci.skeptic*, etc.). They were able to dominate discussion in many places at once, almost by remote control. Occasionally women got drawn into an extended discussion, but most often they simply stopped posting; as one woman put it, "And as I had figured, this whole discussion has been a tar baby and since at least one low blow has been struck, I'm bowing out as gracefully as I can." (post #8478).

Obviously, it is possible that only the dominating 5% of posters were responsible for the "noise" in the noise-to-signal ratio. To investigate this, I subtracted the contributions of the 12 most prolific individuals and looked again at the levels of participation:

	Male	Female	Unknown	Total
number of posters	142 (66%)	47 (22%)	31 (14%)	216
number of postings	353 (66%)	113 (21%)	71 (13%)	537

Figure 3: Breakdown of Postings by Gender, minus Most Frequent Contributors (# of posts / % of total posts)

Topic	Total	M	F	?
Nannygate (a woman attorney general)	61	37 (61%)	22 (36%)	2 (3%)
The Dread Power of a Feminist Moderator	64	48 (75%)	9 (13%)	7 (11%)
Is Male Dominance Universal?	51	41 (80%)	10 (20%)	0
Let us never forget: ALLEN WELLS	35	29 (83%)	6 (17%)	0
How many rapes are there?	18	13 (72%)	4 (22%)	1 (5%)

Figure 4: Top 5 Threads, minus Most Frequent Contributors (# of posts / % of total posts)

We see that the participation now is more consistent with the number of contributors. Note, though, that in 3 of the 5 top threads, women still did not contribute in an amount representative of their numbers. 10 men were responsible for 42% of men's posts, so they were clearly responsible for much of the "noise". If we take 21% as the percent of women who participate in the group (based on

total number of contributors in Figure 1), and also as the amount of talk we expect from them, it is interesting to see that women did not make up 21% of the most prolific posters - there was only one woman, 8% of this group. So it was not just a minority that dominated the discussion; it was a minority of men.

As in oral discourse, when women did initiate a topic, they were often ignored (*non-response*, as mentioned by Lakoff 1992). Of 8 sample topics introduced (or reintroduced) by women, most received approximately 5 responses. The exception to this was the topic of "Nannygate", which was the most frequently posted to thread during February. However, although this thread was started by a woman, it quickly became a men's debate, as shown by the gender differences in number of postings. The nature of CMC prevents actual *interruption*, but in its place comes virtual dissection: a reply to a post which reproduces the original message with "annotations" - criticisms, counterexamples, and flames - after almost every line. This is the main reason why men's posts used so many more lines. Often, these detailed posts become multilayered, so you read comments on comments on comments - a kind of bizarre literary criticism.

Besides maintaining control by number and length of posting, men relied on the Adversary Paradigm almost exclusively. Posts were aggressive, often overtly hostile, using the experiences of men as the final authority on a subject. Sarcasm and ridicule were also used to belittle the "adversary". Here are some samples of men's postings, taken from a single day's posts:

female posts in Geneva, male posts in Times
> This symbol indicates that the text is being quoted from a previous posting

> Michael, you made several good points as how language in
>this argument can be used and abused. Some of this legislation
>is to change some attitudes that go back into the Middle Ages.
>Such as a husband would get off with a slap on the wrist for the
>murder of his wife but if a wife killed her husband the
>punishment would be death.

As you say, that was the middle ages, and while it's wrong to have burned so many women for witchcraft back then, that does NOT justify the burning of men now, as neither the men nor the women alive today lived back when the crimes were committed, and cannot be held to blame.

BUT, I live here in the United States of America on the doorstep of the 3rd millenium. I'm not a criminal, a rapist, an abuser, nor do I beat my goldfish or tear the little tags off of my couch cushions. I was not alive in any of the places or times the feminists point to as cause for their angst, and I will not be made to feel responsible or guilty for crimes I have had no part in and could not possibly have influenced. And I am sick and tired of the gender based legal bias that inflicts greater punishments on men simply because they ARE men.

>True the vast majority of the victimes are women or children
>and the majority of victimisers are men.

For sexual crimes, that may well be, but certainly that's NOT the case for domestic violence, which is gender balanced for spousal abuse, and for child battery and homocide, is a problem of predominantly female offenders.

Or maybe women run the show and patronize men with their sensitivity to our "sexual jokes and innuendo". Perhaps the lower pay scale shows that the women in charge know women are more dedicated to work and don't have the bourgeois need to flaunt annual income. MAYBE THERES A SECRET CABAL OF WOMEN WHO SECRETLY MANIPULATE TRUTH TO PERSUADE OTHER WOMEN THAT THEIR OPPRESSION IS EXTERNAL AND NOT A RESULT OF THEIR OWN MISTAKES. Naaah, couldn't happen, if that were true, there would probably be a separate moderated newsgroup for those feministas (maybe called soc.feminism). Couldn't happen here, though, this is the land of the free.....

>I'm terribly sorry what happened to this man. It is tragic.

Yeh. Take your sincerity and fuck off with it.

>However, this sentence is pure bullshit as far as I'm
>concerned.

It's not bullshit. Read it again. the CODE OF HONOUR among men is that you don't strike a woman.

Sure some men do, but they are liable to prosocution for much bigger crimes or rape, no matter what their reason. The fact is, female victims are protected by law, and male victims are not.

Your pitiful example of your friend's s.o. just goes to prove my point. The worst that can happen to a woman is a legal accident. They do not get driven to suicide.

>What disharmony will they cause? The people that are worried
>that a member of the same sex will be looking at them in the
>shower or coming on to them in the barracks should stop
>flattering themselves and start thinking about what their jobs
>really entail.

Really "entail"! Quite a punny lady aren't you. Of course I would consider true social justice to be when you get assaulted by a bulldyke named Bertha. Twice as big as you, she laughs as you suddenly realize how aggressive female homosexuals can be if they think they have an easy lay like a white liberal. Especially when the liberal no longer recognizes right from wrong or the implications of having to live in the amoral world she has tacitly created.

(18 Feb)

Notice that in these examples, women typically began by agreeing with something previously posted and then went on to bring in other information or disagree with other points in a non-aggressive way. Even the woman who used the hostile word *bullshit* applies it to a sentence and not to a person, in contrast to the reply "*your* pitiful example". In the last example, the female poster blunted a personal attack by aiming it at an unspecified group: "The people that are worried..."; in reply, the

male poster tried to be as vicious and as personal as possible, hoping that she will be raped by a lesbian and that it will be her fault if she is. Men also seemed compelled to have the last word, bombarding the news group with postings until their "opponent" no longer replies.

I also followed a single thread, "Possible Arguments Against 'AA' in Custody Determination?..." through 18 postings, 8 men, 9 women, 1 unknown. I filtered out the postings by any of the "12 most wanted" and was left with 12 "average" postings by 7 men and 5 women. Here again, the patterns identified by Herring surfaced - all of the women used explicit justifications for their assertions and used questions for clarification. All included, somewhere in their posts, explicit agreement with the previous post - "Yes, I know...", "Absolutely", "Okay, that's one". Men, when they used any personal orientation, held it up as refutation or prime example: "This kind of thing really tends to piss me off", "Take it from someone...it is quite possible", "You'd be amazed at how little food costs...". I also noted that the thread ended when 3 men, in succession, addressed the topic of how much child support a woman should receive by claiming that it was possible for a person to live on less than $5000 year, because they had done it, and that therefore $5000 a year was not inadequate for a non-working mother and child. All three ended with an air of finality, as if to close the subject for good: "And I regard that [$5000] as *quite* adequate" - sort of a "so there".

So women were outnumbered and shouted down. They retreated into silence. Undoubtedly, some continued to read but rarely posted; this behavior is known as *lurking*, and some sysops estimate that around 85% of users simply lurk. Broadhurst observes:

> It says something, though, that the "Why Do Women Lurk?" thread on ECHO (NYC news system)has continued for three years. Occasionally, it serves as a place where members conspire about how to cope with the latest flamer in a different section. Or they retreat to vent their emotions after another onslaught. Yet only here, in this section open to women only, do women repeatedly describe themselves as "guilty of lurking," routinely. (Broadhurst 1993:51)

Women, having been forced into silence, choose to stay that way, which perpetuates the stereotype that women do not have anything important to say, and also that they cannot express themselves in the "correct" (adversarial) way. This silence could be interpreted as the silence of disapproval, the silence of being fed up, the silence women use when something offensive or threatening is said. But aside from rare women-only areas, there do not appear to be many places online where women can go to break that self-imposed silence.

Conclusions

Despite high hopes for egalitarian communication, computers and CMC seem still to be a male domain. Where do women go? One alternative is the **moderated news group**, where messages are screened before they are posted to the group. Here one must rely on the taste and whims of the moderator; as I've shown, the second most-posted to thread in this group was "The Dread Power of a Feminist Moderator". Moderated groups tend not to be as lively as unmoderated ones (for obvious reasons) and some feel they cross the line into censorship. Another alternative is the private **news list,** which is sent by e-mail. Some of these are moderated - the "owner" of the list reads each message before it is sent out

- but some automatically send every message to the whole list. Herring (1993) describes the Women's Studies List (WMST), which has a subscribership 88% female. The majority of posts are queries for information, with the stipulation that answers be sent privately to the poster by e-mail. Discussions are usually cut off by the list owner to prevent a huge volume of mail, and also to discourage flaming. The high membership on WMST (about 2,000 members) is proof that "many women are comfortable with CMC that consists primarily in asking advice and information of others" (Herring 1993:7). Smith and Balka (1988) describe attempts by women to establish communication - "sisterhood" - through a feminist computer network to share information and technology. The goal is to create "computer networks that are compatible with feminism" (Smith and Balka 1988:96).

Issues of gender and behavior *have* been receiving attention in the electronic community, and more groups like the WELL (Whole Earth 'Lectronic Link) and the Electronic Frontier Foundation are establishing rules of etiquette (or "netiquette") for participation in their groups. Whether CMC will actually change styles of communication remains to be seen; but it has provided a vast new area for research on what may be the media of the future.

Notes

[1]This posting appeared in the CU [Computer Underground] Digest, vol 3 #3 (1991):

> First, The CU is made up mostly of males. I'm told by friends, and the facts are consistent with those given to me by one CuD moderator, that at a maximum, less that five percent of pirates are female, and probably less than one percent are phreaks or hackers.
> (Liz E. Borden)

[2]This was my own personal experience, as well as that of 2 other women in my department. My news reader was different than that described in the Help Manual, and I could not locate the correct "help" file online. The problem was that I had typed "pnews" rather than "Pnews".

[3]Flaming usually stops short of what could be called "hate speech" and therefore open to censorship or prosecution. Most private systems have procedures for dealing with habitual flamers (sometimes banishing them from the system), but sysops are hypersensitive to implications of censorship, so action may only be taken if many complaints are filed. In unmoderated USENET groups, however, no such procedures exist.

[4] During the time I collected data, one of the postings on *alt.feminism* gave a short history of the group:

> The idea of *alt.feminism* began in soc.men. There was a thread about the moderators of *soc.feminism* rejecting articles and the anti-man nature of many of the posts...Others wanted to create a group to reflect a more open discussion of feminism. Not just a forum for dogma...T.J.Wood wrote a charter which simply stated that the

group would be for all who wished to discuss feminism, both anti and pro. (post #8473)

[5] I determined the gender of the poster by either the name they signed their post with (i.e. "Doug", "Roberta", "Mr. Graley") or by references made in their posts (i.e. "as a heterosexual male", "my wife tells me", "I'm a woman who has worked in shelters"). In most cases, individuals gave not only their names, but also their affiliations (school, work, etc., with the usual disclaimers). I did not feel it was necessary to verify the gender of each of the 228 posters. In some cases, I attempted to contact people by e-mail (or by "fingering" their accounts) to verify their gender. Those who did not reply were grouped in the "Unknown" category.

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Is That a Fact? Reevaluation of the Relationship between Factivity and Complementizer Choice in Japanese

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1. Factivity and English Complement Types: Kiparsky and Kiparsky's Analysis

The correlation between factivity and complement types was first delineated by Kiparsky and Kiparsky (1971) in the context of English. Predicates which take sentential subjects or objects were classified into two types: factive and nonfactive.[1] Predicates such as *be significant, be tragic, make sense, regret, be aware (of)*, and *grasp* are factive, while predicates such as *be likely, be possible, seem, suppose, maintain*, and *believe* are nonfactive. In uttering a sentence which contains a factive predicate, the speaker presupposes (i.e. assumes) that the embedded clause expresses a true proposition. On the other hand, the speaker of a sentence with a nonfactive predicate does not hold such presupposition. The following examples illustrate the contrast.

(1) It makes sense that John is good at science.
(2) It seems that John is good at science.

In saying (1) the speaker presupposes that it is true that John is good at science. In (2) the speaker THINKS that John is good at science, but s/he does not PRESUPPOSE so.

This contrast in meaning was correlated with syntactic behavior of the predicates. Kiparsky and Kiparsky stated that factive predicates can take certain complement types whereas nonfactive predicates cannot and vice versa. For example, it was proposed that only factive predicates allow the noun *fact* with a sentential complement.

2. Factivity and Japanese Complement Types: Kuno's Analysis

Kuno (1973) adopted the concept of factivity from English and applied it to Japanese without much modification. Predicates such as *higeki da* 'be a tragedy', *migoto da* 'be admirable', *wasureru* 'forget', and *omoidasu* 'recall' are termed factive whereas predicates such as *ariuru koto da* 'be possible', *uso da* 'be false', *hayagatensuru* 'form a hasty conclusion', and *yuu* 'say' are termed nonfactive.[2]

This distinction is then shown to be correlated with the choice of complement types. With respect to predicates which take sentential subjects, it is claimed that facitve predicates allow *koto, no, to yuu koto*, and *to yuu no* as their complementizers while nonfactive predicates allow only *to yuu koto* and *to yuu no* as their complementizers. In other words, whereas *to yuu* is optionally inserted in front of *koto* or *no* in the case of factive predicates, the presence of *to yuu* is obligatory in the case of nonfactive predicates. The following examples from Kuno (1973: 219) illustrate this contrast.

(3) John ga sono yuuwaku o kippari shirizoketa KOTO/NO/
S[3] that temptation O resolutely rejected

TO YUU KOTO/TO YUU NO wa migoto da.
T admirable C
'It is admirable that John rejected the temptation resolutely'.

(4) John ga Mary o nagutta *KOTO/*NO/TO YUU KOTO/TO YUU NO wa
S O hit T

ariuru koto da.
possible thing C
'It is possible that John hit Mary'.

For predicates which take sentential objects, it is claimed that factive predicates take either *koto* or *no* as their complementizer whereas nonfactive predicates take *to*. This is illustrated in the following examples taken from Kuno (1973: 217).

(5) John wa Mary ga tsunbo dearu KOTO/NO o omoidashita.
T S deaf C O recalled
'John recalled that Mary was deaf'.

(6) John wa Mary ga shinda TO itta.
T S died said
'John said that Mary had died'.

Thus Kuno suggests that there is a parallel between English and Japanese complement types. In both languages syntactic features such as choice of complementizer and complement type are sensitive to the factivity of the predicate.

3. Degree of the Speaker's Conviction

Kuno's analysis of the relationship between factivity and Japanese complementizers can be summarized as follows:

(7) Predicates which take sentential subjects
a. Factives take *no*, *koto*, *to yuu no*, and *to yuu koto*
b. Nonfactives take *to yuu no* and *to yuu koto*

(8) Predicates which take sentential objects
a. Factives take *no* and *koto* complementizer
b. Nonfactives take *to*

Examination of data collected for this study[4] indicates that the situation is not as clear-cut as suggested above. There are numerous cases where factivity of the predicate does not seem to be the determining factor in complementizer choice.

Because of lack of space, I will mainly discuss predicates which take sentential objects in this paper although a few examples of predicates which take sentential subjects will be mentioned to illustrate that the same analysis can be

applied to both types of predicates (For detailed discussion on both types of predicates, see Suzuki (1994)). There are two types of cases which do not follow the pattern shown in (8). First, there are cases where factive predicates occur with *to* instead of *koto* or *no*.

(9) Kurumaya san no shukugakai ga juugoya ni moyoosareru
Mr. Kurumaya L party S full moon night on be held

TO shitta toki kara obidome wa kore, to kimeteita.
found out time since sash clip T this have decided
'Since when I found out that a party for Mr. Kurumaya will be held on a full moon night, I have decided to wear this sash clip'. (Bungei Shunjuu 1986:189)

(10) Moshi boku ga kansensha da TO wakari, aite ga mada
by any chance I S infected person C find partner S still

kansenshiteinakattara, kyori o okimasu.
if have not been infected distance O place
'If I find out that I've been infected and if the partner has not yet been infected, then I will keep a distance from the partner'.
(More, Feb., 1993:323)

In the above examples, *to* is used as the complementizer even though the predicates, *shiru* 'know, find out' and *wakaru* 'understand, find out' are factive. How should we explain this? Kuno notices this phenomenon, but does not give an adequate account of it. Since the behavior of these predicates contradicts the correlation between factivity and complementizer choice predicted by Kuno, we need an alternative analysis.

Note that *shiru* and *wakaru* do occur with *koto* or *no* as shown below.

(11) Watashi no otoko tomodachi wa watashi ga onna tomodachi
I L male friend T I S female friend

to no ittaiichi no kaiwa o taisetsunishiteiru NO o
with L one-on-one L conversation O value O

shitteiru node...
know so
'My boyfriend knows that I value one-on-one conversation with my girlfriends, so..'. (Chiba 1988:151)

(12) Marariakin o motteiru KOTO ga wakatteiru noni
Malaria parasite O have O know though

soredemo ka o korosu koto o itou hitobito ga aru.
still mosquito O kill NOM O dislike people S exist
'There are people who dislike killing mosquitoes even though they know that they carry Malaria'. (Hotta 1957:78)

What differentiates sentences like (9) and (10), where factive predicates occur with *to*, from sentences like (11) and (12), where the same predicates occur with *koto* and *no*? McCawley (1978) gives a convincing account of the difference. She attributes the difference to the nature of knowledge these predicates represent. Sentences like (9) and (10) indicate that the speaker acquired the new piece of information at that very moment. What is involved in these kinds of sentences 'is not really KNOWLEDGE as such but rather SUDDEN REALIZATION' (1978:199). On the other hand, sentences like (11) and (12) present the propositions in the complement as knowledge. Thus these predicates differentiate knowledge from sudden realization by taking *koto* or *no* when knowledge is involved and *to* when sudden realization is involved.

Although this analysis is convincing as far as the above examples are concerned, it encounters difficulty when dealing with examples such as follows:

(13) Sore wa itsuka kaettekuru TO ikura shitteite mo hakkiri
that T some day come back how much know even clearly

miminisuru made kesshite tenihairanai 'jikkan' datta.
hear until never not obtain realization C
'That was the "realization" which could never have been obtained until I heard it clearly even though I knew it well that he was coming home some day'. (Yoshimoto 1988:106)

(14) Chishiki toshite wa ka de wa utsuranai TTE
knowledge as T mosquito by T be not infected

wakatteite mo kininarimashita.
know even worried
'Although I rationally knew that it is not communicable by mosquitoes, I was still worried'. (*More*, Feb., 1993:327)

As the English translations show, the propositions expressed in the complements in these sentences are presented as 'knowledge', not as 'sudden realization'. Yet, the complementizer used in both sentences is *to*.[5]

In accounting for sentences (9)-(14), it is clear that the concept of factivity is not useful. It cannot explain why factive predicates sometimes occur with *to* (as in (9), (10), (13) and (14)) and sometimes with *koto* or *no* (as in (11) and (12)). An alternative account by McCawley attributing the use of *to* to the notion of sudden realization can account for the difference between (9) and (10) on the one hand and (11) and (12) on the other. However, it fails to explain why *to* is used in (13) and (14), where the propositions are presented as knowledge rather than something that is suddenly realized.

I would like to propose a broader concept that encompasses the notion of sudden realization. Choice of complementizers in Japanese is correlated with the degree of the speaker's conviction about the truth of the proposition expressed in the complement. When the conviction is strong, *koto* or *no* is used. When the conviction is weak or nonexistent, *to* is used.

This analysis is capable of explaining sentences (9)-(14). First, it accounts for the use of *no* and *koto* in (11) and (12) respectively. In both instances we can reasonably say that the speaker is convinced of the propositions in the complement

clauses. With respect to (9) and (10), McCawley's analysis is correct in relating the use of *to* with the speaker's sudden realization of the proposition. When somebody suddenly realizes that something is the case, s/he may still not be fully convinced of that proposition. Thus, sudden realization is an instance of the speaker's weak conviction. The concept of the degree of the speaker's conviction is more adequate than the narrower concept of sudden realization because it can also account for the use of *to* in sentences such as (13) and (14). In both of these sentences the speaker has the knowledge that something is the case, but s/he is not fully convinced of the proposition. For example, the speaker of (14) was in a country where AIDS is rapidly spreading and she was bitten by many mosquitoes. Although she has the common knowledge that AIDS is not communicable by mosquitoes, she was not totally convinced about that, probably because AIDS is still a new and somewhat mysterious disease.

In the preceding paragraphs I have discussed one type of instance where the correlation between factivity and complementizer choice shown in (8) does not hold. Namely, factive predicates take *to* instead of *koto* or *no*. There is another set of instances where the correlation does not hold. In these cases nonfactive predicates occur with *koto* or *no*[6] instead of *to*.

(15) Ikura watashi ga aishiteiru KOTO o itte mo
how much I S love O say even

wakattemoraenai no yo.
understand-receive-not N F
'No matter how often I tell him that I love him, he doesn't get it'.
(*More*, Dec., 1992:330)

(16) Demo anata no hoo koso konna katachi de wakare o tsugeru
but you L side indeed this kind form in farewell O say

jinsei nado zettai ni erabitakunakatta KOTO o omoi,
life something like never A wanted-to-choose-not O think

watashi wa umarete hajimete chooji nado
I T born first time memorial address something like

o yomu no desu
O read N C
'But, thinking that you never wanted to choose a life that ends like this, I will read a memorial address for the first time in my life'.
(Bungei Shunjuu 1986:245)

In (15) a nonfactive predicate *itte* (a gerundial form of *yuu* 'say') occurs with *koto*. In (16) another nonfactive verb *omoi* (an infinitive form of *omou* 'think') takes *koto* as its complementizer. These sentences, in which the correlation between factivity and complementizer does not hold, can be accounted for by the analysis using the concept of the speaker's conviction. In both of these sentences even though the predicate used is nonfactive the speaker is convinced of the proposition expressed in the complement. In (15) the proposition expressed in *aishiteru* '(I) love (him)' represents the speaker's inner feeling. We can reasonably say that the speaker is

strongly convinced of the truth of his or her own feelings. (16) is uttered at the speaker's best friend's funeral. Her friend died in a bomb explosion of an airplane she was on. From the background knowledge that the speaker is the best friend of the deceased and thus must have known her well, and the common sense that people normally do not wish to die in a bomb explosion, we can be pretty sure that the speaker is convinced of the truth of the proposition expressed in *konna katachi de wakare o tsugeru jinsei nado zettai ni erabitakunakatta* 'you never wanted to choose a life that ends like this'.

Since using *koto* and *no* indicates that the speaker is strongly convinced of the truth of the proposition expressed in the complement, they are incompatible with predicates which express that the proposition is false as shown below.

(17) John wa Mary ga shinda TO/* KOTO O/* NO O kanchigaishita.
T S died made a wrong conjecture
'John made the wrong guess that Mary had died'.

(18) John wa Mary ga shinda TO/* KOTO O/* NO O gokaishita.
T S died formed a wrong notion
'John formed the wrong notion that Mary had died'. (Kuno 1973: 217)

In these sentences the predicates *kanchigaisuru* 'make a wrong conjecture' and *gokaisuru* 'form a wrong notion' explicitly deny the truth of the propositions. Thus there is no conviction on the speaker's part concerning the truth of the propositions. It is predictable from our analysis that in these cases *to* is the only complementizer possible. Because these predicates are nonfactive, Kuno associated nonfactivity with *to*. However, as we saw in (15) and (16), nonfactive predicates do not always occur with *to*. Complementizer choice is determined not by factivity/nonfactivity of the predicate but by the strength of the speaker's conviction about the truth of the proposition.

The situation is the same for predicates which take sentential subjects. See the following example.

(19) Nihon no kokuji wa daibubun ga kanji de
Japan L national character T majority S Chinese character in

kakareteiru ga, kono kanji o oboeru koto ga seito
be written but this Chinese characters O learn N S student

nitotte omosugiru futan ni natteiru KOTO wa hotondo subete no
for too heavy burden ADV become T most all L

gakusha no icchishita iken dearu.
scholar L agreed opinion C
'The majority of the national script of Japan is written in Chinese characters. It is a unified opinion of almost all scholars that learning these Chinese characters is a burden which is too heavy for students'. (Inoue 1981:109)

Although according to Kuno's prediction summarized in (7) the insertion of *to yuu* is obligatory with nonfactive predicates, the above sentence shows that a nonfactive predicate allows *koto* by itself as the complementizer. (19) is part of an American delegation's report quoted in Inoue's book. The report was put together by the delegation right after World War II to recommend that Japan abolish the use of Chinese characters. From this background it is clear that the writer of the report is convinced that the proposition expressed in the embedded clause of (19), *learning these Chinese characters is a burden which is too heavy for the students*, is true. The writer's strong conviction is expressed in his/her choice of the complementizer. *Koto* is used without *to yuu* in front of it.

When the speaker is not convinced of the truth of the proposition, the insertion of *to yuu* in front of *koto* or *no* is necessary. In Kuno's example (4) in which *to yuu* is shown to be obligatory, the predicate used is *ariuru koto da* 'be possible'. This predicate indicates that the speaker is not convinced of the truth of the proposition. The predicate is also nonfactive, but as we saw in (19) not all nonfactive predicates require *to yuu*. The following example illustrates how the speaker differentiates the use of complementizers depending on whether or not s/he is convinced of the truth of the proposition.

(20) Ikitosu no hoteru ni taizaichuu dooshuku no amerikajin ga
Iquitos L hotel in while staying same hotel L American S

nikuson daitooryoo ni chotto niteite, futari de omoshirogatta
Nixon president to a little resemble two by be amused

NO wa jijitsu da ga, watashi ga furonto e itte sono hito no namae
N T fact C but I S front to go that person L name

o kakuninshita TO YUU NO wa kanojo no soosaku.
O confirmed T she L invention
'It is a fact that when we were staying in a hotel in Iquitos, there was an American tourist in the hotel who looked a bit like President Nixon and that amused us, but it is her invention that I went up to the front desk and confirmed his name'. (Bungei Shunjuu 1986: 153)

Although the two predicates, *jijitsu da* 'be a fact' and *kanojo no soosaku* 'be her invention', are both nonfactive,[7] the former takes *no* as its complementizer and the latter *to yuu no*. That is because the speaker is convinced of the truth of the proposition in the former case while the speaker is convinced of the falsity of, thus not convinced of the truth of, the proposition in the latter case.

In this section we saw that there are numerous sentences that do not express the correlation between factivity and complementizer choice proposed by Kuno. Instead, complementizer choice in Japanese seems to be determined by the degree of the speaker's conviction about the truth of the proposition represented in the complement. In the next section we see whether the concept of the speaker's conviction can be applied to other languages.

4. Cross-linguistic Applicability of the Speaker's Conviction

What is true in one language is often true in other languages. Does the concept of the speaker's conviction have cross-linguistic applicability? There is an indication that it does. Givon's observation (1989) of KinyaRwanda, a language spoken in parts of Rwanda, Uganda, Zaire, Tanzania and Burundi, shows that complementizer choice in KinyaRwanda is determined by the degree of the speaker's conviction. See the following examples.

(21) a. ya-mu-bgiye KO u-a-kora-ga cyaane
he/PAST-him-tell that you-PAST-work-HAB hard
'He told him that you worked hard (and I don't doubt it)'.

b. ya-mu-bgiye NGO u-a-kora-ga cyaane
he/PAST-him-tell that you-PAST-work-HAB hard
'He told him that you worked hard (but I doubt it)'. (Givon, 1989:135)

Note that (21a) and (21b) are identical except for the complementizers. In (21a) the complementizer is *ko* while in (21b) it is *ngo*. The contrast between *ko* and *ngo* indicates the degree of certainty or doubt the speaker holds in relation to the truth value of the proposition expressed in the complement clause. In two unrelated languages, KinyaRwanda and Japanese, complementizer choice is determined by the degree of the speaker's conviction. This suggests that the concept is cross-linguistically and perhaps universally relevant.

