



Proceedings of the Fourteenth Annual Meeting of the Berkeley Linguistics Society: General Session and Parasession on Grammaticalization (1988)

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BERKELEY LINGUISTICS SOCIETY

Proceedings of the Fourteenth Annual Meeting

February 13-15, 1988

GENERAL SESSION

AND

PARASESSION

ON

GRAMMATICALIZATION

**Berkeley Linguistics Society
Berkeley, California, USA**

12

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GRAMMATICALIZATION

edited by

Shelley Axmaker

Annie Jaisser

Helen Singmaster

Berkeley Linguistics Society

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Preface

The Fourteenth Annual Meeting was held - a minor miracle to us, as we were plagued with various misfortunes last Fall, which almost led to cancellation. Not only are we happy and relieved to report that the Meeting took place, but also that we enjoyed the best of luck: the conference with its parasession on Grammaticalization drew a large and enthusiastic crowd, and we were blessed with the best weather in recent BLS history.

The conference would not have come to pass had we not had the help and support of a number of wonderful people. We therefore wish to give our heartfelt thanks to: Natasha Beery, Claudia Brugman, Laura Michaelis, Mary Niepokuj, and Kiki Nikiforidou - all seasoned BLS officers - for their expert advice and guidance through the inevitable crises; Mirjam Fried - graduate student and caterer of the traditional BLS party - for transporting our taste buds to the land of unforgettable epicurean delights; "Los Antillanos" for entertaining us with their lovely and memorably danceable Caribbean music; the Institute of Cognitive Studies for continuing to give us shelter; and all of the friends and former friends for wading through the piles of abstracts, staffing the registration and book tables at the conference, serving as session chairs, and/or attending our marathon mailing parties.

We also wish to express our deepest gratitude to all those who presented papers or submitted abstracts - the numerous contributions to this year's parasession on Grammaticalization testify to a strong interest in the topic at Berkeley and beyond. We believe the papers from the general session and parasession to be of enduring quality, and trust that **BLS 14** will be as enjoyable to read as it was to produce.

Shelley Axmaker
Annie Jaisser
Helen Singmaster
1987-88 BLS Officers



GENERAL SESSION

On Glossing

A. L. Becker

"Each language represents a different equation between manifestations and silences. Each people leaves some things unsaid in order to be able to say others.

Hence the immense difficulty of translation: translation is a matter of saying in a language precisely what that language tends to pass over in silence."

Ortega, 1957.

The publication in 1825 of August Schleicher's monumental work, *Die Sprachen Europas*, marked as clearly as anything can the split between linguistics and philology as separate disciplines.¹ The split was based upon the notion that some things are subject to "nature's unalterable laws" while other things are within "the sphere of operation of human free will." We wouldn't say it that way today, but we would still recognize a difference between those who pursue universal, ahistoric laws and those who seek understanding of particular, temporally changing cultural phenomena. The linguist is ideally a scientist, the philologist a humanist. Their methods are different because their goals are different, and their goals are different because the problems they confront are different.

The major issue around which these differences were shaped in 1825 was *accidence* --- the way a root appears as adjective, noun, verb (and so on) and is marked for case, tense, mood, etc. *Accidence* involved the shaping or morphology of words, and morphology was seen as something subject to "nature's unalterable laws." Linguistics was a natural morphological science, in Goethe's scheme of things, along

with the other morphological sciences of botany, crystallography, and anatomy.

Using arguments one hears yet today, Schleicher argued that linguistic laws are universal because they reflect concepts and relations of thought which were (and for some still are) held to be universal. But right from the start there was an assumption that some languages reflect these concepts and relations of thought better than others, and so there was a politics to it right from the start. It is not irrelevant that these notions developed in places and at a time when economic, political, and religious colonialism was expanding and seemed both moral and profitable. Like people, languages were seen as evolving, and some were farther along than others, and --- oblige noblesse --- the speakers of more advanced languages had a moral duty to instruct the others. In linguistic morphology the stages of this universal evolutionary progression were called isolation, agglutination, and inflection.

This is not to suggest that linguistics has been more colonialist than philology, but only that linguists are not always mindful of the implications of universalist claims, and how these claims aid a kind of linguistic colonialism, the spread of American English.

At the center of linguistic practice, right from the start, has been analysis, which in linguistics is called parsing --- the principled division of wholes into parts.

At the center of philology, on the other hand, is translation, which in linguistics is called glossing. If careful, skillful parsing is the defining skill of the scientific linguist, then careful, thoughtful translation is the defining skill of the philologist. A philologist ideally is as sentive to the differences between a Homeric or Javanese term and its English translation as a linguist is to the difference between, say, sub-types of ergativity or varieties of anaphora.

For philologists, the most useful "theory" in understanding a distant text is their own language. The skill lies in seeing the differences between the translation and the original. As the great Spanish philologist, Jose Ortega y Gasset, put it, a translation --- like any "reading" ---is always both exuberant and deficient (Ortega, 1959). That is, there are always things in the translation which have no counterpart in the original; they are there because of the demands of the language of translation. These are the exuberances. For one working with Southeast Asian languages, these include things like number and tense and copula, which rarely have any counterpart in the original. And there are also things in the original which have no counterpart in the translation, the deficiencies --- things like classifiers and focus markers which are hard even to fake in English. Furthermore, different root

metaphors permeate the morphology of both languages in a translation and provide thereby some of the most basic exuberances and deficiencies a philologist encounters.

It is my experience that any translation into English from a Southeast Asian language is at least fifty-per cent exuberant and deficient: that is, at least fifty per cent of the translation is exuberant and at least fifty percent of the original does not come through in the translation and is thereby deficient. What a careful translator does is sort out --- for a word, a sentence, or a complete text --- the exuberances and deficiencies across the languages. These are the things one must unlearn and learn in the course of learning to understand a distant language.

I would like to share with you briefly the experience of translating a single Burmese verb phrase into English, concentrating my attention on the root metaphors and the deep differences between the Burmese and its English translation.² The Burmese verb phrase is only four words long, and it makes a complete clause. That is, Burmese is a language full of what we so linguocentrically call "zeroing" or "zero anaphora" --- as if something (here the NP arguments) had been deleted or was, as we used to say, 'understood.' It is very hard to teach students of Burmese that nothing is missing --- that that phenomenon of a sense of absence is a result of glossing. It is not that subjects and objects, like tense and number, are left out in Burmese. They just aren't there. This is perhaps the greatest exuberance in going from Burmese to English: the assumption that what is in the English but not the Burmese is somehow 'understood' in the Burmese. And we have invented a glossing called "deep structure" or "logical" structure to introduce these things into Burmese or any other language we are studying.

It is this which makes a modern philologist want to say that all grammatical analysis of another language is comparative, always one language put into the categories and metaphors of another. At the very least, in this short essay, I want to hold up parsing and glossing as themselves language games, a point Wittgenstein made some time ago. They are prominent among the language games we play across two or more languages.

Any tongue takes on many metaphors from the way it is written, and so going from Burmese,

to English,

'Put that aside, please'

involves us in some rather basic exuberances and deficiencies. Our alphabetic writing leads us to imagine words, even spoken words, as sequences of phones, which can be analyzed into

initials, medials and finals. Burmese syllabic script, one of the Southeast Asian variants of Pallava script, leads one to imagine words, even spoken words, as overlays built around a center. That is, there is a basic core sound with modifications and elaborations in front of, behind, over, and under it. In Burmese writing there is no initial, medial and final. Phonemic analysis requires transliteration, in which one's image of language itself changes. Phonemic analysis, as we understand it, is not possible in Burmese writing (Becker, 1984).

This different image of a word came across vividly in a linguistics class at Michigan some years ago when a Southeast Asian student pointed to the final letter of a word written on the blackboard and said, "Here, at the front of the word...." Upon being pressed, he said that he imagined words coming toward him. Assume with me for a moment that this anecdote is not about the idiosyncracy of a particular person but a widely shared image, and you can see one of the roots of what we call reverse deixis or hearer centered discourse (where 'here' means close to the 'hearer').

Putting aside all the exuberance and deficiency of transliteration (which is too often assumed to be a meaning-preserving act), we can romanize the Burmese as:

hta:pato.le

We have translated it freely as,

'Put that aside, please.'
or
'Let that be.'

The only things in the English with counterparts in the Burmese are 'put' and 'please'. The rest of the translation is there because of the demands of English, i.e. that 'put' takes an undergoer and a location.

The deficiencies are difficult to gloss. We might see the whole phrase as a string of metaphors:

hta: 'put' is a metaphoric 'putting down' of a topic of discourse prior to 'picking up' a new one.

pa polite 'include' is a metaphoric use of a verb which we might translate as 'include' or 'be with' or 'accompany'. It is a very old metaphor for politeness.

to. 'toss' (?) is the metaphoric use of a verb which describes the act of hitting something into the air with hand, foot, or stick --- as in the widespread Southeast Asian game (Burmese hcin:loun:) in which the players keep a rattan ball in the air with their feet.

lei 'evaporate' is a metaphoric use of a verb which Judson's dictionary translates as 'to be scattered, lost, evaporated, as camphor, quicksilver, etc.' The verb also seems close to a noun we gloss as 'air' or 'wind'.

To think of this Burmese verb phrase as an aggregate of metaphors is to foreground dissimilarity. For many linguists it may seem to exoticize Burmese in a way that is perhaps historically accurate (perhaps not)³ but certainly not the way native speakers would imagine their own language. Over time, as one learns the language better, these metaphors become bleached and ordinary --- become grammaticalized, some would say, but for the comparative philologist, interested in how that very ordinariness comes about, it seems right (and, as Pike would say, *emic*) to see the metaphors first and then, on the assumption that grammaticalization is a figurative rather than a logical process, to see their present use as extensions of the metaphors into new contexts.

We all wince, of course, when the everyday metaphors of a language are uncovered: they are things to be seen, as Gregory Bateson used to say, only out of the corner of the eye. Yet, we do live in them and not in the clarity of abstractly defined categories. Words which have non-metaphoric uses in identifying and specifying acts and events in nature (e.g. PUT, INCLUDE, TOSS, EVAPORATE) have been displaced to identify and specify acts and events in the management of the text and the language game itself. The things which are PUT, TOSSED, and EVAPORATED are words and not rattan balls or quicksilver. The metaphoric movement is from nature to language itself.

As far as I can see, all of the words in Burmese verb phrases which have been called auxiliaries and particles are metaphors, open always to new uses.

It is clear, however, that to translate the passage above as PUT INCLUDE TOSS EVAPORATE is clearly not an acceptable English translation of the Burmese. I would only argue that *emic* understanding may well have to pass through that blatant string of metaphors and note them and hear their echo, "under erasure" (i.e. crossed out but visible, Derrida's suggestion for a new mark of punctuation). Their loss is surely a major deficiency of glossing.

I leave them behind reluctantly and move on to a more grammatical view of the Burmese passage as,

PUT polite change-of-state persistive

or, at a more abstract level, as,

VERB auxiliary aspect euphonic

To go from an understanding of the passage as a string of metaphors to an understanding of it as a string of abstract categories is to familiarize it, to put it into the categories of our understanding.⁴ That is a useful, even necessary thing to do, but it is even more heavily weighted with exuberances and deficiencies. I think we are farther from Burmese, closer to English, when we do that.

And the grammatical glossing, of course, implies a parsing, while the metaphoric glossing did not. That is, we would be tempted to analyze the phrase as a headword which is a verb (PUT) and a string of subsidiary modifiers of the headword: auxiliaries, aspectuals, and other species of operators (at levels of nucleus, core, and periphery). The parsing, in any case, is a function of the glossing. There is no such thing as a language-neutral analysis.

Just as I can describe my Burmese experiences in English, so I --- with the help of many others over two centuries of glossing and parsing Burmese into English--- can describe the Burmese language in English. The question is not Can this be done, with rigor and generality? Rather, the question is, What are we doing when we do it?

There are, I think, as many exuberances and deficiencies in parsing as there are in glossing. The grammatical figure of head and modifier (endocentricity) is very robust in our grammatical language. We would, I think, consider it the unmarked case that words be seen as roots and affixes, phrases as heads and modifiers, and clauses as predicates and arguments. In each case there is a single head or center. Learning Burmese involves, I believe, seeing the unmarked case as double-headedness. To use a term suggested by Mary Haas and extended by James Matisoff (1973), Burmese always seems elaborate to an English-speaking learner. In spite of all the so-called zero-anaphora, one always seems to have to use more words than are necessary in Burmese, and this, I want to suggest, is because we are not attuned to double-headedness as a pervasive phenomenon.

Burmese words are usually built around two morphemes, like

hma: ywin: 'mistake' (ERROR MISPLACE)

a myin a yu 'belief' (APPEAR BELIEVE)

cei na' 'be satisfied'(GRIND COOK)

At the phrase level we are familiar with this phenomenon of double headedness in many languages as classifier constructions, which have many uses besides just counting things, as in these two examples from Professor Hla Pe's bold attempt (Hla Pe, 1967) to render a Burmese view of classifiers into English:

sani' t kya (i.e. 'be systematic')
system one fit

hma' t me (i.e. 'be unthinkable')
notice one lack

John Verhaar has suggested to me that we can get the same sense of double-headedness in English in phrases like

a whale of a story

in which there is a tension between the grammatical head (whale) and the referential head (story).

I hope that these few examples will suffice to illustrate what is a widespread phenomenon in Burmese, double headedness. Much in Burmese rhetoric and poetics seems to me to be built around this grammatical figure.

I have recently argued (Becker, to appear) in more detail than is possible now in this short essay that it can be illuminating and more emic to think of the verb phrase in Burmese as double headed. A structural deficiency of glossing Burmese is, in this view, to reduce double-headed constructions to single-headed ones.

In this double-headed view a Burmese verb phrase at its simplest has two poles, a verb and a final particle. Around these two poles the structure is built.

Around the left pole, the verb, before and after it, cluster the words, almost entirely metaphors, which particularize the referential event or act by identifying and specifying it.

Around the right pole, the final particle, before and after it, cluster the words, also metaphors, which particularize the language event by identifying and specifying it.

Around the two poles and between them is the grammatical space they shape, which I will leave unexplored here and return to the Burmese passage we have been examining:

hta:pato.le
PUT INCLUDE TOSS EVAPORATE
PUT polite change-of state persistive
VERB auxiliary aspect euphonic

What is missing here is the sense of double-headedness, the bipolar figure. The left pole is the verb PUT plus the polite auxiliary, which might be seen as including the hearer in the act of putting. (This analysis of pa is much too simple, and it might just as well be seen as the leftmost adjunct of the right pole in the double-headed construction.)

The right pole in this positive imperative verb phrase is the zero member of a set of final particles. The small set of aspectuals occur before indicative finals, and after the negative imperative final, so that we might put the final into the gloss just before the aspectual (to.):

VERB auxiliary (FINAL) aspect euphonic

Since the absence of the final is significant in Burmese, it is, I think, important to include it in the glossing. That is, zero makes sense in indicating a deficiency, but not as an exuberance (like, for instance, a zero marking the object of PUT, an exuberancy of the English translation).

The goal here is not an exhaustive description of a Burmese verb phrase, for even a single instance is extremely complex. Translation is always a utopian task, one which never arrives at any finality. The Burmese passage was presented in order to illustrate a point: all grammatical analysis of another language is always comparative, for there is always, at any level, a great deal of exuberance and deficiency. There is no neutral language of analysis.

And there is a more general point. It is that we reconsider the split between linguistics and philology, not in order to say that they are one and the same, not to recombine them, but rather to strengthen the dialogue between the analyst and the translator, between the parser and the glosser, between "nature's unalterable laws" and "human free will", between generality and particularity, between universality and deep cross-lingual differences. For the sake of that crucial dialogue, I do not think it is good for linguistics if philology is weak in either theory or practice.

Endnotes

1. A thorough discussion with complete bibliographic reference concerning the split between linguistics and philology and Schleicher's role in it can be found in Arbuckle, 1970-71.
2. A more complete description of Burmese verb phrases is to appear in Becker, (to appear). The phrase discussed here is from the story by Dr. Maung Maung Nyo, "ingalan ameiyikanhnin. myanmapyitha:" (A Burmese Encounters England and America) (Rangoon, 1977), provided to me by John Okell.
3. The results of the Sino-Tibetan Etymological Dictionary Project under the direction of James Matisoff at Berkeley will help us check the accuracy of the glossing of these metaphors. I feel sure that these words, and other so-called particles, can be described as metaphors, but less sure that I have correctly captured their metaphoric action.

4. The parsing is based on the grammatical descriptions of Allott, 1965; Okell, 1969; and Wheatley, 1982. They bear no responsibility, however, for the reanalysis undertaken here.

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TEMPORAL BOUNDARIES IN ALSEA

Eugene Buckley
University of California, Berkeley

This paper proposes a new analysis of the aspectual system of Alsea — specifically, the way temporal boundaries are marked. The only existing grammar, a manuscript by Leo J. Frachtenberg (1918), gives an unclear picture of how time is marked in Alsea. Frachtenberg describes the suffix *-ai'* as the 'inchoative', which I consider to be basically correct, but calls *-x* a 'verbalizing suffix' which is 'dropped' under ill-defined circumstances (p. 149f). I argue that this *-x* is actually a COMPLETIVE marker which indicates the final boundary of an event in time, while the INCHOATIVE, conversely, marks the initial boundary. Together they constitute the primary means by which Alsea codes the temporal nature of an event.¹

The inchoative²

The inchoative suffix *-ai'* shows that the action described by the verb has a definite beginning, and when used by itself often can be translated by the English 'begin'. It is subject to considerable phonetic variation, although the most common form is [ai'].³ Some typical uses:

- (1) tem̄́hu' qam̄-í:
and.then be.dark-INCH
'At last it got dark.' (132.35)
- (2) tem̄íx̄ m̄́hu' ay-ái:
and=3plS then go-INCH
'Finally they started out.' (24.1)
- (3) tem̄́hu' tp-ái:
and.then fly-INCH
'Then he flew away.' (136.9)
- (4) tem̄́hu' k̄e-ái'=slo'
and.then stop-INCH=all
'Then everyone stopped.' (26.12)

All of these examples have in common the entrance into some sort of state or activity, which is marked by the inchoative: darkness, journey, flight, and even cessation. It might seem a bit strange to find the verb 'stop' in (4) with a morpheme that typically indicates the beginning of an action, but the crucial point is that a new state has been entered, distinguished from the previous one by the *lack* of a given activity. In a simpler but comparable context:

- (5) tem=aux m̄́hu' qalhk-ái:
and=3duS then escape-INCH
'So the two of them escaped.' (j70.21)

'Escape' is a verb which, like 'stop', can be thought of as referring to the end of some state, i.e. captivity. But it is also clearer with 'escape' that the change in state

can be looked at differently: not as an exit from captivity but as an entrance into freedom. The same shift in perspective applies to the Alsea *kea*- 'stop'.

The form [ai̯] of the inchoative is phonetically identical to the unstressed form of the verb 'go', suggesting that it may have originated as an auxiliary verb with a meaning not far from the 'entrance into a state' metaphor used earlier. Since there are no records of an earlier stage in the history of Alsea, however, this hypothesis is based only on the phonetic similarity and the semantic plausibility of such a development.

Since -ai̯ makes reference only to the beginning of the action or process, it can be used for somewhat different situations, as in the following two sentences:

(6) temúhu kexk-ái'=slo' ts-hítə-k
and.then assemble-INCH=all DET-body-POSS
'Thereupon all the people assembled.' (132.35)

(7) kexk-ái'=slo' ts-hítə-k múhu
assemble-INCH=all DET-body-POSS then
'All the people began to assemble.' (42.22)

After sentence (6), the text goes on to describe what the people did as a group, while following (7) is a further description of the process of assembling, including mention of the types of people that came. The translations do not capture the precise semantics expressed by the Alsea verb because English does not encode the same aspectual distinctions. Alsea is here concerned only with whether the events have a beginning and an end. In both (6) and (7) the assembly has begun, so the inchoative is used.

All of the examples given so far are translated in English by the past tense, even though -ai̯ makes no explicit reference to tense. In fact, Alsea encodes no systematic distinction between present and past time, relying on the context and logic of the sentence, along with the aspect markers, to convey the idea of tense. The inchoative by its very nature is unlikely to be interpreted as present tense, since it basically refers to a single point in time at which one state gave way to another. But the new state may indeed continue in the present, as in the following:

(8) tém=ḥta hí'ke qaidí' átsk-ai̯
and=but just immediately sleep-INCH
'Then he just fell right to sleep.' (134.12)

(9) átsk-ai̯ múhu
sleep-INCH now
'He is asleep now.' (j71.37)

These two verbs are marked exactly alike in Alsea (I do not believe that the stress shift is significant here), but they have been rendered by different tenses in the English equivalents. In essence they refer to the same situation — a state of sleep which has begun — but the context demands different interpretations. Sentence (8) is found in a series of past events and, accompanied by the adverb 'immediately', suggests an emphasis on the punctual entrance into the state; (9) is spoken by a character in the story who has been waiting for the subject to fall asleep.⁴ Here the English present perfect would be a more literal translation ('he has fallen asleep'), but the distinction is not a necessary one: compare the French 'il est mort', which

can mean ‘he died’, ‘he has died’, and ‘he is dead’; or ‘il est parti’ meaning ‘he left’, ‘he has left’, and ‘he is gone’. The important factor in these French sentences, and on a much wider scale in Alsea, is that the new state has begun. A strictly present-tense meaning (‘he is falling asleep this very minute’) is not attested for *atsk-áí*. Since the texts do not provide an example of this sentence, it is unclear how an Alsea speaker would have expressed such an idea — though the next paragraph presents a possible candidate.

A variation on the inchoative use of *ai-* is found in its appearance with the prefix *λ-* and the suffix *-u*. This combination of three elements, which I have termed the ‘transitional’, describes a transition from one state to another, similar to the use of ‘become’ in English. The suffix *-u* seems to occur only in combination with the inchoative (unstressed); the prefix *λ-* elsewhere conveys a transitive, causative, or intensive idea, but here it seems to contribute nothing in particular aside from being a necessary part of this construction, which is intransitive:

(10) temúhu λə-álk in-i'y-u
and.then TRNL-quiet-INCH-TRNL
‘Then he quieted down.’ (64.37)

(11) tem=aux m̄úhu λə-áltuxt-i'y-u
and=3duS then TRNL-be.big-INCH-TRNL
‘They grew tall.’ (124.10)

(12) λ-áq-ay-u=axa
TRNL-be.well-INCH-TRNL=again
‘She became well again.’ (j75.9)

While the inchoative alone denotes change from one state to another, the transitional gives more emphasis to the actual process of change.

The compleutive

The second major morpheme marking temporal boundaries is *-x*, which I am calling the compleutive.⁵ An epenthetic [ə] or [a] is often added. The compleutive is the inverse of the inchoative, since it indicates whether there is a terminal boundary to the action or process — i.e. whether or not it is completed. The subsequent events may certainly be related to the one marked with the compleutive — they may in fact be the direct result of the first one — but they are seen as distinct in their performance:

(13) hík=axa tsliyáq-t-əx, qé'n-t-xa m̄úhu
just=again straighten-STAT-CMPL die-STAT-CMPL finally
‘He just straightened out again, and died.’ (j69.11)

(14) tem λəái's-x xas məshálsla-tsλo
and look-CMPL ERG.DET woman-AUG
‘The old woman looked around.’ (134.22)

(15) temúhu mis=axa wi'l-x
and.then RLS.COMP=back come-CMPL
‘And then after she came back...’ (154.10)

(16) tém=itia ailíki' kákke-s-t-əx=slo'
 and=but already together?-STAT-CMPL=all
 '...the people had already assembled.' (154.10)

In these examples the completive -x marks two similar types of completion. 'Straighten out' and 'die' in (13) and 'look' in (14) are simply actions or events that are finished; in principle they had beginnings, but only the fact that they are now accomplished is relevant to the narrative. It would be theoretically possible to treat 'die' as entry into a new state (as with 'stop'), but it is not surprising that the state preceding death, i.e. life, should be considered much more important than whatever may follow, and the finality is definitely more salient than the transition in states. Similarly, in (14) the woman looks around and then immediately announces what she has seen, so the process and its beginning are not as important as the completed act of perception. (15) and (16), which make up one sentence in the text, demonstrate the use of -x to show that the events are over with before the next actions take place. The verb wi'l- 'come, arrive' is almost always used with the completive, which is logical since it refers to the end of a journey; it can be used with the inchoative, though, if the origin of something which has recently arrived is being considered:

(17) k/ist/is=axa phains-ái'-m hał-ní'keai wi'l-í'-sal
 RES/IduS/*=back go.see-INCH-INTR ABL-where come-INCH-DSTR
 'Then we will go see where it started.' (214.34)

The use of suffixes with kexk- 'assemble' illustrates the highly subjective nature of aspect. In (6) and (7) I gave kexk-ái' as an example of the inchoative, and now in (16) we have kákke-s-t-əx (the -s and -t suffixes are explained below). The difference is in the perspective of the speaker. The inchoative is used when the process of assembling is viewed from the beginning, as in (6), since the relevant characters are present to observe. When the 'protagonist' arrives after the gathering has already taken place, however — as is the case in (16) — the transition from 'no people' to 'many people' is unimportant: all that matters is that the people are there now. This difference is expressed in English with the past perfect aspect 'had assembled'.

Special uses of the completive

There are several verbs which are used with the completive even though they seem to be stative in nature, i.e. they do not seem to describe completed actions but rather on-going situations. For example, tqaiált- 'want, like' seems to require -x for all realis constructions:

(18) ímsta tém=in tqaiált-əx sis kexk-ái'-m
 thus and=1sgS want-CMPL IRR.COMP assemble-INCH-INTR
 'For that reason I want [the people] to assemble.' (42.26)

(19) 'λ/an/iya? tqaiált-əx
 NEG/1sgS/* like-CMPL
 'I don't like it.' (48.18)

(20) *l̥i:iya?* qá-u'keai tqaiáld-əx
 NEG ERG-someone want-CMPL
 'Nobody wanted him.' (j72.20)

Note that the same form is used for the present and past time interpretations; as with the inchoative examples above, the context determines the appropriate English tense. The completive can be justified by defining *tqaiált-* as 'take a liking to, be struck with a desire to'; these events would have to be completed before the feeling of liking or wanting could exist.⁶

A similar pattern is found with the verb *yáts-* 'live, stay'. This verb also has a formulaic use at the beginning of a narrative to establish the existence of a character:

(21) xám-ət s=hí'tsləm yáts-x
 one-ADJ DET=person live-CMPL
 'There once lived a certain man.' (j72.19)

(22) yáts-x=aux k̥áaxk̥e
 live-CMPL=3duS together
 'The two of them lived together.' (116.1)

(23) yáts-x=ax=a hú'ki
 live-CMPL=2sgS=Q here
 'Do you live here?' (j65.4)

As with *tqaiált-*, these examples show *-x* in the present and past. And also like *tqaiált-*, the semantics of *yáts-* must be defined within Alsea, not according to English equivalents. In reality this verb seems to mean 'take up residence' (compare sentence (33)), an action which must be completed before the state of residence can begin — hence the completive. The inchoative is not used in this context because the residence was established at an earlier point in time which is not relevant to the discourse; only the established residence is important.

Whereas the completive views an action as over and done with, the inchoative marks a process which has begun but could at any time come to an end. Thus, when it takes the inchoative, *yáts-* (unstressed form *i'ts-*) is best understood as 'stay', a more temporary notion than 'live':

(24) tem-áux mýhu' iits-ái' xú'si' qátsə
 and-3duS then stay-INCH little long.time
 'The two of them stayed for a little while.' (74.19)

The period of 'staying' starts after other events in the narrative, so the beginning is salient. Frachtenberg's translation:

And when he arrived home he began to make his son (well). Then after he got through (with) him they two staid [sic] in the house for a little while.
 Then one day Suku said to his two cousins... (p. 75)

The inchoative indicates that the stay begins and then lasts for a while; the end of the stay is not explicit in the story, so no completive is used. Still, the completive can be used with *yáts-* to mean 'stay' in the right context:

(25) temúhu ⁱλi·ya? qátsa yáts-x i's i'tsái's
 and.then NEG long.time stay-CMPL LOC house
 'He had not been in the house very long [when...]' (72.11)

Here 'stay' is used to refer to a period of inactivity, not just location in a given place; the rest of the sentence describes the character's actions shortly after entering the house—*after* the inactive 'stay' is over. The end of this stay is the only salient part here, so the inchoative would be inappropriate.

A third verb which seems to exhibit a strange use of the completive is *məlá'n-* 'know'. In the texts it is always used with the suffix -x:

(26) hamsti:^t=əx híké intskí's məlá'n-x
 every=2sgS just thing know-CMPL
 'You know everything.' (40.13)

(27) məlá'n-x=an ^k=in=aúx iłtq-áa
 know-CMPL=1sgS FUT=1sgS=3duO do-TR.INCH
 'I know what I will do to those two.' (j74.10)

(28) tem=á^hλ múhu məlá'n-i'y-u-x^u
 and=1plS now know-INCH-2sgO-CMPL
 'Now we know you.' (40.11)

It would appear that the best way to explain this usage is, as before, through an appeal to the semantics of the verb. If *məlá'n-* means 'come to know, realize; become acquainted with', then the need to complete this action before knowledge exists is ample explanation for the completive. The completive alone implies that the process of 'coming to know' was either very short or simply unimportant; this is the normal situation when a fact is involved, as in (26) and (27), since learning a fact is generally just a matter of hearing it. The use of both the inchoative and the completive in (28) serves as further support for this analysis of the meaning of *məlá'n-*. As explained in the next section, the two suffixes together mark the beginning and end boundaries and imply that the process took a certain length of time and is relevant to the narrative. This is a natural way to interpret (28) because it refers to knowledge of a person's qualities and abilities, something which takes time to learn. To quote Frachtenberg's translation of the context for both (26) and (28):

Verily, now we *know* thee. For that very reason will our hearts be strong once more, because we *know* thee. Thou *knowest* everything. (p. 41; emphasis added)

There are two kinds of 'know' here. The first type, which is seen in the first two instances, employs both the inchoative and completive, and could be paraphrased 'we have come to know you'. This usage is also found elsewhere in a similar context, where knowledge of a person is similarly being discussed:

(29) məlá'n-i'y-əm ts-x=ast
 know-INCH-1sgO-CMPL=IduO
 'He knows the two of us.' (j71.28)

Here again the knowledge referred to is that of character or personality, which would allow one to predict the others' actions after having 'come to know' them. In contrast, the second type of 'know' in the passage, marked only with the completive, would sound strange as 'you have come to know everything'. There is no implication in the story that this omniscience is the result of long study; indeed, since the addressee (Coyote) is a mythical figure, it is natural to treat his knowledge as something which now exists but has an uncertain origin. Given the postulated definition of *məlán-*, the completive would express this attitude.

Combinations and contrasts

As mentioned above, the inchoative *-ai-* and completive *-x* can be used together. In fact, this is a frequent combination, which refers to a process seen as bounded in time both initially and finally; often it is not unlike the traditional definition of the aorist. The dual boundedness can imply that the process is a short one, since it is not free to extend in either temporal 'direction':

(30) namk̥ k/aúx/uts qt-í-xa !k=as ku'x
when HAB/3duS/* climb.over-INCH-CMPL LOC=DET log
'Whenever they climbed over a log...' (j71.12)

(31) temúhu' tipx-á-łn-x
and.then offer.food-INCH-PASS-CMPL
'Then he was offered food.' (j74.27)

(32) t[u]-úi-xa
swim-INCH-CMPL
'He swam for a short time [but floated right back].' (62.21)

All of these actions are relatively short in duration and clearly definable in time; each is easy to see as a unit. The last example, which is located in a series of similar usages, resembles the use of a perfective prefix in Russian to mean 'for a little while' (e.g. *govorit'* 'talk,' *po-govorit'* 'have a talk'). Recall the definition earlier (examples (21) to (23)) of the verb *ya'ts-* as 'take up residence'; this definition is clearly supported by the following usage:

(33) temúhu' i's xam-ət s=lehwí' wíl-x tem i'ts-ái-xa
and.then LOC one-ADJ DET=place come-CMPL and live-INCH-CMPL
'Then he came to a place and took up residence.' (118.2)

Here the deliberate act of moving in is bounded by his journey there and his subsequent wooing of a wife, so both the inchoative and completive are used.

With appropriate modifiers the action can have a longer duration, but it must remain bounded in the mind of the speaker:

(34) tem=uk^u hí'ke qá'tsə uy[u]-úi-xa-sxa
and=away just long.time barrier-INCH-CMPL-REFL
'He made a barrier of himself for a long time.' (72.31)

Whatever the length of the action, the fundamental property of boundedness remains unchanged. The beginning and end are very clear in this particular example — the

subject pretends to have his leg stuck until the others threaten to trample him — and nothing else is said about this period of time, so it is treated as a clearly demarcated temporal unit. It happens to be a bigger unit than, for instance, that required in (30) to climb over a log, but is nonetheless clearly bounded.

Perhaps the best way to get a feel for the way -ai' and -x function is to look at their use in contrastive situations. Consider the following pair:

(35) temúhu' qauwi's ats-sáa-k tp-ái'-xa kwí'-ks=auk
and.then first DET-sister-POSS jump-INCH-CMPL canoe-ALL=inside
'First his elder sister jumped into the canoe.' (132.12)

(36) temúhu' qalpái' ats-mútsk-ak tp-ái'
and.then next DET-younger.brother-POSS jump-INCH
'Next his younger brother jumped.' (132.13)

The difference in markings on the two verbs may seem at first unmotivated, but the context offers a clear explanation (Frachtenberg's translation):

Then after he arrived in the canoe he floated in it far out in the water. Thereupon the elder sister jumped [tpái'xa] first into the canoe; verily, she got into it correctly. And then his younger brother jumped in [tpái'] next. He almost fell short. He touched the water just a little bit. (p. 133)

In the first case, the jumping was begun (-ai') and completed (-x) successfully. In the second, however, the jump from the shore (-ai') was not immediately completed. Frachtenberg translates this as 'jumped in', but I feel that this carries an implication of completion which is not present in the original and even sounds somewhat out of place in English, given the rest of the paragraph. Simply 'jumped' would be better, since the particle 'in' here conveys a completive meaning very similar to the Alsea -x. The narrator leaves the action literally suspended in mid-air in order to describe the difficulties of the younger brother. The eventual completion of the jump is implied by the subsequent sentences, which in a sense replace the completive marking. In this situation the completive resembles the use of the Russian perfective to imply success (ya emu po-zvonil 'I called him') where the imperfective shows failure (ya emu zvonil 'I tried to call him [but he wasn't home]').⁷

A second pair of examples involves the verb 'sleep':

(37) tém=ḥta hí'ke qaidí' átsk-ai'
and=but just immediately sleep-INCH
'Then he just fell right to sleep.' (134.12) (=8)

(38) temúhu' astk-ái'-xa
and.then sleep-INCH-CMPL
'Then he slept.' (174.38)

Sentence (37) says only that the state of sleep has begun. This is necessary because the story goes on to describe how he is killed in his sleep, which is therefore never completed (not in the normal way, at any rate). In contrast, (38) describes the entire night, not just the beginning of the sleeping process. Thus the time spent sleeping

can be treated as a single unit, bounded in time by the events that precede and follow it.

Finally, the beginning and end to an action can be distributed over different verbs, especially when there are special words for different parts of the action. Verbs of movement are prime examples of this lexical specialization:

(39) xam-í=axa, tem=axa yałs-á'
turn.back-INCH=back and=back return.home-INCH
'He turned back and started home.' (j66.6)

(40) temúhu' mis=axa wił-x, tem pxełtsu's-á-łn-x
and.then RLS.COMP=back come-CMPL and ask-INCH-PASS-CMPL
'And when he got back he was asked...' (j66.7)

Number (39) supplies two (somewhat redundant) examples of the same usage: the inchoative marks the beginning of the journey homeward. Then (40), which directly follows (39) in the text, uses the completive to mark the end of the same journey, clearing the way for the next temporal 'unit': asking a question. Note that this latter action is treated as a dually bounded unit as well, since utterances are clearly marked in time by the linear nature of speech: every sentence must begin and end. This is another sample of the aorist-like characteristics of -ai' and -x together.

The stative suffix

An additional suffix which interacts with the inchoative and completive markers is the stative -t (which may be related to the homonymous adjectival suffix).

(41) ailíki' yúx-t-əx
already disappear-STAT-CMPL
'He had already disappeared.' (j70.8)

(42) tém=łta mýhu' kέa qéñ-t-əx
and=but at.last indeed die-STAT-CMPL
'But then he was finally dead.' (64.38)

The suffix -t turns these punctual verbs ('disappear', 'die') into stative verbs ('be gone', 'be dead'). The addition of the completive shows that the state has been entered, i.e. that the punctual action required to enter the state has been completed; this punctual action is that described by the verb stem which takes the stative suffix (here, disappearance and death). This combination resembles the inchoative with certain verbs, such as qalhk-ái 'she has escaped' or qamł-í 'it got dark'. This apparently paradoxical functional overlap can be explained by defining the verbs which take the inchoative as already denoting a state or process — for example, 'be free' instead of 'escape', 'be dark' instead of 'become dark', 'go' instead of 'leave'.

It is still possible, however, to use the stative -t with an inherently stative verb, as long as an intermediate step is included: the addition of the suffix -s. This suffix, which is homonymous with the nominalizing suffix, is of unclear meaning, beyond the fact that it must be present when the stative suffix is used with a stative

verb. The completive then emphasizes that the action of the verb precedes the action of the following verb:

(43) tém=ḥta hí'ke qaidí' átsk-ai'
 and=but just immediately sleep-INCH
 'Then he just fell right to sleep.' (134.12) (=37)

(44) temúhu' mis tsá'a'mə átsk-əs-t-əx
 and.then RLS.COMP very sleep-?-STAT-CMPL
 'Then after he was sound asleep...' (134.13)

These two sentences, which occur consecutively in the text, differ primarily in the perspective of the speaker. In (43), the fact that the man is entering a sleeping state is most important; the focus is on the moment, as a part of the narrative, when he falls asleep. Then, in (44), the crucial fact is that he is now in a deep state of sleep (which will allow the others to kill him). The stative-completive is like a look back over one's shoulder at the completed entrance into the state, while the inchoative observes the beginning with eyes straight ahead, in accordance with the natural flow of time.

The following examples with the verb *λο·h-* 'climb' further illustrate the interaction of the inchoative, completive, and stative:

(45) k/úk^u/ts mýhu' qáhlt λο·h-ái'
 HAB/up/* now seemingly climb-INCH
 'He would pretend to start climbing up.' (60.15)

(46) tem qauwaʔ^a hí'ke látaq λο·h-ái'-xa
 and whole just thing climb-INCH-CMPL
 'Then the whole group climbed up.' (60.10)

(47) temúhu' mis λο·h-as-t-əx, tem tsilh-ái'
 and.now RLS.COMP climb-?-STAT-CMPL and sing-INCH
 'After he got to the top, he started to sing.' (60.14)

The inchoative in (45) shows that the action is begun but not completed (since he is only pretending to climb up, and slides back down shortly after beginning). The inchoative and the completive in (46) together mark an action with a clear beginning (leaving the ground) and end (reaching the top). The stative and completive in (47) focus on the end of the process of climbing, which must be finished before the singing can begin. Notice also that this *-s-t-əx* construction is used with the realis complementizer *mis* 'when, after' in both (44) and (47). In fact, almost all verbs marked with this precise combination of suffixes occur in clauses introduced by *mis*; however, there are some exceptions, as in (51):

(48) mis káq-s-t-əx
 RLS.COMP come.ashore-?-STAT-CMPL
 'After he came ashore...' (62.18)

(49) míš=iḥx mýhu' λáq-s-t-əx
 RLS.COMP=3plS at.last cross-?-STAT-CMPL
 'When they finally got across...' (134.28)

Both *mis* ‘after’ and *ailíki* ‘already’ focus on the end of a state or event, so it is quite natural that the stative-completive construction, which has the same emphasis, is usually used with one of them.

Irrealis forms

Both the inchoative and completive have special forms in the irrealis mood. One of these, the transitive inchoative -aa, can be seen in (27). This portmanteau morpheme is always used in the irrealis when there is a third-person object. With intransitive verbs, or transitive verbs with a first- or second-person object, the form of the inchoative is identical to that used in the realis.

More interesting is the status of the completive in the irrealis mood. The suffix -x seems to be used only in the fixed stative-completive construction; and when there is no emphasis on the end of an action, then a verb like 'come', which so commonly takes the completive in the realis, may occur as a simple stem (reminiscent of the English subjunctive):

(52) tqaiált-x=an sis há^aqqa wi'l as qó'na
 want-CMPL=1sgS IRR.COMP quickly come DET coroner
 'I want the coroner to come right away.' (220.25)

In (52) the emphasis is on notifying the coroner to come, and not yet on his arrival; thus it is not surprising that the completive is not used. When a completive meaning is desired, however, a special allomorph *-i'* is found:

(53) $\ddot{\kappa} = \dot{u} \ddot{\kappa} = \dot{e} n$ hái'ts wíl-i'
 FUT=who=Q here come-CMPL
 'Who will come here?' (214.4)

The same suffix is used with the verbs discussed above that generally take the completive:

(54) si/p/s xam? intskís məhán-i'
 IRR.COMP/2p1S/* one something know-CMPL
 '[It's good] that one of you knows something.' (184.21)

(55) si/p/s tqaiáld-i'
 IRR.COMP/2plS/* want-CMPL
 'If you desire it...' (24.3)

(56) *k=xan hí'ke káaxké yáts-i'*
 FUT=EduS just together stay-CMPL
 'She and I will stay together.' (j69.31)

Thus the suffix *-i'* appears to be simply the irrealis completive, used in those relatively uncommon cases in which the end of a future action is in focus.