That means that it may also be relevant to English. In another words, the accuracy of Kiparsky and Kiparsky's findings in English may need to be reexamined. They themselves admit that there are native speakers of English for whom the distinctions between factive and nonfactive predicates do not exit. They have chosen to ignore such speakers and concentrate on the speech of Carol Kiparsky. One cannot help but wonder what would have happened if the speech of those speakers had been included in the analysis. One of Kiparsky and Kiparsky's findings is that only factive predicates allow the noun *fact* with a sentential complement. I conducted an informal survey of native speakers of English. I asked them to rate certain sentences and found that many speakers allow certain nonfactive predicates to occur with the noun *fact*. For example, many speakers said that sentences such as (14) to (15) are acceptable.

(14) The fact that I'm extremely jealous of his success is true.
(15) She believes the fact that I'm against abortion.

Both of these predicates are nonfactive, but they nevertheless allow the occurrence of the noun *fact*. These sentences have two common factors which may be associated with the speaker's conviction about the truth of the proposition represented in the complement. First, the propositions express the speaker's inner feelings. Second, the predicates are compatible with the speaker's strong conviction as opposed to predicates such as *be possible, be false*, or *misunderstand* which are incompatible. This may suggest that the notion of the speaker's conviction may be useful in analyzing English complement types. Obviously the result of this survey cannot be taken too seriously. There are numerous problems with this type of survey. For example, intuitions of native speakers are not always

reliable. What they actually do may be different from what they say that they do. Nonetheless, the result of this survey at least suggests that the relationship between the speaker's conviction and complement types in English may need further investigation. More rigorous study on the relationship than this informal survey should be encouraged in the future.

5. Bureaucratization of Language

In this paper I have argued that complementizer choice in Japanese is determined by the degree of the speaker's conviction rather than by factivity of the predicate used. This issue relates to what Haiman (1991) calls the bureaucratization of language.[8] He theorizes that some language changes are brought about through routine repetition. Through such ritualization, language becomes standardized so that its form becomes relatively autonomous from its original stimulus. In other words, language becomes decontextualized. However, Haiman (1994) argues that because grammar is simply ritualized (or bureaucratized) verbal behavior, grammatical rules are capable of being resuscitated by the speaker so that they mean what the speaker means, rather than something to which s/he no longer attends.

This perspective helps us understand the relationship between factivity of the predicate and the speaker's conviction. Factivity may be viewed as the highest form of the speaker's conviction. The speaker is so strongly convinced of the truth of the proposition that it is presupposed. Certain predicates and complement types (the forms) have become associated with this strong conviction. Through repetition, some of these forms may have become autonomous from the original stimulus, the speaker's strong conviction. In other words, factivity may be viewed as a ritualized form of the speaker's conviction. The occurrence of certain complement types may be attributed to factivity/nonfactivity of the predicate in a sentence as if that were an inherent characteristic of the predicate. However, when we look at the actual use of language by a speaker, the choice of complement types (in Japanese at least) is not determined by the choice of predicate itself, which may or may not be associated with factivity, but by how strong the speaker is convinced of the truth of the proposition. Grammatical distinctions between factivity and nonfactivity are blurred by the speaker. This is an example of the speaker's reclaiming of the language.

In summary, I have described the original study on factivity and complement types by Kiparsky and Kiparsky and then critiqued Susumu Kuno's adaptation of the concept in the context of Japanese. My argument is that complementizer choice in Japanese is not correlated with factivity of the predicate, but rather it is determined by the degree of the speaker's conviction about the truth of the proposition. The implications of this study include the cross-linguistic applicability of the concept of the speaker's conviction and the perspective that the choice of complementizers in Japanese reflects the speaker's reclaiming of bureaucratized language.

Notes

[1]There are predicates which belong to a third type called indifferent and ambiguous predicates. They occur indifferently with factive and nonfactive complements. They are excluded from discussion for clarity of exposition.

[2]Just as in English, there are predicates which behave indifferently toward factivity of complement types. These predicates are excluded from discussion.

[3]The abbreviations used in the literal glosses are as follows:

A	Adverbial marker	C	Copula
F	Final particle	L	Linker
N	Nominalizer	O	Direct object marker
S	Subject marker	T	Topic marker

[4]Data used are written texts taken from books and magazines.

[5]In (14) *tte*, a variation of *to*, is used.

[6]Although I did not find an instance of *no* with a nonfactive predicate in my data, one of McCawley's sentences contains the nonfactive verbs *omou* and *kangaeru* occurring with *no*:

Toshioita haha ga furusato de watashi no seikoo o inotteitekureru
old mother S hometown in I L success O pray-for-me

NO/KOTO o omou/kangaeru tabini yuuki ga waitekru no desu.
O think whenever courage S spring out N C

'Whenever I think of the fact that my old mother is praying for my success in my hometown, I feel invigorated.'

[7]*Jijitsu da* 'be a fact' is a nonfactive predicate despite that, or rather because, it contains the noun *jijitsu* 'fact'. In using this predicate the speaker asserts that the content of the proposition expressed in the embedded clause is a fact, but does not presuppose that it is a fact. For a detailed discussion of this issue, see Suzuki (1994).

[8]I would like to thank John Haiman for valuable comments.

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Discourse functions of the Japanese epistemic modal DESYOO

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1. Introduction

The uses of the Japanese epistemic modal desyoo [1], defined by Jorden with Noda (1987:150) as the "TENTATIVE equivalent of desu [the copula] ... indicating probability, lack of certainty, imprecision and/or indirectness", have been characterized by Tanomura (1990) and Hasunuma (1992) in terms of a number of semantic-pragmatic uses. Building on these previous studies of desyoo and recent research by Herring (1991) on the grammaticalization of rhetorical questions in Tamil, I present an analysis of the discourse uses of desyoo in actual Japanese conversations and discuss the grammaticalization of desyoo in light of Herring's (1991) mechanisms for discourse-based grammaticalization and Hopper's (1991) grammaticization principle of "layering."

2. Previous research on desyoo

Tanomura (1990) analyzes desyoo in terms of three semantic-pragmatic uses. First, desyoo is often used for "simple inference" (tanzyun suiryoo) in utterances such as (1). Japanese grammarians have referred to this usage as the epistemic modal auxiliary (suiryoo zyodoosi). The information presented in the utterance that precedes desyoo is an inference about knowledge not in the speaker's direct experience. This use of desyoo is usually pronounced with falling intonation.

(1) 多分、今晩、雨が降るだろう。 (Tanomura 1990:70)
Tabun, konban, ame ga huru DAROO.
It will probably rain tonight.

Tanomura characterizes the second usage of desyoo as a "request for confirmation of an inference" (suiryoo kakunin yookyuu). In this usage, the speaker requests confirmation from the hearer that the speaker's inference is correct and the proposition is usually related to the hearer's direct experience as in (2), or something for which the hearer has direct evidence [2].

(2) 疲れているんでしょう。(もう寝なさい。) (Tanomura 1990:71)
Tukarete iru n DESYOO. (Moo nenasai.)
It's that (you)'re tired, aren't you. (Go to sleep now.)

Tanomura's third usage is a "request for confirmation of a fact" (zizitu kakunin yookyuu). In this usage the speaker uses desyoo to request the hearer's confirmation of information which the speaker believes is a fact and directs the hearer's attention to that fact as in (3).

(3) 駅や地下街によくいるだろう、ああいう男が。 (Tanomura 1990:71)
Eki ya tikagai ni yoku iru DAROO. Aa iu otoko ga.
They're often in the station and underground markets, aren't they.
Those kinds of men.

Hasunuma (1992) is basically in agreement with Tanomura's analysis of the three uses of desyoo except that she points out that his third usage is not necessarily a request for confirmation of fact because this construction can be used to confirm a hypothetical situation as well. Hasunuma recharacterizes Tanomura's third usage as an "evocation of shared knowledge" (kyootuu ninsiki no kanki or ninsiki kanki). According to Hasunuma, the speaker, who has a cognitive advantage over the hearer, evokes a world of shared knowledge with the hearer based on the expectation that the hearer can naturally make the same cognitive judgement as the speaker. Thus, when one uses desyoo, she/he is in effect saying "I am right in thinking that you have the same perception as I do, aren't I?"

Hasunuma further points out that the types of knowledge evoked by this construction include 1) shared past experience, 2) observable/cognitively salient information in the speech situation, 3) general knowledge/common sense and conclusions that can be drawn from it (in this case the inference is that the hearer can make a cognitive evaluation similar to that of the speaker) and 4) narrative internal knowledge. A narrator may use desyoo to evoke narrative internal knowledge by presenting previously introduced information as well as new information. The latter use of desyoo with new information compels the hearer to be drawn into the narrative.

I build on these previous analyses in my analysis of the discourse functions of desyoo. In particular, I have found that Tanomura's second and third uses can be used to structure a text in similar ways and are only distinguished in some cases by the interactional role of the participant using them.

3. Research on the grammaticalization of rhetorical questions

Herring's (1991) research on the grammaticalization of rhetorical questions in Tamil is relevant to this study because the textual functions of rhetorical questions in Tamil are similar to some of the textual functions of desyoo in Japanese. In addition, the mechanisms that Herring proposes for discourse-based grammaticalization are also relevant for this study.

Herring has found that grammaticalization is not necessarily unidirectional with objective referential meanings becoming more subjective. "[S]ubjective pragmatic-based meanings are not always late concomitants of grammaticalization; rather, ... they may constitute the very roots of grammar" (Herring 1991:278). Herring includes three types of rhetorical questions in her study; 1) CRQ (classical rhetorical questions), 2) TRQ (thematizing rhetorical questions) (e.g., the Tamil equivalent of "And then what happened?" or "What did X do next?"), and 3) RTQ (rhetorical tag ques-

tions). TRQ and RTQ function similarly to the uses of desyoo that I have found in my data.

Herring notes that rhetorical questions in Tamil have evolved textual uses from pragmatic ones, and in some cases rhetorical questions have become grammaticalized as clausal morphology. Pragmatically, these rhetorical questions have origins which are interactive and expressive; CRQ evoke listener involvement and are persuasive, TRQ create suspense and RTQ evoke solidarity with the listener.

These uses have given way to textual cohesive discourse organizational functions. TRQ are used to introduce new information in a pragmatically "focused" way and provide a broad organization to the discourse. Thus, TRQ relate short independent clauses to a single focus or theme. Herring also demonstrates that RTQ participate in a "retrieval and predication function," i.e., speakers introduce old information in an RTQ and add new information about this old information in subsequent clauses.

Finally, the RTQ in particular, has become grammaticalized as an informal relativizing construction, as shown in (4)a. The informal paratactic relativizing construction in (4)a is used in a similar way to the formal embedded relativizing construction in (4)b.

(4)a. Informal paratactic relativizing construction (RTQ)
Nēttu oru payyaṉ vantāṉ-ē avaṉ iṉṉekkum vantāṉ.
yesterday a boy come-P3sgMS-TAG he today-also come-P3MS
'A boy came yesterday, you know, he came today also.'

b. Formal embedded relativizing construction
Nēttu vanta payyaṉ iṉṉekkum vantāṉ.
yesterday came-PAJP boy today-also come-P3MS
'The boy who came yesterday came today also.' (Herring 1991:275)

Herring concludes that the mechanisms that drive discourse-based grammaticalization are

> [p]ragmatic unmarking, or the process whereby a stylistically or expressively-marked usage loses its marked value as a result of frequent use; reanalysis of function, e.g., from one functional/semantic component to the other; and, in the sense employed by Givón, syntacticization of loosely conjoined structures into syntactically unified ones. (Herring 1991:279)

4. The discourse functions of desyoo

Building on Tanomura and Hasunuma's analyses, I demonstrate that the uses of desyoo that evoke a sense of solidarity have acquired textual functions. Desyoo functions to 1) retrieve information for further predication (similar to Herring's "retrieval-predication function"), 2) provide a focus/theme for subsequent utterances (Herring's

> broader organizational function... [which relates] entire sequences of short, syntactically independent clauses to a single focus or theme, thereby creating loose structural unities reminiscent of paragraphs in written discourse (Herring 1991:266)),

and 3) provide a basis for subsequent discourse. I also demonstrate that the semantic-pragmatic distinctions between Tanomura's "request for confirmation of an inference" and "request for confirmation of a fact" may not be that significant when considered from the point of view of textual functions.

In contrast with previous studies which tended to be based on made-up sentences (Tanomura 1990) and play scripts (Hasunuma 1992), the conversational data for this study come from tapes from actual telephone conversations, face-to-face conversations and interviews on television talk shows. It is also important to note that Tanomura's "request for confirmation of a fact" which Hasunuma refers to as "evocation of shared knowledge," tends to be found in conversations between speakers of equal status or in utterances of a superior speaking to a subordinate [3]. For a subordinate to "evoke shared knowledge" with his/her superior, i.e., presume that the superior would have similar perceptions, is probably not appropriate.

4.1. The use of desyoo to retrieve information for further predication

In the conversation in (5), T uses an utterance ending in desyoo in 15T to retrieve information which she predicates on in 17T to 20T [4]. This usage is similar to what Herring has found with RTQ in Tamil.

In (5), T is explaining some renovations that are being done around her house. After setting a time frame of "after some other work is finished" in 11T, T mentions "the dirt on the outer side" in 12T. Then in 14T Ano, ippai yamamotte ru toko to ka, 'Uhm, the places that are piled up high or' and 15T Ano, hikui toko aru DESYOO? 'uhm there are low places, aren't there?', she uses an utterance ending in desyoo to introduce the concept of the land around her house. Subsequently she adds that she is planning to call the escavator and have him/her flatten the land.

(5) 11T そして、今度は、あの、それが済んだら
TIME FRAME Sosite, kondo wa, ano, sore ga sundara
Then, next, uhm when that's finished,
12T 外側の土がねえ?
Sotogawa no tuti ga nee?
The dirt on the outer side, you know?
13S ええ。
Ee.
Yes.
14T あの、いっぱい山もってるとことか、
RETRIEVE INFORMATION Ano, ippai yamamotte ru toko to ka,
Uhm, the places that are piled up high or

→15T あの、低いとこあるでしょう？
ano, hikui toko aru DESYOO?
uhm there are low places, aren't there?
16S ええ。
Ee.
Yes.
17T そこを、エスカペイトーの人に、うん、来てもらって、
PREDICATION Soko o, esukapeitoo no hito ni, un, kite moratte,
That, we will have the escavator person come and
18T 平らげるのね？
Tairageru no ne?
It's that we'll flatten it, you know?
19S あらまあー。
Ara maaa.
Oh my!
20T 平らくして。
Tairaku site.
We'll make it flat.
21S んー。
Nn.
Yeah.

4.2. The use of desyoo to provide a focus/theme for subsequent utterances

The second textual function of desyoo is to provide a focus or theme for subsequent utterances. This usage is similar to the use of desyoo to retrieve information for further predication but it provides a sentence theme rather than a nominal theme and functions on a larger scale. I demonstrate this use of desyoo using an example where the main speaker (the narrator) uses desyoo in (6), and an example where the support speaker uses desyoo in (7). The example where the main speaker uses desyoo in (6) is similar to Tanomura's "request for confirmation of a fact" and the example where the support speaker uses desyoo in (7) is similar to his "request for confirmation of an inference."

In (6), G is telling a story about how he used to clean his white shoes when they were dirty; he would wash them and rub toothpaste on them to make them white. He tells this story in the context of a discussion of how conscientious he was as a child. (6) begins with G's statement that he took the responsibility for washing his socks in 1G. After setting a time frame for his story, i.e., "the day before a schooltrip" in 2G, he uses the desyoo pattern in 3G Sono siroi kutu nanka yogorete ru DESYOO? 'Those white shoes and whatever are dirty, right?' to provide a focus or theme for his subsequent story. G's utterance ending in desyoo in 3G has the effect of saying here's a story about what I did when I had dirty white shoes. G goes on to tell the story in the subsequent discourse in 4G-10G and concludes that he was a child that did not require much attention in 10G.

(6) MAIN SPEAKER'S UTTERANCES

1G で靴下ぐらい自分でちゃんと洗いますしね、
De kutusita gurai zibun de tyanto araimasu si ne,
And socks at least I can wash properly by myself and, you know.

2G 明日遠足というとね？
TIME FRAME
Asita ensoku to iu to ne?
When they say tomorrow there's going to be a school trip, you know?

→3G その白い靴なんか汚れてるでしょう？
FOCUS/THEME
Sono siroi kutu nanka yogorete ru DESYOO?
Those white shoes and whatever are dirty, right?

4G そうすと、こう、洗ってね？
STORY
Soo su to, koo, aratte ne?
Then, like, I wash (them), you know?

5G それで革、あのう、あと歯磨き粉でこう塗るんですよ。
Sore de kawa, anoo, ato hamigakiko de koo nuru n desu yo.
Then, leather, uhm, afterwards it's that I like rub on toothpaste, you know.

6K 白く。
Siroku.
(Make them) white.

7G そうすと乾くとね？
Soo su to kawaku to ne?
Then, when they dry, you know?

8G 真っ白になるんです。
Massiro ni naru n desu.
It's that they are all white.

9K あ
A.
Oh.

10G そういう手のかからない子供だったんですかなあ。
Soo iu te no kakaranai kodomo datta n desu ka naa.
It's that I was that kind of a child that doesn't require attention, I guess.

(Tetsuko no heya- television interview program)

The use of desyoo in (7) also provides a focus or theme for subsequent utterances. This use is an example of Tanomura "request for confirmation of an inference" about the hearer's direct experience. What distinguishes the usage in (7) from (6) is that desyoo is used by what I refer to as the "support speaker" (kyooryokusya) rather than the "main speaker" (zyoohoo teekyoosya) in this part of the conversation (Szatrowski 1993:154). In my analysis I view Japanese conversation as co-produced by all the participants involved, each taking on different interactional roles as main speakers or supporting speakers. Support speakers support the main speaker(s) in his/her presentation and tend to use a high number of back channel ut-

terances. In addition, more active support speakers also support the main speaker with utterances ending in desyoo like 6S in (7).

(7) SUPPORT UTTERANCE

1 S T-san の方はなかなかいらっしゃらないのねー。
T-san no hoo wa nakanaka irassyaranai no nee.
As for you T, it's that you're not home much, are you.

2 S お、あの、お忙しいですか?
O, ano, oisogasii desu ka?
Uhm, are you busy?

3 T わたし?
Watasi?
Me?

4 S んー。
Nn.
Yeah.

5 T すごく忙しい。
Sugoku isogasii.
(I)'m really busy.

→6 S お家の方、まだ片付かないんでしょう。
FOCUS/THEME Outi no hoo, mada katazukanai n DESYOO.
It's that your house still hasn't gotten cleaned up, has it.

7 T んー。まだうちの中ねー?
STORY Nn. Mada uti no naka nee?
Yeah. Still inside my house, you know?

8 S んー。
Nn.
Uh huh.

9 T 箱、ボール箱いっぱい(かさな)あのー重なってー?
Hako, boorubako ippai (kasana) anoo kasanattee?
boxes, cardboard boxes are (stack) uhm stacked up high and,

10 S ええ。
Ee.
Yes.

11 T 少しずつ開けてるんだけど?
Sukosi-zutu akete ru n da kedo?
It's that I'm opening them up a little at a time but,

12 S ええ。
Ee.
Yes.

The example in (7) is taken from a telephone conversation where S calls T to chat. In this section, S is trying to find out how T is doing. She starts with a comment that T is not home much in 1S and then asks T if she is busy in 2S. T requests confirmation that she is the topic of these questions with her utterance in 3T Watasi? 'Me?,' to which S agrees in 4S. Then T answers that she is very busy in 5T. Up to this point, the conver-

sation is not very lively; S is asking questions and T is contributing minimally. Next, S uses an utterance ending in desyoo in 6S Outi no hoo, mada katazukanai n DESYOO. 'It's that your house still hasn't gotten cleaned up, has it.' This utterance suggests a focus or theme for T to build on. Subsequently, T does build on this theme in 7T, 9T and 11T, where she describes the condition of her house and what she is doing about the situation.

In 3G in (6) and 6S in (7), G and S, the main speaker and support speaker, respectively, use utterances ending in desyoo to provide a theme for the main speaker to expand on in subsequent conversation. Thus, Tanomura's "request for confirmation of a fact" (3G) and "request for confirmation of an inference" (6S) can have similar textual functions although the interactional role of the speaker may differ.

4.3. The use of desyoo to provide a basis for subsequent discourse

The third use of desyoo to provide a basis for subsequent discourse is particularly common in situations of potential conflict. I will illustrate this usage in examples of a negative answer to a question in light of a possible invitation refusal in (8), a refusal of a suggestion in (9) and an invitation refusal in (10). The example Tanomura gives for a "confirmation of an inference" in (2) also illustrates this usage.

Example (8) is taken from an invitation conversation. In my research on Japanese invitations (Szatrowski 1991, 1993), I have found that invitations consist of a series of invitation and answer stages. Both speakers co-produce each of these stages, i.e., both the inviter and invitee co-produce an invitation stage, then they co-produce an answer stage, then an invitation stage and so on, throughout the conversation. Prior to the section of the conversation given in (8), B, the invitee, has indicated a negative attitude towards A's invitation to come out drinking. Nonetheless, B begins another invitation stage in 1B. Thus, B, the invitee, puts A, the inviter, into a position where she can either continue her invitation or accept B's previous attitude as an indication that B does not want to go.

(8) Negative answer to a question in light of a possible invitation refusal (BASIS for answer)

1 B なに、もう帰るの－？
Nani, moo kaeru no:?
What, are you going home soon?

→2 A (0.3) だから、まだ9時でしょ？
BASIS (0.3) Dakara, mada ku-zi DESYO?
(0.3) So, it's still 9:00, isn't it?

3 B うん。
Un.
Yeah.

4A (0.5) もう少しいると思うけど、
NEGATIVE ANS (0.5) Moo sukosi iru to omou kedo:,
(0.5) I think we'll be here a little longer, but...

5B うん。
Un.
Yeah.

6A 出てこれるー？
INVITATION Dete koreru:?
Can you come out?

After B opens up the invitation stage with her question in 1B about whether A is going to go home soon, A is cautious in responding to B's question. She pauses for 0.3 seconds and starts by requesting confirmation of a very obvious fact about the time, something that she is guaranteed to get agreement on, with her utterance which ends in desyoo in 2A (0.3) Dakara, mada ku-zi DESYO? '(0.3) So, it's still 9:00, isn't it?' After getting B's agreement in 3B, A goes on to answer B's original question in 4A and finally makes her invitation more explicit in 6A. Thus, in (8), A uses desyoo to buffer a face-threatening act, in this case pursuing an invitation in a situation where the invitee has indicated that she is not very interested.

In (9), T uses desyoo to refuse S's suggestion that T have the children at the school where T teaches come to her home rather than T driving out to the school every week. T uses a very common pattern consisting of an utterance ending in desyoo followed by dakara, a connective meaning 'so' three times in her refusal of S's suggestion. Each time T uses an utterance ending in desyoo to introduce a reason for why she does not want to take S's suggestion followed by the connective dakara 'so' and a statement that directly opposes S's suggestion.

(9) Refusal of a suggestion (BASIS for refusal)
1S ついて[つぎ]からきてもらうようにしたら方が楽なんじゃないですか？
Tui [tugi] kara kite morau yoo ni sitara hoo ga raku na n zya nai desu ka?
From next time on if you have them come (to your house) won't it be easier for you?
2T でもむこからこっち連れてくんの、
BASIS1 De mo muko kara kotti turete kun no,
But (for the parents) to bring them here from over there,
3T あの子供連れてきたり
ano kodomo turete kitari
uhm bringing the children
4S ああっ。
Aat.
Oh.

→5 T 仕事終ってからくんの大変でしょ。
Sigoto owatte kara kun no taihen DESYO.
coming after finishing work is rough, isn't it.

6 S ああ。
Aa.
Oh.

7 T だから、わたしが向こう行った方が、あの、簡単だから、
REFUSAL1 Dakara, watasi ga mukoo itta hoo ga, ano, kantan da kara,
So, it's easier for me uhm to go there so,

8 S あ {LAUGH}
Ah.{LAUGH}
Oh.{LAUGH}

→9 T どうせわたし、あの、あの(0.4)Dとこ寄るでしょう?
BASIS2 Doose watasi, ano, ano (0.4) D toko yoru DESYOO?
In any case I, uhm, uhm stop by D's place, you know?

10 S ああそうねー。
Aa soo nee.
Oh that's so, isn't it.

11 T 1週に1度はね?
is-syuu ni iti-do wa ne?
once a week at least, you know?

12 S んー。
Nn.
Uh huh.

13 T だから、行ったって別に、うん、構わないしー?
REFUSAL2 Dakara, itta tte betu ni, un, kamawanai sii?
So it's not any particular trouble to go and,

14 S ああそう。
Aa soo.
Oh, is that so.

15 T そいで、お天気が悪ければ
Soide, otenki ga warukeba
Then, if the weather is bad

16 T キャンセルできるし?
Kyanseru dekiru si?
I can cancel and,

17 S んーふん。
Nn hun.
Uh huh.

18 T そいで、帰りがちょっと、怖かったら
BASIS3 Soide, kaeri ga tyotto, kowakattara
And if the return is a bit scary

→19 T Dんとこ泊まれるでしょう?
D n toko tomareru DESYOO?
I can stay over at D's place, you know?

20S ああそう。
Aa soo.
Oh, is that so.

21T 孫達喜ぶからね?
Mago-tati yorokobu kara ne?
The grandchildren are pleased so, you know?

22S んー。
Nn.
Uh huh.

23T んー。
Nn.
Uh huh.

24T だから、今のとこ、あと1年ぐらい続けてもいいと思ってるの。

REFUSAL3 Dakara, ima no toko, ato iti-nen gurai tuzukete mo ii to omotte ru no.
So, at this point, it's that I'm thinking that I can continue for about one more year.

25S ああそおー。
Aa sooo.
Oh is that so.

S suggests that T have the children come to her house rather than T driving out to the school in 1S. T subsequently refuses this suggestion in 2T-24T. She starts by giving the basis for her reason for refusing S's suggestion in 2T, 3T and 5T with an utterance ending in desyoo, saying that it would be rough to have the parents drive the children. After giving this basis T starts 7T with dakara 'so' and refuses S's suggestion.

T then gives another reason for refusing with an utterance ending in desyoo in 9T followed by a postposed utterance in 11T. The basis for her refusal is that she drops by D's place (which is near the school) once a week. Subsequently, T again starts her next utterance in 13T with dakara 'so' and refuses S's suggestion. After adding a comment in 15T-16T that if the weather is bad she can always cancel, T gives a third reason for refusing S's suggestion with an utterance ending desyoo in 18T-19T, i.e., that if it looks scary to drive back she can always stay over at D's place. And finally in 24T she again says dakara 'so' and refuses S's suggestion saying that she thinks that she can continue going out to the school for another year. This final utterance sums up her overall refusal of S's suggestion based on all the reasons she has given up to this point.

Thus, T's refusal of S's suggestion in (9) is made up of a series of utterances where T refuses the suggestion made by S three times. Each time she sets up the basis for her refusal with an utterance ending in desyoo and then uses dakara 'so' to introduce a more face-threatening utterance that directly opposes S's suggestion.

In the final example in (10), desyoo is used to provide a basis for a refusal of an invitation. C, the invitee, uses an utterance ending in

desyoo to provide the basis for her refusal but does not go on to make a direct refusal. After D invites C to go with him on a trip (which would involve missing several days of classes) in 1D, C acknowledges that she would like to go in 2C and continues with the connective de mo 'but' in 3C. She then refuses indirectly with her utterance that ends with desyoo in 4C Hutu-ka no asa ni kaette kuru no tte tyotto sore muboo DESYO. 'coming back on the morning of the second, that's a bit reckless, isn't it.' This utterance which gives the basis for her refusal is sufficient to convey her refusal which is never made explicit.

(10) Refusal of an invitation (BASIS for a refusal)

1 D カモン。カモン。{笑い} 一緒に行きませんか?
Kamon. Kamon. {LAUGH} Issyo ni ikimasen ka?
Come on. Come on. {LAUGH} Won't you go with (me)?

2 C うーん。行きたいな。
U:n. Ikitai na.
Yeah. I want to go.

3 C でもさ、
De mo sa,
But

→4 C 二日の朝に帰ってくるのってちょっとそれ無謀でしょ。
BASIS Hutu-ka no asa ni kaette kuru no tte tyotto sore muboo DESYO.
coming back on the morning of the second, that's a bit reckless, isn't it.
(Ishida 1992)

5. Conclusion

Uses of desyoo follow the two patterns shown in Figure 1.

FIGURE 1[6]

DESYO01 (simple inference)

DESYO02

PRAGMATIC	+/→	TEXTUAL	→?	CLAUSAL MORPHOLOGY
evocation of shared knowledge (solidarity)		1. retrieval/predication		relativizing clause
		2. focus/theme		
		3. basis		causal clause

The first use, DESYO01, as illustrated in (1), has been documented by Teramura (1984), Tanomura (1990) and others and is used for situations of simple inference. DESYO01 is roughly equivalent to English "probably," and indicates the likelihood of an uncertain event or a situation for which the speaker lacks direct evidence. The second use, DESYO02, the focus of the analysis in this paper, covers Tanomura's "request for confirmation of an inference" and "request for confirmation of a fact" and Hasunuma's "evocation of shared knowledge." DESYO02 is used to structure the discourse in

three ways; 1) to retrieve information for further predication, 2) to provide a focus/theme for subsequent utterances, and 3) to provide a basis for subsequent discourse, which is often introduced by the connective dakara 'so.'

I also demonstrated that the semantic-pragmatic distinctions between Tanomura's "request for confirmation of an inference" known to the hearer and "request for confirmation of a fact" both take on similar textual functions and their differences in some cases can be explained in terms of the interactional roles of the participants using them in the conversation. This distinction relates to the structure of Japanese conversation as co-produced by main speakers and support speakers. Thus, Tanomura's "request for confirmation of an inference" was observed when a support speaker used DESYOO2 to provide a focus/theme for the main speaker's subsequent utterances in (7) and Tanomura's "request for confirmation of a fact" was observed when the main speaker used DESYOO2 to provide a focus/theme for his own subsequent utterances in (6). Examples of Tanomura's second use, as in (2), and third use, as in (8) through (10), show that these uses of desyoo can both be used by a main speaker, i.e., without differentiation according to the interactional role of the speaker, to provide a basis for subsequent discourse.

Herring's (1991) pragmatic unmarking and reanalysis mechanisms for grammaticalization and Hopper's (1991) grammaticization principle of "layering" are helpful in explaining the use of DESYOO2 in Japanese conversation. DESYOO2 is primarily used in conversations between participants of equal status or utterances of superiors to subordinates. In particular, frequent use of DESYOO2 in conversations between participants of equal status, where solidarity is the norm, has led to pragmatic unmarking. In these contexts, the expressive solidarity effect of DESYOO2 is less marked and DESYOO2 is free to be used for textual functions [5]. Textual patterning suggests that DESYOO2 is undergoing a reanalysis from semantic-pragmatic to textual uses. However, until these textual uses are used by subordinates to superiors one would not expect DESYOO2 to have lost its solidarity effect altogether. Hopper's (1991) grammaticization principle of "layering" accounts for the coexistence of pragmatic and textual uses of DESYOO2 in Japanese conversation.

> Within a broad functional domain, new layers are continually emerging. As this happens, the older layers are not necessarily discarded, but may remain to coexist with and interact with the newer layers.
>
> (Hopper 1991:22)

Finally, Herring's (1991) syntacticization mechanism may also prove relevant in the subsequent evolution of DESYOO2. It predicts that the use of DESYOO2 to retrieve information for further predication may lead to the development of informal relativizing constructions as is the case in Tamil and the use of DESYOO2 to provide the basis for subsequent discourse may become further grammaticalized as a causal clause construction. Further

investigation of the intonation contour and the statistical frequency of these constructions from a historical perspective is required to substantiate these predictions.

FOOTNOTES:

[1] I will use the form desyoo to refer to formal variants with rising intonation, desyo(o)?, and with falling intonation, desyo(o)., and their informal equivalents, daroo? and daroo., respectively. Desyoo and daroo can be added to finite imperfective and perfective forms of verbals and adjectivals, nominals, nominals + phrase particles, and nominals + phrase particles + copula in the perfective form (Jorden with Noda: 1987).

[2] The use of the extended predicate n before desyoo, translated 'it's that' in the gloss in (2) is worthy of further study but is not treated here.

[3] This was first pointed out to me by Misao Okada and further confirmed by observations and discussions with native speakers. Maynard (1990) warns

> The use of -deshoo and -daroo should be avoided when speaking to one's social superior. This is because these phrases ask for confirmation of something that your superior is assumed to already know. Using these phrases gives the impression that you are challenging the depth and the extent of your superior's knowledge; it carries a condescending tone. (Maynard 1990:144)

Other speakers claim that they would use Tanomura's second or third usage of desyoo to a superior with an honorific-polite verb, when the subject of the proposition was the superior, or a neutral-polite form in other cases. (My use of the terms 'honorific-polite' and 'neutral-polite' follows that of Jorden with Noda (1987).) These intuitions of native speakers await empirical confirmation from data of conversations between speakers of different statuses.

[4] In the conversations transcribed for this study, underlined capital letters are used to indicate participants who are women and capital letters which are not underlined, indicate men. Thus, the conversation in (5) is between two women. Aizuti 'minimal responses' are shifted to the right in the transcription. Rising intonation is indicated by '?', falling intonation by '.', and uncertain utterances are in ().

[5] Similarly, I have found that the Japanese non-past V-(r)u forms are free to be used for participant tracking rather than vividness in inherently vivid contexts in narratives about past experiences (Szatrowski 1985).

[6] + indicates coexistence of the function on the left with the function on the right, → indicates the development of the function on the right from the function on the left, →? indicates a possible predictable future development.

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CASE MARKING IN TURKISH INDEFINITE OBJECT CONSTRUCTIONS

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In terms of the parameters of definiteness and specificity, we can distinguish four different direct object constructions in Turkish:

1) definite direct objects (henceforth DOs), as in (1), where the head noun of the object NP is marked with the accusative suffix -(y)I[1]

(1) Ali her gün gazeteyi okuyor.
every day newspaper he reads
'Ali reads the newspaper every day.'

2) indefinite DOs with the indefinite article *bir* (homophonous with the numeral 'one') and with accusative marking on the head noun, as in (2)

(2) Ali her gün bir gazeteyi okuyor.
'Ali reads a newspaper everyday.'

3) indefinite DOs with the indefinite article *bir* and no case marking on the head noun, as in (3)

(3) Ali her gün bir gazete okuyor.
'Ali reads a newspaper every day.'

4) indefinite DOs with neither an indefinite article nor any case marking on the head noun, as in (4). Such DOs, which obligatorily appear in immediately pre-verbal position, are often referred to as incorporated objects. For count nouns the singular/plural distinction is neutralized in this construction.

(4) Ali her gün gazete okuyor.
'Ali reads a newspaper/newspapers everyday.'

In what follows we shall be principally concerned with the distinction between types 2) and 3).[2]

What appears to us to be the primary factor in favoring the appearance of the accusative suffix is what we shall call 'individuation', without attempting at this point a precise definition of the term.[3] Rather imprecisely, we can characterize it as a focussing on a particular entity as such rather than on its being primarily of interest as a member of such-and-such a class. Some cases in point are the following:

Specific indefinites almost invariably are case-marked. Thus (5) implies that I am looking for a specific doctor, whereas (6) conveys that I am looking for anyone who is a member of the class of doctors.

(5) Bir doktoru arıyorum.
a doctor I am seeking
'I'm looking for a doctor.'

(6) Bir doktor arıyorum.
'I'm looking for a doctor.' (i.e. any doctor)

(2) above might be understood as implying that Ali reads the daily edition of the same paper every day (cf. Lewis 1967:248), or that he reads a paper from beginning to end every day, or that the paper is going to be topical in the continuation of the discourse, while (3) has no such implications.

An indefinite DO modified by *bütün* will generally be case-marked, while the corresponding DO without *bütün* may preferentially not be marked, as in (7) and (8):

(7) Kahvaltıdan sonra bütün bir karpuzu yedim.
breakfast after whole a watermelon I ate
'I ate a whole watermelon after breakfast.'

(8) Kahvaltıdan sonra bir karpuz yedim.
'I ate a watermelon after breakfast.'

There can be little doubt that the great majority of indefinite DOs that one comes across in Turkish are not case-marked. Nilsson notes that in a text sample taken from a collection of short stories the ratio of accusative-marked indefinite DOs to non-marked ones is about 1:8 (Nilsson 1985:55). In spite of this fact it appears that in certain instances the case-marked alternative is the preferred one. We shall attempt to give some explanations for this, and for contrary instances--i.e. cases where, given our hypothesis that individuation correlates with the use of the accusative suffix, one might have expected case-marking, but speakers prefer *bir Noun-Ø* DOs. Our focus in doing so will be upon subclasses of transitive verbs. We should note that in most instances the speaker judgments we shall be discussing involve preferred versions in what seem like the least presuppositionally loaded contexts versus dispreferred versions, rather than anything one would be tempted to call grammatical vs. ungrammatical contrasts; the dispreferred versions can usually be made more acceptable by specifying one or another feature of the context. To keep as many potentially confusing parameters as possible out of the picture, we are confining our presentation principally to affirmative statements involving DOs that refer to individuals (for some observations on generic objects, see in particular Nilsson 1979 and 1985).

One class of verbs that has a preference for case-marked DOs is that of causatives formed from intransitive bases. With such causatives the grammatical subject represents the causer, the grammatical DO the causee:

(9) Hasan güldü. 'Hasan laughed.'

(10) Ali Hasan-ı gül-dür- dü. 'Ali made Hasan laugh.'
ACC CAUS PAST

Looking at examples with indefinite DOs we find that speakers generally prefer case-marked versions. Thus (11) and (12) are preferred to versions in which the noun in the *bir*-phrase appears without the accusative suffix:

(11) Hoǰa bugün gine sınıfta bir öğrenciyi ağla-t-tı.
teacher today again in class a student cry CAUS
'Today the teacher again made a student cry in class.'

(12) Hoǰa bugün gine bir öğrenǰiyi koš-tur-du.
run CAUS
'Today the teacher again made a student run.' (e.g. as a punishment)

While no comparable data are available for the causatives of most transitive verbs, in which the causee appears as an indirect object marked with the dative suffix, the object slot already being occupied by the DO of the base verb, there is a small class of verbs which are lexically marked as taking dative objects and in the causatives of which the causee can thus appear as accusative-marked DO (for some further observations on certain interesting case-assignment properties of these verbs see Erguvanlı 1979). One such verb is *bin-* 'to get on (a horse, a bus etc.), to ride'. If we imagine an animal trainer in a circus who has an act where various people ride on a horse and an elephant, we might announce his intentions for a new version of this act as:

(13) Fil- e bir čocuğu bin- dir- eǰek.
elephant DAT a child ride CAUS FUT
'He's going to have a child ride on the elephant.'

with the case-marked *bir čoǰuğu* preferred over the unmarked *bir čoǰuk*.[4]

Our explanation for why it is that causatives exhibit a preference for case-marked DOs, thus running counter to the general tendency noted above, appeals to the parameter of individuation: we find it plausible that NPs denoting causees, which are typically also agents, are inherently more prone to score high on individuation than DOs in general, in that they focus, at least secondarily, on the individual made to perform some action. We do not claim, of course, that we would have predicted this property of causatives in Turkish; we do assert, however, that if we had to assign probabilities for various subclasses of verbs selecting case-marked DOs, we would have assigned a relatively high probability for such behavior to causatives.

We shall next take a look at some relatively high-transitivity verbs which one might a priori expect to have DOs that would score high on an individuation scale. One such verb is *kır-* 'to break'; we find, somewhat unexpectedly, that speakers prefer non-case-marked DO nouns in such sentences as (14)

(14) Temizlik yaparken bir vazo kırdım.
cleaning while doing a vase I broke
'I broke a vase as I was cleaning up.'

in neutral situations, i.e. in the absence of any contextual feature that favors case-marking. We find furthermore that with what may be the prototypical high-transitivity verb, *öldür-* 'to kill' (the causative form of *öl-* 'to die') the situation is similar; (15) is the preferred way of reporting that our neighbor killed a child:

(15) Komšumuz bir čocuk öldürdü.
our neighbor a child he killed

(We attribute the un-causative-like behavior of *öldür-* to the fact that it is lexicalized.) What seems to be happening here is that there is a tendency in the case of many transitive verbs to treat the object not as a figure, but as part of the ground (cf. Jackendoff 1983), so that (15) can be regarded as an assertion that our neighbor engaged in an act of child-killing (notice that *čoǰuk* can easily be treated as a formal incorporated object of *öldür-*, as in (16):

(16) Çocuk öldürmek günahtır.
child to kill is a sin
'To kill a child is a sin.')

Interestingly, we seem more likely to get case-marking if some more restricted (and non-biological?) subclass of humans is involved, as in (17) and (18):

(17) Komšumuz bir doktoru öldürdü.
'Our neighbor killed a doctor.'

(18) Komšumuz bir İngilizi öldürdü.
'Our neighbor killed an Englishman.'

Presumably *doktor* and *İngiliz* are not as readily absorbable into the ground as *čocuk, adam* 'man, person', *kadın* 'woman', etc. We note further that not all violent activities are treated similarly in this respect. Thus if our neighbor had merely stabbed or wounded the child instead of killing him, the patient noun would preferentially be case-marked, as in (19):

(19) Komšumuz bir čocuğu bıčakladı (yaraladı).
he stabbed he wounded
'Our neighbor stabbed (wounded) a child.'

We confess that we do not have a very convincing explanation for this state of affairs. We suspect that specificity (in the sense that *stab* is more specific than *kill* in terms of instrumentality) and/or newsworthiness counteracts the tendency to absorb the object into the ground (a tendency which might be regarded as a kind of quasi-compound formation), but we are far from convinced that we can thereby account for the behavior of *yarala-*.

We would finally like to discuss briefly the case-marking propensities of the verbs *öv-* 'to praise' and *eleštir-* 'to criticize'. They both show a strong preference for case-marked indefinite DOs; thus (20) is judged far more acceptable than a counterpart with an accusative-less DO:

(20) Ali gečenlerde bir filmi övdü, ama ismini hatırlamıyorum.
recently a film he praised but its name I don't remember
'Ali recently praised a film, but I can't remember its name.'

Can we make sense of this in terms of our explanation of case-marking as related to individuation? It seems to us that such an explanation is in fact possible; verbs like *praise* appear to focus on individual properties of the object being praised which render it praiseworthy in ways in which many other transitive verbs do not.

To sum up: there exists, in the Turkish treatment of direct objects, an intermediate area between the highest degree of specificity, represented by definite objects as in (1), and complete lack of specificity, represented by incorporated objects as in (4). In this intermediate area, where NPs with the indefinite article *bir* appear, case-marking or the lack of it indicate where on the specificity scale a particular object falls. In our view individuation is the parameter that most appropriately describes the contrasts that are expressed formally by the device of case-marking, and we find that the use of this formal device provides intriguing insights into verb semantics.

We are fully aware that much work remains to be done in this area. More verbs need to be looked at, and other constructions (e.g. negatives, generics) need to be investigated. It would also be interesting to study the phenomena we have described from the point of view of acquisition; it has frequently struck the second co-author of the present paper, whose Turkish is fluent but by no means native-like, that his tentative judgments on some of the examples discussed here differed widely from those of native speakers, who, although they did not always agree with each other completely, nevertheless exhibited general consensus. The only explanation for this that we have been able to come up with is that the ability to form 'correct' judgments on these matters is innate, but that it requires for its appropriate development exposure to relevant data at a critical period (a critical period which had passed for KZ when he began to learn Turkish), but we have been persuaded by a number of more cautious colleagues that we should probably abandon this hypothesis.

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[1]The values of the archiphoneme /I/ in a given context-- namely i, ü, ı (=ɨ), u-- are determined by the rules of vowel harmony which refer to the relevant features of the preceding vowel. The /-yI/ allomorph of the accusative appears after an immediately preceding vowel, the /-I/ allomorph after a consonant. The accusative suffix is underlined in all the examples.

The examples are given in a close-to-phonemic transcription, which differs minimally from standard Turkish orthography. The symbol ğ , the so called 'soft g', can be considered to correspond to phonetic zero in our examples, except that it indicates length on a preceding vowel in the context V_C; it appears in our transcription for morphophonemic reasons only.

[2]For relevant discussions see Tura (1973), Johanson (1977), and especially Nilsson (1979) and Nilsson (1985). The latter is the most thoroughgoing discussion we are familiar with; we have profited from it greatly. Nilsson discusses the role of such factors as specificity, individuation, and topicality, and reaches the general conclusion that case-marked DOs are in a number of ways more independent of the predicate than ones without case-marking, a conclusion with which our analysis in the present paper is fully compatible.

[3]We note that what we refer to as *individuation* is intended to be scalar, and is not identical with the property called *Individualität* ([IND]) in Johanson (1977). Johanson characterizes both indefinites with *bir* and plurals as [+IND], and bare-stem nouns as [-IND].

[4]There is some evidence that an animacy hierarchy may also play a role here: some speakers find no case–marking for non–human objects (causees), e.g. *bir arslan* 'a lion' ('He's going to have a lion ride on the elephant'), as acceptable as or more acceptable than the case–marked version (*bir arslanı*).

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MEANING IN A THEORY OF PRAGMATICS[1]

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0. Introduction

The main objective of this talk is to investigate the following question: Is there such a thing as a pragmatic theory of meaning? Or: What is the status of `meaning' in a theory of pragmatics?

The question is eminently suitable in the context of a meeting held in honor of the contributions of Charles Fillmore, in particular if we think of his contributions to the study of deixis, presupposition, and frame semantics (e.g. Fillmore 1966, 1971a, 1971b, 1971c, 1972, 1975, 1976a, 1976b, 1981). The `Fillmorean approach' to meaning has always been one which we might be inclined to capture under a label introduced by Susan Bean in 1978, i.e. `pragmatic semantics.' Relying on Peirce's threefold distinction between icons (representing their object by possessing an attribute similar to it), indexes (indicating an object by being existentially associated with it), and symbols (referring to objects on the basis of an arbitrary association established by convention), Bean -- while also recognizing that "Signs with a significant iconic component occur in all languages" (p. 2) -- proposes a basic distinction between symbolic meaning (defined as "a product of signs that are arbitrarily related to their objects and that therefore signify distinctive properties of the object class"; p. 3) and pragmatic or indexical meaning (described as "a product of signs existentially associated with their objects, which therefore signify an intrinsic connection to their objects (but nothing further about the properties of the objects themselves)"; p. 3). In the same breath, she suggests that there are certain linguistic elements, such as terms of address, which partake both in symbolic meaning (their being *about* aspects of the sociocultural world) and in pragmatic or indexical meaning (because of *their connection to* the social situation in which they occur).

When confronting such distinctions with the semantics to be found in Fillmore's work, our original question gives rise to numerous sub-questions. His work on deixis, obviously concerned with the indexicality of utterances, could be adduced in support of Bean's basic definition of pragmatic meaning. But does an aspect of meaning have to be indexical in order to be pragmatic? What about the suggestion of guilt implied by the choice of **to blame** for the description of a verbal act that could also have been described with **to accuse**? Is the anchoring (to use Östman's 1986 term) which this choice involves in relation to an intangible world of assumptions also to be interpreted as an indexing device of some sort? If so, the same could probably be said for the institutional frame carried along by **to buy** and **to sell**. A positive answer would raise questions about Östman's (1986) definition of pragmatics as the study of implicit meaning, which would cover the presuppositional information evoked by **to blame,** and the institutional information associated with **to buy** and **to sell**, but not the indexical meaning of explicitly deictic expressions. This makes me repeat the question as to whether indexicality, as such, should be at all a prerequisite to talk about pragmatic issues of meaning. To borrow one of Fillmore's (1975) examples, isn't there something fundamentally pragmatic, for instance, in the question whether a caterpillar is

privileged to **climb** down a flagpole -- even if we are not thinking about social forms of privilege here but just about conceptual constraints? And what about common distinctions between literal, metaphorical, and situational meaning? What is their role in relation to a theory of pragmatics?

I hope to shed some light—though not at all conclusive, given the inherent limitations of this presentation—on these issues by advocating what could be called `a pragmatic return to meaning' (section 1), by outlining a basic framework for a general theory of pragmatics (section 2), by asking some further questions in relation to recent work on meaning interpretation (section 3), by trying to situate the corresponding answers in the proposed theory of pragmatics (section 4), and by briefly illustrating the issues (section 5)

1. The pragmatic return to meaning

The following observation (developed at length elsewhere, see Verschueren 1994) will serve as our starting point. The Gricean concept of non-natural meaning (Grice 1957, 1968) removed meaning, as it were, from language (which had been its proper locus in traditional semantics) and attached it to one specific ingredient of the speech event, viz. individual intentionality. Defining meaning, as Grice did, in terms of the speaker's intention in the making of an utterance to produce an effect in the hearer by means of the hearer's recognition of the intention to produce that effect, was one of the major impetuses for a field of linguistic pragmatics to develop. Recently, however, an intention-based view of meaning has been seriously challenged, in particular by confronting orthodox speech act theory (Searle 1969) with anthropological data which showed that intention is only one factor in the production of meaning and that under certain circumstances it may not be the most important one (see Rosaldo 1982, Du Bois 1987, Duranti 1988, Hill & Irvine (eds.) 1993).

Historically, the restriction of meaning to speaker's intentions is probably to be explained as an understandable and partly justifiable defensive reflex to safeguard linguistics against the risk of conceptual imprecision and methodological unruliness, which would almost necessarily be involved in any attempt to cope with a field of pragmatics in the broad sense delineated by Morris (1938) as the study of the relation of signs to interpreters, to be developed under an obligation to take into account "psychological, biological, and sociological phenomena which occur in the functioning of signs" (p. 30).

Elsewhere (see Verschueren 1987, 1994) I have tried to demonstrate (i) that such a restriction did not really seem to help very much in terms of coherent theory formation in pragmatics; (ii) that it was probably a mistake to regard pragmatics as an additional component of a linguistic theory on a par with syntax and semantics and that it might be more useful to look at it as a specific perspective on language; (iii) that such a perspective would necessarily take us back to the broadest possible functional view of language incorporating cognitive, social, and cultural aspects of language use; and (iv) that, in terms of such a general functional perspective, pragmatics could provide for a full-fledged *return to meaning* which, unlike the more restrictive Gricean semantics and certainly unlike most types of pre-Gricean semantics (if we disregard for a moment the quite broad view taken by Ogden & Richards 1923, or by the likes of Sapir), does full justice to the central role of meaning in human reality in its full complexity.

Unfortunately, arguments for these positions cannot be repeated in the context of this paper. Let us therefore briefly introduce the basic ideas underlying

one possible theory of pragmatics of the type we have hinted at, in order to proceed from there towards further reformulations of the question of meaning in pragmatics.

2. A theory of pragmatics

At the most elementary level, using language involves constantly making linguistic choices of various kinds. Keeping in mind that what must concern us when adopting a functional perspective on language is a question such as "What does language do for human beings, or what do human beings do for themselves by means of using language?" at least three, hierarchically related, notions are needed to understand this `making of choices'. First, **variability** is the property of language determining the range of possible choices. Second, there is **negotiability** involved, which implies that the choices are not made mechanically or according to strict rules or fixed form-function relationships, but on the basis of highly flexible principles and strategies. Third, **adaptability** is the property of language which enables human beings to make negotiable choices from the variable range of possibilities in such a way as to satisfy basic human communicative and/or expressive needs.

Using adaptability as the starting point, we can assign four clear tasks to pragmatic descriptions and explanations. First, **contextual objects of adaptability** have to be identified. These include all the ingredients of the communicative context which communicative choices have to be interadaptable with. Second, the processes in question have to be situated with reference to the different **structural layers of adaptability**. Since the making of communicative choices takes place at all possible levels of linguistic structure that involve variability of any kind, pragmatic phenomena can be related to any level of structure. Third, any pragmatic description or explanation must account for the **dynamics of adaptability** as manifested in the phenomenon under investigation, in other words the development of adaptation processes over time. Fourth, we have to take into consideration differences in the **degrees of salience of the adaptation processes**. Not all choices are made equally consciously or purposefully. Some are virtually automatic, others are highly motivated. They involve different ways of processing in the medium of adaptability, the human `mind in society.'

These tasks for pragmatic investigations are not to be situated all on a par with each other. Their contributions are not only complementary, they have different functional loads to carry within the overall framework of the pragmatic perspective. First, a combination of *contextual objects* and *structural layers* of adaptability can be used to define the **locus** of adaptation phenomena, i.e. they describe the combination of linguistic and extra-linguistic coordinates in the communicative space of a speech event. Accounting for the *dynamics* of adaptability, taking into account the full impact of variability and negotiability, is no doubt the central task of most specific pragmatic investigations since it is essentially concerned with a definition of the **processes** of adaptation as such. Finally, an investigation of the *salience* of adaptation processes sheds light on aspects of their most fundamental **functioning** in the lives of human beings, i.e. on the many ways in which they relate to human reflexive awareness, which may be actualized to various degrees in different instances of use.

What does all this have to do with meaning? The superordinate concern which guides the study of pragmatic phenomena, with an identifiable locus, primarily as processes at various levels of salience, is simply to trace the dynamic

(and often interactive) construction of **meaning** in language use. We are inevitably concerned with what Bruner (1990) calls `acts of meaning,' cognitively mediated, and performed in a social and cultural environment.

3. Eco'ed questions

It should be clear that if we assume that there is more to meaning than the speaker's intention, and if we are dealing with a dynamic process of meaning construction (often to be qualified as interactive), then *interpretation* should be as crucial to the overall process as *production*. Probably it is the inevitability of this conclusion that has kept many linguists interested in meaning from taking a straightforward pragmatic approach seriously. Indeed, isn't interpretation a process without limits? And if so, how can it seriously be accounted for with any degree of certainty?

These questions basically echo a debate in semiotics fuelled by Umberto Eco's *The limits of interpretation* (1990) and *Interpretation and overinterpretation* (1992).[2] Eco defines the infinite drift of deconstruction allowed by Derrida's followers as a perversion of the `unlimited semiosis' recognized by Peirce. Though there are indeed endless possibilities of interpretation of a text, Eco argues that it can be demonstrated that some types of interpretation are misinterpretations or overinterpretations, the main empirical criterion being one of `coherence.' In order to avoid going back to the original language user's individual intentions as a criterion, he introduces a distinction between the *intentio auctoris* (the pre-textual individual intentionality of the author), the *intentio operis* (the `intention of the work' which cannot be reduced to the author's intention, but which nevertheless imposes its own constraints on interpretation), and the *intentio lectoris* (i.e. basically the reader's `interpretation,' to be distinguished from whatever `use' the reader wants to make of the work). The belief in unlimited semiosis is fundamentally a relativistic attitude. What Eco does is what should be done, i.e. placing relativity itself within the scope of the relativistic attitude.

It is only if Eco's general point is correct (which does not commit us to adherence to the details of, for instance, his threefold distinction), that we can sensibly follow a pragmatic approach to meaning of the kind hinted at, while believing that what we are doing is at all scientific. Fortunately, recent work on the notion on `context' (Auer & di Luzio (eds.) 1992, Duranti & Goodwin (eds.) 1992) points in the same direction. Potentially, `context' is as troublesome a notion as `interpretation,' since it seems equally limitless. But just as interpretation can be restricted to what is justifiable on the basis of the empirical language data, context can be restricted to those empirically traceable aspects of a potentially boundless context which the language users make use of in the (again, often interactive) construction of context, which is a central aspect of the construction of meaning.

4. Meaning in a theory of pragmatics

In other words, a pragmatic return to meaning in its full human complexity makes it possible to ask *What is the meaning of expression X in context Y?* (in the sense of a communicative content that is interactively constructed) rather than to restrict pragmatic investigations to the Gricean question *What does the language user intend X to mean in context Y?* (where the only active input on the interpretation side is an assessment of speakers' intentions).

Our own research in the last few years (see especially Verschueren 1991 and Blommaert & Verschueren 1991, 1992a, 1992b, 1993, 1994 forthcoming a/b) induces us to push this position to its extreme. Whereas Eco's formulation focuses on the interplay between intention, the linguistic form, and interpretation, where both the pre-textual intention and the recipient's interpretation involve conscious mental states and processes, we have evidence for the following assumption: *not only does the reader/listener/interlocutor play an important role in the construction of the meaning of a form of language use (within certain limits inherent in the discourse itself), but linguistic form may even come to carry meaning (to be empirically found in the text or discourse in the sense that it can be shown to have an influence on the further making of choices) which may neither have been intended pre-textually nor consciously interpreted by the `audience,' and which is nevertheless part of the meaningful functioning of the instance of language use in question.*

The research in question involves a pragmatic analysis of tolerant discourse concerning the presence of (certain groups of) foreigners in Belgium. The analysis revealed, at the level of implicit types of meaning (to be found, for instance, in patterns of word choice, presupposition- and implication-carrying constructions, interaction patterns, and global meaning constructs such as structures of argumentation), conceptual patterns which demonstrably permeate rhetoric about interethnic conflicts while they deviate sharply from explicitly professed attitudes. The overall structure of the debate is now as in (1), where ER stands for the position taken by the extreme right, TM for what we call the `tolerant majority,' and JB&JV for Blommaert and myself.

(1)
a. ER: Migrants should be sent back to their countries of origin.
b. TM: Migrants should integrate themselves into our society.
c. ER + TM: We respect other people's identity.
d. JB&JV: Neither ER nor TM accept fundamental forms of diversity.
e. TM: JB&JV just don't understand.