To summarize, the inchoative indicates that an action or process has begun. The addition of the transitional emphasizes the change from the first state to the second. The completive marks the end of an action or process. Together the inchoative and completive mark the event as a single unit bounded in time, regardless of its duration. The inchoative and completive interact with the stative suffix, which allows a punctual verb to be used statively. Finally, special forms of the inchoative and completive are used in the irrealis mood.

Abbreviations

Each example sentence is given with the page and line number where it is found; those preceded by 'j' are from Frachtenberg (1917), others are from Frachtenberg (1920).

Translations of lexical meaning are given in lower case, and grammatical functions are given in upper case. The following abbreviations have been used: ABL ablative, ADJ adjectival, ALL allative, AUG augmentative, COMP complementizer, CMPL completive, DET determiner, DSTR distributive, ERG ergative, FUT future, HAB habitual, INCH inchoative, INTR intransitive (irrealis), IRR irrealis, LOC locative, NEG negative, PASS passive, POSS possessive (third person), Q interrogative, REFL reflexive, RES resultative, RLS realis, STAT stative, TR transitive, TRNL transitional. For pronouns: 1, 2, 3 = first, second, third person; I, E = inclusive, exclusive (first person); sg, du, pl = singular, dual, plural; S, O, IO, P = subject, object, indirect object, possessive. An asterisk (*) marks the second half of a discontinuous morpheme that has been divided by a clitic; the first half is the initial element of the morpheme cluster. Affixes are set off by a hyphen (-), clitics by an equals sign (=). Clitics dividing a discontinuous morpheme are set off by slashes (/).

The Alsea data preserve the distinctions in Frachtenberg's original nonphonemic transcription, though adapted to the Americanist alphabet. The symbol [k̪] is a palatalized stop, and the small raised letters represent Frachtenberg's 'resonance and epenthetic vowels'. Except where stated otherwise, the free translations given here reflect the published version but have been edited for style.

Notes

¹ Alsea is an extinct language which was spoken on the Oregon coast. Data here are from Frachtenberg (1917, 1920). I would like to thank Scott DeLancey and Colette Craig for their help on my undergraduate thesis (Buckley 1986), parts of which form the basis of this paper; also Natasha Beery and Orin Gensler for their comments on an earlier draft of the paper itself, and Herb Luthin for careful proofreading of the finished product.

² As the following discussion reveals, the Alsea suffix is of more general application than the traditional definition of 'inchoative' implies; this term was chosen for lack of a good alternative.

3 After a dental or glottal consonant, except [s] and [ts], the inchoative becomes [i]; before the passive suffix -*h* it is found as [a] or [a]; after a uvular it becomes [e], unless a vowel follows; and it combines with a preceding [u] to make [u'i]. The inchoative suffix almost always takes the accent, but there are a few cases where the verbal root takes it instead.

4 The word *m̥q̥hu* 'now' is of little help since it occurs constantly in past-time narratives and often means 'then' or 'at last'. It seems to serve usually as a simple transitional word, especially in combination with tem 'and'.

5 Although this term is sometimes used as a synonym for 'perfective', the morpheme -x is not precisely the same as a perfective.

6 Alternatively, the verb could be lexically marked as belonging to a morphological class which always requires the completive, though this lexical solution seems more arbitrary. See below for further evidence for a semantic explanation.

7 This second mention of the Russian perfective is intended only to illustrate the Alsea data and draw another parallel between the 'completive' and a traditional 'perfective'; it is not intended to imply any deeper semantic parallels between the aspectual systems of the two languages.

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IN DEFENSE OF MORPHEME STRUCTURE RULES:
EVIDENCE FROM VOWEL HARMONY

Donald G. Churma
SUNY, Buffalo

There are four different views that have been held or are currently held concerning the existence, or lack thereof, of morpheme structure rules (MSRs). The first view, that of 'classical' generative phonology (e.g., Halle 1959, 1962), is that they do indeed exist, and furthermore are ordered in a block before all phonological rules proper, filling in unspecified (redundant) feature values; as a result, phonological rules operate only on fully-specified feature matrices. This view was challenged by Stanley 1967, who argued that generative MSRs should be replaced by static 'morpheme structure conditions' (MSCs) which govern permissible fully-specified underlying representations. The MSC approach has been adopted in most subsequent research, including the influential Chomsky and Halle 1968 and the popular textbook of Kenstowicz and Kissoberth 1979. A third view, advocated by Stampe 1973, Lee 1975, 1976, Donegan and Stampe 1979, Kiparsky 1982, and Churma 1984a, 1987, is that only MSRs exist, and that they can apply freely (subject to universal, and perhaps language-specific, constraints on rule interaction) in the phonology. On this view, MSRs (called 'natural processes' by Donegan and Stampe and 'universal redundancy rules' by Kiparsky) are members of a set of rules that is universal in nature, and a language is marked to the extent that it does **not** exhibit these processes.¹ There is no necessary distinction between MSRs and other kinds of phonological rules on this view, although phonological rules that are not MSRs may develop as a result of complications induced by phonological change (rule telescoping, rule inversion, analogical leveling, etc.). The final view (cf., for example, Stewart 1983, Archangeli and Pulleyblank 1986) maintains that both MSRs and MSCs (or something very much like these – Stewart employs 'word structure conditions' and rules triggered by violations of these conditions, and Archangeli and Pulleyblank's notation is somewhat exotic) exist. The rules in question may apply in the phonology in Archangeli and Pulleyblank's system, and may apply **only** in the phonology for Stewart.² In this paper, I will defend the third position, that constraints on morpheme structure may be stated only in terms of (universal) MSRs. The basis for my arguments will be the vowel harmony systems based on the feature [ATR] found in various African languages.³

1. Akan, Kinande, and Maasai.

As Kiparsky 1982:53-4, 58-84 has pointed out, there is one very strong piece of evidence that MSRs must be allowed to apply to the output of phonological rules: otherwise, we must posit phonological rules that either are identical to MSRs (if a 'standard' MSR approach is adopted) or have the effect of converting segments or sequences of segments that the MSCs disallow into permissible (sequences of) segments. In either case, as Kenstowicz and Kissoberth 1977 have pointed out, we will have a 'duplication problem': two distinct (albeit identical-looking, in the first case) mechanisms are being employed to prevent a single configuration from surfacing.

On the other hand, there appears to be evidence that MSCs must be permitted (cf. Kiparsky 1985), since employing them allows for an explanation of which vowels are 'opaque' to harmony. For example, there are no [+ATR] low vowels in Akan.⁴ This constraint can be expressed by the following MSC:

(1) *[V, +ATR, +low]

If we suppose that the application of phonological rules (in the lexical phonology) is constrained by a principle of 'Structure Preservation', so that no segment that violates an MSC may be created, then it follows that /a/ will block the spread of [+ATR], since otherwise a

non-permitted [+ATR] low vowel would be created. Notice that the only way of accounting for the opacity of /a/ in a theory that disallows MSCs like (1) is building this fact into the statement of the harmony rule, in this case by restricting the harmony rule so that it may affect only non-low vowels. But doing so appears to be making the claim that the fact that harmony affects only non-low vowels and the fact that an impermissible segment would result if harmony were to affect a low vowel are unrelated.

It is entirely possible that these facts are indeed unrelated. First of all, restrictions on harmony rules such as that suggested above are common even when no violations of putative MSCs would result, e.g., harmony may apply only when the target and trigger vowels agree in height, as in Yokuts, Bobangi, and Ngbaka (cf. Churma 1984a). Furthermore, there are languages that have ATR harmony and no [+ATR] low vowels, and in which these vowels are not opaque. In Kinande (Schlindwein 1987), /a/ is transparent to one of the two ATR harmony rules. In Maasai (Wallace 1981, Churma 1987), /a/ is opaque for purposes of leftward harmony, but not rightward harmony, where it surfaces as [o] in [+ATR] contexts. As argued in the works cited, the most plausible way of accounting for the *a/o* alternation is allowing harmony in its rightward incarnation (but not its leftward one) to create a [+ATR] low vowel, which is subsequently affected by MSRs. These MSRs are given in (2), and a schematic account of the derivation of [o] from /a/ is provided in (3):

(2) a. $[V, +\text{ATR}] \rightarrow [-\text{low}]$ b. $[V, -\text{low}, +\text{back}] \rightarrow [+ \text{round}]$
 (3) $/a/ \rightarrow (\text{harmony}) \emptyset \rightarrow (\text{rule (2a)}) [V, -\text{low}, \dots] \rightarrow (\text{rule (2b)}) [o]$

Clearly, this account is incompatible with a pure MSC/Structure Preservation approach.

The Maasai case might be viewed somewhat suspiciously in the light of the unusual difference between leftward and rightward harmony. There are, however, other cases of this nature. Pulleyblank 1986 has argued that a similar approach is required in order to account for the fact that in Okpè certain instances of /a/ surface as [e] in [+ATR] contexts. There is, once again, a left-right asymmetry in Okpè (although Pulleyblank doesn't treat the phenomenon in question in these terms), and in addition, the data that provide the basis for Pulleyblank's analysis are sufficiently scanty that I, at least would not be willing to draw any conclusions from the little that we know about Okpè.⁵ I will therefore examine in a fair amount of detail a language for which the data are relatively abundant, and for which there is no left-right asymmetry. The language in question is Tunen, a Bantu language spoken in Cameroon, as described by Dugast 1967, 1971 and Mous 1986.

2. Tunen.

Tunen has a surface eight-vowel system:⁶

(4)	i	e	o	u	ə	[+ATR]
	ɛ	ɔ		a		[-ATR]

Like Maasai, Tunen has a harmony system in which [+ATR] is dominant, in the sense that, if a word contains a [+ATR] vowel, in either prefix, suffix, or root, all vowels in the word surface as [+ATR]; otherwise, all vowels surface as [-ATR]. Thus, there are some vowels which are invariably [+ATR], while others exhibit an alternation with respect to this feature. For example, there are some morphemes that invariably surface with [ə], while others have vowels that surface as [a] in [-ATR] environments and as [ə] in [+ATR] contexts. The mid vowels behave somewhat unexpectedly, however; consider the data in (5), where *-en/in* can be glossed roughly '(to VERB) for somebody', and *-i* is a causativizer (following common practice, morphemes that contain a dominant vowel are starred):

(5) a. *falab - en* / *fələb - i** 'build' d. *huk* - in* / *huk* - i** 'blow'
 b. *fəŋ* - in* / *fəŋ* - i** 'exchange' e. *kol* - in* / *koŋ* - i** 'buy medicine'
 c. *fol - en* / *fol - i** 'borrow' f. *kol - en* / *kul - i** 'create'

The alternation involving the stem vowels in (5a) is straightforward, as is that in (5c); the underlyingly [+ATR] causative suffix triggers harmony in the stem. In (5b, d), we find that dominant stems appear to trigger both [+ATR] harmony with respect to recessive suffixes and some kind of raising process. Finally, in (5e, f), there are two different kinds of segments that may surface as [o], one which triggers harmony in a recessive suffix, and one that does not, and which, when in a [+ATR] context, also appears to undergo what may be the same raising rule as that just alluded to. Mous proposes that the second kind of *o* carries a diacritic [+R] (for recessive), and that the vowel harmony rule (a negative cooccurrence restriction, violation of which triggers application of an associated rule, actually) and the raising rule are sensitive to the presence or absence of this diacritic (p. 289). He dismisses what appears to be a fairly obvious alternative analysis, in which the vowels involved in the height alternation are underlyingly [-ATR] high vowels (cf. Stewart and Van Leynseele 1979 for a segmental account of this nature, and Edwards 1987 for an autosegmental account), on the grounds that it would involve excessive abstractness (p. 294). On this latter kind of analysis, *ɛ/i* would be /I/, and the *o* in (5f) /U/, while the *o* in (5e) would be /o/. If such an analysis is adopted, then ATR harmony can be accounted for by the mirror image rule in (6a), after which the absolute neutralization rules in (6b, c) would apply.⁷

(6) a. $V \rightarrow [+ATR] // [+ATR] C_0 \underline{\quad}$
 b. $[-ATR, +high] \rightarrow [+ATR, -high]$
 c. $[+ATR, -high, -back] \rightarrow [-ATR] / [X \underline{\quad} Y]_{root, suffix, Class 19 prefix}$

Thus, when harmony is inapplicable, /I/ and /U/ will be subjected to the absolute neutralization rule (6b), thereby becoming /ɛ/ and /o/, respectively. The former is then subjected to a further neutralization rule, and surfaces as [ɛ] in the rather motley collection of morphological environments specified in (6c). This rule would explain, in addition to the *ɛ/i* alternation, the greater number of roots with *ɛ* rather than *e* in the variety studied by Mous (cf. note 6). Derivations illustrating this kind of approach are given in (7):

(7)	a. huk - In	b. kol - In	c. kUl - In	Underlying
	huk - in	kol - in	—	Rule (6a)
	—	—	kol - en	Rule (6b)
	—	—	kol - εn	Rule (6c)

When there is a dominant stem, it triggers harmony, and the suffix vowel surfaces as [i], as illustrated in (7a, b). When the root is (underlyingly) [-ATR], however, harmony is inapplicable, and the abstract high vowels surface as mid, due to the application of one or both of the neutralization rules, as in (7c).

There is a problem with this account, however, concerning the restrictions on rule (6b), at least within the theory of lexical phonology (cf. Kiparsky 1982, 1985, Mohanan 1982). Note first that this rule must apply post-lexically, because it is structure-changing and applies in non-derived environments, and the Strict Cycle Condition would therefore block its application in the lexical phonology. If it does apply in the post-lexical phonology, however, then it cannot have access to even morphological bracketing information (assuming some version of the bracket erasure convention), let alone such properties as being a Class 19 noun class prefix.⁸ Thus, regardless of the position one takes on how much abstractness is allowable, the analysis under discussion is not tenable in the case of the front vowels, at least from the perspective of lexical phonology.⁹

Even apart from this theory-specific technical problem, there is reason to question this approach. If both underlying /ɛ/ and /e/ from underlying /I/ are affected by rule (6c), then we might expect that those /ɛ/s that are derived from the former should behave like what they are underlyingly – in particular, [+ATR] – just as the different kinds of *o* in (5e, f)

do. However, vowels that can surface as [ɛ] uniformly fail to trigger harmony, and always surface as [i] in [+ATR] contexts;¹⁰ they must all therefore be treated as being underlyingly [−ATR] (and [+high]). On this analysis, then, there would be an extremely odd distribution of underlying /e/s: they would occur only in a handful of pronominal class prefixes, and possibly a few roots.¹¹ What happened to all the /e/s?

Suppose, then, that we try an alternative approach. What if /I/ merges directly with /ɛ/ in the odd assortment of environments specified in (6c), instead of going through the intermediate stage? (This is, in fact, what Stewart and Van Leynseele 1979 have suggested in their informal diachronic account, if I have interpreted them correctly.) That is, the rules in (6) would be replaced by:

(8) a. [−ATR, −back] → [−high] / [X ____ Y]_{root, suffix, Class 19 prefix}
 b. [−ATR, +high] → [+ATR, −high] (elsewhere)

Thus, /I/ will surface as [ɛ] in the right places (with a few possible exceptions – see below), and those /I/s that have not been affected by (8a) (i.e., those in prefixes other than the Class 19 prefix) will be subject to (8b) (= (6b)), which will necessarily follow (8a) by virtue of the Elsewhere Condition (cf. Kiparsky 1973), and these vowels will also behave for purposes of harmony like the [−ATR] vowels that, underlyingly, they are. Derivations illustrating this kind of approach are given in (9), where /I/ is the Class 7 prefix, /hI/ the Class 19 prefix, and the roots are glossed as ‘peigne’, ‘dossier’ and ‘banane’, respectively (cf. Dugast 1971:73, 84):

(9)	a. I - fal	b. hI - bɛnɛ	c. hI - bul	Underlying
	—	—	—	Harmony
	—	hɛ - bɛnɛ	—	Rule (8a)
	e - fal	—	—	Rule (8b)

But once again, we will be positing a curiously asymmetrical (nearly) /e/-less vowel system, and the feature-changing neutralization rules will have to apply post-lexically in order to be able to affect their non-derived inputs, and so could not have access to the required morphological information. Furthermore, on this account, there would be no underlying /ɛ/s, and it is predicted that there can be no *e/i* alternations in roots, which, as pointed out in note 11, is not the case.

The source of much of the trouble with these accounts is the necessity for morphological restrictions on some neutralization rule. Suppose, then, that we get rid of any rule that requires such conditioning. The problem then becomes how to account for the *e/i* alternation in the troublesome environments without setting up an abstract /I/. Let us try positing that [ɛ] is underlyingly just what it looks like, i.e., /ɛ/. When it is in a [+ATR] environment, it would then be expected to surface as [e], which, it will be recalled, actually occurs only rarely in roots. Because of this near lack of *es*, Mous (p. 282) sets up a ‘Well Formedness Condition’ that disallows it. When in the course of a derivation a structure that violates a WFC arises, an associated ‘automatic rule’ applies to fix things up (cf. Stewart 1983), in this case ‘V → [+high]’. This approach is in this respect similar to the MSR approach (and, of course, incompatible with a pure MSC approach). On an MSR approach, however, there would be no need for a WFC, which would be implicit in the structural description of the MSR:

(10) [V, +ATR, −back] → [+high]

On either an MSR or an automatic rule approach, underlying /ɛ/ would first be converted to /e/ in [+ATR] contexts by the harmony rule, and then undergo a rule that raises the

output of harmony to [i]. Notice also that, while we still have a vowel system with (almost) no /e/s, the presence of (10) in the grammar as an MSR can explain this lack **and** the fact that ε alternates with something other than its [+ATR] counterpart.¹² A static MSC approach would be unable to relate these two facts.

However, front vowels in prefixes other than the Class 19 prefix usually surface as [e] when in a [-ATR] context (e.g., the Class 7 prefix, as illustrated in (9a)),¹³ and there may be a few root vowels which are invariably [e] (cf. note 11); these vowels must somehow be prevented from undergoing the raising rule. What is more, some way of accounting for the fact that these prefix vowels surface as [i] when they are in a [+ATR] context must be provided. But note that if these vowels were underlyingly /I/, they would be affected by rule (8b) – the one that has no morphological conditioning – unless this rule were bled by harmony, which would appropriately derive [i] in [+ATR] contexts.¹⁴ Thus, if /I/ is underlyingly only in the case of the *e/i* alternation, whereas the vowel that underlies the *e/i* alternation is / ε /, rule (8a) and the associated morphological restrictions can be dispensed with, as can the requirement that there be a preceding *h* only in prefixes (cf. note 8) if Stewart and Van Leynseel's suggestion is adopted. If these proposals are adopted, however, there will be a substantial mismatch between the underlying vowel inventory, which will now contain [-ATR] high vowels and no /e/s (cf., however, note 11), and the surface system of (4).

Mous' account does not entail such a mismatch, so it is worth investigating. On this approach, any vowel that can surface as mid is underlyingly mid, so that my /I, U, ε / are /e, o, ε /, respectively. In order to account for the alternations in question, Mous (pp. 287-90) sets up a raising rule which is sensitive in part to the diacritic alluded to at the beginning of this section, which I give in slightly revised form below:

$$(11) \quad [V, -\text{low}, \{-\text{round}, [+R]\}] \rightarrow [+high] // __ C_0 [V, -R, +\text{ATR}]$$

That is, mid vowels that are either unrounded or marked with the diacritic [+R] are raised in the environment of a [+ATR] vowel that is not [+R]. After this rule applies the regular harmony rule will convert the intermediate /I/ that is derived from / ε / to the appropriate [i].

However, since on this account there are no underlying /I/s (and hence there would have to be an MSC that bars them), the raising rule will have to be allowed to violate Structure Preservation. It is fairly easy to get around this problem: we simply change rule (11) so that it also makes the output [+ATR]:

$$(11') \quad [V, -\text{low}, \{-\text{round}, [+R]\}] \rightarrow [+high, +\text{ATR}] // __ C_0 [V, -R, +\text{ATR}]$$

This account will handle all (almost – cf. note 16) of the relevant data. However, it looks rather odd: why should a vowel get raised in a [+ATR] environment? Furthermore, it is implicitly making the claim that the vowel harmony which we know exists in the language is not in part responsible for the *e/i* alternation. Historically, at least, it seems clear that this is not the case; a sound change that corresponds to rule (10) is almost certainly responsible for the existence of this alternation. But we cannot assume that the the diachrony is recapitulated in a synchronic grammar; languages can have rules that are quite 'crazy' (Bach and Harms 1972), and it could well be the case that we are dealing with one of them.

In fact, there appears to be some evidence that at least the *o/u* alternation is best treated in terms of a diacritic-based analysis. In addition to the kinds of segments that surface as [o] discussed in the previous subsection, there is third 'schizophrenic' *o*, as illustrated in the data below, taken from Mous 1986:288:

(12) a. faton - εn / faton - i 'open'
 b. onjwan - εn / onjwən - i 'blow'
 c. lobon - εn / lobun - i 'weed'
 d. aloboton - εn / aloboton - i 'answer summons'

Since the *o* in *fatōn* cooccurs with *a* within a root and fails to trigger harmony, it would be expected to be underlyingly [-ATR] and high (cf. (7c)). However, even if it is not underlyingly [+ATR], it should become so when the dominant causative suffix is added, and hence surface as [u] (cf., again, (7c)). But it doesn't. Similarly, because *o* and *a* cooccur in the root in (12b), the former would be expected to be /U/, but it fails to be affected by harmony (note that harmony cannot be restricted so as to prevent more than one vowel from being affected, due to the existence of forms such as those in (5a)). Since the root in (12c) does not trigger harmony, the final vowel of the root would be expected to be /U/, and since the first vowel cooccurs with it, it should also be [-ATR]; but only the second vowel is affected by harmony. And since the *os* in (12d) cooccur with *a*, and since the stem does not trigger harmony, they should all be /U/, but none of them is affected by harmony. Thus, regardless of the general position one takes on how much abstractness is allowable, the abstract approach encounters difficulties in this case.¹⁵

There is at least one root that contains still another kind of *o*, *sokom* 'work in vain'. This stem triggers harmony in suffixes (/sokom - εn/ → [sokomin]), but both vowels surface as [u] when a [+ATR] suffix is added (/sokom - i/ → [sukumi]). This suggests that speakers are taking all *os* except for the one that alternates with *ɔ* as being underlyingly /o/. Doing so, however, creates a problem: some /o/s trigger harmony, and some do not, and some surface as [u] in [+ATR] contexts, while some remain mid. Apparently what speakers have done is memorize which /o/s do which, on a case-by-case basis – i.e., assign the /o/s in question an appropriate diacritic – and in some cases, they have 'made the wrong guess' about how unfamiliar forms should behave. Notice that, since whether or not an /o/ triggers harmony need not correspond to whether or not it alternates with [u], two different diacritics are required; speakers apparently did not 'capture' the (former) generalization that the *os* that do not trigger harmony also undergo raising.¹⁶ This is, I submit, very strong evidence against an abstract analysis that treats some instances of [o] as deriving from underlying /U/.

This does not, of course, provide any direct evidence concerning whether or not an account of the *ε/i* alternation should contain an abstract intermediate stage. There is one root whose behavior at least suggests that a one-step analysis should be preferred, although this behavior is sufficiently odd (and, apparently, isolated) that one should not give too much weight to it. The causative form of *obəm* 'brood' shows two variants, *obimi*, which is what we would expect (at least if the *o* is marked as not undergoing the raising rule), and *obəmə* (cf. Mous 1986:288). The causative suffix surfaces as [ε] only in this form, as far as I can tell, and it is not easy to see why it should, from the point of view of the harmony-plus-raising analysis. One might suggest that there is some minor rule that converts [+ATR] vowels to [-ATR] in the environment of a [-ATR] vowel, and in fact a rule of this sort would presumably be required in order to account for the behavior of prefixal *es* discussed in note 13. But this rule would in this case yield *I* (if it's allowed to), which should surface as [e] via rule (6b). The existence of this variant thus seems not to be relatable to the rules used in the two-step account of the *ε/i* alternation. But it is possible to understand at least partially what is going on here if we assume that speakers find this alternation to be as bizarre as it appears to be at first glance, and are simply memorizing that *ε* and *i* are paired for purposes of harmony. Given this assumption, what is happening here is an application of the rule 'turn a [+ATR] vowel into its [-ATR] counterpart', albeit in a context that it

appears to be impossible to state.

These facts make me, at least, suspicious of the 'clever' (to use Kiparsky's 1971 term) two-step analysis; children learning Tunen (or other languages) may very well not be as good at doing internal reconstruction as professional linguists. This suspicion is increased by the apparent existence of cases of very common processes such as palatalization, which can be analyzed as two-step processes (in this case, fronting of a velar stop, plus affrication of the resulting palatal stop), but which appear not to be so analyzed by speakers. The particular case I have in mind is Italian palatalization, which has been discussed in some detail by Dressler 1985. Velar stops alternate with the corresponding palatal affricates in Italian, with the latter occurring before (some instances of) *i*. In order to characterize precisely which is trigger palatalization, one must first of all distinguish nouns from verbs, since this process may affect only non-geminate velars in nominals, whereas both geminates and simplex consonants may be affected in verbs (cf. Dressler 1985:170, 176-7). What is more, either further grammatical conditioning is required or there will have to be numerous lexical exceptions (cf. Dressler 1985 for the details).

Dressler argues (pp. 174-5) that this kind of palatalization is particularly liable to telescoping, since the required affrication process is context-free, and hence inherently unstable (due to the lack of direct support from phonological alternations). If so, then it is possible to see why the non-phonological complications to this rule might have arisen, since, as Clements 1985:246 has pointed out, telescoped rules 'typically [become] lexicalized and/or grammaticalized'. Thus, despite the rather frequent occurrence of palatalization rules that take stops as input and yield palatal affricates, and despite the fact that it is possible to derive the outputs from the inputs via the sequential application of two MSRs, it seems that palatalization rules of this nature should be formulated as one-step, non-natural, learned rules.

The neutralization rule (10), of course, is also context-free, so if we accept Dressler's line of reasoning, we would expect telescoping of it and any other rule that appears to interact with it – i.e., the harmony rule. The Maasai rules would, if anything, be even more susceptible to telescoping than those in Tunen, since in the former case not just one, but two context-free rules are required. There is thus some reason to question whether the 'clever' multi-step analyses should be adopted as synchronic analyses,¹⁷ although diachronic analogs of them would appear to present an accurate picture of the history of the alternations in question. On the other hand, there is independent support for the harmony rules (from the other harmony alternations), whereas there is no such independent motivation for simple fronting of velars in Italian. Clearly, this issue is thus far from settled, and I will have to leave it unresolved here.

3. Conclusion.

If the purely phonological accounts of Maasai and Tunen are accepted, then they provide conclusive evidence against a pure MSC approach. Furthermore, we can reject the less restrictive combined MSC/MSR approach on general metatheoretical grounds, at least provisionally. It is important to note that, should the multi-step phonological accounts turn out not to be correct, this would not be evidence against the MSR approach; it would simply be lack of evidence in favor of it. As it turns out, the vowel system of Tunen provides a different kind of argument in favor of the MSR approach, as well. Given the distribution of [+ATR] vowels in the vowel systems of the world (cf. Churma 1987), something like (13) would belong to the universal set of MSRs:

$$(13) [V, -low] \rightarrow [+ATR]$$

This rule would provide an explanation for the dramatically larger number of [+ATR] non-low vowels found cross-linguistically. Within a pure MSC approach, the only way of accounting for such cross-linguistic generalizations appears to be setting up 'implicational

universals', along the lines of Jakobson 1941. This is the approach taken by Kaye, Lowenstamm, and Vergnaud 1985, who propose a principle of 'charm markedness' that has the effect of requiring that all languages have [+ATR] counterparts of any [-ATR] non-low vowels that are present. Like (most?) other implicational universals, this one has the unfortunate property of being false, at least if we take a reasonably strict position concerning how much 'normalization' is allowable (i.e., if a language has one high front vowel, and it's [i], we shouldn't be allowed to say it's /i/). Note that maintaining rule (13) as a universal rule does not commit one to this false implicational universal, although it does make the right claims about the markedness of [+/-ATR] vowels. In particular, since rules such as (13) can interact with (10) in such a way as to eliminate one of the [+ATR] vowels, without also eliminating the corresponding [-ATR] vowel, violations of this tendency are possible, as we have seen is (almost?) the case in Tunen, as well as in the languages discussed in Churma 1987. As Stampe 1973 has pointed out, it is only by allowing this kind of interaction between MSRs that what is true about the important inductive generalizations noted by Jakobson and others can be salvaged, in the face of examples in which these generalizations do not hold.

There are, however, apparent problems for the MSR approach, as Stanley was perhaps the first to point out. First of all, they are inherently directional, and frequently there is no evidence from the corpus being investigated concerning what the direction should be. Since I have discussed this issue elsewhere (cf. Churma 1984a, 1985), I will simply refer the reader to these papers. A related problem is what might be called the indeterminacy of MSRs. For example, in a language that has no [+ATR] low vowels, this fact can be accounted for by positing (2a), but it could also be accounted for by rule (14):

$$(14) [V, +low] \rightarrow [-ATR]$$

In Maasai, assuming the three-step analysis of section 1, we would have evidence that (2a) must be present in the grammar, but in a language like Akan, neither of these rules is involved in any alternations, so there can be no corpus-internal evidence concerning which of these potential MSRs is responsible for the lack of underlying [+ATR] low vowels. But on the assumption that MSRs are universally present unless the facts of a given language require that the learner suppress them, this is not a problem: both of these rules are part of the grammars of Maasai and Akan (although a child learning Tunen would have to suppress both of them). Lovins' 1973 study of the nativization of loan words in Japanese, in which she found competing ways of repairing loans, suggests that, in some cases at least, this is exactly what is going on: different speakers are using different MSRs in the repair process. My own work (cf. Churma 1984a, also summarized in Churma 1985) indicates, moreover, that in some cases there is a thoroughgoing directionality in nativization, a fact which requires a directional device – i.e., an MSR, not an MSC.

A problem that is not specific to the MSR approach is the existence of neutral vowels. There are several possible ways of handling this phenomenon. The one which would appear to be most compatible with the MSR approach is to allow the harmony rule to affect the neutral vowel, and have an MSR subsequently undo its effects. This approach will not work for languages such as Khalkha Mongolian in which the neutral vowel has a counterpart with respect to the harmonic feature, and it would require violations of the Strict Cycle Condition, which appears to be needed in order to account for certain aspects of Maasai harmony (cf. Churma 1987 and the references cited there). Another possibility is to adopt Steriade's 1987 approach, in which neutral vowels, and only neutral vowels, are unspecified for the harmonic feature. However, as she points out (p. 360), this would require an appeal to Structure Preservation to prevent harmony from filling in the wrong value, and if the multi-step accounts of Maasai and Tunen are accepted, then this principle at least cannot hold universally. We may be stuck with the brute force approach of *SPE*, where the harmony

rule simply states, by the use of the parenthesis notation, that some vowels may be skipped. This actually may be what we are forced to, since when neutrality is examined carefully (cf. Kontra and Ringen 1986), we find that the situation is as messy as it is in the case of the Tunen *os*. Speakers may well find the idea of neutral vowels as difficult to handle in strictly phonological fashion as the idea of abstract absolutely-neutralizable vowels.

FOOTNOTES

I would like to thank the Department of Linguistics at Stanford University and the Center for the Study of Language and Information, which provided me with invaluable word processing facilities and support staff.

¹One need not adopt the position that MSRs are universal (innate) processes in order to maintain a pure MSR position. It is a matter of fact that all advocates of this position have done so, however.

²It is thus somewhat misleading to call Stewart's rules MSRs; the lines between the various positions is are not always as clear as we might like them to be. In fact, Stanley's system might well be put in this last category, since he allows for a type of condition, the 'If-then Condition', which is, as he points out, a notational variant of an MSR. However, such a condition obviously cannot apply in the phonology, and in this respect Stanley's system is significantly different from the other approaches included in this group.

³In the interest of full disclosure from the start, I will warn the reader that I am not as convinced of the correctness of the analyses on which the arguments in large part depend as I was as late as a few weeks ago. This issue will be treated at the end of section 2.

⁴This is true only in the lexical phonology. Such vowels are created post-lexically in strictly local fashion by a low-level rule.

⁵Pulleyblank does not give a source for his data, but all of the forms he cites are also found in Hoffmann 1973. Hoffmann's data consist exclusively of the paradigms for the infinitive, imperative, and two tenses for a small number of monosyllabic verb roots.

⁶Dugast notes that the vowel *e* is rare in verb roots, and Mous states that for his informant, it 'is rare in [all] roots', and that he 'has *e* where Dugast notes *e*' (p. 282).

⁷For purposes of discussion, I will assume fully-specified underlying representations, and segmental vowel harmony rules. The latter assumption is, of course, quite controversial, and I cannot defend it here. The case against radical underspecification of the type advocated in, e.g., Kiparsky 1985 appears to be quite strong; see Churma 1987, Steriade 1987.

⁸Stewart and Van Leynseele (1979), in their account of the diachronic development of the synchronic harmony system, suggest that the change that created the [ɛ] of this prefix was phonologically conditioned by the initial *h* of this suffix. Even if some version of this rather suspect proposal (why should *h* have anything to do with ATRness?) is incorporated into a synchronic analysis, the remaining morphological information would not be available in the post-lexical phonology.

⁹Non-alternating root vowels (if they exist – cf. note 11) that surface as [e] would presumably have to be marked as exceptions to rule (6c), and post-lexical rules are said not to allow exceptions, so such vowels would also be problematic for this theory.

¹⁰There appears to be a single exception to this generalization (at least in the variety studied by Mous); see the discussion below of the causative of *obem*.

¹¹There are four pronominal class prefixes that contain a vowel that surfaces invariably as [e], but which does not trigger harmony in roots. It is conceivable that some or all of the rare root *es* are underlyingly /I/, but neither Dugast nor Mous describes their behavior with respect to harmony, so it is impossible to establish the underlying identity of these vowels; the single root with an *e* that I have been able to find, the 'far demonstrative' *eye/iyi* (cf. Mous 1986:292) seems clearly to have underlying /I/s. The non-alternating *es* will have to be analyzed as /e/, however, so there are presumably at least four /e/s in the language.

¹²The non-alternating *es* described in note 11 will have to be analyzed as /e/; they will violate MSR (10), and hence be technically inadmissible, like English words with initial /sf/, which violate an otherwise exceptionless morpheme structure constraint against syllable-initial sequences of fricatives. Note that the prefixal /e/s are also odd in that they fail to trigger harmony.

¹³The qualification concerns the behavior of this vowel when the first syllable of the root contains ε or ɔ, in which case the prefix vowel surfaces as either [e] or [ɛ], apparently depending idiosyncratically on each individual root. Dugast makes explicit note of the existence of this three-way alternation only in the case of the Class 5 prefix (p. 69), but her examples demonstrate that it exists in the case of the other relevant prefixes as well. Mous (p. 291) notes the existence of this phenomenon, as well, claiming that the [-ATR] variant 'is most frequent before stems with an ε as the first vowel, less frequent before stems which have an ɔ as the first vowel and rare with an a as first stem vowel'. He also points out a similar alternation in the Class 14 prefix *bo-/bɔ-/bu-*, and notes that 'there is a lot of variation in these assimilation processes and both forms, assimilated or not assimilated, are acceptable in the majority of cases'. The lexical idiosyncrasies associated with this part of the alternation in question appear to support a blatantly diacritic approach to an account of these facts such as that suggested below in another context.

¹⁴This account thus appears to require the use of extrinsic rule ordering, which would be most unfortunate if this device should turn to be illegitimate, as it appears to be (cf. Churma 1984b and the references cited there). If one adopts a distinction between lexical and post-lexical rules, with the latter necessarily following the former, as in lexical phonology, then the ordering restriction will no longer be extrinsically imposed – nor will the requirement that the neutralization rule not feed rule (10). This account is viable, then, only if one buys either extrinsic rule ordering or some distinction of the lexical/post-lexical sort.

¹⁵There are conceivable ways of accounting for these data in purely 'phonological' terms, but they would require a pretty blatant 'diacritic use of aphonological feature' (cf. Kiparsky 1968), and I will not pursue them here. I suspect that these facts are a main concern of van der Hulst and Mous 1986, but I have been unable to consult this work.

¹⁶As a result, Mous' single-diacritic analysis will not work. Since it requires a Word Structure Constraint that contains diacritics (roughly, words may not contain diacriticless vowels that disagree with respect to [ATR]), it was not a very attractive candidate to begin with. (Since Mous had pointed out (p. 288) prior to giving the final form of his analysis that vowels that undergo raising do not always fail to trigger harmony, it is hard to understand why he went on to propose an account that does not allow for this kind of difference.) Notice also that (12c) shows the diacritics must be assigned to individual vowels, rather than morphemes as a whole, contra the standard position. For further evidence that individual segments must be allowed to host diacritics, see Churma 1986.

¹⁷Indeed, if this kind of approach is pushed far enough, it could be taken as evidence against allowing any rules of absolute neutralization in synchronic phonology, thus imposing a substantial constraint on allowable abstractness. The abstractness controversy has, unfortunately in my view, quieted down quite considerably, and the standard view appears to be that any alternation that can be handled in purely phonological terms should be so treated. The Tunçen and Italian cases suggest strongly that such a position cannot be taken for granted.

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The Mechanisms of "Construction Grammar"

Charles J. Fillmore
University of California, Berkeley

1. In this paper I will sketch out some of the working parts of a grammatical framework that gives central place to the notion of **grammatical construction**. Rejecting that view of grammar which prides itself in being able to get along without this concept, my colleagues and I have come to believe that, in a framework which takes grammatical constructions as its primary units, not only can we allow the individual constructions in the languages we study to be as complex as they need to be, but we are also able in its terms to recognize powerful generalizations of both language-specific and language-universal sorts.

Unfortunately, the framework I'll be speaking about is a moving target; in fact, it is one of a set of several moving targets with the same name. My goal in this paper is merely to lay out enough of the working assumptions on which I think most of the Berkeley constructionists are agreed, at least in the area of syntax, and to define and display some of the structures and notations which illustrate the application of these assumptions to a small selection of both central and non-central phenomena in the syntax of English.

Not only is Construction Grammar a moving target; so are the theories with which one might compare it. Briefly, construction grammars differ from **transformational grammars** in not having transformations. That is to say, relationships that are presented in transformationalist theories as participating in the derivation of individual sentences, and hence in their structure, are treated instead as relationships defined in the grammar as a whole. [1] Construction grammars differ from **simple phrase-structure grammars** in that the categories that label the units of structure include complex bundles of information, rather than simple atomic categories. Construction grammars differ from phrase-structure grammars which use **complex symbols** and allow the **transmission of information** between lower and higher structural units, in that we allow the direct representation of the required properties of subordinate constituents. (Should it turn out that there are completely general principles for predicting the kinds of information that get transmitted upwards or downwards, this may not be a real difference.) And construction grammars differ from **phrase-structure grammars in general** in allowing an occurring linguistic expression to be seen as simultaneously instantiating more than one grammatical construction at the same level.

While construction grammars have similarities to a number of other approaches to grammar, meaning, and natural language understanding, construction grammarians differ from many other workers in the generativist tradition by their insistence on simultaneously describing grammatical patterns and the semantic and pragmatic purposes to which they are dedicated, and by their tendency to give attention to the fine and fussy details of what might be called the **non-central constructions of a language**. This tendency shows itself, for example, in George Lakoff's detailed survey of constructions in English introduced by the words HERE and THERE (Lakoff 1987, pp. 462-585); in Knud Lambrecht's studies of the clause types of colloquial French that are used in structuring information (Lambrecht 1986), to which we should now add his contribution to this year's BLS collection; in Paul Kay's studies of scalar and metalinguistic qualifiers in English (Kay 1984, 1988); in the paper by Mary Catherine O'Connor, Paul Kay, and me, on the English LET ALONE construction (Fillmore, Kay and O'Connor, 1988); and in a body of work currently in progress on the part of a number of graduate students. [2] Our reasons for concerning ourselves with otherwise neglected domains of grammar are not so that we can be left alone, by claiming territory that nobody else wants, but specifically because we believe that insights into the mechanics of the grammar as a whole can be brought out most clearly by the work of factoring out the constituent elements of the most complex constructions.

2. By **grammatical construction** we mean any syntactic pattern which is assigned one or more conventional functions in a language, together with whatever is linguistically conventionalized about its contribution to the meaning or the use of structures containing it.

On the level of syntax, we distinguish for any construction in a language its **external** and its **internal** properties. In speaking of the **external syntax** of a construction we refer to the properties of the construction as a whole, that is to say, anything speakers know about the construction that is relevant to the larger syntactic contexts in which it is welcome. By the **internal syntax** of a construction we have in mind a description of the construction's make-up. The familiar **phrase-structure rules** can be read off as descriptions of (the syntactic portions of) constructions: the symbol to the left of the rewrite arrow, standing for the category of the whole construction, represents its **external syntax**, while the sequence of symbols to the right of the rewrite arrow indicates the construction's **internal syntax**, and it does this by specifying the external categories of the constructions which can serve in given positions within it. The constructions that most hold

our interest, however, are of greater complexity than that of simple phrase-structure sub-trees of depth one.

There are various interchangeable notations for representing linguistic structures in construction grammar. One that I will use is a boxes-within-boxes notation in which information about the external syntactic, semantic and pragmatic requirements of a construction is written in the perimeter of the box, with smaller boxes drawn inside to display the construction's internal syntax. In Figure 1, a category with the **xxx** value of the attribute **aaa** has as its two constituents one with the **yyy** value of attribute **bbb** and, to its right, one with the **zzz** value of attribute **ccc**.