Sentence (1) d. summarizes the conclusion of a pragmatic analysis of a discourse corpus with a time depth of roughly three years, collected from mainstream sources (i.e. avoiding overt extremism in any direction), and consisting of news reports on the `migrant problem,' moderate political policy statements, highly mediatized social scientific research reports, and a government training program directed mainly at police officers. What we found was a conceptual, attitudinal, or ideological pattern of meaning construction, the one summarized in (1) d., with the following properties.

First, it is *not at all overtly represented in the linguistic form* of (1) a. and (1) b., nor in the texts which these lines summarize. Second, the discovered meaning *contradicts the explicit claims* to an attitude made by both ER and TM and which, certainly in the case of the `tolerant majority,' we might want to accept as sincere expressions of meaning intentions. Third, (1) d. *does not form part of the interpretations* which the typical audience of the tolerant rhetoric would produce in its contribution to the meaning construction involved in the discourse in question.

The issue in the context of this paper is not whether our conclusions are methodologically sound (an extremely important issue which we have addressed at

length elsewhere; see Verschueren 1994), but simply what the example tells us about the status of meaning in a theory of pragmatics. It should be clear that the meaning we are talking about escapes from the realm of what can be studied in traditional forms of semantics focusing on semantic properties of linguistic expressions as such.

But are we then dealing with different types of meaning? In line with my argument that pragmatics does not have its own object, but that it is characterized by a perspective of its own, my answer would be negative.

Does this imply that there are no different types of meaning that can be distinguished? Again, my answer would be negative. There is no reason to dispute the possibility of distinguishing, for instance, between literal and metaphorical meaning, or between denotation and connotation, or between linguistic meaning and situational meaning, even if the distinctions are not always equally clear.

What pragmatics does is simply to apply its functional perspective (in the broadest sense involving cognitive, social, and cultural considerations) to any one of the different types of meaning one might want to distinguish (just as it applies that perspective to the choices made at any structural level of language as well). Assuming that a complete account of meaning would always have to involve such a pragmatic perspective, semantics may then be regarded as the field of investigation restricting itself to more or less abstracted or idealized meaning phenomena. Ultimately, it is part of the logic of the position advocated here, that any search for a strict distinction between semantics and pragmatics is relatively futile.

5. On shelling, chance, and change

Let us briefly illustrate the kinds of meaning-related questions engendered by the pragmatic perspective, with reference to (2), which is a front-page headline from *The New York Times* of Tuesday, February 8th 1994.

(2) Shelling Gives Clinton Chance to Change

Before going into this example, it is good to remind ourselves that the very fact of adducing an illustration of this kind is a violation of the principles of the pragmatic perspective. We indulge in this practice, however, for the simple reason that within the scope of this presentation it is impossible to provide a serious pragmatic analysis, which could never draw conclusions about the meaning of a sentence such as (2) without, for instance, going through the details of the text it is part of. Therefore I will not have conclusions to present. I will simply be raising the types of questions one must inevitably face if one takes meaning seriously as the complex human phenomenon it is.

The locus of what we want to talk about, for the present purposes, is defined by the following coordinates: in terms of the layers of linguistic structure involved, we want to say something about the processes of lexical choice resulting in `shelling,' `chance,' and `change'; in terms of contextual objects of adaptability, the phenomenon under consideration is to be situated in a general geopolitical context in which a war is being fought in the former Yugoslav republic of Bosnia Hercegovina, and in which the Clinton Administration's policy has been to avoid direct American military involvement.

If we were to restrict ourselves to Bean's definition of pragmatic meaning, restricting its scope to indexical elements, not too much could be said about (2) beyond the mere observation that there are indeed a number of contextual objects of

adaptability which the sentence is indexically related to. In this case, however, the indexicality itself is less interesting than the vagueness with which it is presented. `Shelling' of Sarajevo had been going on for more than a year. But in spite of its general formulation, it is not a year of shelling that the phrase refers to. Such an interpretation would be incompatible with the `chance to change' which, under the general interpretation would have been there for over a year as well, so that it would hardly be newsworthy. The `shelling' in question is both textually and contextually narrowed down to one specific incidence of shelling which killed 68 people and wounded more than 200 in Sarajevo's central marketplace on Saturday February 5th. So there is no problem of ambiguity associated with the vagueness.

Yet, there is something intriguing about the formulation. Clearly it is not the *act* of shelling, on this particular occasion, that gives Clinton a chance to change (because the same kinds of acts had taken place many many times before), but rather the *result*: the many dead and wounded, the massacre. So, why did this headline not describe the result rather than the act? The reason seems to be that the meaning of `give a chance' is too much associated with positive overtones for it to be combineable with anything resembling a massacre. The expectation pattern for (3)

(3) X gives Y a chance to do Z

contains positive elements primarily in slot Z, but by extension also in X. Given the topic, the way in which the pattern is used would completely break the expectations if slot X would be filled with an explicit mention of what it stands for. However dubious the nature of shelling may be, in this case the word manages to serve as a euphemism.

But there is more. Slot Z is filled by `change,' which in combination with `give a chance to' sounds quite appealing in a society which values mobility and dynamism. But what does the `change' mean? A cynical reading of (2) could be (4):

(4) The massacre gives Clinton a chance to go to war

We can call this reading cynical because it would imply that going to war, in opposition to abstaining from military involvement, is something Clinton would like to do. And if that would be the case, the massacre would get elevated to a stroke of luck because it provides him with the opportunity to do what he would like to do. But to avoid such morbid implications, the substitution in slot X of a description of the result of shelling with the term for the more neutral act of shelling, is parallelled in Z by the replacement of an action to be undertaken with a very general `change.' Note that such a strategy only works for the author or editor of a report, and that it would not really help very much if Clinton himself were to say (5)

(5) That shelling gives me a chance to change

which he fortunately never did—one would hope.

Once it becomes clear that the `change' in question does not so much pertain to the bringing about of changes in the state of affairs which led to the massacre, but merely to a `change of policy,' it becomes impossible to avoid the issue of what the major concerns are that are betrayed by the phrasing: given the focus on improved chances for Clinton, the main preoccupation does not seem to be an

external change directly affecting Bosnia, but more an internal change taking place in Clinton and resulting in a different official stance and hence either in a different personal image, or a strengthening of American leadership in relation to the crisis at hand, or any combination of these. In that sense, there is real `chance' involved, literally to be interpreted as good luck, since a policy change might be more detrimental than beneficial to the public image if it were not to be spurred by an incident which attracted enough public attention, and in this case outrage.

The processes of meaning construction involved can be ascertained on the basis of linguistically observable coherence and recurrence in the discourse under investigation, where both explicit and implicit movements have to be carefully monitored. To give a little taste of how the questions we raised can be shown to be relevant in this respect, let us also quote the subtitle of the same article:

(6) Graphic Bosnia Images Prompt Policy Debate

Unfortunately, in the context of this paper we cannot even begin to scrutinize the further implications of this phrase (let alone of the rest of the text), and the way in which they hang together with those we suspect to be relevant for (2).

6. Conclusion

The main point of this paper is that a pragmatic approach to meaning, while dealing with observable phenomena with a clear locus (such as word choice), must address wide-ranging issues involving cognitive phenomena (such as patterns of expectations) as well as social and cultural determinants (to the point where even geopolitics gets involved).

In a pragmatic analysis of the meaning of linguistic expressions such as (2), the question of the author's intentions plays only one of many roles, dominating only where clearly conscious strategies can be detected, and many of the processes in question take place at such a low level of awareness that they cannot be expected to enter the reader's conscious interpretation. Nevertheless they can play a crucial role in the societal and interactive construction of meaning. On the societal level, this leads us directly into the study of ideological processes, for which a systematic pragmatic methodology is well suited.

I must apologize for the fact that some of the examples briefly adduced to illustrate the status of meaning in a pragmatic theory or what a pragmatic study of meaning looks like, have not been very cheerful. This being the final lecture, this conference might thus end in a more serious note than is really necessary. But again Fillmore is to blame. He also used to teach a course on language and social institutions, the implicit—if not explicit— message of which was that linguists have a social responsibility. The details of how I interpret that message cannot be fully spelled out here. Let me just end by saying that if we have or can develop tools for the analysis of socially and politically relevant processes of meaning construction, we must use them.

Notes

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[2]Eco 1990 also contains a reprinted version of an older article (Eco 1987) in which a position is taken very similar to my own in connection with the status of pragmatics as an enterprise characterized by a specific perspective rather than a separable domain: "[...] pragmatics cannot be a discipline with its proper object as distinguished from those of semantics and syntactics" (1990: 205).

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Rejection by Implicature

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1 Introduction

On one view of dialogue, the conversational record is part of the COMMON GROUND of the conversants. As conversants make assertions, the content of these assertions are added to the common ground, with the effect of limiting the context set (Stalnaker, 1978; Gazdar, 1979). According to Stalnaker, an assertion is assumed to be ACCEPTED, with a concomitant limitation of shared context, unless it is REJECTED by another conversant, and if an assertion is REJECTED the context remains as it was.

Although Stalnaker says nothing about how acceptance and rejection are indicated and recognized in dialogue, other work has shown that the inference of acceptance **can** be licensed in the absence of rejection (Whittaker and Stenton, 1988; Walker and Whittaker, 1990), but that conversants often explicitly indicate acceptance, as B does in 1:

(1) A: Sue's house is on Chestnut St.

B: Chestnut St.

The examples to follow are like 1: speaker A asserts U_1 and speaker B asserts U_2. If B's utterance indicates that B accepts A's assertion, we say that U_2 ACCEPTS U_1. If B's utterance indicates that B rejects A's assertion, we say that U_2 REJECTS U_1.

Indicators of acceptance range from the IMPLICIT ACCEPTANCE displayed by simply going on to the next topic, to phrases such as *uh huh* and *okay*, to partial repetitions such as 1B, to paraphrases or making inferences explicit (Clark and Schaefer, 1989; Walker, 1992). Walker (1992) argues that the the explicitness of acceptance affects the defeasibility of the propositions in the common ground.

Previous work has also identified three types of rejection: (a) DENIAL as in 2; (b) LOGICAL CONTRADICTION as in 3; and (c) IMPLICIT DENIAL as in 4, where B denies a presupposition of A's (Horn, 1989), p. 182-184.

(2) A: Pigs can fly.

B: No, you idiot, pigs can't fly! (Horn's 29)

(3) A: Kim and Lee have been partners since 1989.

B: But Lee said they met in 1990.

(4) A: Julia's daughter is a genius.

B: Julia doesn't have any children.

It seems to have been commonly assumed that the types of denial and contradiction exhaust the ways in which rejection can be indicated (Gazdar, 1979; Allwood, 1992), yet neither logical inconsistency nor denial of a presupposition is **necessary** for rejection as in 5:

(5) A: There's a man in the garage.

B: There's something in the garage.

The proposition realized by 5B follows from 5A as an entailment via existential generalization, yet 5B REJECTS 5A. That the informationally weaker 5B can reject 5A is surprising. How can a logically consistent assertion function to reject another assertion?

I will argue that the basis for the rejection function of 5B is a QUANTITY implicature (Grice, 1975; Horn, 1972; Gazdar, 1979; Hirschberg, 1985). Furthermore, the implicature depends on the FOCUS/OPEN PROPOSITION structure of U_1 and U_2 (Prince, 1981; Prince, 1986), also known as the focus/p-skeleton of an utterance (Rooth, 1985). The analysis raises several issues which will then be discussed in sections 3 through 5.

2 Rejection by Implicature

Quantity implicatures arise from the use of a less informative item in a sentence, implicating that the same sentence with a more informative item is either false or unknown. Thus the less informative *some* in 6 gives rise to the implicature in 7:

(6) Kim ate some of the cookies.

(7) Kim didn't eat all of the cookies.

Scalar implicatures are a type of quantity implicature (Horn, 1972). Hirschberg's theory of scalar implicature specifies the conditions under which a speaker may LICENSE a scalar implicature and that a hearer must have access to in order to INFER that a speaker intended a particular scalar implicature (Hirschberg, 1985). Scalar implicatures are calculated from surface semantic representations of propositions, i.e. from logical form, by identifying a potentially scalar subformula in the logical form, identifying the scale or scales that this subformula belongs to, and generating implicatures for alternate and higher values of that scale.

The theory depends on (1) $\mathcal{O}$, a salient ORDERING or scale, defined as any partially ordered set, POSET, relation over a set of scalar expressions $e_1 \ldots e_n$; (2) a means of ranking sentences as HIGHER, LOWER or ALTERNATE sentences with respect to $\mathcal{O}$; and (3) a specification of whether the speaker uttered a sentence which AFFIRMED, DENIED or declared IGNORANCE of a value on $\mathcal{O}$.

A means of ranking sentences is provided by the definition of a scale as a POSET, e.g. a HIGHER sentence is a sentence with a higher value from the POSET. The expressions e_i which can participate in scales are any constant, predicate, logical or epistemic operator, connective or quantifier symbol of a proposition p_i or any wff that is a subformula of p_i. Here we consider sentences that AFFIRM a value e_i on a scale $\mathcal{O}$ in an asserted proposition p_i, as defined in 8. A sentence p_i is SIMPLE with respect to an occurrence of a component expression e_i iff p_i contains no instances of negation with wider scope than e_i.

(8) AFFIRM(S, e_i, p_i) iff (p_i = BEL(S, p_j)$\wedge$ SIMPLE(p_j, e_i))

The SCALAR IMPLICATURE INFERENCE RULE (SIIR) for AFFIRMED sentences is in 9, where $\mathcal{O}$ is an ordering, C_h is the context, and BMB is the standard Belief in alternating mutual belief:

(9) SCALAR IMPLICATURE INFERENCE RULE(SIIR):
$\exists \mathcal{O}(BMB(Salient(\mathcal{O}, C_h) \wedge Realize(u_i, Affirm(S, e_i, Bel(S, p_i))$
$\wedge (HigherSent(p_i, p_j, \mathcal{O}) \vee AltSent(p_i, p_j, O)))$
$\rightarrow ScalarImp(S, H, u_i, \neg BEL(S, p_j), C_h)))$

The SIIR says that if there is a scale $\mathcal{O}$ that is salient in the context and a speaker S affirms a sentence p_i with a component expression e_i, and there is another sentence p_j which is a higher sentence or alternate sentence to p_i with respect to scale $\mathcal{O}$, then the speaker may implicate that it's not the case that s/he believes p_j, i.e. either s/he doesn't know whether p_j or she believes not p_j.

Thus if we instantiate the SIIR by letting u_i be the assertion in 6, the scale $\mathcal{O}$ be the scale of quantifiers (*some, all*), the higher sentence p_j be 10, and the context C_h the null context, we get the implicature in 11, glossed in 7.

(10) Kim ate all of the cookies.

(11) ScalarImp(S, H, *Kim ate some of the cookies*,
¬ BEL(S, *Kim ate all of the cookies*), C_h)))

The predicate ScalarImp in 11 is defined so that implicatures can be felicitously CANCELLED, as in 12a, as well as REINFORCED as in 12b.

(12) a. Kim ate some of the cookies, and in fact Kim ate all of them.

b. Kim ate some of the cookies, but Kim didn't eat all of them.

The tests of CANCELLABILITY and REINFORCEABILITY distinguish conversational implicatures from entailments (Grice, 1975; Horn, 1972; Sadock, 1978; Horn, 1991). In 12b, the implicature was cancelled by a subsequent statement, but can also be cancelled by **prior** context, so that the implicature never arises, as in 13.

(13) Kim may have eaten all of the cookies. She ate some of them.

Thus in every respect, scalar implicatures are DEFAULT inferences (Joshi et al., 1986; Perrault, 1990).

Now, consider the quantity implicature in 15, which arises from 14:

(14) A: Is the new student brilliant and imaginative?

B: He's imaginative.

(15) He's not brilliant.

In 14, A introduces a question as to whether a, *the new student*, is both $brilliant$ and $imaginative$. The conjunction evokes the scale of conjunctive assertions ($P, P \wedge Q$), where P is *The new student is imaginative* and Q is *The new student is brilliant*, and $P \wedge Q$ is a higher sentence than P. Thus because speaker B affirms P with 14B, B implicates the denial of $brilliant(a)$ in 15.

However, note that the implicature in 15 still arises in the context of the assertion in 16A:

(16) A: The new student is brilliant and imaginative.

B: He's imaginative.

Thus the implicature is not dependent on the question context of 14, and 16B rejects 16A. Similarly, the SIIR licenses the inference of rejection in 5. The salient scale $\mathcal{O}$ must include (*a man, something*) and 5A is a higher sentence than 5B. Then B's assertion implicates that it isn't the case that B believes 5A.

2.1 Issues

The analysis of rejections as implicature presented above partially explains how a logically consistent (entailed) proposition, asserted by a speaker B after an assertion by a speaker A can function to REJECT A's assertion. However, the analysis raises several issues.

First, a less informative U_2 following an assertion U_1 may ACCEPT U_1 rather than REJECT it, as in 1B. Section 3 discusses the difference between acceptance and rejection.

Second, implicatures only arise when they are consistent with the context, as 13 shows. However 15 is not consistent with 16A. Section 5 presents a theory which explains why a rejection implicature can arise in a context with which it is inconsistent.

The third issue is how the speaker and hearer coordinate on the SALIENT scale that licenses a scalar implicature. Because a single sentence can potentially evoke many scales, the assertion in 1 repeated here as 17a can license any of the implicatures in 17b to 17d:

(17) a. Sue's house is on Chestnut St.

b. The speaker doesn't believe that Steve's house is on Chestnut St.

c. The speaker doesn't believe that Sue's car is on Chestnut St.

d. The speaker doesn't believe that Sue's house is on Walnut St.

The determinant is whether the salient scale $\mathcal{O}_i$ is (Steve, Sue) for 17b, (house,car) for 17c or (Chestnut St., Walnut St.) for 17d. Section 3 discusses how the FOCUS/OPEN PROPOSITION information structure of these utterances provide the cues for determining the salient scale.

Fourth, when a rejection is logically consistent, as in 5, it is perfectly possible that both assertions hold, and that both a man and something else are in the garage. Some cues to distinguish rejection from simple continuation are discussed in section 4.

Finally, rejections are often realized with Fall-Rise intonation, which may signal disagreement (Ladd, 1980). The role of Fall-Rise is discussed in section 4.

3 Acceptance and Rejection

The logically entailed rejections discussed above are a type of INFORMATIONALLY REDUNDANT UTTERANCE, IRU, as defined in 18 (Walker, 1993a):

(18) An utterance u_i is INFORMATIONALLY REDUNDANT in a discourse situation $\mathcal{S}$ if u_i expresses a proposition p_i, and another utterance u_j that entails, presupposes, or implicates p_i has already been said in $\mathcal{S}$.

IRUs can also be used to indicate explicit acceptance, e.g. 1B, which does **not** implicate that for all B knows it is not **Sue's** house that is on Chestnut St. Yet, it is plausible that the logical form for 1 includes conjunction as in 19, and thus could evoke the scale of conjunctive assertions:

(19) (house x) ((belong-to Sue x) $\wedge$ (located x Chestnut St.))

One hypothesis for the lack of an implicature in 1B is that A's utterance in 1A has no explicit conjunction, and that an explicit conjunction is required to introduce the scale of conjunctive assertions. However, the implicature conveyed by 20B, glossed in 21a, and given in 21b, can be explained most naturally by postulating a conjunctive representation at the propositional level as in 22:

(20) A: We bought these pajamas in New Orleans for me.

B: We bought these pajamas in New Orleans.

(21) a. But not for you.

b. ScalarImp(B, A, *We bought these pajamas in New Orleans*, $\neg$ BEL(B, *We bought these pajamas in New Orleans for you.*), C_h)))

(22) (pajamas x) ((bought e x) $\wedge$ (located e New Orleans) $\wedge$ (agent e WE) $\wedge$ (benefactor e ME))

Thus the implicature in 21B, which indicates rejection, is generated **without** explicit conjunction. So what is the difference between 1B and 20B?

One clue is provided by an examination of 54 partial repetitions that indicate acceptance from a corpus of naturally-occurring problem solving dialogues (Walker, 1993a). In 50 out of 54 cases the repeated subformula of the propositional representation of U_2 was either (1) previously questioned, i.e. syntactically marked as focal (Prince, 1986), or (2) prosodically marked as focal in U_1. In other words, the repeated *Chestnut St.* of 1B was **focal** information in 1A.

Furthermore, the repeated focal information in Acceptance IRUs is prosodically marked as hearer-old information by the speaker's choice of both prosodic contour and phrase final tones (Prince, 1992; Walker, 1993b; Walker, 1993a).

Thus one key difference between Acceptance IRUs and Rejection IRUs is their information structure. Acceptance IRUs re-realize focal information from U_1 and

mark it as old information. Rejection IRUs re-realize the open proposition from U_1, and either omit the focal item or replace the focal item with a scalarly related item.

This suggests that the basis for inference of rejection includes the condition in 23:

(23) EXCLUSION OF FOCUS CONDITION:

If an utterance U_2 by a speaker B asserts an (alternate) instantiation of the salient open proposition contributed to the context by an assertion U_1 as uttered by a speaker A, and U_2 omits, or provides an alternate or more general instantiation of the focused element e_i of U_1, then U_2 REJECTS U_1.

It follows from the analysis of rejection by implicature that the focused elements e_i are precisely those that potentially license scalar implicatures. The condition is formulated as EXCLUSION rather than replacement because 20B functions as a rejection.

Applying the EXCLUSION OF FOCUS CONDITION to the examples thus far, we see that in 20A the focus is *for me*. B's excluding this focus in 20B leads to the construction of the conjunctive scale. The conjunctive scale provides the basis for the rejection implicature.

In 5A the focus is *a man* whereas in 5B, the focus is *something*. The scale of *a man, something* is made salient by the focus marking, and *something* is a more general instantiation of *a man*, which then licenses the rejection implicature.

In 14A and 16A the focus is the conjunction of *brilliant and imaginative*, whereas in 14B and 16B, the focus is only *imaginative*. The rejection implicature is licensed by identifying the scale of conjunctive assertions.

In all these cases B's assertion REJECTS A's assertion because it meets the EXCLUSION OF FOCUS CONDITION.

In contrast, 1B realizes the focal element e_i of 1A, failing to meet the EXCLUSION OF FOCUS CONDITION. Thus 1B accepts 1A, as we might have expected from the fact that it is logically consistent and realizes e_i as hearer-old information (Prince, 1992).

Furthermore, the EXCLUSION OF FOCUS CONDITION provides an explanation of **how** the speaker and hearer coordinate on which scales are salient, and thereby coordinate their mutual beliefs about which scalar implicatures have been licensed. The utterance expressions from which a scale is to be identified are both marked as focal in U_1 and U_2 (See also (Rubinoff, 1987)). Thus the focal structure of **both** U_1 and U_2 is critical, for defining the relevant scale $\mathcal{O}$, and for constraining when rejection IRUs are felicitous. This can be seen by considering the difference in foci of the naturally occurring 20A and an invented variation given here as 20'A:

(20') A: We bought me these pajamas in New Orleans.

In the original utterance, the focus was *for me*. In 20' the focus is most natural on *New Orleans*. B can reject 20A with 20B by excluding the focus, but B's utterance is infelicitous as a rejection of 20'A. This is precisely because the benefactor *for me* is not focal in 20'A. It is not plausible that the propositional representations from which scalar implicatures are calculated are different in 20A and 20A'. Thus the key factor is not simply that the propositional representation makes available a scale of conjunctive assertions, the scale must be identified from the focus/open proposition structure of U_1 and U_2. Felicitous rejections meet the EXCLUSION OF FOCUS CONDITION.

4 The Role of Fall-Rise in Rejection

Rejection IRUs are often realized with a Fall-Rise intonational contour, which marks a focus, and conveys additional meaning. This additional intonational meaning has been characterized as incomplete deliberation, uncertainty, focus within a set, a statement or answer with reservation, a polite softener of denial or rejection, (Ward and Hirschberg, 1985; Ladd, 1980; Horn, 1989) *inter alia*.

Ladd proposed that a fall-rise contour on the focused element signals a subset or hyponym relation: the focused element represents a proper subset or member of a contextually accessible set (Ladd, 1980; Horn, 1989). In addition, he proposes that Fall-Rise signals disagreement or at least amendment (Ladd, 1980), p 155, i.e. 24B disagrees with 24A, by marking *fool* with Fall-Rise, as indicated in 24B. In contrast, the simple fall in 25B signals acceptance by a continuation, i.e. conveys implicit acceptance.

(24) A: Harry's the biggest liar in town.

B: The biggest $_F$fool$_R$, maybe (.. but I think he means what he says)

(25) A: Harry's the biggest liar in town.

B: The biggest fool$_F$, maybe. (not only a liar but a fool)

However, Fall-Rise is not **necessary** because an utterance that meets the EXCLUSION OF FOCUS CONDITION can reject without Fall-Rise as in 26, even without the explicit amendation marker of *maybe*.

(26) A: Sue's house is on Chestnut St.

B: Some street$_F$.

Furthermore, the Fall-Rise on 27B, which fails to meet the EXCLUSION OF FOCUS CONDITION, is at best interpreted as a bit odd.

(27) A: Sue's house is on Chestnut St.

B: It's on $_F$Chestnut$_R$ St.

Thus Fall-Rise is neither necessary nor sufficient for indicating rejection. However, Fall-Rise can certainly help conversants disambiguate between rejection and continuation. Perhaps 26B is ambiguous between continuation and rejection without the fall-rise or a *maybe*. It is also plausible that Fall-Rise indicates polite softening (Horn, 1989), which presupposes a less preferred response (Brown and Levinson, 1987), and this presupposition disambiguates between rejection and continuation.

5 The Cancellability Diagnostic

One remaining issue is that implicatures only arise when they are consistent with the context, but 15 is not consistent with 16A. This illustrates the problem of coordinating acceptance between two speakers. It can not be that 16A is added to the common ground by virtue of being uttered alone, because 16B rejects this addition. Further 16B rejects this addition indirectly by an implicature, thus our description of conversational coordination must allow for this possibility.

This problem is handled by the account of inferring mutual acceptance in (Walker, 1993a), which was originally proposed in order to explain the differential effect on what is mutually accepted of all the ways of indicating acceptance discussed in section 1. On this account, each conversant maintains a representation of what has been mutually accepted so far in the conversation, along with endorsements on these mutually accepted propositions. The account is briefly sketched below.

As a dialogue proceeds, propositions realized by, inferrable from, or implicated by, assertions or proposals are added to each conversant's representation of the common ground with endorsements of various strengths. Endorsements are used to indicate the source of the proposition, whether it was inferrable or asserted, and whether the inference was an implicature or an entailment (Galliers, 1991). Endorsements contribute to the degree to which a belief is epistemically entrenched, i.e. endorsements provide a qualitative way of distinguishing between beliefs that are defeasible and those that a conversant would rarely change (Gardenfors, 1990).

The two weakest endorsement types are HYPOTHESIS and DEFAULT, where HYPOTHESIS is used to endorse assumptions that have no evidence supporting them at all, and DEFAULT is used for implicatures. The ordering on endorsements reflects the **relative** defeasibility of assumptions: an assumption endorsed as a HYPOTHESIS

can be defeated by DEFAULT. When two contradictory beliefs have the same level of endorsement, then the coherence of a larger subset of the whole belief set is used to choose between them.

Rejection can be indicated by an implicature because implicatures are endorsed as DEFAULT, and the acceptance of A's assertion is endorsed as a HYPOTHESIS until after B has the opportunity to reject, *pace* (Perrault, 1990; Thomason, 1990). In other words, the mutuality of the content of A's assertion is only a hypothesis until after B's turn. If B's utterance implicates the negation of the proposition realized by A's assertion, then A's assertion is not added to the common ground.

Note that this process applies in turn to B's utterance, so that B's assertion (which implicates rejection) is added to the common ground, endorsed as a hypothesis, until after A's turn. In the case of rejection by implicature, B's utterance is only weakly rejecting, or amending, because B's utterance asserts a weaker version of A's utterance, and B's utterance is added to the common ground, unless it is rejected by A in A's next turn. Thus what is mutually accepted evolves over time, with acceptance inferred weakly until more evidence is provided, allowing a rejection implicature to defeat the hypothesis of acceptance.

6 Conclusion

In sum, rejection need not be conveyed by denial or contradiction; a logically consistent U_2 REJECTS U_1 by a quantity implicature. The analysis is easily extensible to other types of illocutionary acts such as proposals, and highlights a more general class of Scalar Rejections. For example, it is possible to reject with an ALTERNATE scalar item as in 28B:

(28) A: Let's buy some bananas.

B: Let's buy some oranges.

It is also possible to reject with a HIGHER scalar item as in 29B (Horn, 1989):

(29) A: Vinnie likes Chuck.

B: She loves him.

Furthermore rejection implicatures are dependent on the FOCUS/OPEN PROPOSITION STRUCTURE of **both** U_1 and U_2. Thus it is critical that information structure be represented and used by a formal account of context incrementation and not simply logical form (Vallduvi, 1992; Moser, 1992). Finally, to avoid conflicting defaults, acceptance must be treated as a hypothesis until after B has an opportunity to reject A's assertion (Walker, 1993a).