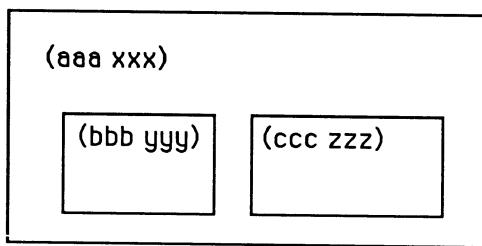


Figure 1

Formally, diagrams of this sort are exactly equivalent to constituent structure diagrams with fancily decorated node labels.

An advantage in using the box notation is that in a step-by-step demonstration of the parsing of a sentence, we can draw boxes around the elements of surface linguistic expressions, allowing us to build up a complex description of a complex expression by showing how it exemplifies the superimposition of construction upon construction.

The grammar of a language can be seen as a repertory of constructions, plus a set of principles which govern the nesting and superimposition of constructions into or upon one another. The generation or analysis of linguistic expressions involves fitting grammatical constructions together in as many ways as possible, allowing them to come together only when they match each other's requirements (or when there's something interesting to say about what happens when they don't), and stopping when every lexical category is occupied by a phonological form, and when every obligatory attribute has been provided with a value. In ways made familiar in all versions of generative grammar, whenever we can find more than one way of assembling constructions to yield the same expression form, that form is shown to be ambiguous in ways explained by the differences in the contributing constructions. [3]

3. At least some of the grammatical properties of a construction can be given as **feature structure representations**, that is, as sets of **attribute-value pairs**, and can be seen as generally satisfying the requirements of a unification-based system. Since the basic phrasal categories will be selected from a set of fixed and mutually exclusive types, we can represent these by the attribute **category**, abbreviated **cat**, paired with one of the values it accepts, such as **Noun**, **Verb**, **Adjective**, etc.; they will thus be introduced with such formulas as (cat N) or (cat V). We are currently representing the ranks or **levels** of headed constructions in terms of **maximal** and **minimal categories**, where maximal categories fill major structural positions in constructions, and minimal categories are the stored or derived units of the lexicon. We believe that these distinctions give us a way of achieving successfully what is aimed at by the so-called "X-bar theory". Major category units will be expressed as pairs of features of the category and level types. Thus, a maximal nounphrase will be represented as

(cat N) (max +)

whereas a lexical adjective will be represented as

(cat A) (min -)

Maximal categories which are phrases are (max +)(min -); structures which are phrasal but non-maximal are (max -) (min -). There are no incompatibility relations between the level features of maximality and minimality. The abandonment of the notations of X-bar syntax in favor of the separation of features of phrasal maximality and minimality creates the possibility that lexical items which may but need not serve as maximal phrases can be listed as having unspecified maximality, and lexical items which necessarily serve as maximal phrases, such as proper names (when used as proper proper names) and personal pronouns, can be listed as having their maximality feature marked "+". We therefore avoid the need to recognize a name like JOE or a pronoun like SHE as simultaneously an N-zero, an N-bar, and an N-double-bar. Instead of a columnar representation of the categorial nature of the name JOE, as in Figure 2, we will prefer a representation in which JOE is given simultaneously as a word and as a maximal phrase, as seen in Figure 3.



Figure 2

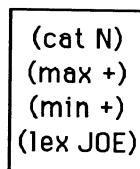


Figure 3

Here JOE is recognized as a lexical item (hence as **min +**) but one whose external syntax is that of a maximal phrase. With names and personal pronouns there are obvious reasons why they are lexical items, and reasons of grammatical behavior why they are maximal nominals; but there is no reason to assign to such words an additional intermediate structural level of the so-called N-bar.

4. Considerations of maximality in nominal expressions lead in a natural way to our first example of a construction: the English **determination construction**, which consists of a maximal noun phrase containing a determiner and a non-maximal nominal head.

Since the "determiner" in a "determiner plus nominal" construction can be any of a variety of categories (that is, it can be an article, a possessive nominal, or a demonstrative), I introduce the term "determiner" as a **role name** rather than as a **category name**. The category of its fillers can be left unmentioned. Articles will be marked in the lexicon as necessarily having the determiner role, demonstratives and instances of the possessive construction will be described in a way that shows them capable of filling the determiner slot. The construction will look something like what is shown in Figure 4:

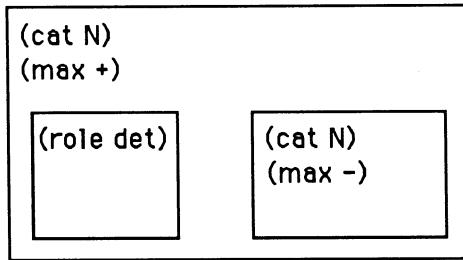


Figure 4

This diagram states that the combination of a determiner with, to its right, a non-maximal nominal, counts as a maximal nounphrase. A pronoun or a proper name will not fit the second slot in this construction because it would be marked with maximality value "+", and what is required here is maximality value "-"; a mass noun will fit it because with a mass noun the maximality value is left unspecified; a singular count noun will fit it because a count noun is marked with maximality value "-". Thus:

proper noun:	(cat N)(max +)
mass noun:	(cat N)(max)
singular count noun:	(cat N)(max -)

(We will naturally need to include a mechanism in the morphology for de-marking count nouns when they are made plural, as well as mechanisms for recognizing that both mass nouns and proper nouns have special uses in which they exhibit the syntax of count nouns.)

It is now necessary to modify my earlier statement that maximal phrases fill major structural positions in sentences. English has various constructions requiring non-maximal nominals, that is, lexical or phrasal nominals that would need a determiner in order to appear in true argument position in a clause. One of these is the **Unique-Role Nominal Predicate Construction**, exemplified by sentences like I WAS CHAIRMAN OF THE COMMITTEE, SHE IS CHIEF SURGEON TO THE ROYAL FAMILY, YOU ARE NOW PRESIDENT OF THE CLUB, and so on. (The semantics of "unique role" is suggested by the unacceptability of *SHE IS MEMBER OF THE CLUB; the inability of a non-maximal phrase to occur in "argument" position is shown by the unacceptability of *PRESIDENT OF THE CLUB RESIGNED.) Another construction allowing a non-maximal nominal is **Fronting to That**, as in

subordinate clauses like FOOLISH CHILD THAT I WAS. (Compare *I WAS FOOLISH CHILD.) These are both cases in which a nominal predicate is a count-noun, or a modified count-noun-headed phrase, in which the "obligatory" determiner is missing.

5. The **Determination Construction** just exemplified can be used to illustrate the **unification** process, and the manner in which entities can not only satisfy the requirements of structural positions in a construction but can bring to a construction properties and requirements of their own.

It may be useful to think of the positions within a construction as **offices** (for example, political offices). The obligatory features associated with positions in the description of the construction can be thought of as the **qualifications** for the office, and the role indicator identifies the **function** of the office. This much involves the **institution** within which the office has a role, independently of any specific **candidate** or **incumbent**. A candidate which does not satisfy the qualifications of the office cannot fill the office. When a particular **incumbent** occupies the office, that incumbent has properties of its own, not only the properties which allowed it to occupy the office, but also properties which cause it to make its own demands. The way in which an obligatorily transitive verb brings into the office of verbal predicate the requirement of finding room for a direct object can be compared with the way in which a married male incumbent in the office of President of the United States brings with it the not always welcome additional role and office of the First Lady.

If the determiner brought into the determination construction is the plural demonstrative **THESE**, and the head noun is the mass noun **BUTTER**, the combination, ***THESE BUTTER**, will not work, because the features of **number**, singular and plural, as well as the features of **configuration**, count and mass, will clash. **THESE** requires that the office next door be occupied by a plural noun. This means that we need devices which provide for the contribution of each constituent element to the description of the external syntax of the whole: such a device will identify those properties of incumbents which become properties of the office as occupied by that incumbent. It is obviously important for a maximal nominal to be recognized as singular or plural, for reasons of verb agreement, and as definite or indefinite, establishing its qualification for inclusion in certain of the existential sentence constructions. Thus, number and definiteness, whether brought in as the requirements of determiners or of nouns, will become properties of the maximal noun phrase as well. (The recognition of the need to do this is in no way a unique feature of Construction Grammar.)

6. The lexicon, which in important ways is not distinct from the repertory of constructions, associates with each lexical item, explicitly or implicitly, information about the grammatical constructions in which the item can participate. To the extent that a given lexical item is closely tied to one or more specific grammatical constructions, describing that item is equivalent to describing the constructions in which it participates. Thus, in Paul Kay's (unpublished) construction grammar treatment of complex English kin-terms, the word REMOVED, as it appears in such phraseological units as **second cousin once removed**, is included as a lexically specified part of the construction itself. This is in contrast to an absurd view according to which the active verb REMOVE would have to be described in such a way that, when it occurs as a postnominal modifier of the word COUSIN, in a past-participial form qualified by an ordinal number, it just happens to contribute the right meaning to the complex phrase.

In those cases in which generalizations about lexical items can be made without reference to particular constructions, the combinatorial properties of lexical items can be stated as their **valence descriptions**. The valence description of a complement-taking predicate can be thought of as the staffing demands which a particular incumbent brings to an office. The valence description of a word identifies its grammatical and semantic complements (including the subject), showing, for each of these, wherever full specification is called for, its grammatical function, its semantic role, and its morpho-syntactic marking. There are numerous redundancy relations among these, suggesting that much of the information displayed in Figure 5 (offered as a partial lexical description of the English verb GIVE) is predictable from other information; the figure shows the structure when all the predictable features are filled in. (The labels on the rows distinguish Grammatical Function (GF), Semantic Role (SR), and Morphosyntax (MS) of the predicate's complements.

(cat V) (min +) (lexeme GIVE)			
valence			
GF:	subject	object	complement
SR:	agent	patient	recipient
MS:	N	N	P[<i>to</i>]

Figure 5

The semantic information associated with a lexical item, about which I unfortunately have nothing to say in this paper, does its work in part by providing an indicator of the **semantic frame** with which the item is associated. The **semantic role array** in the valence description (what I used to call the **case frame**), identifies the elements which are foregrounded ("profiled", to use Ron Langacker's term) within such a frame. We will often find that information about the syntactic requirements of a lexical item can be read off from, or at least motivated by, the associated semantic frame. The semantic interpretation of the sentence will be accomplished by unifying, or otherwise integrating, semantic information from the semantic frames activated by the predicator with those introduced by the obligatory and optional companions (the complements and adjuncts) of the predicators.

7. I introduced the word **subject** as the name of a grammatical function or role specified in a predicator's valence description. We need to distinguish two notions of "subject" in this discussion: (1) the subject argument of a predicator, typically the argument associated with the highest-ranking semantic role, and (2) the subject of a finite sentence. I shall refer to these as the **P-subject** and the **S-subject**, respectively. In simple sentences, the P-subject and the S-subject are the same.

The **subject predicate construction**, of English and many other languages, is, in common with the determination construction already discussed, a construction which deals with the maximality value of a category, at least in the treatment that is being proposed here. I treat a clause or sentence as a maximal verb-headed phrase. Figure 6, displaying one of the constructions for defining the S-subject in English, shows that something capable of filling the role "subject", united with a non-maximal verbal, yields a maximal verb phrase, on condition that the unit as a whole (and hence its head verb) is finite (hence the "(infl tense)").

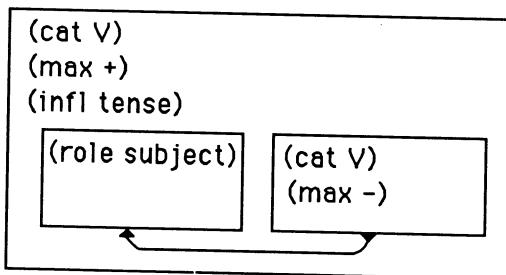


Figure 6

The arrow connecting the two boxes indicates that the constituent in the left box is available as an instantiation of the P-subject requirement of the head verb of the verb phrase in the second box. Whatever other requirements the verb has must be satisfied elsewhere, for example, inside the verb-phrase box. In those cases in which no P-subject is assigned to the verb which heads the verb-phrase, either directly or by a process to be described shortly, the language provides a way of filling this first slot anyway -- for example, with the word IT.

It should be noticed that the S-subject is not given a category specification, in the same way that the determiner in the determination construction lacks a category specification. It will have whatever category is required of the P-subject of the head verb in the verb phrase. This means, of course, that we do not need to treat infinitives, THAT-clauses, interrogative clauses, preposition phrases, etc., as NPs just when they appear as the subjects of sentences.

The construction just observed is not the only means of introducing an S-subject. An **inversion** variant of a maximal V-phrase, has a finite auxiliary verb in initial position, the subject following and the complements of the auxiliary appearing after that, as suggested by Figure 7. The example here is simplified, covering the case where the auxiliary requires only one non-subject complement. (I am here making the common assumption that auxiliaries are raising verbs, and that the copula BE for these purposes is a member of the class of auxiliaries.)

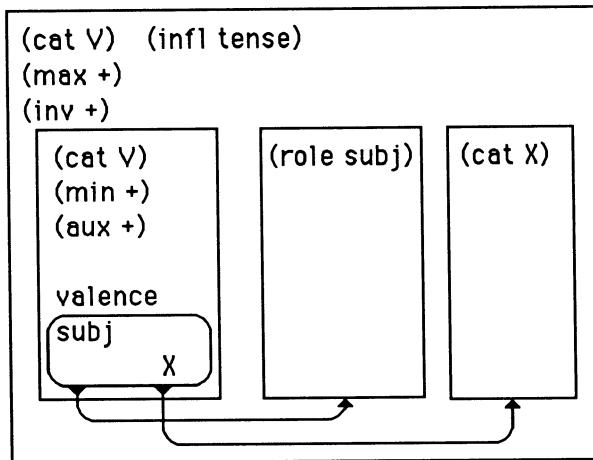


Figure 7

The feature "inversion" is a part of the external syntax of the construction. What we have here, by the way, is a variety of **polarity item**. This construction can be selected when the clause as a whole has the feature of interrogation (as in yes-no questions), or when it is in the scope of negation (as when it follows a negative word like NEVER and SELDOM), or when it is, as a whole, the antecedent of a counterfactual conditional sentence (as in WERE SHE HERE, HAD I KNOWN, etc.).

8. A V- ("V minus") phrase, a phrase of the type (cat V)(max -), consists of a lexical verb together with some or all of its non-subject complements or augments. I say "some or all" because some of them may be present at some distance from the V- constituent, just in case it is in topic or WH-phrase position. A non-maximal verb phrase built around the verb REMOVE, and incorporating all of its local, i.e., non-subject complements, is illustrated in Figure 8.

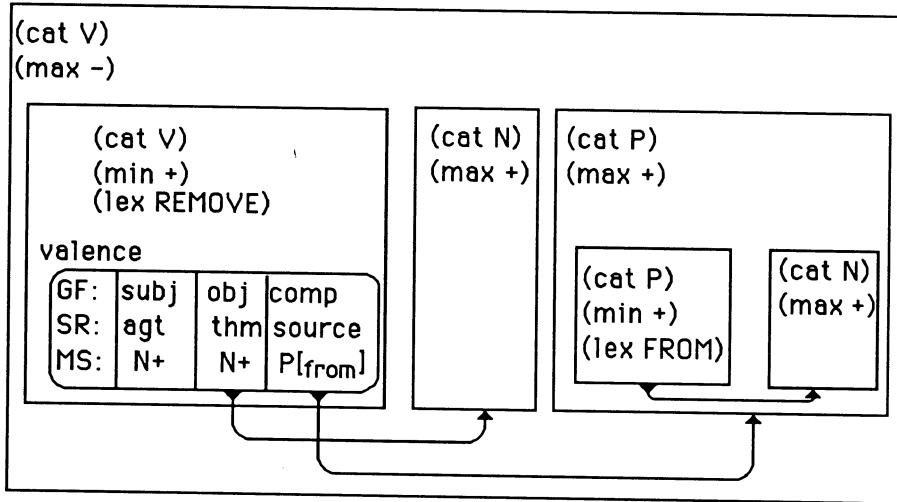


Figure 8

Again, the arrows are instantiation links, showing that certain of the "staffing needs" of the verb have been met inside the verb phrase. In addition to the obligatory complements of a predicator, other phrasal elements may be introduced into a verb-phrase as long as they contribute meanings which integrate into the semantic frame built up around the predicator, or can fit the semantic frame of the predicator into their own semantic frames. They differ from complements in not being syntactically required.

Under certain conditions, complements may be missing. In languages in which there are lexically specifiable conditions on the omissibility or optionality of complements, information about such omissibility will be included with some system of diacritics on particular complement descriptions, as suggested in Figure 9, something along the lines of Fillmore 1969 and Fillmore 1985. Here, parentheses represent omissibility under conditions allowing an "indefinite interpretation", square brackets representing omissibility under conditions of conversational givenness. (In this notation, I follow Allerton 1975.) That this is not a simple matter of lexical marking was forcefully argued in Sally Rice's paper elsewhere in this volume.

$(\text{cat } V)$ $(\text{min } +)$ $(\text{lexeme CONTRIBUTE})$			
valence			
GF:	subject	(object)	[complement]
SR:	agent	patient	recipient
MS:	N	N	P [<i>to</i>]

Figure 9

9. The subject argument of a verbal predicate can be instantiated in the subject position in the subject-predicate construction; non-subject arguments can be instantiated inside the verb phrase, as we have seen. There are additional means of cashing out the argument requirements of a predicate, among them various sorts of *left isolate* constructions. A left-isolate which is an interrogative word occurs in the construction suggested by Figure 10, where the arrow is interpreted as meaning that the left-isolated constituent complements or augments the semantic structure in the predication to its right. The result of the union of the WH-element with its partner to the right is a complete clause, that is, a maximal verb-headed constituent.

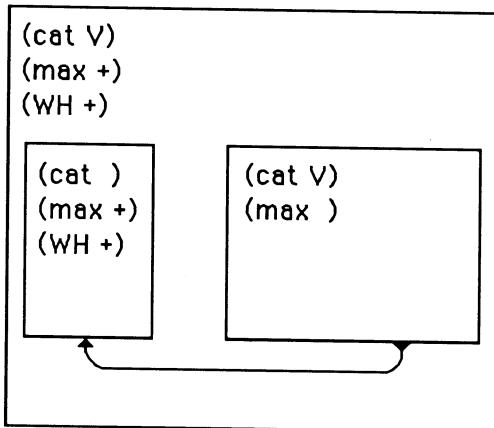


Figure 10

Notice that the maximality of the verbal constituent is not indicated; what this means is that if the interrogated element is the subject, then the structure fits the structure of the subject predicate construction as well, and the sister constituent is a "verb phrase" ("V-") rather than a "sentence" ("V+"). If, however, the verbal category is maximal, then the instantiation link is to some non-subject inside the sister constituent. The link will mean that the fronted element must be unified with the valence description of some predicate inside the sister constituent. [4] When the second constituent is V+, it will have the feature "inversion" (and the structure shown in Figure 7) just in case the sentence is a main-clause question.

10. Control relationships are coded into valence descriptions, and represented in diagrams with links that we call **co-instantiation** links. These link an argument requirement in one predicate with an argument requirement in a "higher" or "commanding" predicate, and assert that in whatever way the argument of the higher predicate gets realized, it simultaneously satisfies the argument requirement of the predicate with which it is linked. Omitting the details here, suffice it to say that the difference between coinstantiation of the type usually called *Raising* and that usually called *Equi* has to do with whether or not the coinstantiating argument has a semantic role assigned to it. Coinstantiation indices are of the familiar types: **S(S)** means that the subject role of the commanding predicate coinstantiates the subject role of the complement; **O(S)** means that the direct object of the commanding predicate coinstantiates the subject role of the

complement; $S(X)$ means that the subject of the commanding predicate coinstantiates a non-subject; and $S()$ means that the subject of the commanding predicate coinstantiates either the subject or a non-subject of the complement. A simple example, using the adjective WORTH, is presented in Figure 11. WORTH is here described in that usage by which it requires a gerundial local complement, and by which it co-instantiates with its subject a non-subject of that gerund. To get a sentence like SHE SEEMS WORTH KNOWING, we have to notice that the subject of KNOW is taken as generic; the object of KNOW is coinstantiated with the subject of WORTH; and the subject of WORTH is coinstantiated with the subject of the copula. (Instantiation links are marked "I", co-instantiation links as "CI".)

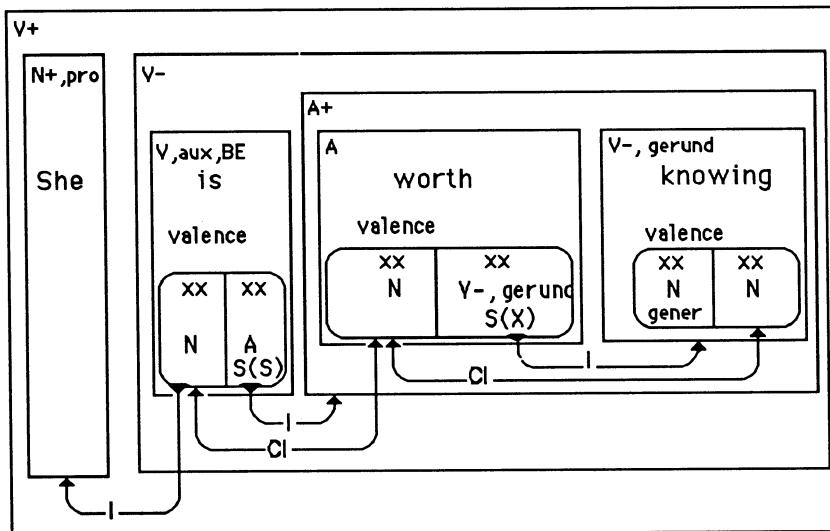


Figure 11

11. In addition to links of instantiation and co-instantiation, there are also links of necessary coreference which characterize certain constructions. A simple example, shown in Figure 12, is the phraseological unit DO ONE'S BEST. Here the requirement is that the possessive nominal prefixed to the word BEST must be coreferential to the subject of the verb. That means that the pronominal form must match that of the P-subject of DO ONE'S BEST. (I did my best, she did her best, etc.) That is to say, however the P-subject of DO ONE'S BEST in this construction gets realized - by being directly instantiated in a subject-predicate construction, by being co-instantiated by the subject of

the verb TRY, the object of the verb PERSUADE, or whatever, that entity must unify with the possessive pronoun inside this construction. (Just in case this element is inside a construction which causes its subject to be given the generic or "arbitrary" interpretation, the possessive form will be the word ONE'S.)

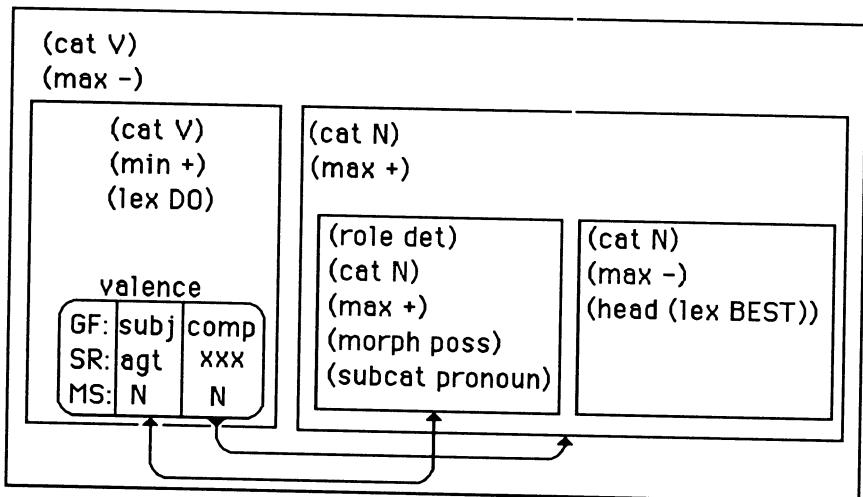


Figure 12

12. Because of the nature of the English inflectional system, the fitting together of lexical verbs with the subject-predicate construction forces us to recognize another necessary property of English grammar. We need to distinguish inflectional forms from lexemes, and we need to associate with inflectional forms whatever special requirements they impose. To show the difference, we might compare a valence description of the verb HAVE in what we will pretend to be its simple 'possession' sense, with the inflected form /HAS/.

The verb HAVE occurs in a large number of constructions: it functions, for example, as an auxiliary, as a simple transitive verb, and as a complement-taking verb in a number of different contexts. Figure 13 shows its use in indicating simple possession. In each of these constructions, the inflected form HAS can stand in as its representative, as long as certain requirements which it itself imposes are satisfied. Notice the three boxes in Figures 13, 14 and 15.

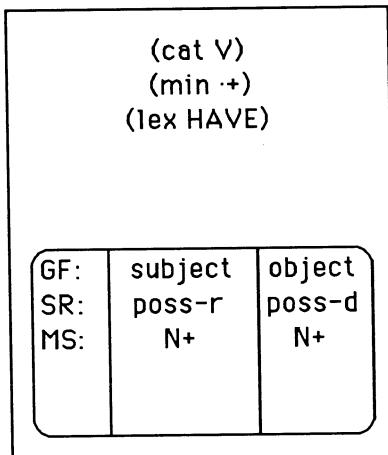


Figure 13

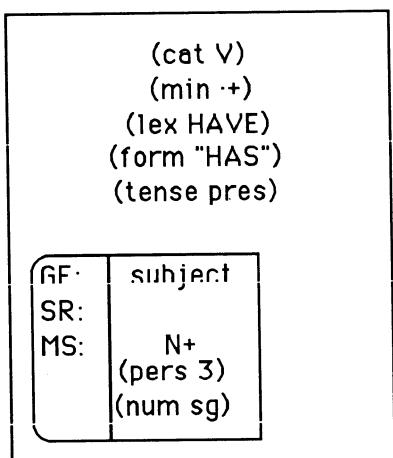


Figure 14

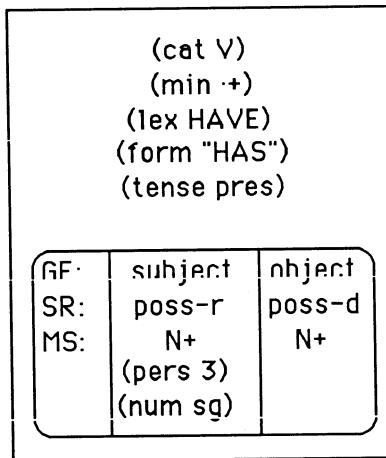


Figure 15

The phonological form HAS, interpreted in Figure 14, is a representation of this verb associated with the present tense, but its standing for any of the instances of the abstract verb HAVE brings with it the requirement that the subject be third person and singular. The lexicon of forms creates or contains entities which must unify with grammatical elements and provide them with phonological forms. The product of this unification can be shown in Figure 15, a superimposition of the information in Figures 13 and 14.

A verb inflected for tense can only occur as the head verb in the subject-predicate construction, and, as we see, it imposes restrictions on the grammatical nature of its subject. In languages in which there is both subject agreement and object agreement, we must be able to describe the morphology as creating forms with associated requirements on their subjects and arguments. The phenomena of "agreement" will thus be merely matters of unification involving the selection of word forms.

In addition to simple unification, we need to have a notion of **obligatorily evaluated attributes**. The attribute given in Figures 14 and 15 as "form" is one of these: every lexical item must have this attribute filled in (possibly, in certain cases, with zero). Morphemes which have allomorphs (and lexemes which have allo-lexes) will generally leave the "form" slot unfilled. The item which brings information filling such a slot will typically bring grammatical requirements of its own, as we have seen with the word HAS.

13. Our grammar needs a way of dealing with the subtle character of contexts which are created or defined by particular grammatical constructions. Positions in the grammatical templates we manipulate are contexts within which special principles obtain determining what can occur in it and how what occurs in it gets construed.

In every grammatical theory much is made of the fact that particular complement-taking lexical items create contexts which welcome or require particular features: the indicative-clause complement of HOPE defines a context for the futurate present, the verb DOUBT assigns negative polarity to its complement, the verb WISH assigns subjunctivity to its complement, etc.

Many grammatical constructions can be shown to have this same context-characterizing property. As a simple example, the syntactic idiom which has the introducers IT'S TIME, IT'S ABOUT TIME, and IT'S HIGH TIME, generally requires that the following indicative clause be past tense in form. (IT'S TIME YOU BRUSHED YOUR TEETH; IT'S HIGH TIME YOU STARTED THINKING ABOUT YOUR FUTURE; IT'S ABOUT TIME YOU DID THAT.)

Mention was already made of a copular sentence in which a non-maximal nounphrase appeared as the nominal predicate, as in SALLY IS PRESIDENT OF THE CLUB. There we saw that the position after BE allowed, atypically, a non-maximal nominal. Another and quite distinct copular sentence is the one used for pointing out referents in the common perceptual world of speaker and hearer, as in such sentences as THIS IS MY TEACHER, THOSE ARE MY NEW

FRIENDS, THAT'S MY OLD CAR. An interesting property of this construction is that the demonstrative pronouns occurring as subjects have a clearly different function and meaning-range here than they have in contexts in which they are the arguments of predicates, and it's an interesting job to try to characterize such contexts. Outside of this **Deictic Presentative** context, THIS or THAT requires construal as a non-human entity. Thus if I ask you, ARE YOU PLANNING TO EAT THAT?, I have said something perfectly ordinary, but if I ask you, ARE YOU PLANNING TO MARRY THAT? I am being insulting. In THAT'S MY UNCLE, THIS IS MY MOTHER, and the like, no such insult is implied.

The conditions on this construction seem to be these: the word THAT appears as the subject of a tensed verb and while it may be the immediate subject of a verb other than BE, it must be the ultimate subject of the verb BE. That is, it must instantiate or co-instantiate the P-subject of BE (as well as that of the predicate nominal), but no other semantic-role bearing position. Thus, THAT SEEMS TO BE MY SON-IN-LAW is all right, but THAT SEEMS TO LIKE YOU isn't. HE'S MY BEST FRIEND and THAT'S MY BEST FRIEND are both normal things to say, but while I REGARD HIM AS MY BEST FRIEND is okay, I REGARD THAT AS MY BEST FRIEND is not. An embedded identificational clause is all right if it's indicative: I THINK THAT'S MY FRIEND is okay, but I CONSIDER THAT TO BE MY FRIEND is not. A striking contrast can be seen in the two otherwise semantically identical sentences: THAT'S MY SON-IN-LAW and THAT MARRIED MY DAUGHTER.

In this construction, the predicate nominal has to be a referring expression. In the one we saw earlier, it had to be instead a name of a unique role. Hence, although it's possible to say THAT'S THE CHAIRMAN OF THE CLUB, it's not possible to say THAT'S CHAIRMAN OF THE CLUB. The construction which allows THAT to refer to a human is not the one which allows the predicate nominal to be non-maximal.

14. A more complex instance of obligatorily assigned values, corresponding to the technical notion of **feature inheritance**, on which I have had something to say in Fillmore 1986, and which McCawley has further discussed during these meetings, is that of what I call the **correlative conditional construction**. [5]

This construction has a number of properties, suggested by Figure 16, which are uniquely linked with it, but many others which are not. Our concern here is in factoring out the numerous other constructions which contribute to the whole package. Some of its

properties can be imported into the description of this construction from the fact that it is a conditional sentence; others from the fact that in two places it is an example of the category comparative; by being a conditional sentence, it is also in the class of subordination constructions (including temporal and conditional clauses) which provide very special ways of treating tense and auxiliary categories. In short, a complex set of qualifications for the "offices" defined for this construction come from numerous sources, yielding a marvelously complex package.

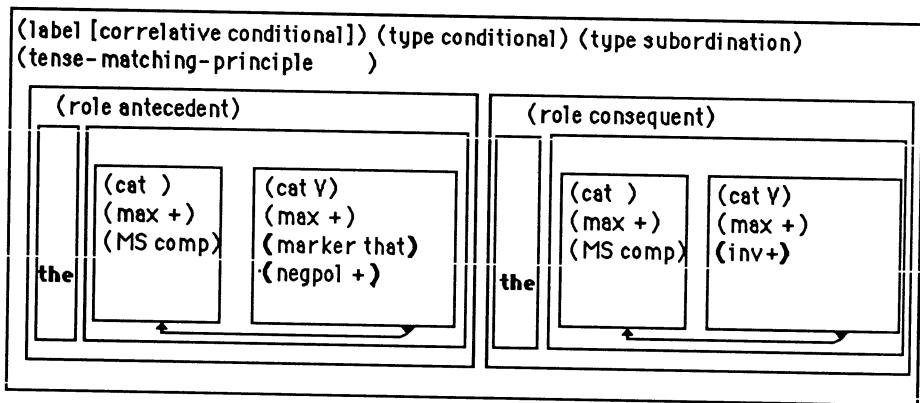


Figure 16

(Certain of the properties of this construction will be "inherited" from others of its properties: that it is an instance of a conditional sentence, that it involves a subordinate-clause/main-clause construction, that the first element of each major piece is of the type "comparative" (indicated with MS comp in the diagram), and so on. We note that the antecedent clause is optionally a negative polarity context, suggested by expressions like THE MORE YOU DO ANY OF THAT; that the antecedent clause is optionally introduced by THAT, as in THE LONGER THAT YOU STAY HERE, and that the consequence clause is an optional "inversion" structure, as in THE SOONER YOU LEARN HOW TO PRONOUNCE HER NAME, THE MORE LIKELY IS SHE TO GO OUT WITH YOU. Many of these properties are unique to the correlative conditional construction; many are predicted by, while others are "motivated" by, the membership of this construction in other construction types.)

15. Summarizing, we treat grammatical constructions as syntactic patterns which can fit into each other, impose conditions on each other, and inherit properties from each other. Grammatical constructions define positions which require or welcome fillers with certain properties, and fillers of those positions can introduce constructions of their own and can impose requirements of their own on positions within the constructions which contain them. At least some aspects of the grammar operate on simple principles of unification, augmented by principles of inheritance and principles for checking for the presence of obligatory elements. Since lexical items can be treated as the heads or markers of the grammatical constructions in which they participate, a grammatical formalism can be constructed, we believe, which is built exclusively on grammatical constructions.

NOTES

1 This is a point which has been given particular emphasis by George Lakoff. At issue here is, for example, whether in the structure of a **sentence** one needs to represent simultaneously the position out of which a topicalized constituent has been "extracted" or whether in the structure of the **grammar** one needs to show the relationship between topicalized sentences and sentences with all of their constituents "in place".

2 There is, of course, a huge body of literature on the functions of specific grammatical constructions, especially in the Generative Semantics tradition, but also in numerous standard reference grammars and pedagogical grammars.

3 While I will be speaking mostly of constructions on the level of phrases and clauses, we assume that similar principles are at work in word-formation and in the conventionalized patterns that structure discourse.

4 The familiar "Ross constraints" are handled in this theory by characterizing particular constructions as **insulated**, that is, as having impenetrable boundaries with respect to the relations indicated with instantiation arrows; many of the determinants of such insulation appear to be semantic in nature (on which see Lakoff 1986); but that's another story.

5 I use the term "correlative conditional" rather than my own earlier term "comparative conditional" for language-comparative purposes: some languages have constructions with essentially the same function as the English one without making use of a "comparative" construction.

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Liberation and Kikuria Relative Clauses

Laurie J. Gould

University of California, Santa Cruz

Discontinuous constituents pose a clear challenge to non-transformational grammarians. A monostratal theory like GPSG has no recourse to transformations to account for order variations beyond the limits of constituent boundaries. McCawley (1981, 1987) and Ojeda (1987) propose to account for discontinuous constituents by allowing trees to have crossing branches; under their analysis, discontinuity does not necessarily involve changes in hierarchical constituent structure. Pullum (1982) and Stucky (1983) use "liberation metarules" to account for discontinuous constituents; these rules rewrite immediate dominance rules, or "ID" rules, by replacing a category with its daughters. In contrast to the crossing branches approach, the liberation approach does assume that discontinuity involves a change in constituent structure. Zwicky (1986) and Levine (1987) abandon liberation metarules in favor of a "direct liberation" approach, in which the categories to be liberated are specified in the ID rules themselves. In this paper, I will present data on discontinuous constituents in the Kikuria VP, and I will show how the direct liberation approach gives a straightforward account of these facts. I will then present data on unbounded dependencies involving relative clauses, and I will show how these "movements" can be accounted for with the same liberated VP structure proposed for the discontinuous constituents. Finally, I will discuss the modifications in the direct liberation proposal which my analysis entails.

In Zwicky's 1986 direct liberation proposal, each ID rule specifies which of its daughters can be liberated. A liberated constituent is replaced by its daughters. ID rules are written as ordered triples, as in (1):

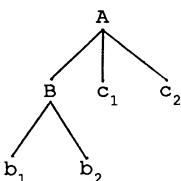
(1) (M, C, L)

where M is the mother, C is the set of daughters which must be concatenated, or fully structured, and L is the set of daughters which can be liberated. Consider, for example, the toy grammar in (2a):

(2a) 1. (A, [B], [C])
2. (B, [b₁, b₂], 0)
3. (C, [c₁, c₂], 0)

The first rule introduces B and C as daughters of A. B must be fully structured, but C may be liberated into A; in other words, C may be replaced by its daughters, which will be sisters of B in the branchings. The second rule introduces b₁ and b₂ as daughters of B; the third rule introduces c₁ and c₂ as daughters of C. These three rules, then, would license the tree in (2b):

(2b)



B, c₁ and c₂ appear as daughters of A; C is replaced by its daughters c₁ and c₂, and C itself does

not actually appear in the tree. In classical GPSG, each minimal tree is directly licensed by a single ID rule. This approach makes a crucial distinction between the ID rules and licensed branchings. C is a constituent of ID rule 1. In the direct liberation schema, subcategorization and semantic interpretation both operate on instantiated ID rules rather than on the licensed branchings. C, then, would be treated as a category for the purposes of both subcategorization and semantic translation, even though it never appears in the tree.

I will now present data on noun-modifier discontinuity within the Kikuria VP, and I will show how the direct liberation approach gives a straightforward account of these facts. Kikuria is a Bantu language; like most Bantu languages, it has unmarked SVO order. It is a pro-drop language; in all of the examples in this paper, agreement prefixes on the verb function as pronominal subjects. All nominal modifiers agree with their head nouns for noun class. Adjectives, demonstratives and genitive prepositional phrases all follow the nouns they modify, but relative clauses can occur before or after their heads. The examples in (3a) through (d) show nouns and their modifiers in the expected positions:

- (3) a. nkoogi-riaa-n-de omo-saacha o-no ibiinto
wash-app-I-be 1-man 1-this dishes
"I am washing dishes for this man."
- b. na-kor-re ama-tagito ama-berretu inyoongo
I-made-app 6-clay 6-red pot
"I made the pot with red clay."
- c. naa-temere ibi-icha ibya-baana gu-sukuuri
I-hung 8-pictures 8.of-children loc-school
"I hung the children's pictures in the school."
- d. n-darok-era isweeta ichi-seendana chi-no
I-knit-app sweater 10-needles 10-which
omosaani a-ŋaaye
friend s/he-me.gave
"I knit a sweater with the needles which my
friend gave me."

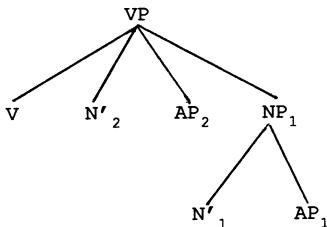
In these sentences, the modifiers immediately follow the nouns they modify. In (3a), the demonstrative *ono* immediately follows *omosaacha*, "man." In (3b), *amaberretu*, "red," immediately follows *amatagito*, "clay." In (3c), *ibya-baana*, "of the children," immediately follows *ibi-icha*, "pictures." In (3d), the head noun *ichiseendana*, "needles," is immediately followed by its relative clause, *chino omosaani aŋaaye*, "which my friend gave me," although it might just as easily have been preceded by the relative clause. The orders in (3) are unsurprising; we would expect sub-constituents of an object NP to be contiguous. But Kikuria also allows any of the nominal modifiers to be separated from their head nouns by an intervening object NP or PP:

(4) a. nkoogi-riaa-n-de omo-saacha ibiinto o-no
wash-app-I-be 1-man dishes 1-this
"I am washing dishes for this man."
b. nakor-re ama-tagito inyoongo ama-berretu
I-made-app 6-clay pot 6-red
"I made the pot with red clay."
c. naa-tem-ere ibi-icha gu-sukuuri ibya-baana
I-hung 8-pictures in-school 8.of-children
"I hung the children's pictures in the school."
d. n-da-rok-era chi-no omosaani a-nyaaye
I-knit-app 10-which friend s/he-me.gave
isweeta ichi-seendana
sweater 10-needles
"I knit a sweater with the needles which my
friend gave me."

Sentence (4a) is identical to (3a), except that the demonstrative pronoun *ono* is separated from the noun it modifies, *omosaacha*, "man," by an intervening object NP, *ibiinto*, "dishes". (4b) is identical to (3b), except that *amaberretu*, "red," is separated from the noun it modifies, *amatagito*, "clay," by another NP, *inyoongo*, "pot". In (4c), genitive prepositional phrase *ibyaabaana*, "of the children," is separated from its head, *ibicha*, "pictures," by adverbial PP *gusukuuri*, "in the school." In (4d), the relative clause, *chino omosaani nyaaye*, "which my friend gave me," is separated from its head, *ichiseendana*, "needles," by the object NP *isweeta*, "sweater". In all these examples, the constituents of NP are mixing freely with their erstwhile aunts.