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The Semantic Development Of *Ter-*

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1 Introduction

Most discussions of Malay prefixes, while acknowledging their polysemous nature, make little attempt to show how the various meanings associated with a particular prefix are related to each other. The polysemy of a prefix, then, is usually presented in the form of a list and the question of how or why the prefix should have the kinds of uses that it does is never fully addressed. In this paper, I focus on the prefix *ter-*, which can be used in the following ways:

i) to indicate 'lack of volition' (with verbs)
ii) to indicate 'completed action' (with verbs)
iii) as a superlative/intensifier (with adjectives)

The aim of the paper is to account for the current polysemy of *ter-* by looking at its semantic development. Towards the end of the paper, I shall also speculate on the etymology of the prefix.

2 Preliminaries

2.1 Metaphor as a source of polysemy

In metaphor, our understanding of one domain of experience is mapped onto another. The use of the same expression for both domains leads to polysemy. For example, the metaphor LINEAR SCALES ARE PATHS maps the starting point of a path onto the bottom of a scale and distances travelled along the path onto relative measures of qualities or quantities (see Lakoff 1990 for details).

1 John is way ahead of Bill in intelligence

2 He's almost through reading that book

As 1 shows, the phrase *way ahead*, which refers to the relative positions of two entities on a path (*'X is way ahead of Y'*), can be used to indicate the relative degrees to which a quality is present. In our analysis of *ter-*, we shall be particularly interested in the situation exemplified in 2 where the word *through*, which refers to motion past a boundary, can be used to indicate the endpoint or completion of an action.

2.2 Metonymic inference as a source of polysemy

In metonymy, one meaning is contextually contiguous with another, possibly via a relation of conversational inference. The conventionalization of the inference then leads to polysemy (Hopper and Traugott 1993). Consider the metonymy ENDPOINT OF SCALE FOR NEAR ENDPOINT for which examples are given in 3-5 below.

3 The car is completely/*extremely wrecked (completed action)

4 The toast is completely/extremely burnt (completed action/quality)

5 That guy is completely/extremely nuts (quality)

Note that in 3, where *wrecked* refers to the result of an action, it is possible to use the form *completely* but not *extremely*. However, in 4, *burnt* is ambiguous between a completed action and a quality so that both *completely* and *extremely* are allowed. It is likely that the use of *completely* in situations such as 4 led to it being metonymically associated with an intensifier sense so that instead of only indicating the endpoint of a scale, *completely* is also able to indicate a point near the end of a scale. The conventionalization of this intensifier sense then licenses the use of *completely* in an example such as 5 where *nuts* clearly refers only to a quality.

3 The behaviour of *ter-*

We now come to the focus of this paper, the polysemy of *ter-*.

With verbs:
ter- indicates 'lack of volition'

6 Ali ter-kejut
Ali ter-awake
Ali was startled

7 John ter-pukul Ali
John ter-hit Ali
John accidentally hit Ali

As 6-7 show, *ter-* can indicate that an action was accidental or involuntary. (The verb *kejut*, which literally means 'to awaken' is almost always used metaphorically to mean 'be startled'.) Note that in 6, the use of *ter-* is intransitive so that the subject is both actor and patient. But in 7, the use of *ter-* is transitive so that the actor and the patient refer to distinct entities. An unsurprising but important constraint that *ter-* places on the subject and, if present, the object, is that both participants must lack volition. For example, in 7, neither John nor Ali can be willing participants in the hitting event. Thus, in a two-participant situation where the patient was willing to be hit, *ter-* cannot be used even though the actor may have acted non-volitionally. Some other prefix such as *di-* is used instead, as in 8 below. The choice of *di-* doesn't necessarily mean that the subject is a volitional patient, it merely allows for such an interpretation.

8 Ali di-pukul (oleh John)
Ali di-hit (by John)
Ali was hit (by John) (where Ali wanted to be hit)

It is, however, possible to use *ter-* in a situation where the actor intentionally did the hitting as long as we have a non-volitional patient. The actor, in this case, must appear either in the oblique or not at all, as in 9.

9 Ali ter-pukul (oleh John)
Ali ter-hit (by John)
Ali was hit (by John) (where John intentionally hit Ali)

We can conclude that the requirement of non-volitionality placed by *ter-* on its participants extends only to the core argument(s) of the verb prefixed by *ter-*, that is, the subject and, if present, the object. An argument that appears in the oblique is able to escape this requirement. Since Malay lacks the equivalent of an antipassive construction, where the patient is either placed in the oblique or suppressed, a situation with a volitional patient can never take the *ter-* prefix. However, since Malay is able to place the actor in the oblique, and have the patient in the subject position, a situation where the actor is volitional can still be coded by *ter-*. Note that this gives the *ter-* clause the form of a passive, which brings us to the other use of *ter-* with verbs, that of indicating 'completed action'.

With verbs:
ter- indicates 'completed action'

10 Makanan ter-hidang di meja
Food ter- serve on table
Food is served on the table

11 Tingkap rumah itu sudah ter-tutup
Window house the already ter-close
The windows of the house have been closed

We see that the 'completed action' use of *ter-* also takes the form of a passive, and differs from the 'lack of volition' passives (such as 9) mainly in the animacy of the subjects. The subject in 9 is human, while those in 10-11 are inanimate.

Actually, calling this the 'completed action' use of *ter-* is somewhat misleading since *ter-* doesn't really indicate any kind of perfectivity. As 12-13 show, both the uses of *ter-* discussed so far, the 'lack of volition' and 'completed action' uses, can occur with the progressive marker *sedang*.

12 John sedang ter-jatuh
John PROG ter-fall
John is falling

13 Makanan sedang ter-hidang di meja
Food PROG ter-serve di meja
Food is being served

12 can be uttered felicitously if John happens to be falling from a very high cliff so that it would take him a couple of minutes to hit the ground. However, it is true that uses of *ter-* with a progressive marker are rare, and that there is a strong tendency to associate *ter-* events with perfectivity. This can be explained by assuming that the association of *ter-* with perfectivity is simply a default consequence of the fact that *ter-* marks 'lack of volition' since 'the difference between an accidental and a purposeful act is precisely in whether the actor is aware of all phases or only of the act's termination' (DeLancey 1981:649). This close association of *ter-* with perfectivity has not only led some analysts to treat *ter-* as indicating 'completed action', more importantly, native speakers also tend to

perceive *ter-* as marking 'completed action'. And as we shall see, this perception on the part of the speakers plays an important role in the semantic development of the prefix. For this reason, I continue to use the term 'completed action' in this paper.

With adjectives:
ter- is a superlative or intensifier

14 Rumah Suyin ter-besar
House Suyin ter-big
Suyin's house is the biggest/extremely big

15 Gunung itu ter-tinggi
Mountain the ter-high
The mountain is the highest/extremely high

Finally, as 14-15 show, *ter-* can be used as a superlative or an intensifier when prefixed to adjectives. The distinction between the superlative and intensifier use is usually context-dependent. For the purpose of this paper, I will simply refer to this as the 'intensifier' use of *ter-*.

4 Classical Malay (The Hikayat Hang Tuah)

We begin our investigation of the semantic development of *ter-* with an analysis of a text, the Hikayat Hang Tuah, taken from the period of Classical Malay. This was probably first written down around the 16th century though this is not uncontroversial. For our purposes, however, the precise date of the text is not as crucial as the relative development of the various uses of the prefix. In the Hikayat, out of the 218 tokens of *ter-* present, only three are with adjectives. The rest are with verbs. On the other hand, we find a *ter-lalu* construction which is used mainly as an intensifier. Thus, out of the 153 tokens of *ter-lalu,* only eight are used with verbs. The rest are with adjectives. The details are given in Figure 1 below.

	ter-	*ter-lalu*
With verbs:	senyum 'smile' (20) kejut 'startle (lit. awake)' (15) dengar 'hear' (14)	ingat 'remember' (3) ber-tuah 'lucky' (1) ber-bahagia 'be-happy' (1) ber-hainya 'be-sorrowful' (1) me-nangis 'be-crying' (1) me-rompak 'be-looting' (1)
With adjs:	banyak 'many' (1) berat 'heavy' (1) utama 'excellant' (1)	sukacita 'joyful' (22) baik 'good' (17) banyak 'many' (14)

Figure 1

The parentheses indicate the total number of tokens for a particular type of verb or adjective. To save space, I have included only the three most frequent types of verbs or adjectives for *ter-* and *ter-lalu* respectively. We can see that *ter-* is mainly

used with verbs, and rarely with adjectives. The 'intensifier' sense is mainly conveyed via the *ter-lalu* construction, an example of which is shown in 16.

16 ... kita sekalian kerjakan, kerana kebaktian saudara hamba kelima itu
we all work, because devotion friend-servant all-five the

pun ter-lalu besar
FOCUS ter-lalu big

we all work together because the devotion of all five confidantes is very great

It appears then, that in Classical Malay, the 'intensifier' use of *ter-* is only beginning to be developed. On the other hand, the 'lack of volition' and 'completed action' uses of *ter-* are already relatively well-established. This suggests that we first attempt to account for the latter two uses of *ter-*, and leave aside for the moment, its 'intensifier' use.

5 Relating 'lack of volition' and 'completed action'

We first note that, according to Figure 1, the most frequent uses of *ter-* are with verbs which are low in transitivity. For example, the verbs *senyum* and *kejut* are intransitive verbs, and the verb *dengar* is a verb of perception. We can therefore begin our anlaysis with *ter-* sentences such as those given below in 17-19.

17 Maka Hang Tuah ter-senyum
And Hang Tuah ter-smile
And Hang Tuah smiled

18 Hang Mahmud pun ter-kejut
Hang Mahmud FOCUS ter-awake
Hang Mahmud was startled

19 ... ia ter-dengar guruh di langit
he ter-hear thunder in sky
he heard the thunder in the sky

Note that although all the above uses of *ter-* are relatively low in transitivity, the construction in 19 allows *ter-* to take a direct object. 19 indicates that *ter-* is already beginning to be extended to verbs that are higher in transitivity since there are now two distinct participants in the *ter-* event. Further increase in the transitivity of the verbs gives us sentences like 20 below and 7 above.

20 Lelaki itu ter-minum racun
Man the ter-drink poison
The man accidentally drank poison

But some of these transitive verbs, though particularly suited to *ter-* prefixation because they involve non-volitional patients, cannot take *ter-* in an active

transitive construction because it is not easy to construe the actor as acting non-volitionally. An example of such a verb is *tawan* 'capture'.

21 *Orang Melaka ter-tawan anak Raja Kelantan yang perempuan itu
People Melaka ter-capture child Raja Kelantan REL woman the

ketiga-nya
all-three-POSS

The people of Melaka captured the three daughters of the Prince of Kelantan

21 is unacceptable because even though the three captive daughters are non-volitional participants, the people of Melaka are clearly not. As we saw, since the constraint of non-volitionality that *ter-* imposes extends only over its core arguments, the only way to code the event in 21 is with a passive construction, as shown in 22-23.

22 ... dan anak Raja Kelantan yang perempuan itu ketiga-nya ter-tawan
and child Raja Kelantan REL woman the all-three-POSS ter-capture

oleh Orang Melaka
by People Melaka

and the three daughters of the Prince of Kelantan were captured by the people of Melaka

23 Maka Raja Sulung ter-tawan ke Acheh
And Raja Sulung ter-capture to Acheh
And Prince Sulung was taken captive to Acheh

We now recall that the 'completed action' use of *ter-* also has the form of a passive, and differs from the passives in 22-23 by having inanimate subjects. Since the subject is now a patient in 22-23, it is natural to further extend the range of possible subjects to inanimates, giving us the uses of *ter-* shown in 10-11 above, and in 24 below.

24 ... keris-nya sudah ter-hunus
blade-POSS already ter-unsheath
his blade was already unsheathed

Of course, having an inanimate subject still obeys, by default, the requirement that the core argument(s) of a *ter-* clause be non-volitional since inanimates lack volition anyway. But more importantly, precisely because of this, the issue of volition now becomes irrelevant. The fact that *ter-* marks 'lack of volition' becomes less salient, and speakers are now free to perceive this as a different use of *ter-*. This difference is interpreted as a 'completed action' use because of the close association that we noted between non-volitional action and perfectivity. It is also possible that this already close association is further strengthened by the passive nature of the construction.

Summarizing thus far, we began with uses of *ter-* which are relatively low in transitivity. This was then extended to verbs which are much more transitive, giving us uses of *ter-* in situations where there is a clear distinction between the actor and the patient. However, in situations where we have a non-volitional patient, but where the actor is not easily construed as acting non-volitionally, the *ter-* clause takes the form of a passive construction. The semantic extension of the subjects in the passive to inanimates makes the question of volition moot, and this opens the way for the perception of a new use of *ter-*, that of indicating 'completed action'.

We now turn our attention to the 'intensifier' use of *ter-*.

6 Relating the 'intensifier' use

Recall that in Classical Malay, the 'intensifier' use was mainly conveyed via a *ter-lalu* construction. 25 shows that the word *lalu* means 'to pass by'. (The prefix *meN-* is glossed as an active voice marker and the *-i* suffix is glossed as a transitivizer. These are undoubtedly oversimplifications since these affixes are also complex. However, a discussion of their semantics is beyond the scope of this paper.)

25 Dia me-lalu-i geraja itu sebelum membelok ke kiri
He ACT-lalu-TR church the before ACT-turn to left
He passed by the church before turning to the left

However, as 26 shows, *lalu* can also indicate 'completed action'.

26 Orang masuk lalu duduk
People enter lalu sit
People entered and then sat down

Recall from our discussion in Section 2.1 of the LINEAR SCALES ARE PATHS metaphor that it is possible for motion past a boundary to metaphorically indicate the completion of an action (example 2). In fact, the use of *lalu* as a marker of 'completed action' is extremely common in Classical Malay, as shown by the examples below.

27 Maka Bendahara pun me-nyembah lalu berjalan kembali
And official FOCUS ACT-pay-homage lalu walk return
And the official paid homage and then returned (to where he came from)

28 ... maka Laksamana pun turun dari balai gendang itu lalu
and Laksamana FOCUS descend from hall drum the lalu

berjalan masuk ke dalam pagar lalu berdiri di tengah halaman istana itu
walk enter to inside fence lalu alone in middle courtyard palace the

and Laksamana descended from the hall of drums and then entered the fence and then stood alone in the middle of the palace courtyard

Since *lalu* can indicate 'completed action', and since *ter-* is perceived to also indicate 'completed action', this must have prompted speakers of Malay to reanalyse the *ter-*

lalu construction (which originally probably meant 'happened to pass by') as a marker of 'completed action', giving us the small number of uses of *ter-lalu* with verbs that we noted earlier in Figure 1. This use of *ter-lalu* with a verb is exemplified in 29.

29 kerana ia ter-lalu ingat
because he ter-lalu remember
because he remembered completely

The process of reanalysis is schematically represented in Figure 2 below.

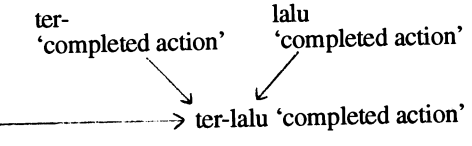


Figure 2

The original meaning of *ter-lalu* 'happened to pass by' is shown with an asterisk because I have not been able to find any use of *ter-lalu* with this particular meaning. In other words, *ter-lalu* appears to have been totally reanalysed as a marker of 'completed action' in the Hikayat.

We can now account for the subsequent use of *ter-lalu* as an 'intensifier' by using the metonymy ENDPOINT OF SCALE FOR NEAR ENDPOINT, which was discussed earlier in Section 2.2 and exemplified with sentences 3-5. The use of this metonymy is motivated by the fact that some of the verbs that are modified by *ter-lalu* are stative, and thus tend to blur the distinction between an action and a quality. An example is shown in 30 below. This, of course, creates the possibility that *ter-lalu* is then metonymically associated with an 'intensifier' sense so that it is now able to indicate a point near the end of a scale.

30 Demi Tun Tuah melihat muka Tun Teja itu, ter-lalu berhainya
When Tun Tuah ACT-see face Tun Teja the, ter-lalu be-sorrowful
When Tun Tuah saw Tun Teja's face, he became extremely depressed

The conventionalization of this gives us an unambiguously 'intensifier' use, leading to sentences such as 31 below, and 16 above.

31 ... ia pun ter-lalu amarah
he FOCUS ter-lalu angry
he was extremely angry

I suggest that over a period of time, speakers came to treat the *ter-lalu* construction as being especially emphatic since the construction constitutes a form of notional reduplication due to the fact that each member of the construction is perceived to have the same meaning of 'completed action'. Speakers then decided that a non-emphatic form was more appropriate. The *ter-* prefix was therefore able to take over the 'intensifier' use for itself.

Support for this suggestion comes from the fact that in Modern Malay, the *ter-lalu* construction still exists, but is distinguished from *ter-* by having an 'excessive' use rather than an 'intensifier' use. For example, compare 32 with 33.

32 Buku itu ter-besar
Book the ter-big
The book is extremely big

33 Buku itu ter-lalu besar
Book the ter-lalu big
The book is too big

In Classical Malay, the distinction between the 'intensifier' and 'excessive' uses was not conventionalized, and depended on the context instead; both were coded by the *ter-lalu* construction. Thus, compare 34 with 16.

34 Maka dalam berkata-kata itu maka berbunyi pula orang gempar
Then in to keep-talking the then to sound again people clamor

di tengah pesara, ter-lalu huru-hara mengatakan orang mengamuk
in middle supporter, ter-lalu tumult ACT-speak people ACT-run amuck

dalam kampung Bendahara Paduka Raja
in village Chief Minister King

Then, while the talking was going on, then there was the sound again of a mob in the midst of the supporters, (it was) too noisy to speak (and) people ran amuck inside the village of the Chief Minister of the King

7 On a possible etymology of *ter-*

7.1 Uighur: The case of *salmaq* 'put into/insert'

In order to look for a possible etymon for *ter-*, we first consider an interesting piece of comparative data from Uighur, an Altaic language. Here, we find that the word *salmaq* 'to put into/insert' (the *-maq* suffix is normally used in citation forms) can be used as an auxiliary to indicate 'lack of volition' (Taub 1994).

35 U kitabni hujunga sal-di
He book-ACC bag-DAT put into-PAST-3RD
He put the book into the bag

36 U kitapqa yezip sal-di
He book-DAT write-P put into-PAST-3RD
He accidentally wrote on that book

(The *-P* form of a verb is assumed to indicate its non-finite status though this is not entirely clear.)

35 shows the use of *salmaq* as a main verb where it has the meaning of 'to put into/insert'. In 36, however, *salmaq* is an auxiliary modifying *yezip* 'to write' and is used to indicate 'lack of volition'.

Taub (1994:7) has suggested that the use of a verb meaning 'to put into/insert' to indicate 'lack of volition' is motivated by the assumption that if an object was not supposed to be in a particular location, then its presence would be accidental or unexpected. On this account, the act of inserting is construed as a way in which an intrusive object might come to be present.

7.2 Malay: The case of *terus* 'through'

For the same situation to be motivated in the case of *ter-*, we need to look for a verb whose semantics is similar to that of the Uighur *salmaq*. A possible candidate appears to be the Malay word *terus* which means 'through'.

37 ... lalu ditikam-nya oleh Laksamana dada Petala Bumi terus
then was-speared-POSS by Laksamana chest Petala Bumi terus

ke belakang-nya
to back-POSS

then the Petala Bumi's chest was speared by Laksamana through to his back

The grammaticalization of *terus* to a prefix would then lead to the loss of the second syllable, giving us *ter-*. In fact, even though speakers of Malay today perceive little or no relation at all between *terus* and *ter-*, there is actually still a very strong similarity between the two, as shown below.

38 ia terus sedar
he terus be-conscious
he immediately/suddenly became conscious

39 ia ter-sedar
he ter-be-conscious
he immediately/suddenly became conscious

In 38, *terus* is used to indicate that the process of becoming conscious happened suddenly rather than gradually. There is a strong inference here that the subject is acting non-volitionally even though this is not explicitly indicated. This is the main difference between 38 and 39. In the latter, the non-volitional nature of the subject is explicit. The use of *terus* in sentences like 38 make it plausible to suggest that it could have developed into a formal marker of 'lack of volition', as in 39.

Assuming we accept *terus* as a possible source of *ter-*, we can then trace *terus* itself further back to the Sanskrit form *tiras* 'through, across, beyond'. This is not to say that there was a direct borrowing from Sanskrit itself since 'third or fourth hand borrowing of Indian elements is in various parts of the Archipelago no rare occurrence' (Gonda 1971:958). This is a rather controversial move since most scholars of Malay, while willing to acknowledge the Sanskrit origins of a large number of lexical items, are uneasy with the possibility that a prefix, too, could have started off as a borrowing. I lack the space to deal with this controversy here

but there is no doubting the suggestive parallels between the Uighur and Malay cases.

8 Summary

I show below a schematic representation of the semantic development of *ter-* outlined in this paper, including my speculations on its etymology.

On the polysemy of *ter-* itself, we begin with the affixation of *ter-* to verbs which are low in transitivity, followed by an increase in the transitivity of the verbs. With the more transitive verbs comes a distinction between actor and patient so that we have different *ter-* constructions where either the actor or the patient is the subject. The extension of the second type of construction to inanimates gives us the 'completed action' use.

As a separate development, we find that *lalu* can also indicate 'completed action'. The result of the these two lines of development prompts the *ter-lalu* construction to be reanalysed as a notional reduplication which also indicates 'completed action'. Via the metonymy ENDPOINT OF SCALE FOR NEAR ENDPOINT, *ter-lalu* comes to be used as an 'intensifier'. This sequence of events brings us to the situation we find in Classical Malay.

By the time of Modern Malay, the reduplicative nature of the *ter-lalu* construction was felt to be too emphatic, leading to a split whereby *ter-* alone takes over the 'intensifier' use, and *ter-lalu* indicates a quality as being 'excessive'.

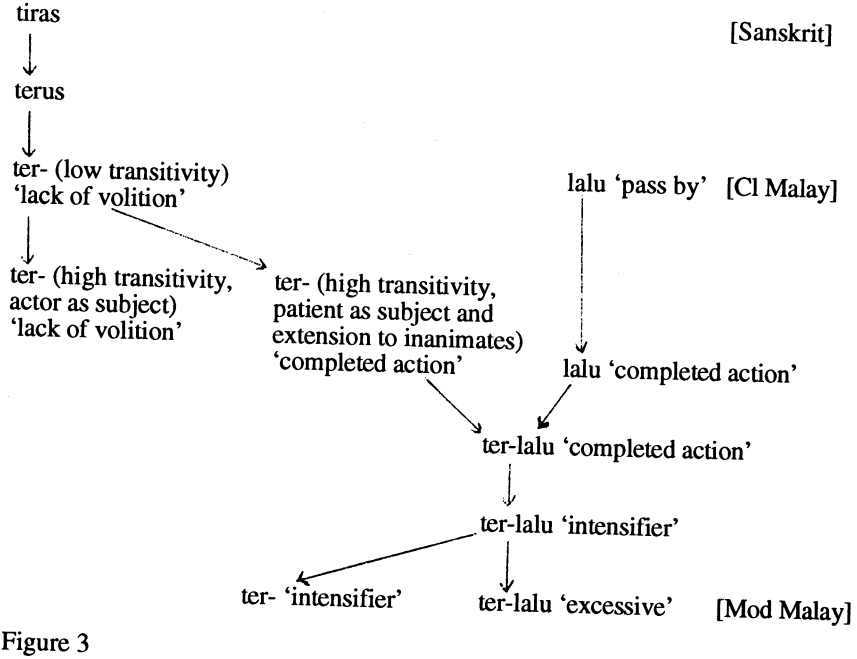


Figure 3

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Phrase Structure, Lexical Sharing, Partial Ordering, and the English Gerund*

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1 Introduction

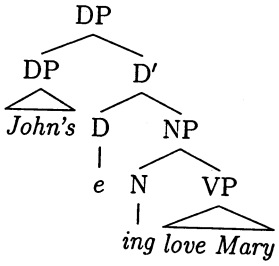
The English gerund is simultaneously noun-like and verb-like, as (1) suggests:

(1) a. I was surprised at *John's cleverly having sent his boss an extra copy.*
b. *I was surprised at *the clever having sent his boss an extra copy.*

Occurring as object of a preposition is a property of nouns; allowing adverbs, auxiliaries, and multiple prepositionless objects, while rejecting articles and adjectives is reminiscent of verbs. The gerund's dual nature has disrupted many elegantly principled theories, especially with respect to ENDOCENTRICITY or 'headedness' in $\bar{X}$-syntax. Some studies resort to positing EXOCENTRIC or 'headless' NPs dominating VPs. However, at least two linguists, Abney (1987) and Pullum (1991), tackle the construction without compromising endocentricity. I present my own endocentric analysis and observe that it overcomes some theoretical and empirical difficulties to which the others are prone.

Baker (1985) likens the morpheme *ing* to INFL in sentences and proposes it as the head of gerunds. Abney (1987) significantly refines this analysis, positing the structure in (2), whose head is D, a functional category like INFL:

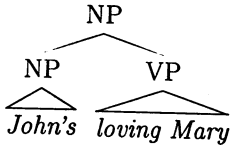
(2)



However, (2) has some controversial features: I propose to avoid inaudibilia like [$_D$ e] and to maintain a strong lexicalist prohibition against syntactically altered morphology, which is violated when *ing* moves down onto the verb.

Pullum adopts a structure that is traditionally considered exocentric:

(3)



His contribution is to note that the logic of GPSG allows syntactic rules to stipulate VP as the head of NP, thereby making (3) endocentric. However,

this violates a traditional assumption of $\bar{X}$-theory: the 'projects to' relation on syntactic categories should be a disjoint union of discrete linear orders. For instance, NP should be prevented from admitting both $N^{(\prime)}$ and VP heads.

Pullum's analysis also over-zealously excludes articles and adjectives from gerunds; it makes no allowance for a variant grammar of English that admits archaic forms like (4)–(7), attested between the 15th and early 20th centuries:

(4) the untrewe forgyng and contryvyng certayne testamentys and last wyll [*Paston Letters*, 15th cent.]

(5) the uttering sweetly and properly the conceit of the minde [Sidney]

(6) my wicked leaving my father's house [Defoe]

(7) the being weighed down by the stale and dismal oppression of remembrance [Dickens]

By making VP the head of NP, Pullum denies the determiners and adjectives in these forms the nominal head they require, rendering (4)–(7) impossible to generate.[1] However, such structures coexisted with all modern gerund forms, so it is only plausible that the current and former grammars of gerunds should be largely compatible, in a way that Pullum's approach cannot model.

I will propose here an analysis that accounts for the simultaneously noun-like and verb-like character of the gerund, while still satisfying the various theoretical desiderata outlined above. Also my analysis is capable of accounting for either modern or archaic gerunds with only a single minor change. The approach involves a somewhat radical re-evaluation of the basic assumptions about phrase-structure trees. The new ideas concern the ordering of phrase-structure nodes and the connection between nodes and lexical tokens.[2]

2 A New Axiomatization of Syntactic Phrase-Structure Trees

My approach stems from a reaxiomatization of phrase-structure trees. It is rare to pursue syntactic analyses by revising the basic assumptions of tree structure, though McCawley (1982) provides a notable exception. However, I believe this leads to new insights into various constructions, including gerunds.

The new notion of phrase structure trees differs from the standard one in two ways. First, lexical tokens may be shared by multiple leaf nodes,[3] i.e., the function λ, associating leaf nodes to lexical tokens, is not one-to-one. Secondly, leaf nodes are only partially, rather than linearly, ordered by the left-to-right precedence relation $\prec$. This allows for the possibility of EXTRA-SEQUENTIAL nodes, which do not participate in left-to-right ordering.

I implement these notions by applying the classical axiomatic method; I first set out a range of primitive notions for a theory of syntactic phrase-structure trees, and then I state a series of axioms to govern the theory.

2.1 Primitive Notions.

A syntactic phrase-structure tree, denoted as in (8), comprises the primitive notions described in (9):

(8) $T = (N, L, \Lambda, \Sigma, l, \lambda, \sigma, D, \prec, P, \lessdot, A)$

(9) N, a set of phrase structure nodes;
L, a set of syntactic category labels;
Λ, a set of lexical tokens;
Σ, a set of lexical forms;
l, the label function from from N to L;
λ, the lexical-token function from leaf nodes to Λ;
σ, the lexical-form function from Λ to Σ;
D, the 'dominates' relation, a strict partial ordering[4] of N;
$\prec$, the 'precedes' relation, a strict partial ordering of N;
P, the 'projects to' relation, a strict partial ordering of L;
$\leqslant$, the 'lexical precedes' relation, a linear ordering[5] of Λ;
A, the 'argument of' relation on members of N.

For clarity, I choose as the idiom in which to state the axioms of the theory a many-sorted, first-order logic with distinct variables for nodes, category labels, lexical tokens, and lexical forms.[6] The notational conventions for the sorted variables are summarized in (10):

(10)

nodes in N,	letters late in the Roman alphabet;
category labels in L,	letters early in the Roman alphabet;
lexical tokens in Λ,	letters early in the Greek alphabet;
lexical forms in Σ,	letters late in the Greek alphabet.

Next I provide various axioms of the theory along with some auxiliary notions.

2.2 NODES AND DOMINATION. The notions of nodes and domination are well known, and the axioms below are essentially ordinary. The set N contains nodes comparable to vertices in a graph-theoretic directed tree. However, where a directed tree employs arcs, I instead use the primitive 'dominates' relation D. I also require the 'immediately dominates' relation D' defined in (11):[7]

(11) $\forall x \forall y (xD'y \stackrel{\text{def}}{=} (xDy \wedge \neg \exists z (xDz \wedge zDy)))$

Note that domination is often described with metaphors of ancestry: an ANCESTOR dominates a DESCENDANT; a PARENT immediately dominates a CHILD. I model the axioms in (12)–(14) on one of the standard graph-theoretic definitions of directed trees (Thulasiraman and Swamy 1992:106ff.):

(12) ROOT AXIOM
$\exists r \forall x (rDx \vee r = x)$
There must be a ROOT, i.e., a node which dominates all other nodes.

(13) ANCESTORLESS NODE AXIOM
$\exists r \neg \exists x (xDr)$
There must be a node (inevitably the root) that has no ancestors.

(14) SINGLE PARENT AXIOM
$\forall x \forall y \forall z ((xD'z \wedge yD'z) \rightarrow x = y)$
A node may have at most one parent.

2.3 PARTIAL LEFT-TO-RIGHT ORDERING. I next present a new view of left-to-right ordering. Usually siblings are linearly ordered, and that ordering is projected down the tree with an axiom not unlike (16). Thus, the leaves—nodes without descendants, as defined in (15)—are linearly ordered. Instead, I assume merely that $\prec$ is a partial ordering, and I project it up and down the tree in a consistent manner by means of the axioms in (16) and (17):

(15) $\forall x(Leaf(x) \stackrel{\text{def}}{=} \neg\exists y\,(xDy))$

(16) DOWNWARDS PRECEDENCE CONSISTENCY AXIOM
$\forall x\forall y\forall z((xD'y \wedge x\Pi z) \rightarrow y\Pi z)$ where Π is $\prec$ or $\succ$.
A node precedes or follows every node that its parent precedes or follows, respectively.

(17) UPWARDS PRECEDENCE CONSISTENCY AXIOM
$\forall x\forall y((\forall z(xD'z \rightarrow z\Pi y) \wedge \neg Leaf(x)) \rightarrow x\Pi y)$ where Π is $\prec$ or $\succ$.
A non-leaf node precedes another node if all children of the first node precede the second node, and similarly for the 'follows' relation.

The result of these definitions is to make $\prec$ less restrictive than the usual left-to-right precedence relation. Note, for instance, that leaf nodes need not be linearly ordered. In other words, some pairs of nodes that would have to be ordered on a traditional approach needn't be under this axiomatization. More ordering constraints will come from the linear ordering of lexical tokens.

2.4 SYNTACTIC CATEGORY LABELS. Syntactic category labels from the set L are associated with each node by the function l. The members of L are organized according to a version of Kornai and Pullum's (1990) axiomatization of $\bar{\text{X}}$-theory. The set L is ordered by the 'projects to' relation P. The treatment of P here renders by traditional formal means what is usually encoded notationally with diacritics in most works on $\bar{\text{X}}$-theory. For instance, given the usual assumptions about the syntactic category labels in (18a), one could diagram P as in (18b) with respect to these items:

(18) a. $\text{N}, \text{N}', \text{N}'', \text{V}, \text{V}', \text{V}''$
b. $\text{N}\,P\,\text{N}'$, $\text{N}\,P\,\text{N}''$, $\text{N}'\,P\,\text{N}''$, $\text{V}\,P\,\text{V}'$, $\text{V}\,P\,\text{V}''$, $\text{V}'\,P\,\text{V}''$

The category labels in (18) separate into discrete linear orders; one involves $\text{N}, \text{N}', \text{N}''$, and the other $\text{V}, \text{V}', \text{V}''$. Let us call these discrete linear orders on subsets of L PROJECTIONS. Since I desire precisely this sort of disjoint union of projections, it is necessary to ensure that each category label has at most one immediate predecessor and successor. I therefore define the 'immediately projects to' relation P' in (19) and then make it one-to-one with the axioms in (20) and (21):[8]

(19) $\forall a\forall b(aP'b \stackrel{\text{def}}{=} (aPb \wedge \neg\exists c(aPc \wedge cPb)))$

(20) UNIQUE P-IMMEDIATE PREDECESSOR AXIOM
$\forall a\forall b\forall c((aP'c \wedge bP'c) \rightarrow a = b)$
A syntactic category label has at most one P-immediate predecessor.

(21) UNIQUE P-IMMEDIATE SUCCESSOR AXIOM
$\forall a \forall b \forall c((aP'b \wedge aP'c) \rightarrow b = c)$
A syntactic category label has at most one P-immediate successor.

Studies on $\bar{X}$-theory often assume that all projections involve a uniform number of categories, but the present axiomatization imposes no such constraint. Thus, the following L and P conform to the axioms, even though the categories DET and DEG have no successors:

(22) a. $L = \{\text{I}, \text{IP}, \text{N}, \text{NP}, \text{V}, \text{VP}, \text{A}, \text{AP}, \text{P}, \text{PP}, \text{ADV}, \text{ADVP}, \text{DET}, \text{DEG}\}$
b. $\text{I}\,P\,\text{IP}, \quad \text{N}\,P\,\text{NP}, \quad \text{V}\,P\,\text{VP}, \quad \text{A}\,P\,\text{AP}, \quad \text{P}\,P\,\text{PP}, \quad \text{ADV}\,P\,\text{ADVP}$

At this time, I have no evidence to suggest that any category needs more than one successor. I will assume the L and P in (22) in the present study.

Also part of $\bar{X}$-theory are constraints on the distribution of category labels throughout the tree. To state the relevant axioms, I require the unary predicates in (23) and (24), which pick out the P-minimal and P-maximal elements of each of the discrete linear orderings, or projections, that make up P. These are called LEXICAL and MAXIMAL categories, respectively:

(23) $\forall a(Max(a) \stackrel{\text{def}}{=} \neg\exists b(aPb))$

(24) $\forall a(Lex(a) \stackrel{\text{def}}{=} \neg\exists b(bPa))$

The axioms are all familiar ones from the literature on $\bar{X}$-theory:

(25) LEXICALITY AXIOM
$\forall x(Leaf(x) \leftrightarrow Lex(l(x)))$
All and only leaf nodes are labeled with lexical categories.

(26) SUCCESSION AXIOM
$\forall x(\neg Leaf(x) \rightarrow \exists y(xD'y \wedge (l(y))P'(l(x))))$
A non-leaf node's label is the P-immediate successor of the label of one of the node's children.

(27) MAXIMALITY AXIOM
$\forall x \forall y \forall z((xD'y \wedge xD'z \wedge \neg Max(l(y)) \wedge \neg Max(l(z))) \rightarrow y = z)$
A node has at most one child labeled with a non-maximal category.

Pullum (1991) observes that the logic of GPSG makes these axioms a default that may be overridden; I shall take them as absolute.

2.5 LEXICAL MATERIAL. In this axiomatization I distinguish between lexical tokens in Λ and lexical forms in Σ. This stems from a need to distinguish instances of words in a syntactic structure from words 'in the lexicon.' For instance, in the sentence *the boy likes the girl*, there are two instances of *the* separated by two other words. If one is to have any sensible notion of lexical ordering, the two instances of *the* must be recognized as separate individuals. I call such individuals lexical tokens. However, for expressing grammatical generalizations, one would prefer to regard the two instances of *the* as representing a single individual: this I call a lexical form.

The function λ associates each leaf node with a lexical token in Λ. Each lexical token is in turn associated with a lexical form in Σ by the function σ. In traditional phrase-structure trees, λ would be a one-to-one mapping from leaf nodes into Λ. However, I impose no such restriction and thereby allow LEXICAL SHARING: λ may associate multiple leaf nodes with the same, shared lexical token.

I provide the linear ordering $\ll$ on lexical tokens to reflect their obvious temporal sequence. I propose the axioms in (28) and (29) to relate $\ll$ to the precedence relation on nodes, $\prec$:

(28) NODE-LEXICAL PRECEDENCE CONSISTENCY AXIOM
$\forall x \forall y((Leaf(x) \wedge Leaf(y) \wedge x \prec y) \rightarrow \lambda(x) \ll \lambda(y))$
One leaf node precedes another only if their respective lexical tokens mirror the ordering.

(29) LEXICAL-NODE PRECEDENCE CONSISTENCY AXIOM
$\forall \alpha \forall \beta(\alpha \ll \beta \rightarrow \exists x \exists y(\lambda(x) = \alpha \wedge \lambda(y) = \beta \wedge x \prec y))$
One lexical token precedes another only if there is a pair of nodes related to the lexical tokens, and the nodes reflect the same ordering.

The gist of (28) is that the orderings on leaf nodes and lexical tokens cannot contradict each other by having leaf nodes ordered one way and their corresponding lexical tokens ordered the other. In contrast, (29) says that the linear ordering on lexical tokens cannot go completely unreflected in the ordering relations among leaf nodes. However, (29) stops short of making the ordering on leaf nodes linear; the use of existential quantification in (29) leaves the possibility of having pairs of unordered leaf nodes.

2.6 ARGUMENTHOOD. The only remaining primitive notion is the 'argument of' relation A: xAy means x is an argument of y. I take this to be the minimal sort of information necessary to facilitate the formulation of subcategorization constraints and similar grammatical rules that distinguish arguments and adjuncts. Distinctions among grammatical relations such as subject (Sub), object (Obj), second object ($Ob2$), and oblique (Obl) may be handled with language-particular definitions. For instance the English object might be treated as follows:

(30) $\forall x \forall y(Sib(x,y) \stackrel{\text{def}}{=} \exists z(zD'x \wedge zD'y))$
SIBLINGS are nodes with the same parent.

(31) $\forall x \forall y(ImSib(x,y) \stackrel{\text{def}}{=}$
$(Sib(x,y) \wedge \forall z((x \prec z \rightarrow z \not\prec y) \wedge (y \prec z \rightarrow z \not\prec x))))$
IMMEDIATE SIBLINGS are siblings contiguous with respect to $\prec$.

(32) $\forall x \forall y(Obj(x,y) \stackrel{\text{def}}{=} (xAy \wedge (ImSib(x,y) \vee \ldots)))$
Objects are arguments that are immediate siblings or...

The definition in (32) is left incomplete, because a full definition would have to take into account such matters as long distance dependencies. I will not

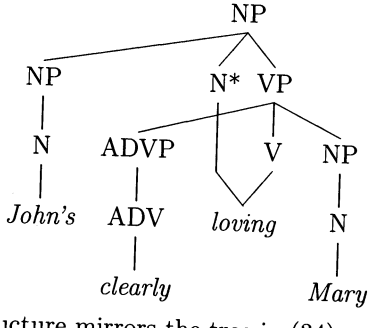
attempt to flesh out the definitions of *Sub*, *Obj*, *Ob2*, and *Obl* here; though I mention them in the discussion below, their exact definitions are not crucial.

2.7 THE GRAMMAR. The foregoing axioms provide a theory of syntactic phrase-structure trees, which may be viewed as a sub-theory, in the technical, logical sense, of a theory of universal grammar. This in turn is to be regarded as a sub-theory of theories of grammars of particular languages. Given these relationships, I find it most natural to formulate universal grammar and write grammars for individual languages with the same axiomatic method and the same logical idiom as were employed in the foregoing discussion. Hence, my syntactic rules are axioms, and first-order logic is my 'notation.' However, I will not attempt to provide a complete axiomatization of even a small fragment of English. Instead, I will content myself with providing a few relevant axioms where they are needed to support the empirical discussion below.

3 THE REPRESENTATION OF GERUNDS

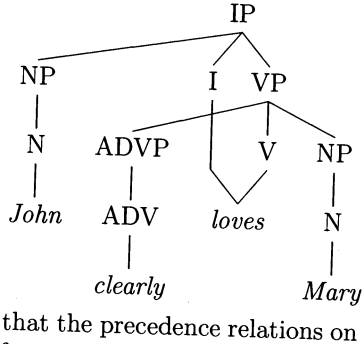
The new notion of syntactic phrase-structure trees axiomatized above allows one to provide gerunds with the structural representation in (33):[9]

(33)



This structure mirrors the tree in (34), which I would posit for a sentence:

(34)



Assume that the precedence relations on nodes and lexical tokens are reflected in the left-to-right arrangement of nodes in the (33) and (34), with one provision: N* [10] and I are unordered or extra-sequential. Careful consideration will reveal that these structures conform to the various axioms presented so far.

The most obvious novel feature of the trees in (33) and (34) is the use of lexical sharing to maintain endocentricity; the finite verb or participle is the head not merely of a verb phrase but also of a sentence or NP. This effect is comparable to that produced in modern transformational grammar with amalgams formed by head movement. However, this is achieved here without employing inaudibilia or movement rules. The lexical tokens *loving* and *loves* are not composites built in the syntax; rather, they are integral units which require that they be associated with two leaf nodes of the categories shown in (33) and (34). Thus, the strong lexicalist hypothesis may be preserved. Furthermore, these results are achieved without retreating from the notion of the 'projects to' relation as a disjoint union of discrete linear orders, or otherwise weakening the principles of $\bar{\text{X}}$-theory in any way. Thus the structures in (33) and (34) satisfy all the theoretical desiderata outlined in the introduction. It remains, though, to evaluate (33) on various empirical points, including the matter of archaic gerunds.

3.1 ISSUES OF SYNTACTIC CATEGORY. The tree in (33) clarifies various issues concerning phenomena that are sensitive to syntactic category. Gerunds are clearly NPs, as evidenced by the fact that they may occur as objects of prepositions, whereas non-NPs with similar semantics cannot, as shown in (35):

(35) a. I was shocked at John's rejecting the application.
b. I was shocked at John's rejection of the application.
c. *I was shocked at (for John) to reject the application.
d. *I was shocked at that John rejected the application.

The structure proposed here for gerunds models these facts by positing NP as the syntactic category of the construction as a whole.

The verb-like characteristics of gerunds tend to be restricted to their internal structure. One such characteristic is the occurrence of OBJECTOIDS, i.e., objects and second objects. Examples (36) and (37) show that objectoids are allowed in gerunds but not in deverbal nominals, the latter being more thoroughly noun-like:

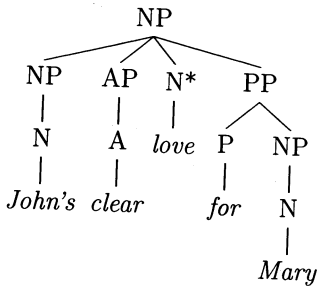
(36) a. I was surprised at John's destroying the evidence.
b. *I was surprised at John's destruction the evidence.
(37) a. I was surprised at John's giving her a valentine.
b. *I was surprised at John's gift her a valentine.

I propose the axiom in (38) to constrain the occurrence of objectoids:

(38) OBJECTOID SUBCATEGORIZATION AXIOM
$\forall x \forall y(\Pi(x,y) \rightarrow l(y) = \text{V})$ where Π is *Obj* or *Ob2*.
Objectoids may be subcategorized only by verbs.

Now, I assume that the structure of deverbal nouns involves no VP structure. Compare (39) with the structure posited for gerunds:

(39)



The lack of V and VP nodes in deverbal nominals and their inclusion in gerunds combine with the axiom in (38) to predict the correct distribution of objectoids in (36) and (37).

Similar explanations could be applied to other verb-like characteristics of gerunds, such as the occurrence of adverbs and auxiliary verbs. Suitable axioms—which I will not spell out—would constrain adverbs to occur only inside of VP or IP and require auxiliary verbs to be associated with a V node. This would suffice to predict the distribution of the items in question.

3.2 Issues of Phrase Structure Constituency. The structures I propose for gerunds, sentences, and deverbal nouns differ with regard to their internal constituency. The two former constructions have a VP node which groups together the predicate and any arguments that follow, whereas deverbal nouns lack such a constituent. This is a felicitous state of affairs, since one of the standard constituency tests suggests that gerunds and sentences differ in the predicted way from deverbal nouns and also from participial forms with prepositionally marked logical objects, which I take to have the same structure as deverbal nouns. Only where the analysis posits a VP can predicates and subsequent arguments participate as a unit in *both... and* coordination:

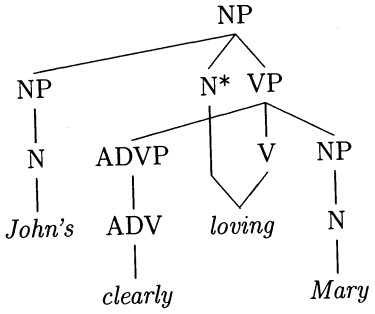
(40) John both stole a car and killed a bystander.
(41) It resulted in John's both stealing a car and killing a bystander.
(42) *It resulted in the both stealing of a car and killing of a bystander.
(43) *It resulted in the both theft of a car and murder of a bystander.

It might be observed that without *both* (40)–(43) are all grammatical. However, as McCawley (1988) notes, coordination without *both* is a significantly weaker test of constituency, admitting a variety of elliptical structures. Thus, the more accurate constituency test supports my predictions.

3.3 Archaic Gerunds and Precedence. Next I return to the fact that archaic gerunds had verb-like internal syntax and yet allowed determiners and adjectival modifiers. I will propose a single constraint based on left-to-right ordering that applies in Modern English to eliminate these determiners and adjectives. Archaic gerunds would be manifestations of an alternative grammar that simply lacks this constraint.

If one considers the structure for gerunds in (33), repeated below in (44), one will be led to the conclusion that the node V is necessarily unordered with respect to N*:

(44) [=(33)]



This is guaranteed by the theorem in (45), which follows directly from the node-lexical precedence consistency axiom in (28) and the asymmetry of $\lessdot$:

(45) LEXICAL SHARING PRECEDENCE THEOREM
$\forall x \forall y(\lambda(x) = \lambda(y) \rightarrow x \not\prec y)$
Nodes sharing a common lexical token do not stand in the $\prec$ relation.

Otherwise, the axioms do not compel or prevent the ordering of any other pair of leaf nodes. Rather, certain ordering relations will be imposed by separate licensing principles. For instance, the grammar will require English-particular axioms like (46) and (47) to the effect that subjects must precede their verbs, while non-subjects must follow them:

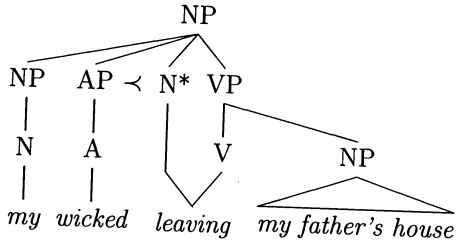
(46) SUBJECT ORDERING AXIOM
$\forall x \forall y(Sub(x, y) \rightarrow x \prec y)$
Subjects must precede their verbs.

(47) NON-SUBJECT ORDERING AXIOM
$\forall x \forall y(\Pi(x, y) \rightarrow y \prec x)$ where Π is *Obj*, *Ob2*, or *Obl*.
Non-subjects must follow their verbs.

As a consequence of these axioms, V cannot go unordered with respect to its arguments, *John* and *Mary*. Adverbs, furthermore, conform to a variety of complex ordering constraints with respect to the verbs they modify. Ultimately these regularities should be somehow reflected in axioms, but I shall not attempt to state such constraints here. In any case, V would plausibly also have to be ordered with the projections of *clearly* to satisfy these rules. Thus, V has to be ordered with its neighbors, but nothing I have said so far compels N* to be ordered with any other element of the gerund. Hence, N* may be completely unordered and thus extra-sequential.

If one considers now the archaic gerund in (6), whose phrase structure would be that given in (48), one finds that N* must surely be ordered with AP, since simple adjectives are constrained to precede head nouns:

(48)



Articles are similarly constrained and would have to be ordered with their head noun. I will forgo exhibiting either of the relevant axioms. Consequently the articles and adjectives that were allowed in archaic gerunds could be excluded from the grammar of Late Modern English by adding a stipulation that the N associated with the *ing*-form of gerunds must be extra-sequential. This might take the form of the underlined expression in the partial axiom in (49), suggesting how the syntactic properties of *loving* could be stipulated:

(49) $\forall\alpha(\sigma(\alpha) = \textit{loving} \rightarrow$
$\exists x\exists y(\lambda(x) = \lambda(y) = \alpha \wedge l(x) = V \wedge l(y) = N \wedge \underline{\forall z\neg(z \prec y \vee y \prec z)}))$
A lexical token associated with the lexical form *loving* is related to two nodes, a V and an N, and the N is unordered with respect to all other nodes.

Consequently the syntactic representation with lexical sharing and partial ordering can readily represent either state of the language simply by adding or removing this extra-sequentiality stipulation.

4 Conclusion

The reaxiomatization of syntactic phrase-structure trees proposed here allows for an endocentric analysis of gerunds that satisfies all of the desiderata set out in the introduction. In conclusion, it appears that any way one analyzes gerunds will involve some degree of abstraction, be it in the form of positing inaudibilia and movement (Abney 1987), adopting default logic (Pullum 1991), or revising the axioms governing phrase-structure trees. I believe the path I have chosen is novel for concentrating on the association of nodes and lexical tokens and for putting renewed emphasis on the importance of precedence relations in syntactic representations.

Notes

*I would like to express my sincerest gratitude to Ernest Adams, without whose kindness and sustained guidance I could not have undertaken this study.

[1]In contrast, Abney seems to make allowances for archaic gerunds. As for adjectival modification of gerunds, he says (1987:198) "This suggests a structure in which the VP is inside of N-bar," implying that D-structure could, if necessary, be made to accommodate the modifiers. He also indicates (ibid.:231) that lexical determiners may replace the empty category $[_{\mathrm{D}}\, e]$.

[2]Formally I distinguish 'lexical tokens' from 'lexical forms.' For instance, in the sentence *the boy likes the girl*, the two instances of *the* constitute two different lexical tokens, both of which correspond to the same lexical form. More will be said on this matter below.

[3]Leaf nodes, formally defined later, are nodes with no children. Note that I call 'leaves' what might elsewhere be termed 'pre-terminals,' since I do not regard lexical tokens as nodes.

[4]A relation Π is a strict partial ordering of a set S iff Π is asymmetric and transitive in S. Π is asymmetric in S iff $\forall x \forall y((x \in S \wedge y \in S \wedge x \Pi y) \rightarrow \neg y \Pi x)$. Π is transitive in S iff $\forall x \forall y \forall z((x \in S \wedge y \in S \wedge z \in S \wedge x \Pi y \wedge y \Pi z) \rightarrow x \Pi z)$.

[5]A relation Π is a linear ordering of a set S iff Π is asymmetric, transitive, and connected in S. Π is connected in S iff $\forall x \forall y((x \in S \wedge y \in S \wedge x \neq y) \rightarrow (x \Pi y \vee y \Pi x))$.

[6]Sorted logics are notational conveniences; there are equivalent, ordinary logics with unary predicates to mark distinctions encoded in sorted variables.

[7]Making D' primitive would more closely reflect the graph-theoretic notion of arcs, but D would then be D''s transitive closure, which would not be first-order definable. Similar comments hold for P and P', to be defined later.

[8]Kornai and Pullum take as basic a partial function essentially equivalent to P'. They then require that the function be 'invertible' and 'acyclic.' Mutatis mutandis, the axioms stated here ensure invertibility in Kornai and Pullum's sense. Furthermore, since P is a strict partial ordering, it is asymmetric, and that satisfies Kornai and Pullum's notion of acyclicity.

[9]Of course, if one assumed only the axioms stated here, one could assign a host of undesirable structures to the same string. Further axioms of universal and English grammar are required to limit the possibilities to just (33).

[10]The asterisk has no meaning; it merely facilitates unambiguous reference.

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A Cognitive Constraint on Negative Polarity Phenomena*

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1 INTRODUCTION

We seek to analyze the distribution of NEGATIVE POLARITY ITEMS (NPIs) like *any* and *ever* in (1) and (2) by combining semantic and cognitive constraints.

(1) Chrysler dealers don't *ever* sell *any* cars *anymore*. (Ladusaw 1980:1)
(2) Before I *ever* buy *any* land again, I'll study the market.

Despite some criticisms, we think the formal-semantic approach of Ladusaw (1979, 1980), who claims that NPIs may occur only in the scope of DOWNWARD ENTAILING (DE) expressions, remains one of the best descriptions of the distribution of NPIs. However, the DE condition is under-restrictive and should be supplemented with a cognitive constraint like that applied to the word *but* by Blakemore (1987). NPIs and *but* require the clause containing them to be processed in a context where it will contradict some current assumption. This idea is easily modeled in RELEVANCE THEORY (Sperber and Wilson 1986), which posits a human information processing system with a database of assumptions called the COGNITIVE ENVIRONMENT (CE) and a processing unit called the CENTRAL SYSTEM. The required contradiction arises when an input sentence being processed in the central system conflicts with propositions in the CE. We call this state of affairs the COGNITIVE STRUCTURE OF NEGATION (CSN) and view NPIs and *but* as signals warning the central system processor to expect CSN to arise when the clause containing these signal-words is examined.

Ladusaw's DE theory has drawn criticism from Linebarger (1980, 1987). We show, however, that Linebarger's alternative analysis makes innumerable false-positive predictions, leaving Ladusaw's approach the best available.

Our analysis of ADVERSATIVES like *doubt*, *regret*, *be sorry*, and *be surprised* leads to a new theory of compartmentalization of information in the CE.

(3) He'll regret that he was *ever* born.

Since *regret* is factive, the speaker takes the complement in (3) to be true. Thus, if CSN licenses *ever*, it is not because the complement of (3) contradicts the speaker's beliefs. Rather, CSN arises in an insulated representation of an alternate possible world. We implement this idea with a tree-structured CE.

Finally, we provide compelling evidence for the CSN analysis of NPI distribution by showing that it automatically predicts the otherwise problematic incompatibility of NPIs with METALINGUISTIC NEGATION, as in (4).

(4) The agency [=CIA] doesn't 'whack [=kill] (#*any*) pinko troublemakers'—it neutralizes anti-American influences.

A straightforward analysis of the latter phenomenon combined with the CSN approach suffices to make the prediction fall out.

2 Conceptual and Cognitive Constraints on NPI Distribution

We begin by examining the semantics of a representative NPI, *ever* and a representative NPI trigger, *before*. We claim that there are two conditions on NPIs: one is Ladusaw's DE condition, and the other is the need for CSN.

2.1 The Downward-Entailment (DE) Condition. First we adopt Ladusaw's DE condition (1979, 1980), which captures the fact that NPIs like *ever* appear strictly inside of the scope of triggers like *before*, as in (5):

(5) a. I sent a donation **before** I was *ever* asked to.
b. #I *ever* sent a donation **before** I was asked to.

Ladusaw proposes (6) as a necessary (but *not* sufficient) condition on NPIs:

(6) The Downward-Entailment (DE) Condition
a. A negative-polarity item is acceptable only if it is interpreted in the scope of a downward-entailing expression. (Ladusaw 1980:13)
b. An expression is downward-entailing if and only if it licenses inferences in its scope from supersets to subsets.

The condition in (6) correctly admits the NPIs in (7)–(9):

(7) a. Mary is**n't** a man. →
b. Mary is**n't** a father. [⇒ *not* is DE.]
c. Chrysler dealers do**n't** *ever* sell *any* cars *anymore*. [=(1)]

(8) a. They run away **before** men come. →
b. They run away **before** fathers come. [⇒ *before* is DE.]
c. **Before** I *ever* buy *any* land again, I'll study the market. [=(2)]

(9) a. **If** a man comes, we will be saved. →
b. **If** a father comes, we will be saved. [⇒ *if* is DE.]
c. **If** I *ever* see you around here again, I will call the police.

Note that the denotation of *father* is a subset of that of *man*. If a sentence with the word *man* entails a sentence like the first except that *father* replaces *man*, then *man/father* is in the scope of a DE expression. Thus, since the (a) sentences in (7)–(9) entail the (b) forms, *not*, *before*, and *if* are DE. The DE condition therefore admits the NPIs in the (c) sentences. See Ladusaw's work (1979, 1980) for demonstrations of the DE approach's capacity for subtle distinctions between environments that do allow NPIs and those that don't.

However, Ladusaw does not explain cases where NPIs are unacceptable, even though they occur in the scope of a DE expression, as in (10) and (11):

(10) #He brushed his teeth **before** he *ever* went to bed.
(11) #**If** he *ever* takes *any* medicine, he will feel better.