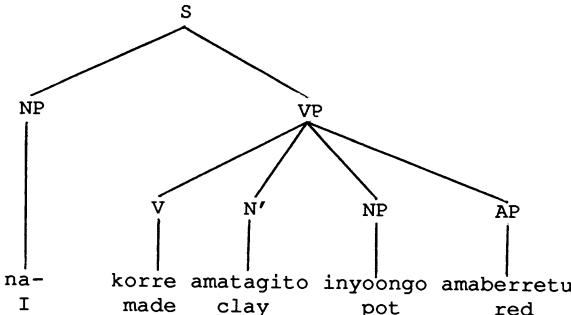
To account for these facts, I propose the direct liberation ID rule in (5), which expands a ditransitive VP. This rule licenses the discontinuous constituents in (4):

(5) (VP, [V, NP₁], [NP₂])



The VP is in the first place in the triple; thus it is the mother. V and NP₁ are in the second place in the triple; thus they will appear as fully structured daughters of VP. NP₂ is in the third position in the triple; this NP can be liberated, and its daughters will take its place in the tree as sisters of V.¹ Assuming that NP₁ and NP₂ each consist of a noun modified by an adjective, the rule in (5) will license the tree immediately below it. Sentence (4c), in which the adjective is separated from the noun it modifies by another object noun, thus has the tree in (6):

(6)



The daughters of the NP_2 have liberated; thus the adjective and the noun can occur on either side of the other object, NP_1 . Recall that the examples in (4) show not only the separation of an adjective from the noun it modifies, but also the separation of demonstratives, genitive PPs and relative clauses from their heads; the full range of nominal modifiers are subject to this kind of separation. The rule in (5), then, by allowing one NP to be replaced by its daughters in the branchings, makes precisely the correct predictions about what kinds of order variation should be possible.

I have shown how a direct liberation analysis accounts for discontinuous constituents in the Kikuria VP. I will now show how such an analysis can also account for data on unbounded dependencies involving relative clauses.

In the sentences in (7), topicalized object nouns have left their relative clauses behind, in post-verbal position:

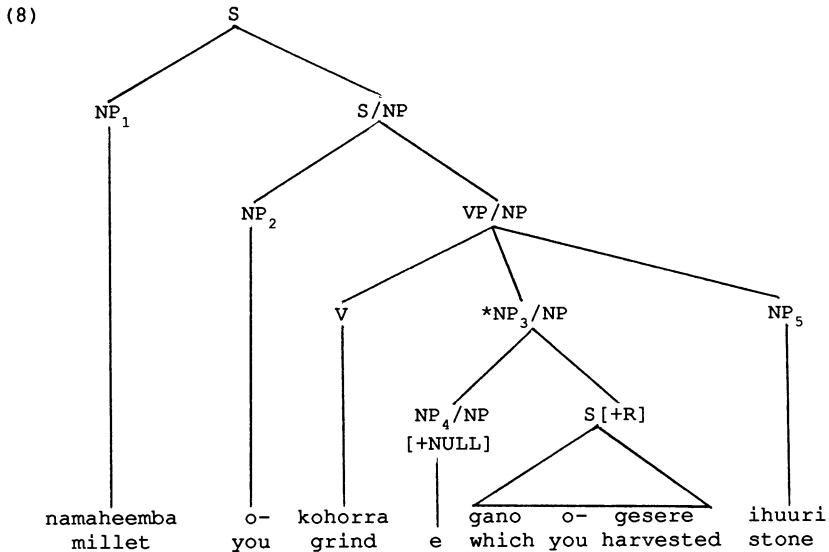
(7) a. n-ama-hEEmba o-ko-hor-ra ga-no o-gEserE
 f-6-millet you-top-grind-app 6-which you-harvested
 ihuuri
 stone
 "You are grinding with a stone the millet which you
 harvested."

b. n-abageni to-kor-eeye ichaahE ba-no baa-chere
 f-2-guests we-made-app tea 2-who 2-came
kurwa nyaamtiro
 from Nyamtiro
 "We made tea for the guests who came from Nyamtiro."

c. n-nichii-ngebo ba-gor-eeye mwiita chi-no
 f-10-clothes they-bought-app Mwita 10-which
maroa aa-re kuhuria
 Marwa he-be selling
 "They bought the clothes which Marwa was selling
 for Mwita."

In (7a), the topicalized noun, *amahEEmba*, "millet," is modified by a post-verbal relative clause, *gano ogEserE* "which you harvested." In (7b), the topicalized noun, *abageni*, "guests," is modified by a post-verbal relative clause, *bano baachere kurwa nyaamtiro*, "who came from Nyamtiro." In (7c), the topicalized noun, *ichiingebo*, "clothes", is modified by the post-verbal relative clause, *chino maroa aare kuhuria*, "which Marwa was selling."

Without recourse to liberation, we would have to assign (7a) the illegal structure in (8):



We can see why the starred subtree NP_3 is illegal when we consider the Slash Termination Metarule as presented in Gazdar, Klein, Pullum and Sag (1985) (henceforth GKPS), shown in (9). The STM terminates an unbounded dependency by introducing the feature [+NULL], which ensures that a category of the form XP/XP , which marks the gap out of which the "movement" has occurred, will be phonologically empty.

(9) Slash Termination Metarule (GKPS, 1985)

$X \rightarrow W, X_2$

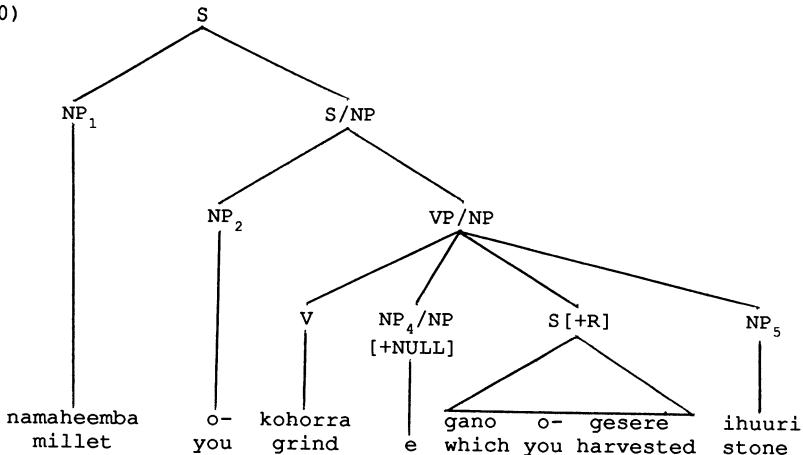
↓↓

$X \rightarrow W, X_2 [+NULL]$

Since metarules only apply to lexical rules, we must assume that W contains a lexical head. In other words, built into this mechanism is the Lexical Head Constraint, first proposed by Flickinger (1983), which claims that all gaps have lexical heads as sisters. In (8), the only sister of the gap NP_4 is $S [+R]$, the relative clause, which is neither lexical nor a head.

Now consider the structure in (10), in which NP_3 , which dominates the relative clause and its head in the fully structured tree, has been liberated. The structure of the VP is licenced by the ID rule presented in (5), which allows one object NP to liberate. Note that NP_3 does not appear in the tree:

(10)



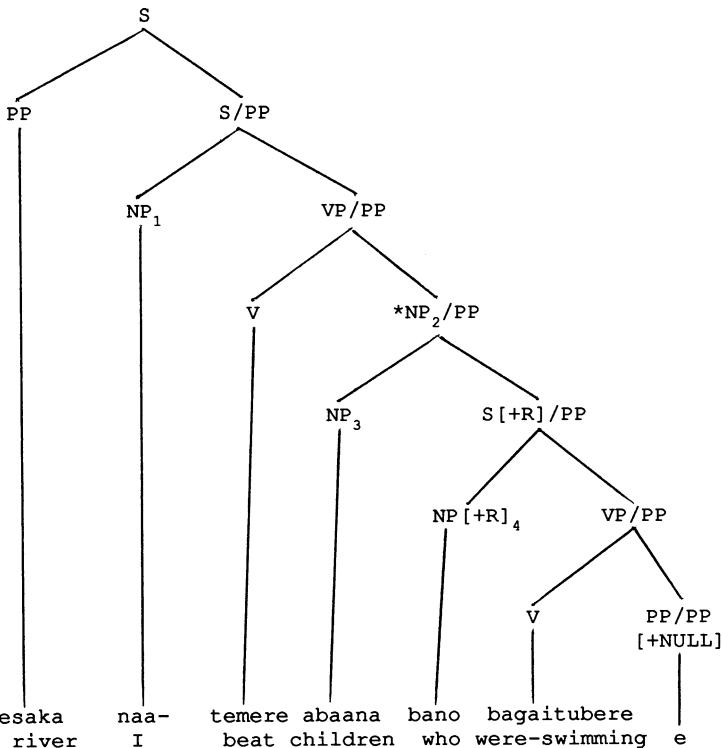
Here, the gap NP_4 does, indeed, have a lexical head sister: it is a sister of V. If we allow such structures, in which NP has liberated into VP, the dependency will be able to terminate, and we can account for head topicalizations out of relative clauses like the examples in (7).

We have seen how the liberated structure of VP proposed to account for head-modifier separation in NPs can also account for one kind of unbounded dependency in Kikuria. Essentially, this analysis involves the interaction of liberation with the instantiation of SLASH, GPSG's mechanism for handling unbounded dependencies. We will now see how a similar interaction of SLASH with the same liberated VP structure can account for movements out of relative clauses. Unlike English, Kikuria does allow movements out of relative clauses, in apparent violation of the Complex Noun Phrase Constraint (CNPC), as we see in (11):

(11) a. n-ko-gesaka naa-tEmere aba-ana ba-no ba-gaitubere _____
 f-in-river I-beat 2-children 2-who 2-were swimming
 "It's in the river that I beat the children who were
 swimming ____."
 b. n-ekegaambo ke o-haanchere umw-iiseke
 f-language which you-like 1-girl
 o-no a-go-soma _____
 1-who 1-top-read
 "Which language do you like the girl who is reading?"

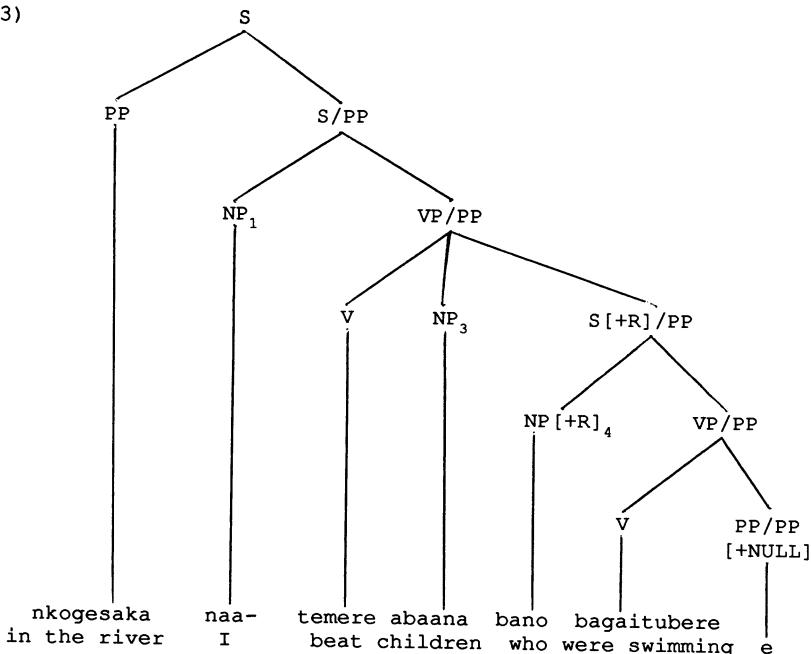
In (11a), a prepositional phrase, *nkogesaka*, "in the river," has topicalized out of a relative clause, *abaana bagaitubere kogesaka*, "the children were swimming in the river." In (11b), a NP, *ekegaambo ke*, "which language," has topicalized out of the relative clause *ono agosoma ekegaambo ke*, "who is reading which language?". In a fully structured tree for sentence (7a), like the one in (12), such movements would be blocked by the Head Feature Convention, as they are in English:

(12)



It is claimed in GKPS that SLASH is a HEAD feature; its instantiation is governed by the Head Feature Convention (HFC). The HFC states that mothers and heads must share SLASH feature values. Consider the starred subtree NP_2 . The head daughter of NP_2 is NP_3 ; SLASH should be forced onto NP_3 , rather than onto $S[+R]$, the relative clause. As Flickinger (1983) has shown, it is precisely this structure which blocks CNPC violations in English. But if we allow a liberated structure for VP like the one proposed in (5), we remove the obstacles to movements out of relative clauses. Consider now the tree in (13):

(13)

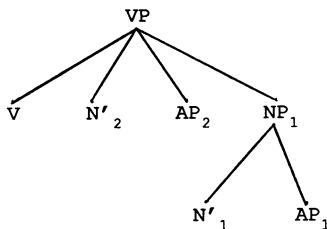


NP₂, which dominates the head and the relative clause in the non-liberated tree, does not appear in the branchings. Here, the relative clause, S[+R], is a sister to lexical V. V is the head daughter of VP/PP; but since lexical categories cannot be SLASHed, SLASH is free to instantiate on the relative clause. In other words, there *is* no complex NP in a liberated structure like (13); the CNPC is thus inoperative.

In conclusion, let us consider the theoretical implications of this analysis. If allowed to interact with the SLASH mechanism, the same liberated VP structure proposed to account for head-modifier separation can at the same time account for two kinds of movements out of complex NPs: cases in which constituents are topicalized out of relative clauses, and cases in which the head itself of the relative clause is topicalized, leaving the relative clause "stranded" post-verbally.

In Zwicky's and Levine's characterizations of the direct liberation approach, semantic interpretation and syntactic subcategorization as well as feature instantiation operate at the level of ID rules, and not on the liberated structures. Now consider once more the direct liberation ID rule proposed in (5), and compare it to the tree it licenses:

(5) $(VP, [V, NP_1], [NP_2])$



It is intuitively clear why we would want to assign a semantic interpretation to the instantiated ID rule rather than the tree: we want to assign a semantic role to the entire NP_1 , not to the scattered and arbitrary fragments of it which appear as daughters of VP in the liberated tree. Furthermore, we want to capture the relationship that obtains between the liberated components of the invisible NP; we can only do this by treating this invisible NP as a proper semantic entity.

It is equally intuitive why we would want subcategorization, too, to apply to the rule rather than the tree it licenses. The ID rule in (5) constitutes the subcategorization frame for ditransitive verbs. Clearly, we want to characterize these verbs as taking two NP arguments, as expressed in the ID rule, rather than, for example, a NP, and a N-bar with a coindexed AP, as in the tree. Metarules, it is claimed, apply only to lexical ID rules; this restriction was intended to capture the link between metarule application and subcategorization. It follows that if subcategorization is relevant at the ID rule level, then metarules, too, operate on ID rules rather than on licensed branchings.

Now consider the operation of feature instantiation. Levine and Zwicky claim that feature instantiation, too, operates at the ID rule level; to some extent, this must be true. The feature spreading principles ensure that all sub-constituents of NP (including adjectives, demonstratives, genitive PPs, and relative clauses) agree with their head nouns for noun class. We need these instantiation principles to apply at ID rule level, when the phrasal N and its modifiers are still each other's only sisters.

There is good reason, then, to accept the version of the theory which claims that both metarule application and feature instantiation apply at the level of ID rules, rather than on the liberated trees. But the analysis of unbounded dependencies presented here relies crucially on the instantiation of SLASH on liberated branchings, and on the application of the Slash Termination Metarule to the licensed branchings rather than to the ID rules. An analysis of the facts presented here which required SLASH instantiation and termination to apply at the ID rule level would necessarily involve a considerable theoretical weakening: at the very least, the abandonment of the Lexical Head Constraint and the claim that SLASH is a HEAD feature. I am proposing, instead, that we make a fundamental distinction between the SLASH spreading mechanism and all of the other features and metarules in the grammar: crucially, that the various components of the SLASH mechanism operates on liberated trees rather than ID rules. There is reason to believe that SLASH is fundamentally different from all other features: it is the only feature which is both a HEAD and a FOOT feature, for example; and recent work indicates that the characterization of SLASH may have to be revised yet further. Similarly, the SLASH Termination Metarule is different from metarules like Passive in that it does not introduce or delete categories, does not alter the constituent structure of any of the categories involved and does not alter the mapping from the syntactic structure to a semantic interpretation. The STM merely introduces the feature [+NULL], which is, in effect, no more than a piece of phonological information.

I propose, then, the model in (14):

(14) Immediate Dominance (ID) Rules - Subcategorization
 Semantic translation
 Metarule application
 (except STM)
 Feature instantiation
 (except SLASH)
 Liberated branchings - SLASH instantiation and termination
 Linear Precedence (LP) rules

SLASH instantiation and termination both operate on liberated branchings, while instantiation of all other features and application of all other metarules operate on the ID rule outputs. Such a division of rule application does, of course, have historical precedent: it echoes the transformational notion of cyclic and post-cyclic rules. But the present proposal makes explicit claims about the nature of both word order freedom and unbounded dependencies, claims of a sort that would be unavailable to a transformational model or any of its derivatives. Rather than weakening our theoretical claims, this analysis enables us to propose the following hypothesis: that the kinds of unbounded movements a language allows will be directly related to the kinds of order freedom the language employs. We have seen that this model makes the correct predictions for a range of data in Kikuria. It remains to be seen whether it can account for the facts about word order freedom and discontinuous constituents in other languages.

Notes

I would like to thank Sandy Chung, Jorge Hankamer, and Geoff Pullum, Chris Barker and my colleagues in the Research Seminar at UCSC for comments on earlier drafts of this paper. Any errors are, of course, my own. The data in this paper was collected from members of the Nyabasi clan of the Abakuria in the Nyabasi West location of South Nyanza, Nyanza province, Kenya, under Kenyan Research Permit No. OP.13/001/15C 136/5, with funding provided by an ITT International Fellowship, 1985-1986. My work on this paper was made possible by a Graduate Fellowship from the National Science Foundation, with resources provided by the Syntax Research Center, University of California, Santa Cruz.

1. The subscript numbers on the NPs, here and throughout this paper, have no formal importance; they are included simply for ease of reference.

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**Question Pull: A Diagnostic Test for
the Complement/Adjunct Distinction in Japanese**
Yoko Hasegawa
University of California, Berkeley

1. Introduction

Although there is no consensus as to how complements and adjuncts should be characterized in theoretical terms, and some researchers have even concluded that the distinction should be given up (e.g. Vater 1978), most of the current syntactic theories claim that complements and adjuncts differ syntactically and semantically in their relationships to the head. The distinction between missing complements and mere unmentioned adjuncts becomes particularly crucial when we analyze constructions which contain internal gaps.

In general, the term *complement* is used to refer to those elements which are indispensable to "complete" the meaning of a given predicate, whereas *adjunct* is used to refer to those which are essentially optional but add information to the central predication as a whole. Complements are said to be subcategorized for by the predicate (or valency-bound); in contrast, adjuncts are not governed by any particular predicate, and thus fall outside the subcategorization frames (or the valence descriptions).

The most important notion in the complement/adjunct distinction (CAD) is *obligatoriness*. The non-predicative elements can be divided into those which are obligatory in some sense and those which are not. There are two kinds of obligatoriness: one is *ontological* (semantic) and the other *syntactic*. Ontologically obligatory elements are those which appear in the logical predicate-argument structure (PAS), which formalizes the native speakers' knowledge of a given predicate. The formalization procedure itself is said to be informal, however. One must make use of his/her intuitive understanding of the language.

Various criteria for the CAD in English have been proposed: some are general and others are more specific, testing a particular type of complement. For example, (1) adjuncts can be eliminated from the sentence without rendering it ungrammatical (Helbig and Schenkel 1973); (2) adjuncts can be added freely to any sentence when relevant (Schmidt 1986); (3) the minimum element that *do so* replaces is the predicate plus any complements, except the subject, which is also a complement (Somers 1984); (4) at least some sentential adjuncts disallow internal gaps while sentential complements generally allow them (Pollard and Sag 1987); (5) among *for*-NPs, only object complements can be passivized, e.g. *Paul was waited for* vs. **This country has been died for* (Emons 1974), and so forth.

Even though no single test can successfully determine the distinction by itself, we find these tests valuable because they can serve to clarify and contrast the nature of the relationship between the head and its complements on the one hand, and that between the head and adjuncts on the other. Also, a grammatical theory is more precise if it provides the criteria on which the CAD is made, rather than simply stating "we consider this element as a complement/adjunct." This is particularly the case when an entity is claimed to be an *optional complement*.

However reliable they may be, many of these diagnostics, based on the properties of strongly configurational languages, are not applicable to languages which have drastically different syntactic characteristics. For example, Japanese tolerates ellipsis to a much greater degree than English, i.e. even obligatory complements need not be overtly expressed; therefore, for example, the elimination test is not helpful.

Certain criteria have been suggested to make the CAD for Japanese. In this paper, we will consider the extent to which such criteria succeed or fail. We will then propose an alternative diagnostic test which is based on the appropriateness of ellipsis-clarifying questions.

2. CAD Tests for Japanese

For languages that tolerate elliptical constructions to an extreme degree, such as Japanese, syntactic obligatoriness is virtually nonexistent. Therefore, we need to rely heavily on semantics. There are, to my knowledge, two diagnostics suggested for the CAD in Japanese.

2.1. Do so Test

Somers (1984) claims that the *do so* test is applicable to Japanese.