We therefore propose the CSN condition to filter out infelicitous NPI usages which aren't caught by the DE condition.

2.2 THE COGNITIVE STRUCTURE OF NEGATION (CSN) CONDITION. We next motivate our cognitive constraint and implement it in relevance theory.

2.2.1 THE NEED FOR A CONTRASTIVE ASSUMPTION. Consider (12):

(12) I lost my ticket before I (*ever*) got to the station.

The sentence has the same truth conditions with or without *ever*, which suggests that *ever* fulfills some pragmatic function. We claim that it is to intensify order-of-event readings, as in the detective-story-like exchange in (13):

(13) Suspect: I met her and decided to accompany her here.
Detective: According to the station master, you had already purchased a ticket the day before. **So I submit that you were coming here before you *ever* met her!**

Now, if one bothers to use the order-of-events intensifier *ever*, there must be room for doubt about the event sequence. Consider (14)–(16), for which no contrasting assumptions about the temporal sequence are readily accessible:

(14) #He brushed his teeth before he *ever* went to bed. [=(10)]
(15) #He was quite a playboy before he *ever* got married.
(16) #Jane took it down before she *ever* forgot it.

All seem inappropriate, because the contrastive assumptions 'brushing one's teeth after going to bed,' 'becoming a playboy after getting married,' and 'taking it down after forgetting it' run counter to normal experience and are thus hard to access. We can test this explanation by controlling the discourse context. For example, (14) above seems quite natural when interpreted in a context like (17):

(17) The accused's alibi depends on the preposterous claim that he brushed his teeth while in bed; however, the eye-witness testimony of the butler proves that **he brushed his teeth before he *ever* went to bed.**

In (17) the desired contrastive assumption, which is usually counter-intuitive, is easily accessible, making (14) appropriate. Similar observations hold for (15) interpreted in the context in (18):

(18) A: I heard he became a playboy only after getting married.
B: No, no, **he was quite a playboy before he *ever* got married.**

Probably (16) is irreparable, because the required contrastive assumption 'taking it down after forgetting it' would never be accessible in any reasonable context. The foregoing contrasts are expected on our analysis, so these observations support the claim that *ever* requires a contrastive assumption.

We believe this generalization extends to other NPIs and triggers. Note, for instance, that (11) improves if made subjunctive, as in (19).

(19) If he *ever* took *any* medicine, he would feel better. [cf. (11)]

Here the irrealis effect of the subjunctive provides the contrastive assumption.

Givón observes that negation requires the same sort of contrastive assumption as found with *ever*: "... negatives are uttered in a context where corresponding affirmatives have already been discussed, or else where the speaker assumes the hearer's belief in—and thus familiarity with—the corresponding affirmative" (1978:109). Consider (20) and (21), where the (a) and (b) paraphrases are literal and metaphorical readings respectively:

(20) John is a fox.	a. 'John is a canine fox.'	*False*
	b. 'John is a cunning person.'	*True/False*
(21) John is not a fox.	a. 'John is not a canine fox.'	*True*
	b. 'John is not a cunning person.'	*True/False*

If *John* is a human being, (20a) is certainly false, while (21a) is true. In contrast, human beings may or may not be cunning, so the truth values of the (b) sentences could go either way. Now, although (21a) is definitely true, it is pragmatically infelicitous. Givón's claim readily explains this: for a negative proposition like (21a) to be appropriate, the contrastive assumption in (20a) must have been previously stated or assumed. However, we can scarcely expect (20a) to be true. In contrast, (21b) is pragmatically felicitous, because the corresponding affirmative, (20b), is plausible as a contrastive assumption.

Finally, recall the well known difference between *and* and *but*, seen in (22):

(22) He is a guitar virtuoso, but/?and he can't play chords.

Truth-functionally, *and* and *but* are equivalent, but the latter additionally indicates that the clause it introduces will contrast with current assumptions.

2.2.2 THE DEFINITION OF THE CSN CONDITION. We model the need for a contrastive assumption with the CSN condition, to be defined next.

Recall that relevance theory, set forth by Sperber and Wilson (1986), uses a device called the central system, which processes input sentences and alters the CE, a database of assumptions. The speaker's intention is to modify the hearer's CE by causing additions or deletions of assumptions. Such changes, called CONTEXTUAL EFFECTS, may result from using new information for contextual implication or for contradicting and removing existing assumptions.[1] Hearers process utterances to achieve optimal RELEVANCE, the most favorable balance of maximal contextual effects for minimal processing effort.

Blakemore (1987) distinguishes CONCEPTUAL and PROCEDURAL semantics. The former concerns traditional, truth-conditional meaning, while the latter describes how linguistic form constrains the computation of utterance interpretation. For instance, Blakemore would analyze *and* and *but* as having a shared conceptual semantics, while differing in procedural semantics. *But* carries an additional processing directive: "the hearer is instructed to process the proposition *but* introduces in a context in which she can derive a proposition logically inconsistent with one assumed to have been derived from the proposition expressed by the utterance of the first clause" (Blakemore 1987:130).

We claim (Yoshimura 1992, 1993) that NPIs, negation, and *but* all share roughly this procedural semantics. Formally, let a COGNITIVE STRUCTURE be a pair (φ, E), where φ is the proposition most recently input to the central system, and E is a state of the CE. CSN is a special type of cognitive structure:

(23) THE COGNITIVE STRUCTURE OF NEGATION (CSN)
$(\varphi, \{\ldots, \psi, \ldots\})$ where φ and ψ lead to a contradiction.

What we previously called the contrastive assumption corresponds to ψ. We may now define the CSN condition on NPIs, as in (24):

(24) THE COGNITIVE STRUCTURE OF NEGATION (CSN) CONDITION
A negative polarity item is acceptable only if the clause containing it is processed in the cognitive structure of negation.

But may be similarly analyzed as requiring CSN, so we have an opportunity to check a prediction. Manipulating the discourse to promote or suppress CSN should either make *but* and NPIs simultaneously acceptable or else cause both to be rejected. This is exactly what we find in (25)–(27):

(25) a. John says he washed up before retiring for the night. (#*But*) **he brushed his teeth before he** (#*ever*) **went to bed.**
b. John says he finished washing up while in bed. *But* **he brushed his teeth before he** *ever* **went to bed.** [cf. (10)]

(26) a. We hope for his recovery. (#*But*) **if he** (#*ever*) **takes** (#*any*) **medicine, he will feel better.**
b. We wish him only pain and suffering. *But* **if he** *ever* **takes** *any* **medicine, he will feel better.** [cf. (11)]

(27) a. I hear you often come around here. (#*But*) **if you** (#*ever*) **come this way, be sure to visit me.**
b. I know you rarely come around here. *But* **if you** *ever* **come this way, be sure to visit me.**

In this section we have sought a concrete definition for our second condition on NPIs. We found a useful foundation in the notion of CSN and observed that this approach led to convergence with analyses of negation and *but*.

3 LINEBARGER'S PROPOSAL

Let us digress from our own analysis to compare it with that of Linebarger (1980, 1987), Ladusaw's main critic. She proposes a popular theory which maintains basically that an NPI is licensed provided the logical form of the clause that contains it implies a NEGATIVE IMPLICATUM (NI), a proposition in which the NPI is in the immediate scope of a negation.[2] Consider (28):

(28) a. If he *gives a damn* about his cat, he'll take it to the vet.
b. $\varphi \rightarrow \psi \vdash \neg\psi \rightarrow \neg\varphi$
c. If he doesn't take his cat to the vet, then he doesn't *give a damn* about it.
(Linebarger 1987:380)

The acceptability of the NPI *give a damn* in the antecedent clause of (28a) supposedly stems from the fact that (28a) and the law of contraposition (28b) entail (28c), in which the NPI is in the direct scope of *not*.

However, (28) illustrates a fatal flaw in Linebarger's theory, its propensity for false-positive predictions. Since the consequent clause of (28a) also comes to be negated in the implicatum in (28c), it is falsely predicted that NPIs should be permitted in the consequent clause too, as in (29):

(29) #If he *gives a damn* about his cat, he'll *ever* take it to the vet.

Indeed, the availability of NIs corresponds at best only sporadically to the felicity of NPIs. For instance, (30) lists entailments which should license all of the infelicitous NPIs in (31), according to Linebarger's theory:

(30) a. $\varphi \vdash$ i. $\neg\neg\varphi$, ii. $\varphi \vee \neg\varphi$
b. $\varphi \wedge \psi \vdash$ i. $\neg(\neg\varphi \vee \neg\psi)$, ii. $\neg(\varphi \rightarrow \neg\psi)$, iii. $\neg(\psi \rightarrow \neg\varphi)$
c. $\varphi \vee \psi \vdash$ i. $\neg(\neg\varphi \wedge \neg\psi)$, ii. $\neg\varphi \rightarrow \psi$, iii. $\neg\psi \rightarrow \varphi$
d. $\varphi \rightarrow \psi \vdash \neg(\varphi \wedge \neg\psi)$ [N.B., should license (29)]
e. $\forall x(\varphi \rightarrow \psi) \vdash \neg\exists x(\varphi \wedge \neg\psi)$
f. $\exists x(\varphi \wedge \psi) \vdash$ i. $\neg\forall x(\varphi \rightarrow \neg\psi)$, ii. $\neg\forall x(\psi \rightarrow \neg\varphi)$

(31) a. #He has *ever* had *any* luck. [N.B., should be licensed by (30a)]
b. #He has *any* money and he likes to buy things. [by (30a,b)]
c. #Either John has *any* money or Bill does. [by (30a,c)]
d. #All people have *ever* visited Japan. [by (30a,e)]
e. #Some people have *ever* visited Japan. [by (30a,f)]
f. #Some people who have *ever* visited Japan liked it. [by (30a,f)]

Linebarger recognizes the problem but not its extent. She limits her attention to parts of (30a–c), saying "Since I do not have a satisfactory account of this, I prefer to exclude these cases by pure stipulation at this point: [i in (30a–c)] may not serve as NIs" (1987:348). This attempt to solve the problem with a finite roster of unusable entailments is obviously futile. Linebarger's statement fundamentally ignores the infinity of logical implication. For instance, any of the entailments schematized in (32) would suffice to license every NPI in (31):

(32) $\varphi \vdash \neg\neg\varphi, \neg\neg\neg\neg\varphi, \neg\neg\neg\neg\neg\neg\varphi, \ldots$

The failure to take the infinity of logical implication into account also manifests itself in Linebarger's focus on a few well known entailments. This fosters the impression that one need consider only a small, comfortably tractable set of NIs. Rather, one should envisage an infinity of entailments strewn with problematic NIs like (33), seldom if ever mentioned in traditional logic studies:

(33) a. $\varphi \vdash \neg\varphi \rightarrow \varphi, (\psi \rightarrow \neg\varphi) \rightarrow \neg\psi$ [N.B., should license (29), (31)]
b. $\varphi \wedge \psi \vdash \neg\varphi \vee \psi$ [N.B., should license (31b)]

Only then is it apparent just how intractable a task it is to constrain Linebarger's theory in a way that achieves anything approaching empirical adequacy.

In sum, we must reject as inaccurate the leading idea of Linebarger's theory, that the distribution of NPIs is predictable on the basis of the availability of NIs. Though Linebarger does isolate flaws in Ladusaw's approach,[3] it is still the latter's theory that best approximates the facts about NPI distribution.

4 Adversative Predicates

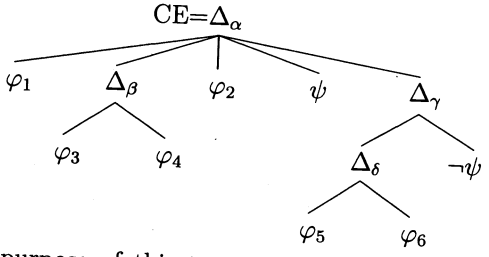
It is not immediately obvious how to apply the CSN constraint to NPI-licensing adversative predicates like *doubt*, *regret*, *be sorry*, and *be surprised*. For instance, *regret* is factive, so the speaker assumes its complement clause to be true. How then could there be a conflict with information held in the CE? CSN arises for adversative verbs, but it may be in a representation of an alternate possible world or of the beliefs of another person. To handle such cases we propose that the CE is not a simple set, but rather a structured database, with recursively embedded sub-databases representing things like possible worlds and the beliefs of others. Processing adversatives activates sub-databases, and CSN arises within these substructures. Thus, the study of CSN leads to new conjectures about compartmentalization of information in the CE.

4.1 A New View of the Cognitive Environment. We assume henceforth that the CE takes the structure described in (34):

(34) Cognitive Environment (CE)
The CE is a tree-structured database, where interior nodes are recursively embedded sub-databases, and leaves are propositions.

Such a structure takes the form in (35), where nodes marked Δ are databases:

(35)



One purpose of this tree structure is to use subordinated databases to segregate information and so prevent clashes. For example, suppose the CE represents two possible worlds, one where ψ obtains, and one where it does not. If the information about these two worlds mingles, the contradiction $\psi \wedge \neg\psi$ will arise, and either ψ or $\neg\psi$ must be ejected from the CE to restore consistency. Thus, the CE would not represent the two possible worlds adequately. On our view, information about two possible worlds can be kept separate in distinct databases, as in (35). Information within a database must be consistent, but clashes across database boundaries do not cause a proposition to be rejected.

The tree-structured CE also lets us model default effects. The root database lists one's own beliefs, while sub-databases describe possible worlds and

the like. When one considers a possible world, its database becomes CURRENT, determining what propositions are available for reasoning, according to (36):

(36) DYNAMIC AVAILABILITY
All propositions in the current database are available for reasoning. A proposition in an ancestral database is available unless it contradicts available propositions with priority; one proposition takes priority over another iff the former's database is a descendant of the latter's. No other propositions are available.

Let Δ_γ in (35) be current: $\neg\psi$, φ_1, and φ_2 are then available. Since Δ_β andΔ_δ are not ancestors of Δ_γ, $\varphi_3, \ldots, \varphi_6$ are unavailable; ψ would be available, if it did not contradict $\neg\psi$. One plausible result is that when one considers one's own assumptions, the root database is current, and no information about alternative worlds from descendant databases is available for reasoning. Now consider desiderata for the treatment of possible worlds. For semantic analysis, one typically deals with minimally distinct alternative worlds, where most assumptions from the real world are simply carried over. For instance, Dowty (1979:91ff.) paraphrases forms like φ *causes* ψ as 'in a world like the real world except that φ doesn't hold, and any minimal changes needed to accommodate the falsity of φ have been made, ψ would not obtain.' Our approach allows for a simple, procedural model of the relation between the real and possible worlds called for here. The database for the possible world would be current and contain $\neg\varphi$. Propositions in the root database would then be available, unless they contradict $\neg\varphi$. Thus, one's assumptions about the possible world automatically mirror those about the real world, except for minimal discrepancies. The fact that our revised CE provides the basis for a simple, procedural rendering of the notion of minimally different possible worlds like that which underlies the analysis of causation is a major argument in favor of our proposal.

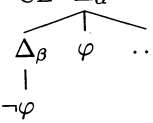
4.2 ADVERSATIVE PREDICATES AND CSN. Now we combine the CSN condition and the new, structured CE. Consider *regret* and *be sorry*. Both predicates are factive, so the speaker commits to the truth of the complement. The hearer may also believe the complement clause, as is surely the case in (37).

(37) I know you know that John loves Mary. I **regret/am sorry** that he *ever* met *anyone* like her.

Where then is the contradiction required by the CSN condition on NPIs?

We believe uttering X *regrets/is sorry that* φ gives rise to a CE like (38).

(38) CE=Δ_α



Since *regret* and *be sorry* are factive, the speaker regards the complement φ as true; thus φ must reside in the speaker's root database, Δ_α. Furthermore,

these predicates carry a procedural instruction to build a new sub-database, Δ_β, containing only $\neg\varphi$. The new database represents a possible world where all of the speaker's assumptions carry over, except for those made unavailable by the presence of $\neg\varphi$. Obviously this is reminiscent of the foregoing causative analysis. The conceptual meaning of the sentence *X regrets/is sorry that* φ is then that X prefers the world described in Δ_β to that in Δ_α.

Since the procedural instructions for *regret* and *be sorry* cause a sub-database containing $\neg\varphi$ to be built, the predicates in effect create the contradiction that the CSN constraint requires for licensing NPIs. Specifically, φ will be in the central system, and $\neg\varphi$ will have been inserted into the current database, the new Δ_β. Since *regret* and *be sorry* are factives, their complement φ will naturally reside in the root database, but our new tree-structured CE will allow φ and $\neg\varphi$ to co-exist under separate nodes. Thus, we predict that CSN will arise, while still allowing for factivity.

The remaining two adversative predicates, *doubt* and *be surprised*, may be similarly analyzed. Both allow NPIs in their complements, and (39) shows that their complements need not contradict the speaker or hearer's own beliefs.

(39) Not knowing her shocking behavior the way we do, John **doubts/is surprised** that Mary *ever* said *anything* like that.

Just as with *regret* and *be sorry*, it is not immediately obvious how CSN could arise to license the NPIs in (39). However, a close examination of the word meanings of *doubt* and *be surprised* will indicate a solution.

Sentences with *doubt* and *be surprised* clearly describe the contradiction of assumptions held by the designatum of the subject NP. *X doubts that* φ simply means that φ contradicts the assumptions of X, while *X is surprised that* φ means that X previously held beliefs contradicted by φ, though X subsequently adopted φ as a new assumption.[4] Now, information about the beliefs of other persons is contained in the CE in the form of embedded sub-databases. Consequently, given our model, the word meanings of *doubt* and *be surprised* actually tell us that the state of CSN is arising with respect to the complement clause of the adversative predicate and the sub-database where the assumptions held by the designatum of the subject are stored. Thus, a careful examination of *doubt* and *be surprised* shows that our new notion about compartmentalization of information in the CE combines with the CSN condition to predict the compatibility of NPIs with these adversative predicates without need of further stipulation.

5 Metalinguistic Negation

Now let us turn to a procedural-semantic analysis of metalinguistic negation. We propose that utterances with metalinguistic negation have no conceptual-semantic content; their meaning amounts to a procedural instruction to the cognitive processor. This analysis is motivated by the fact that it automatically

explains the unacceptability of NPIs in the scope of metalinguistic negation, a long-standing problem for most approaches.

5.1 THE BASICS OF METALINGUISTIC NEGATION. For Horn, metalinguistic negation is an "extended use of negation as a way for speakers to announce their unwillingness to assert something in a given way, or to accept another's assertion of it in that way" (1985:135). Metalinguistic negation allows no NPIs. It takes variable forms, one involving stylistic correction, as in (40):

(40) A: So, you even [mĩʸɨnɨ̆jd] to buy ice.
B: I didn't [mĩʸɨnɨ̆j] to buy (*#any*) ice—I [mænɨ̆jd] to buy it.

Metalinguistic negation can also alter connotation, as in (41) and (42):

(41) A: The agency whacks pinko troublemakers.
B: The agency doesn't 'whack (*#any*) pinko troublemakers'—it neutralizes unpatriotic influences.

(42) A: You resemble him. You are his daughter, aren't you?
B: I'm not his daughter (*#at all*)—he's my father.

5.2 LINEBARGER ON METALINGUISTIC NEGATION. Linebarger (1980) analyzes metalinguistic negation as the negation of a semantic operator TRUE. Consider the denial in (43), where SMALL CAPS indicate rising intonation:

(43) #She DID NOT *lift a finger* to help. (Linebarger 1980:89)

To explain the impossibility of NPIs here, Linebarger posits (44) as the logical form of (43); ¬TRUE(...) means roughly 'The sentence ... is not true':

(44) ¬TRUE(she *lifted a finger* to help) (ibid.:89)

Now TRUE separates the negation and the NPI. Consequently Linebarger's NPI constraint rules out (43).

Linebarger's approach incorrectly predicts that metalinguistic negation should invert truth values. Consider (45)–(47), corresponding to (40)–(42):

(45) ¬TRUE(I [mĩʸɨnɨ̆jd] to buy (*any*) ice) [cf. (40)]
(46) ¬TRUE(the agency 'whacks (*any*) pinko troublemakers') [cf. (41)]
(47) ¬TRUE(I am his daughter (*at all*)) [cf. (42)]

For (45)–(47) to be true, each parenthesized formula must be false. However, (40)–(42) have no such readings. Indeed, metalinguistic negation does not alter truth conditions. In contrast, we view (43) as an echoic response using truth-functional negation; the NPI fails because it would not have been licensed in the prior, affirmative utterance which the denial in (43) is presumed to echo.

No analysis we know has successfully explained the lack of NPIs in metalinguistic negation. However, our procedural approach overcomes this difficulty.

5.3 A PROCEDURAL VIEW OF METALINGUISTIC NEGATION. Since metalinguistic negation doesn't affect truth values, it needs no conceptual-semantic content. Instead, its procedural content is a warning to the cognitive processor

that a previous utterance is problematic. This begins an inference process to find a relevant modification of the CE. This can be rendered as in (48):

(48) METALINGUISTIC NEGATION
$(\emptyset, \{\ldots\})$: There is a problem in the target utterance, i.e. the negatum of the input sentence.

The symbol $\emptyset$ represents an empty conceptual-semantic content. Relevance theory dictates that a search for implicata be initiated in the quest for optimal relevance. The reasoning process will be aided by the procedural instruction in (48), which partially identifies the goal of the speaker. The search for implicata will also be constrained by the explanatory, follow-up comment that usually accompanies metalinguistic negation, e.g. *he's my father* in (42). This reasoning process eventually yields implicata like 'you have a low-prestige accent' in (40), 'CIA agents must watch their mouths' in (41), and 'I am not merely another person's child' in (42).

The foregoing analysis of metalinguistic negation interacts with our conditions on NPI occurrence to predict automatically that the two phenomena are incompatible. Recall that NPIs may occur only in cases of CSN, where the conceptual-semantic content of the NPI-bearing clause gives rise to a contradiction with the contents of the CE. Now, if utterances with metalinguistic negation have empty conceptual-semantic contents, it follows straightforwardly that the sort of contradiction that constitutes CSN simply cannot arise. Hence, metalinguistic negation cannot provide an environment in which it is possible for NPIs to occur. Since the problematic incompatibility of NPIs and metalinguistic negation is predicted without the need for any additional stipulations, this constitutes motivation for the present approach.

6 CONCLUSION

Hopefully this paper contributes to research on NPIs in four ways. Combining our CSN condition with Ladusaw's DE condition produces a more refined description of NPI distribution. Pointing out Linebarger's failure to take into account the infinity of logical implication and all the false-positive predictions to which this gives rise underscores the superiority of Ladusaw's approach. Application of the CSN approach to adversatives opens the way to new inquiries about the structure of the CE. Finally, offering a new, procedural-semantic analysis of metalinguistic negation that interacts with the CSN condition to predict automatically that metalinguistic negation does not license NPIs brings to light new evidence for the present analysis of NPI distribution.

NOTES

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Ruth M. Kempson, William Ladusaw, Yukio Oba, Michael T. Wescoat, and Deirdre Wilson for their comments and encouragement. Responsibility for any errors is entirely my own.

[1]Our presentation of relevance theory is necessarily abbreviated. In a fuller treatment of the theory, the CE ought to record the strength of confidence in each assumption. Furthermore, contextual effects should include the altering of the strength of one or more assumptions. These considerations would lead one to view the CE as some kind of fuzzy set. However, to simplify the discussion below, we entirely omit any mention of the strength of assumptions, and thus avoid the formal complications that would be entailed by the introduction of fuzzy-set theory. Restoring the notion of the strength of assumptions should not, however, pose any real difficulties for the present approach.

[2]Note that $\varphi \vdash \varphi$, so the relevant scope relation may arise in the clause's own logical form. For precise definitions, see Linebarger's immediate scope constraint (1987:338) and her negative implicatum theory (ibid.:346).

[3]See our review (Yoshimura 1993) of Linebarger's (1987) objections; we find some ill-founded or questionable, but others are genuine problems.

[4]Space constraints force us to ignore certain subtleties of meaning here.

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Dealing out meaning: Fundamentals of syntactic constructions

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1. Introduction. Any framework for syntactic description that intends both to cover the syntactic details of a language and to associate meanings with syntactic forms systematically must posit some locus of association between those details and those meanings. This is the pretheoretical notion of a *syntactic construction*, versions of which appear in virtually every syntactic framework I've read about, though often in very non-obvious ways.

A few frameworks take the notion as central. I have in mind, of course, primarily the Construction Grammar of Fillmore and his associates (among them Kay, O'Connor, and Lambrecht; see their items in the list of references) and my own work on the foundations of syntax and morphology, much of it animated by the Berkeley research (see my items in the list of references, and for applications to the description of some languages other than English, the dissertations by Kuh and Välimaa-Blum).

I start with the proposition that a syntactic construction picks out a set of syntactic objects (the instances of the construction) by stipulating some formal conditions that these objects must satisfy and a procedure for determining the semantics for these objects. I then explore seven fundamental questions about constructions, focusing on the last:

(1) What types of syntactic objects do constructions pick out?
(2) What is the inventory of formal conditions that can figure in a construction?
(3) What is the relationship between the formal conditions and the semantics they 'express'?
(4) How is a construction connected with the set of lexical items that are eligible to occur in some slot within it?
(5) What is the relationship between constructions and idioms?
(6) How are constructions related to the extragrammatical - stylistic, registral, discourse, and sociolinguistic - values of expressions?
(7) How do constructions interact with one another?

2. Types of syntactic objects. Question (1) I answer immediately: there are at least four distinct types of syntactic objects, inventoried in (8), and therefore four separate, but related, types of constructions, each with its own subtheory. *Sentences* are associated with (conventionalized) speech acts and are composed of *constituents*, which are assembled from the elements of *valence sets*. *Substitutes* are special types of constituents, devoted to anaphoric, deictic, indefinite, or generic uses; I have little to say about them here, beyond referring to Kay's paper in this volume.

(8.1) Sentences [*sentence-type* constructions]
(8.2) Constituents: clauses, phrases, words [*constituency* constructions]
(8.3) Valence sets: head plus set of dependents [*valency* constructions]
(8.4) Substitutes: pro-forms, zeros [*substitution* constructions]

3. Assortments. Before I turn to the seven questions in more detail, I take up a pretheoretical task, that of making plausible the idea that there is an inventory of formal conditions that can occur in various assortments, and that (in general) it is these assortments, rather than the individual conditions, that are associated with semantic interpretation. In somewhat more vivid imagery, syntactic theory supplies a large (but universal) pack of cards, each card bearing a single formal condition on some type of syntactic object (so that there are separate suits for sentences, constituents, valence sets, and substitutes), and each language deals out hands of one or more cards and assigns meaning to each such hand. To this end, I will briefly consider the syntax of WH items in English, including those in the constructions in (9).

(9.1) Main WH questions: *What penguin will we see?*
(9.2) Reclamatory WH questions: *We will see WHAT penguin?*
(9.3) Main WH exclamations: *What a marvelous penguin we saw!*
(9.4) Embedded questions: *I know what penguin we will see.*
(9.5) Infinitival questions: *I didn't know what to look for.*
(9.6) WH clefts: *What we saw was a flying pig.*
(9.7) Inverted WH clefts: *A flying pig was what we saw.*
(9.8) Exclamatory clefts: *What did we see but a flying pig!*
(9.9) WH relatives: *The penguin which we saw was gigantic.*
(9.10) Appositive relatives: *We saw the penguin, which croaked loudly.*
(9.11) Free relatives: *What we had in our hands croaked loudly.*
(9.12) WH-*ever* relatives: *Whatever we had in our hands croaked loudly.*
(9.13) WH-*ever* concessives: *Whatever the pig did, I was happy.*
(9.14) *No matter* concessives: *No matter what the pig did, I was happy.*
(9.15) *It*-clefts: *It was a flying pig which we saw.*

3.1. Involvement of other constructions. Most constructions do not place only elementary conditions on expressions; instead, they involve, use, call, or invoke other constructions. I will illustrate this observation by working up to the Inverted WH Cleft construction, (9.7). What I have to say here is an elaboration of parts of Zwicky (1989b), and as in that article my focus is on what has to be captured in an adequate framework, not on providing the necessary formalisms for such a framework.

3.1.1. SVP. We begin with the constituency construction Subject + Verb Phrase, or SVP for short. SVP licenses a C (clause) with two constituents, in order: a SU (subject); and a VP with V head and non-SU arguments, all these arguments licensed as occurring with the head in some valency construction. The C *we will see a flying pig* is licensed (ultimately) as an instance of SVP.

3.1.2. SAI. Next there is the constituency construction Subject-Auxiliary Inversion, or SAI for short. SAI licenses a finite C with three constituents, in order: a head V of a VP licensed by SVP; a SU that SVP licenses as combining with this VP; and the remainder of this VP. The C *will we see a flying pig* is licensed (ultimately) as an instance of SAI.

3.1.3. SAI versus SVP. SAI and SVP place incompatible requirements on a C; a construction that calls for a C will get one or the other. SAI is an ingredient in (9.1) and (9.8) and also in a few other constructions, among them Yes-No Question (*Will you eat sushi?*), Main Exclamation (*Boy, will you ever eat sushi!*), Focused Negation (*not only would I eat sushi...*), Focused Intensification (*so happy was I that...*), Additive Tag (*I can swim, and so can you*), and Inverted Counterfactual (*had I seen more people...*). SVP is used in the remaining constructions in (9) and in many others.

3.1.4. FF. Focus Fronting, FF for short, is a constituency construction licensing a C with two constituents, in order: an XP contain$_1$ing a pro-form (note that this condition is itself a substitution construction); and a C missing an XP (i.e., contain$_2$ing a zero XP - yet another substitution construction).[1] The Cs *what penguin we will see* and *what penguin will we see* are licensed as instances of FF.

3.1.5. FF versus SVP/SAI. FF is an ingredient in all the constructions in (9) except (9.2), as well as in Focused Negation, Focused Intensification, and Additive Tag. Plain SVP (or SAI) is used elsewhere.

3.1.6. IC. Interrogative Clause, IC for short, is a constituency construction calling for FF with an indefinite pro-form in its first constituent. The Cs *what/which we will see* and *what/which will we see* are licensed as instances of IC.

3.1.7. WH Relative. Illustrated in (9.9), this is a constituency construction calling for FF with a definite pro-form in its first constituent and SVP in its second. Note the contrast with IC.

3.1.8. Main WH Question. Illustrated in (9.1), this is a sentence-type construction calling for IC with SAI in its second constituent and with (default) falling final intonation.

3.1.9. Embedded Question. Illustrated in (9.4), this is a constituency construction calling for IC with SVP in its second constituent. Note the contrast with Main WH Question.

3.1.10. WH Cleft. illustrated in (9.6), this is a valency construction calling for a head V with two arguments: an Embedded Question SU and a PD, that is, Predicative. (Semantically, the PD expression is an answer to the question posed by the SU expression.) The participants in such a valency set can be assembled into a C by SVP (*what we saw was a flying pig*) or SAI (*was what we saw a flying pig*), which is then usable in the sentence-type construction Main Declarative (*What we saw was a flying pig*) or Yes-No Question (*Was what we saw a flying pig?*) or in any of various constituency constructions licensing embedded Cs, thus licensing sentences like *I know that what we saw was a flying pig* and *Were what we saw to have been a flying pig, I would be astonished.*

3.1.11. Inverted WH Cleft. Finally, our goal, which is also a valency construction, calling for a head and two arguments as licensed by WH Cleft, but with SU and PD interchanged. The participants in such a valency set can be assembled into a C by SVP (*a flying pig was what we saw*) or SAI (*was a flying pig what we saw*), which is then usable in the sentence-type construction Main Declarative (*A flying pig was what we saw*) or Yes-No Question (*Was a flying pig what we saw?*) or in any of various constituency constructions licensing embedded Cs, thus licensing sentences like *I know that a flying pig was what we saw* and *Were a flying pig to have been what we saw, I would be astonished.*

3.2. Licensing conditions versus well-formedness constraints. Throughout this discussion of the Inverted WH Cleft construction, I have taken a *licensing* view of the way the syntactic component of a grammar picks out the set of expressions in a language: An expression is syntactically well-formed if its phonological form is paired with its semantics as an instance of some syntactic construction. It follows that an expression is ungrammatical only because there is no combination of constructions that license it, not because there is some cross-constructional filter that rules it out. This is my reading of Bloomfield's view of constructions. It certainly is the position of classical transformational grammar, unadorned by surface structure constraints and the like - a position defended more recently by Pullum & Zwicky (1991).

This positive licensing view of the workings of the syntactic component is opposed to a view of syntax as a set of well-formedness *constraints*: An expression is syntactically well-formed only if it satisfies all the applicable conditions on well-formedness. In one version of a constraints approach,[2] at least some of the constraints are parochial. In another (an extension of work on Optimality Theory in phonology by John McCarthy, Alan Prince, and Paul Smolensky, in various combinations in still-unpublished manuscripts), the constraints are universal but their rankings are parochial.

It is hard to see how the effect of syntactic constructions could be achieved via a set of universal constraints, however ranked. A universal constraint approach is certainly plausible in phonology,[3] but the fact that syntactic form is associated with semantic interpretation (and, as we shall see, extragrammatical values) in decidedly language- and dialect-particular ways stands in the way of a universal constraint approach in syntax.

Consider (with Sadock & Zwicky 1985) how yes-no questions can be marked in the world's languages: by prosody (of several different sorts), by a special marker word (adjacent to the main verb, in initial position, in second position, in final position), by inflection on the main verb, by a special word order (again, of several different sorts), by a loosely connected adverbial expression (perhaps fixed in form, perhaps varying with properties of the clause it is attached to), or by various combinations of these. (This is essentially an inventory of all the ways in which *any* property of a sentence can be marked formally.) A single language can have several distinct yes-no question constructions, differing subtly but significantly in their semantics, pragmatics, or

stylistic values as well as in the details of their form. There is nothing imaginably universal in these conditions on form.

One virtue of Optimality Theory is that it provides (via the ranking of constraints) an account of the fact that expressions violating a constraint do sometimes occur - when they avoid a violation of a higher-ranked constraint. On the licensing view, there are no 'violations' per se, but rather failures to be licensed via one construction, which of course leaves the way open to licensing by another.

To see how such an account works, consider the well-known facts (a) that English allows NPs (and in special circumstances PPs) as SUs, but not other phrasal categories, in particular not VPs, as in (10), and (b) that English allows finite Cs marked by *that* to serve as SUs, but not unmarked Cs, as in (11). There is, however, no absolute constraint against VPs or unmarked Cs as SUs, as (12) and (13) show. Although there are no valency constructions specifically licensing such expressions as SUs, they are (along with a variety of other types of phrases and clauses) licensed as PDs in the WH Cleft construction in (12a) and (13a), hence are licensed as SUs in the Inverted WH Cleft construction in (12b) and (13b).

(10) a. NP: Pigs with wings do not fly well.
b. PP: Under the porch makes a poor hiding place for an alligator.
c. VP: *Build an igloo tires me out quickly.
(11) a. marked C: That we built an igloo astonished Terry.
b. unmarked C: *We built an igloo astonished Terry.
(12) a. What we did was build an igloo.
b. Build an igloo was what we did.
(13) a. What we did was we built an igloo.
b. We built an igloo was what we did.

3.3. Where do the details of a construction come from? The details of the internal and external syntax of a construction have at least three sources: the associated semantics; other conditions on the construction; and stipulation.

3.3.1. Semantics. Some details follow from the semantics associated with the construction. Consider the fact that the various interrogative WH constructions allow multiple WH pro-forms (*Which people from which cities did you meet?, When did you see which species of penguins?*) but the relative WH constructions do not (**At noon we saw penguins which were there when*). The no-multiple-WH condition on WH relatives presumably follows from the function of these constructions in restricting the reference of, or adding information about the referent of, some single expression.

3.3.2. Other conditions. Some details follow from other conditions on the construction. Consider the fact that postposed *else* is allowed in interrogative constructions (*Who else did you notice?*) but not in relative ones (**the people who else we noticed*). The no-*else* condition on WH relatives follows from two facts: (a) that *else* combines only with one-word pro-forms that are indefinite

(*someone else*, **those else*); and (b) that the pro-forms in interrogatives are indefinite and those in relatives are definite (as we should expect from the semantics of interrogatives and relatives).

3.3.3. Stipulations. Some details follow from nothing, but are simply stipulated for the construction (and hence may be subject to variation among speakers). I give four examples here,[4] the first three of which I know, from many years of experience in teaching introductory syntax classes, do not hold for all English speakers (the third seems to be completely inapplicable for younger Americans, although usage manuals sometimes insist on it), and the fourth of which is known to be lifted in speech in certain pragmatic circumstances.

(a) WH Cleft (and therefore also Inverted WH Cleft) is subject to the condition that the WH-containing phrase be a single word; contrast **Which bird* *we saw was the penguin* and **From where they came was* (*from*) *Antarctica* with *Where they came from was* (*from*) *Antarctica*. Note that Exclamatory Cleft is not subject to this condition: *Which bird did we see but the penguin!*.

(b) Free Relative is subject to the condition that the WH pro-form be non-human; contrast **Who I saw snubbed me* (Free Relative, human pro-form) with *Whoever I saw snubbed me* (WH-*ever* Relative, human pro-form), *Who I saw amazed me* (Embedded Question, human pro-form), and *What I saw bit me* (Free Relative, but non-human pro-form).

(c) *That*-Relative is (at least for some older speakers) subject to the condition if a SU is relativized on it must be non-human; contrast **the people that admire me* (human SU relativized on) with *the people that I admire* (human non-SU relativized on), *the ideas that impress me* (non-human SU relativized on), and *the people who admire me* (human SU relativized on, but via WH Relative rather that *That*-Relative).

(d) Zero Relative is subject to the condition that the constituent relativized on be a non-SU; contrast **the ideas ever impress me* (Zero Relative on SU) with *the ideas Mel ever impressed me with* (Zero Relative on non-SU), *the ideas that ever impress me* (*That*-Relative on SU), and *the ideas which ever impress me* (WH Relative on SU). Zero Relatives are, however, known to appear in unstudied speech, where they have a presentational function (Lambrecht 1988): *We got a cop gave a waitress two million dollars, Dr. Stein is a therapist treats athletes.*

3.3.4. The inventory of properties. In any case, the syntactic properties involved in constructions are *not* idiosyncratic, but are (it is plausible to hypothesize) drawn from a universal inventory. In the examples above, the conditions constructions place on expressions all involve properties we can suppose are provided in general syntactic theory: SU vs. non-SU, definite vs. indefinite, one-word phrase vs. multi-word phrase, pro-form vs. full form.

4. The seven questions. Now I turn to issues (1)-(7) above, giving (in this section) brief, tentative, and partial answers to the first six; this discussion builds on Zwicky (1987a, 1989a, 1989b).

4.1. Syntactic objects. To (1), I have already said, in section 2, that there are at least four types of objects picked out by syntactic constructions: sentence types, constituents, valence sets, and substitutes; different sorts of principles are appropriate in each of the four domains, although each domain interacts with the others.

The separation of valence sets from sentence types and constituents allows, among other things, for an account of 'amnestied' syntactic conditions (along the lines suggested by Pullum & Zwicky 1991 for the English doubl-*ing* constraint), which apply only when the concerned items are actually in construction with one another: the conditions in question apply only to constituency constructions, like the one that combines a P with its object to make a PP (and is subject to the condition that the object be non-clausal: **I will assent to that pigs can't fly*), not to the valency constructions that the constituency constructions build on (*That pigs can't fly I will assent to*). Similarly for the doubl-*ing* 'constraint', which is operable in **Kim was stopping singing* but not in *Kim neither was stopping, nor ever intended to stop, singing.*

4.2. The inventory of formal conditions. To (2), I proposed above that the inventory of formal conditions comprises a finite, universal subinventory of elementary conditions, plus the possibility of 'calls on', or invocations of, other constructions in the language, as when Main WH Question calls on SAI (rather than SVP).

4.3. Formal conditions and semantics. To (3), I suggest that although certain formal conditions might be especially good signs of particular meanings (as explored, for instance, in Lakoff 1987), there is no necessary connection between the two. There is a very great latitude in the way in which formal conditions can be associated with semantics.

In particular, different constructions, with different formal conditions, can be associated with the same semantics (as in the case of WH Relative, *That*-Relative, and Zero Relative); and different constructions, with different semantics, can have the same formal conditions (as I claimed in Zwicky 1987a for the 'raisings to object' in *I expected Terry to be a spy* and *I believed Terry to be a spy*). Like a morpheme or a lexical item or an expression, a construction is neither pure form nor pure meaning, but a Saussurean sign, a pairing of the two. As slogans, or rules of thumb:

(14) Different formal conditions, different constructions.
(15) Different semantics, different constructions.

4.4. Constructions and the lexicon. To (4), I propose that for each formal condition that mentions a slot filled by a word, there is a special set of lexical items eligible to occur in that slot.

Some of these slots are head slots, some aren't. A head slot gives rise to a *head subcategory* for its construction. For example, WH Cleft, Inverted WH Cleft, and *It*-cleft are all as choosy as could be in the set of head Vs they allow; the head subcategory is the singleton set {*be*}. A non-head slot gives rise to what I will call a *foot subcategory*. For example, Appositive Relative permits, for many speakers, only the set of WH pro-forms {*who, which, where, when*}, while Free Relative has the even more restricted foot subcategory {*what, where, when*} and Main WH Question has a much larger set. Since head and foot subcategories differ in different constructions, we have another slogan:

(16) Different subcategories, different constructions.

4.5. Constructions and idioms. To (5) I say, as in Zwicky (1986), that each idiom is an instance of particular constructions (with at least partially idiosyncratic semantics and possibly with lexical stipulations beyond those of the participating constructions).

4.6. Constructions and extragrammatical values. And to (6), I hypothesize that constructions are (along with lexical items and idioms) one of the elements to which extragrammatical values can be attached; this possibility is especially notable when there are alternative constructions expressing the same semantics, as in (17a-c), for argument clauses, relative clauses, and counterfactual conditional clauses, respectively. These constructions differ on several dimensions, among them whether they have an initial marker (Zero Argument C, Zero Relative, and Inverted Counterfactual do not), whether they use SAI (Inverted Counterfactual) or SVP (all the others), and what constraints there are on their head Vs (the argument and relative clauses are quite open in this regard, allowing a full range of auxiliary and non-auxiliary Vs, in either present or past tense, while two of the counterfactual constructions use a special 'counterfactual' verb form, one uses the past tense, and one uses a marker lexical item, the auxiliary V *would*, rather than an inflection).

(17) a. that we saw the creatures (*That*-Argument C)
we saw the creatures (Zero Argument C)

b. the idea which I had (WH Relative)
the idea that I had (*That*-Relative)
the idea I had (Zero Relative)

c. were I in charge (Inverted Counterfactual)
[no marker; SAI; VFORM:Counterfactual]
if I were in charge (*If*-Counterfactual)
[marker *if*; SVP; VFORM:Counterfactual]
if I was in charge (Past Counterfactual)
[marker *if*; SVP; VFORM:Past]
if I would be in charge (*Would*-Counterfactual)
[marker *if*; SVP; marker verb *would*]

The alternatives in each of (17a-c) do not differ truth-functionally, but instead exhibit differences in formality, appropriate modality (oral vs. written), register, social dialect, and the like; they count as different with respect to their

contexts of use. For instance, the unmarked clause types in (17a) and (17b), Zero Argument C and Zero Relative, are a bit more informal and conversational than their more explicit alternatives, and the four constructions in (17c) range from the extremely formal, now primarily written, Inverted Counterfactual (which most speakers these days do not use at all) to the colloquial *Would*-Counterfactual (which appears to be the wave of the future in the U.S., given its widespread use by many young Americans). In any case we have another slogan, the final one:

(18) Different extragrammatical values, different constructions.

5. Interactions. As to (7), I now survey some issues in the logic of construction interactions, beginning with constructions that are in competition both semantically (they express the same semantics) and formally (they place incompatible conditions on the same sort of object). Sets of such *etic* constructions fall roughly into two groups, a division reminiscent of that between phonological free variation (inclusively alternative, or *I-etic*, constructions, like those in (17a-c), with essentially the same external distribution) and phonological complementary distribution (exclusively alternative, or *E-etic*, constructions, like SAI and SVP, with clearly different external distributions).

Whatever the situation in phonology, in syntax and morphology both sorts of alternation seem frequently to be imperfect. I-etic constructions are sometimes exclusive (because of differences in their internal composition or external distribution or both), as illustrated in section 5.1 below, and E-etic constructions sometimes overlap, as illustrated in section 5.2. Note that my purpose, here as elsewhere in this paper, is to point out the phenomena (in fact, with reasonably well-known examples, though their import has not always been fully appreciated), not to provide a formalized account of them.

5.1. Exclusive I-etic constructions. The two finite argument clause constructions in (17a), for example, are not always interchangeable. In particular, many speakers find Zero Argument Cs much less acceptable than *That*-Argument Cs as direct objects of manner-of-speaking verbs (19a), as arguments of abstract nouns (19b), or when extraposed (19c).

(19) a. ??Pat whimpered the pigs were flying. [Zero Argument C]
Pat whimpered that the pigs were flying. [*That*-Argument C]
b. ??the idea those pigs can fly [Zero Argument C]
the idea that those pigs can fly [*That*-Argument C]
c. ??I hate it some snakes bite. [Zero Argument C]
I hate it that some snakes bite. [*That*-Argument C]

5.2. Overlapping E-etic constructions. SAI and SVP, for instance, are sometimes both possible. SAI is available in some subordinate clauses introduced by *as* (20a) and *than* (20b) and some main clauses with fronted phrases containing deictics, like *thus* and *such* (20c). SAI in such examples is often associated with formal style, but it can also serve to allow the postponement of heavy constituents to the end of a clause.

(20) a. We will see more birds than will our friends. [SAI]
We will see more birds that our friends will. [SVP]
b. I can swim, as can all my friends. [SAI]
I can swim, as all my friends can. [SVP]
c. Thus / By such means will we succeed. [SAI]
Thus / By such means we will succeed. [SVP]

6. Privileged constructions. Within a set of etic constructions it is quite often the case that one or more of the constructions will have a special status in the grammar of the language. In the next five subsections I survey different ways in which a construction can be so privileged.

6.1. Unmarked cases. Characteristically, in a set of etic constructions there is one that is 'unmarked' - that is, un-special - by virtue of having (a) the fewest extragrammatical values, (b) the fewest semantic implicatures, (c) the fewest constraints on internal composition, and/or (d) the fewest constraints on external distribution.

Among the four counterfactual constructions in (17c), the one that is least marked extragrammatically would seem to be the Past Counterfactual, for most current speakers at any rate. And for the two argument clause constructions in (17a), the one that is least marked with respect to external distribution would seem to be *That*-Argument C, given facts like those in (19).[5] As for SAI and SVP, the least marked construction with respect to internal composition is certainly SVP, given that SAI is available only for finite clauses, while SVP is used for non-finite clauses, as in the exclamatory construction of *Them having no hats on!* and the infinitival subject in *For them to have no hats on would astonish us.*

Nothing that I know of would require the various characteristics of (un)markedness always to run together, though it is certainly common for them to do so. In fact, though, there are at least four different types of unmarkedness here. This is not necessarily troublesome, since so far as I know no generalization about syntax, parochial or universal, is properly stated so as to refer to any one of these four types of unmarkedness. The remaining types of rule privilege do, however, play an explicit role in grammar. These first types are of interest primarily in that they tend to be correlated with the types that follow.

6.2. Elsewhere cases. For E-etic constructions realizing the same syntactic properties, the un-special construction is the 'elsewhere' or 'otherwise' case, used whenever another construction calls for an object with these properties (unless, of course, the invoking construction specifically requires otherwise). For the E-etic set comprising SAI and SVP, this is certainly SVP, even when we restrict ourselves to finite clauses, where both are possible; in particular, SVP is used in almost (but not quite) all of the many subordinate finite clause constructions: all three types of finite relative clauses, free relatives, cleft sentences of all types, finite argument clauses in all of their uses (as, inter alia, subject, direct object, argument of an adjective or abstract noun, or degree

complement as in *so big it obscured my vision*), most types of adverbial subordinate clauses, and so on.

Being an elsewhere case is certainly a grammatically relevant property of a construction. Virtually everyone who has thought about the matter has wanted to get the elsewhere case 'for free' or 'as a default', though what the appropriate formalism is is far from clear.

6.3. Fall-back constructions. The next two kinds of grammatical privilege arise when there are purely formal conflicts between different requirements on an expression.

I will say that a construction is the *fall-back* construction in an E-tic set if it is used when its alternatives are unavailable for purely formal reasons. This is what happens when SVP is used instead of SAI when the conditions for SAI, which requires that the SU follow the head V of its C, are in conflict with those for Focus Fronting, which requires that the XP containing the focus pro-form precede the remaining material of the C, including its head V. As I pointed out in Zwicky (1989b), these two requirements come into conflict in subject WH questions, since the first requires that the SU follow the head V and the second requires that the SU (which is in fact the XP at issue) precede the head V.[6]

In this example, FF is satisfied, and SAI is suppressed. We still need a finite clause, however, and SVP comes to the rescue: *Who will see the penguins?*, an instance of SVP, rather than **Will who see the penguins?*, with FF suppressed in favor of SVP. That is, SVP is the fall-back with respect to SAI.

6.4. Firm constructions. I will call the construction that 'wins' in such a purely formal competition the *firm* construction of the two. Since FF wins over SAI, FF is the firm member of the pair (and SAI the 'soft' construction).

Similarly, firm Subject-Verb Agreement wins over soft Predicative-Verb Agreement in examples like *It was the penguins that we saw*. *It*-clefts require as SU the specific lexical item *it*, which is intrinsically singular, but they allow PDs that are plural NPs (of the sort that can be seen to trigger Predicative-Verb Agreement in examples like *There were penguins on the porch* and *The sheep are spies*). When the two requirements come into conflict, only the Subject-Verb Agreement condition is satisfied.

Conflicts like these are rarer than one - or this one, at any rate - might have thought, but they do occur, and it seems to be quite generally the case that such a conflict does not result in ungrammaticality; instead, one of the conditions is satisfied and the other is suppressed, that is to say, violated without ungrammaticality.

We would hope of course that if one construction is the firmer of two in one situation it is the firmer in all others, in other words, that competitive interactions between two conditions are always resolved in the same way within a single grammar, or in still other words, that the interaction is a relation between

two conditions, not between two conditions and a circumstance in which they are in conflict.

I would hope for better than this, however. Rather than having the victor stipulated for each pair of potentially conflicting conditions (as in derivational theories, which use parochial rule orderings for this purpose, or in Optimality Theory, where universally supplied constraints are parochically ranked), the most attractive theory would be one in which softness is a property of individual constructions: a condition that yields to one competitor will yield to all.[7] Nothing that I know of would predict, from other theoretical hypotheses, that softness is a property of individual constructions, so that I am not wed to this proposal. But it would be very nice if it was so.

6.5. Basic-level constructions. Finally, some constructions are privileged by virtue of not invoking other constructions of the same type. They are *basic-level* constructions.

There are at least two sorts, illustrated by (a) the ordinary TrV (Transitive V) valency construction with respect to, say, SOR (Subject-to-Object Raising), and (b) the SVP constituency construction with respect to, say, FF (or to SAI).

The valency construction TrV licenses a head V as compatible with two arguments, SU and DO; it imposes no further valency requirements. SOR, on the other hand, licenses a head V as compatible with three arguments, SU and DO and CP (that is, Complement), but the DO and CP cannot be just any old expressions otherwise licensed as DO and CP. SOR also imposes a 'secondary' stipulation of syntactic functions, namely that some valency rule license the DO as SU of the CP. (Or, as we have learned to say in other theoretical contexts, the DO in SOR is a 'derived grammatical relation'.)

The constituency construction SVP licenses a C composed of a SU followed by a compatible VP; it imposes no further constituency requirements. FF, on the other hand, licenses a C composed of an XP followed by a C missing an XP, but the daughter C cannot be just any old type of clause. The daughter C must be an instance of SVP or SAI. In other words, FF imposes a 'secondary' stipulation of constituency. (Or, as we have learned the say in other theoretical contexts, the sequencing of daughter constituents in FF illustrates 'displacement' or 'movement'.)

I now suggest that these distinctions do sometimes play a role in grammar, that there are syntactic conditions that refer specifically to basic-level constructions. These would be the analogue of phonological rules that apply only to 'underived' material; cf. the way Donegan & Stampe (1979) treat automatic phonological rules that are counterfed by other automatic rules as being subject to the condition that they apply only to underlying representations.

I offer here, not a demonstration, but only a plausibility argument. There is a rich literature on the facts I will mention, which begins with Ross (1986[1967]:sec. 3.1.1.3.1), who treats them as involving a (presumably

universal) constraint on acceptability, rather than grammaticality, that rejects instances of sentence-internal NP-over-S. There is no space here for me to compare my proposal below to the many imaginable alternatives, though I do attempt to cast some passing doubt on several of them.

Consider first the distribution of *That*-Argument Cs serving as SUs in English, as in *That pigs can't fly was astonishing to you* and *That pigs can't fly finally came to Marty* (both with SVP). Such clausal SUs seem to be possible only in the basic-level constituent construction SVP, and not in any non-basic-level constituency constructions, for instance SAI as in (21a), or the inversion in (22a). I offer (21b) and (22b) to suggest that the condition is unlikely to be a semantic one, or one that refers either to syntactic complexity or to length; and I offer (22a) - and also (23b) below - to suggest that sentence-internal position is also not the crucial factor. In any case, the rule licensing *That*-Argument C as SU seems to be counterfed by all non-basic-level constituency constructions.

(21) a. *Was that pigs can't fly astonishing to you?
b. Was the fact that pigs can't fly astonishing to you?
(22) a. *To Marty finally came that pigs can't fly.
b. To Marty finally came the idea that pigs can't fly.

Next consider finite clauses (*That*-Argument Cs or Zero Argument Cs) serving as DOs in English, as in *We believe (that) pigs can't fly*. Such clausal DOs seem to be possible only in the basic-level valency constructions like TrV, and not in non-basic-level valency constructions like SOR, as (23a) illustrates. In (23b) we see that the ungrammaticality of (23a) is not amnestied by a displacement (Heavy NP Shift) that moves the clausal DO out of sentence-internal position. Finally, contrast the ungrammatical (23b) with the grammatical (23c), which has a similarly displaced DO but is an instance of a basic-level valency construction (licensing a head V as compatible with three arguments: SU, DO, and P-marked IO). In any case, the rule licensing finite clauses as DOs seems to be counterfed by all non-basic-level valency constructions.

(23) a. *We believe (that) pigs can't fly to be astonishing.
b. *We believe to be astonishing (that) pigs can't fly.
c. They explained to us (that) pigs can't fly.

6.5. Summary. I have detailed quite a number of ways in which a construction can be said to be privileged: it is the unmarked case, in any one of at least four senses; it is the elsewhere case; it is the fall-back; it is firm; and it is basic-level, with respect to valency or constituency or both.

We can ask both how these different ways are related, and of course how such facts about interactions are to be incorporated into an otherwise plausible formalized theory of syntax. My purpose here has been to try to state these questions clearly. I never promised you a rose garden, but I *can* offer some interesting thorns.

Footnotes

1. The two notions of containment are part of a universal framework for syntax. *Contain*$_2$ incorporates the 'constraints on extraction' that apply in English, while *contain*$_1$ is a bit more restricted, in that the pro-form cannot be within any subordinate clause; contrast the zero within a complex NP object in *Which award do you have some hope that you will get?* with the ungrammatical pro-form within the fronted complex NP object in **How much hope that you will win which award do you have?*. On the other hand, *contain*$_1$ allows pro-forms on a left branch, as in *which people* and *how tall*, while *contain*$_2$ disallows zero there; this is the Left Branch Condition of Ross (1986). In any case, a universal framework for syntax must supply several notions of containment, including some less restrictive than *contain*$_2$ (in some languages the LBC does not apply) and some more restrictive (some languages do not allow objects of prepositions to be extracted, some allow only single-word phrases to be extracted, some allow only subjects to be extracted, and so on).

2. I am inclined to attribute to the Zellig Harris of [*Methods in*] *Structural Linguistics* the view that a component - phonological, morphological, or syntactic - of a grammar is a set of (parochial) constraints on the set of all possible strings of elementary units for that component, and this interpretation is encouraged by his use of templates for describing linguistic structure, but I haven't yet found a place where he says this clearly.

3. At least in automatic phonology, where a framework of this sort was proposed some time ago by the Natural Phonologists; see Donegan & Stampe (1979).

4. Some of these details are explored further in Zwicky (1986).

5. Thanks to the fact that 'marked' has been used in linguistics in so many different senses (each with some justification, to be sure, but nevertheless the senses are distinct), it turns out that I am claiming here that the construction that is marked in the sense of having an overt mark, here the special lexical item *that*, is unmarked in the sense of being the ordinary, un-special, construction.

6. Note that I am *not* saying that this is the only way to analyze the facts about subject WH questions in English - the literature on generative syntax contains an array of alternatives - only that once constructions are taken as central and once they are treated as assemblages of conditions on expressions, the problem of subject WH questions in English becomes one of conflict between two such conditions (FF and SAI) and of the (normally) complementary relationship between two of them (SAI and SVP).

7. The echo here of 1970s-style efforts on behalf of Universally Determined Rule Application (see the extended discussion of the issues for syntax, with bibliography, in Pullum 1979, and for phonology in Zwicky 1987b) is intentional.

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