(1) (Somers' ex.49)

- a. Keiko ga kinoo hon o kaimasita; watasi mo asita
SUB yesterday book DO bought I too tomorrow
soo simasu.
so do
Keiko bought a book yesterday, and I will do so tomorrow.
- b. *Keiko ga kinoo hon o kaimasita; watasi mo zassi
SUB yesterday book DO bought I too magazine
o soo simasita.
DO so did
Keiko bought a book yesterday, and I did so a magazine.

The ill-formedness of (1b) shows that *soo suru* 'do so' must replace *zassi* 'magazine', which is the DO complement, in addition to the verb *kau* 'buy'. In (1a), by contrast, the temporal adjunct, *asita* 'tomorrow', may remain.

This test, however, does not give consistent results. First of all, *soo suru* is not equivalent to *do so*. Lakoff and Ross (1976) mention that *do so* may replace any VP containing a nonstative verb. *Soo suru* has a stronger restriction: the verb must be intentional, i.e. the subject must be an Agent. The following sentence is not acceptable because the subject of *nakusu* 'lose' is an Experiencer, not an Agent.

(2) *Alice wa hon o nakusimasita; watasi mo soo simasita.
TOP book DO lost I too so did
Alice lost a book, and I did so, too.

When the verb suggests a high degree of intentionality of the Agent, e.g. *korosu* 'kill', even the DO, which is clearly valency-bound, can be extracted.

(3) Alice wa titi-oya o korosita-n datte;
TOP father DO killed Evid(hearsay)
watasi mo syuzin o soo si-tai.
I too husband DO so want-to-do
I heard that Alice killed (her) father; I want to do so (my) husband.

Second, the IO (complement), can be extracted in many cases.

(4) Alice wa haha-oya ni seikatu-hi o okutteiru;
TOP mother IO living-expenses DO is-sending
Bob mo titi-oya ni soo siteiru.
too father IO so is-doing
Alice sends her mother living expenses, and Bob does so to his father.

Third, elements whose adjunct status is not controversial (e.g. Means) often cannot be extracted.

(5) *Alice wa geppu de kuruma o kaimasita;
TOP monthly installment by car DO bought
watasi mo/wa genkin de soo simasu.
I too cash in so will-do
Alice bought a car on monthly installments, and I will do so in cash.

Finally, some pragmatic factors may affect the extractability.

(6) a. Alice wa resutoran de kani o tabemasita;
TOP restaurant at crab DO ate
watasi mo uti de soo simasu.
I too home at so will-do
Alice ate crabs at a restaurant, and I will do so at home.

b. *Alice wa resutoran de ban-gohan o tabemasita;
 TOP restaurant at dinner DO ate
 watasi mo uti de soo simasu.
 I too home at so will-do
 Alice ate dinner at a restaurant, and I will do so at home.

As for (6), the more specific (and scarce) the Theme is, the more natural the *do so* sentence becomes. The overall performance of this test rates low.

2.2. Referability

Kameyama (1985) makes a distinction between invariable (or "global") event components, which are usually encoded as adjuncts, and "locally" obligatory arguments selected by a predicate (complements). She argues that there is a difference between an unexpressed complement and a mere non-mention of an adjunct phrase in discourse. A missing complement can have an implicit reference to an element which has been already introduced in discourse, whereas a mere non-mentioned adjunct cannot have such a reference.

(7) 1. Mary ga Tokyo ni asobi ni kiteiru.
 SUB to play for has-come
 Mary has come to Tokyo for a leisure visit.
 2. kinoo wa Tom ga doobutuen ni turete-itta.
 yesterday TOP SUB zoo to took
 Yesterday, Tom took [her] to the zoo.

(8) (Kameyama's ex.73)

1. kono hootyoo wa yoku kireru.
 this knife TOP well cuts
 This knife cuts well.
 2. watasi wa itumo niku o kitteiru.
 I TOP always meat DO cut
 I always cut meat [with it].

(9) (Kameyama's ex.74)

1. Mary ga Tokyo ni asobi ni kiteiru.
 SUB to play for has-come
 Mary has come to Tokyo for a leisure visit.
 2. kinoo wa Tom ga doobutuen ni itta.
 yesterday TOP SUB zoo to went
 Yesterday, Tom went to the zoo *[with her].

In (7), the missing DO of the second sentence has an implicit reference to Mary, which is mentioned in the first sentence as the subject. In Lexical Functional

Grammar, which Kameyama uses as a theoretical framework, the Instrumentals are *optional complements* (Bresnan 1982). Therefore, she argues, the second sentence in (8) also can have an implicit reference to the knife in the first sentence although there is no overt oblique phrase in the second. In (9), on the other hand, even though Mary has been introduced in the first sentence, the second sentence cannot have an implicit reference to her as an unexpressed element. She claims that this is because the comitative notion is not one of the subcategorized arguments for *iku* 'go'.

As in the cases of other diagnostic tests, this difference does not hold without exception. For example:

(10) 1. tikaku ni ii kooen ga dekita.
vicinity in nice park SUB be-made
A nice park was made in the neighborhood.

2. watasi wa mai-asa sanpo-siteiru.
I TOP every-morning take-a-walk
I take a walk [there] every morning.

(11) 1. akegata wa kuuki ga sundeiru.
dawn TOP air SUB clear
The air is fresh at dawn.

2. watasi wa zyogingu o tuzuketeiru.
I TOP jogging DO continue
I'm still jogging [at dawn].

(12) 1. Oshima de zisin ga atta.
in earthquake SUB there-was
There was an earthquake in Oshima.

2. watasi wa Seki-zyuuzi ni okane o okutta.
I TOP Red Cross IO money DO sent
I sent some money to the Red Cross [because of/for it].

What is referred in (10) and (11) is Spatio-Temporal Location, whereas that in (12) is Purpose/Cause or Beneficiary. These adjuncts, in fact, have reference to an element in the previous sentence.

The fundamental problem of this test is that it is based on inference rather than direct interpretation of the sentence. In real discourse, even simply positioning two sentences in sequence conveys an implicit relation between them. In other words, the addressee links the two pieces of information in one way or another. Therefore, if the addressee believes that the speaker is cooperative, (s)he may make a connection between the two sentences by any reasoning available to him/her. Consider the following example.

(13) 1. Mary ga Tokyo ni asobi ni kiteiru.
 SUB to play for has-come
 Mary has come to Tokyo for a leisure visit.

2. dakara Tom wa maiban disuko e itte-iru.
 therefore TOP every night disco to is-going
 Therefore, Tom is going to a disco every night [with her].

Provided richer context, native speakers interpret (13-2) as "Tom is going to a disco with her."¹

3. Question Pull

Finally, we propose another diagnostic test for the CAD in Japanese. In Japanese discourse there is a style in which the speaker initiates conversation saying only the predicate; e.g. *mityatta* 'have/has seen'. The cooperative addressee is expected to ask questions, such as 'who/what/when/why?', to carry on the conversation. An excessive use of such maximally elliptical sentences is annoying, but, if used effectively, it induces the addressee's active participation in the conversation. Conversation initiating *Guess what* or *You know what?* in English are the same in spirit. Let us call this style in Japanese *Question Pull*.

It is likely that in Question Pull the PAS attached to the articulated predicate in the addressee's mental lexicon is evoked, and the addressee asks questions to identify the elements corresponding to each argument in the PAS until (s)he thinks that (s)he has understood the original one word sentence (cf. Hinds 1978). Of course, the addressee can ask not only for complements but also for adjuncts, if (s)he so desires. However, the addressee cannot ask questions eliciting those which correspond to adjuncts, without rendering the sequence of discourse ill-formed, until all complements have been identified. In other words, the addressee cannot query possibly accompanying adjunct phrases unless (s)he has already understood the complements.²

(14) S: *mityatta*. '[I] have seen [something].'
 A: *nani o?* 'What [have you seen]?'
(15) S: *mityatta*. '[I] have seen [something].'
 A: *#itu/naze/doko de/dare to?* 'When/why/where/with whom [have you seen something]?'³

In order to see this restriction clearly, we need to idealize the situation by assuming that (i) the addressee asks only one question at a time, (ii) there is no non-linguistic (e.g. deictic) information available, and (iii) the addressee has no previous knowledge about the topic of conversation.

One more thing to mention here is that when the subject is *I*, it is rarely overtly expressed in declarative sentences in Japanese. Therefore, it is not clear in

(14) whether A thought the subject was S, or A thought the subject was somebody else, and yet (s)he asked the direct object first.⁴ We can avoid this ambiguity by creating a situation where the referent of the subject cannot be the speaker.

(16) S: netyatta. '[I/somebody] slept.'
 A: itu/doko de/naze? 'When/where/why [did you/somebody sleep]?'
 (A might have interpreted that the subject was the speaker.)

(17) S: neteiru. '[Somebody] is sleeping.'
 A: dare ga? 'Who [is sleeping]?'
 A': #doko de/naze? 'Where/why [is somebody sleeping]?'

(18) S: kesita rasii. 'It seems that [somebody] erased [something]'
 A: dare ga? 'Who [erased something]?'
 A': #itu/doko de/naze? 'When/where/why [did somebody erase something]?'

To use Question Pull as a diagnostic test for the CAD, we ascertain whether or not a question which asks for the entity corresponding to a clear adjunct (e.g. *when*) may come before the question asking for a given entity. In other words, we list all entities that MUST be identified BEFORE asking *when* in idealized discourse situations. We consider the listed entities as complements. The following tables show the test results for some Japanese verbs.

3.1. Simple Verbs

Postpositional particles mark: *ga*=Subject, *o*=Direct Object, *ni*=Indirect Object, unless otherwise specified.

Verb	Gloss	Must be asked before <i>itu</i> 'when' (no. of comp's)
aruku	walk	dare ga 'who' (1)
kieru	disappear	nani ga 'what' (1)
iku	go	dare ga 'who', doko e/ni 'where[GOAL]' (2)
matu	wait	dare ga 'who', nani/dare o 'what/whom' (2)
kiru	cut	dare ga 'who', nani o 'what' (2)
kihu-suru	donate	dare ga 'who', dare/doko ni 'who/where[GOAL]', nani o 'what' (3)
turete-iku	take	dare ga 'who', dare o 'whom' doko ni 'where[GOAL]' (3)

This test accurately reflects the native speaker's intuition about these predicates: *aruku* 'walk' is unary, *iku* 'go' is binary, *kihu-suru* 'donate' is ternary, and so on. The results also confirm (in principle) the two-level case frames proposed by Hinds (1978).⁵ Notice that Instrumentals are not classified as complements according to

this test. None of our informants felt that a discourse is unnatural if *when* is asked about immediately after the subject and DO, before an Instrumental is queried.

When temporal adjuncts are not appropriate, we replace *when* with some other WH-words whose status with respect to the CAD is unproblematic. The following table shows that both *niteiru* 'resemble' and *niau* 'fit' are binary predicates.

Verb	Gloss	Must be asked before <i>dono-gurai</i> 'how much'
<i>niteiru</i>	resemble	<i>dare/nani ga</i> 'who/what', <i>dare/nani ni</i> 'whom/what' (2)
<i>niau</i>	fit	<i>dare/nani ga</i> 'who/what', <i>dare/nani ni</i> 'whom/what' (2)

3.2. Derived Causative Verbs

Let us now apply the Question Pull test to causatives. One type of causative verb is derived from a simple verb by attaching a causative morpheme *-(s)aseru*. The next table presents some examples of the results.

Verb	Gloss	Must be asked before <i>itu</i> 'when'
<i>aruk-aseru</i>	make X walk	<i>dare ga</i> 'who', <i>dare o</i> 'whom' (2)
<i>kie-saseru</i>	make X disappear	<i>dare ga</i> 'who', <i>nani o</i> 'what' (2)
<i>ik-aseru</i>	make X go	<i>dare ga</i> 'who', <i>dare o</i> 'whom' <i>doko e/ni</i> 'where[GOAL]' (3)
<i>mat-aseru</i>	make X wait	<i>dare ga</i> 'who', <i>dare o</i> 'whom' (2)
<i>kir-aseru</i>	make X cut	<i>dare ga</i> 'who', <i>dare ni</i> 'who' <i>nani o</i> 'what' (3)
<i>kihu-s-aseru</i>	make X donate	<i>dare ga</i> 'who', <i>dare ni</i> 'who', <i>nani o</i> 'what', <i>dare/doko ni</i> 'whom/where' (4)
<i>turete-ik-aseru</i>	make X take	<i>dare ga</i> 'who', <i>dare ni</i> 'who', <i>dare o</i> 'whom', <i>doko e/ni</i> 'where[GOAL]' (4)

Again, the results agree with the native speaker's intuition, viz. "causativization" creates $n+1$ -arity for n -ary verbs. There are exceptions; e.g., the causative form of *matu* 'wait' does not increase the arity. However, this can be attributed to the idiosyncracy of *matu*. If *X* makes *Y* wait for *Z*, the most natural interpretation is *X*=*Z*, unless otherwise specified.

3.3. Derived Passive Verbs

The accuracy of the Question Pull test for isolating complements is limited by the degree to which pragmatic principles of default interpretation provides the semantic values for unexpressed complements. Japanese contains three distinct passive constructions, each with a different array of complement types. Question Pull

responses following an elliptical passive sentence, therefore, reveal which type of passive the addressee assumes the speaker to have in mind.

Similar to causatives, passives are derived by adding a passive morpheme -(r)are- to the stem. In Question Pull with passives, we used an inferential evidential marker *rasii* to signal that the subject was not the speaker.

As noted, there are three types of passive in Japanese.⁶ Generally speaking, Type I is parallel to the English passive construction in which the subject is a Patient, and the Agent may be expressed as an oblique NP. Shibatani (1972) calls this type *direct passive*. Type II contains a predicate which is derived from an intransitive verb. We call this type *intransitive root passive*. Type III has a Patient DO and may contain an agentive oblique NP. The subject of this type is someone who has a "strong relation" with the DO. Shibatani (1985:841) describes Type III as that in which "the affected nature of the passive subject...may lead to the use of passive morphology/syntax in a situation where the subject is indirectly affected by the event...the possessor of body part or an article that is directly affected can stand in subject position in a passive expression." Let us call this type *patient object passive*.

(19) Direct Passive

John ga Alice ni nagur-areta.
SUB by was-hit
John was hit by Alice.

(20) Intransitive Root Passive

John wa haha-oya ni nak-areta.
TOP mother by cry(Pass)
John had his mother cry on him.

(21) Patient Object Passive

John ga okane o nusum-areta.
SUB money DO was-stolen
John had his money stolen.

Both the subject and the Agent/Experiencer NP are clearly complements in intransitive root passives, e.g. *nak-ar eru* '<(derived from) cry', *hikkos-ar eru* '<move away', *isuwar-ar eru* '<stay on', *sin-ar eru* '<die'.

In other types of passives, the results vary from verb to verb. The agentive NP must be identified before *when* with some verbs, e.g. *damas-ar eru* 'be deceived', *homor-ar eru* 'be praised', *mitomer-ar eru* 'be recognized', *ais-ar eru* 'be loved'. However, the Agent need not be identified with *koros-ar eru* 'be killed', *nusum-ar eru* 'be stolen', *kowas-ar eru* 'be broken', etc.

Another point to mention is that the patient object passive interpretation seems to be more salient than the direct passive interpretation for many

predicates. For example:

(22) S: *nakus-areta rasii*. 'It seems that [something] was lost.'
 A: *nani o?* 'What? (DO)'
 S: *hon o.* 'A book.'
 A: *dare ga?* 'Who? (affected person)'
 S: *John ga.* 'John.'
 A: *dare ni?* 'By whom? (the person who lost the book)'
 S: *sensei ni.* 'By the teacher.'
 (John had the teacher lost his book.)

None of the informants came up with the direct passive interpretation for *nakus-areru* 'be lost', *kowas-areru* 'be broken', *mi-rareru* 'be seen', *tabe-rareru* 'be eaten', *kizuk-areru* 'be noticed', etc. This result reflects the fact that non-human NPs rarely appear as the subject in the Japanese passive constructions. The claim that the passive operation creates n-1-arity verbs from n-ary verbs is not empirically justified.

4. Conclusion

We have discussed three diagnostics for the Japanese CAD. In contrast to English, the *do so* test is not reliable with the Japanese CAD. The Referability test seems to be more promising. However, if strong contextual support is provided, it fails to discriminate even prototypical adjuncts from complements due to its heavy reliance on inference rather than direct interpretation of language. The Question Pull test is reliable as far as active sentences are concerned, but its overall accuracy is yet to be established.

Notes

* My thanks go to Charles Fillmore, Paul Kay, and Yoshiko Matsumoto for their comments on an earlier version of this paper.

¹ If uttered in appropriate context (e.g. Mary is a zoo fanatic), even (9-2) could be interpreted as "Tom went to the zoo with her".

² C. Fillmore has pointed out to me that the English equivalent to (14) may be *I've seen it*, without mentioning what *it* refers to. In such a case, it is strange to ask *where*, *when*, *with whom* unless the addressee knows what *it* is.

³ The sequence in (15) could occur in real discourse, in which case the interpretation would be that the addressee refuses to be cooperative.

⁴ There may be a natural preference in the order of identification among complements; e.g. SUB > DO > IO, etc. None of our informants asked for the IO prior to the subject or DO. Between the subject and DO, the latter was sometimes identified first. For example:

S: nakusita mitai. 'It seems that [someone] lost [something]'
 A: nani o nakusita no? 'What did [someone] lose?'
 S: tegami. 'A letter'
 A: dare ga? 'Who [lost a letter]?'

As for adjuncts, we assume that there is no ordering: after all complements have been identified, the addressee can ask questions for relevant adjuncts in any order.

⁵ Hinds considers the Ablative NP of *kuru* 'come' as an obligatory argument in neutral situations. Our test, however, indicates that the Ablative is not a complement. In fact, our informants did not even mention the Goal. They might have thought that the Goal was wherever the speaker was. We could not override this default indexical interpretation of the verb.

⁶ For syntactic and semantic properties of these three types of passive, see Alfonso (1971), Akatsuka-McCawley (1972), Shibatani (1972), Kuno (1973), or Howard and Howard (1976).

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SMALL CLAUSES AND THE PROJECTION PRINCIPLE

Jeffrey P. Kaplan
San Diego State University

Analyses of complement small clauses like those in (1) reveal a logical gap in the argumentation for category assignment.*

- 1 a) Max considers Joe smart.
b) Sam expects Laura off the ship by midnight.
c) We feared Mo killed by the enemy.
d) They made their son a good lawyer.

The logical gap is a case of a wider gap in GB theory, which has to do with the question of what the syntactic possibilities are for realizing particular θ -roles. The special case of this question that appears in the case of small clauses is the problem of what can be the syntactic realization of the θ -role "propositional object."

It has been controversial whether small clauses like those in (1) are syntactic constituents, and if so what their syntactic category is. According to Stowell 1981 and 1983, Chomsky 1981 and 1986b, and Contreras 1987, each is a constituent whose category is that of the maximal projection of the head of its predicate. Under this analysis the small clause in (1a) is an AP, the one in (1b) is a PP, the one in (1c) is a Participial Phrase, the one in (1d) is an NP. According to Kitagawa 1985, they are constituents of the category \bar{S} . According to Safir 1983, they are "clausal" constituents; but Safir does not address the question of their category. And according to Williams 1983 they are not constituents, but instantiations of the subject-predicate relation, marked by co-indexing but not by shared constituency.

Answers to the category and constituent questions are not purely empirical, but depend partly on theory. One relevant theoretical constraint is the Projection Principle, which says that syntactic structure at all levels manifests lexically stated thematic properties. One such property of the matrix verbs in (1) is that they assign the θ -role of "propositional complement" or "propositional object" to their complements. But what is the syntactic realization of a propositional complement? In LGB Chomsky assumes it is \bar{S} . But Stowell, Contreras, and Chomsky (elsewhere in LGB) argue that propositional complements such as those exemplified in (1) are AP, PP, etc.

Suppose that \bar{S} is taken to be the default realization of propositional arguments. The theory should have a way to capture this. The Projection Principle is the obvious candidate, requiring, as it does, preservation of thematic properties at all syntactic levels. Chomsky intimates in LGB that the distinction between lexically stated thematic and subcategorization information may be neutralized:

- 2 The requirement that subcategorization entails θ -marking..restricts the variety of lexical entries. It is minimally necessary that the lexicon provide, for each lexical head, information about θ -marking for this element. We are now assuming that it is also maximally necessary; that is, there is no independent subcategorization information, except, possibly, in the case of idioms, or with regard to the linking of θ -role and category (e.g., is an

infinitival complement an NP or only an \bar{S} ?). Even the latter may well be eliminable either on general grounds, or at worst, in terms of redundancy rules for the lexicon of a particular language. (Chomsky 1981.38) [my underlining: JK]

In the underlined portion, Chomsky leaves an opening to retaining the independent statement of subcategorization. As a way to eliminate it, on the basis of an idea of Grimshaw's (1981), in *Knowledge of Language* Chomsky proposes the principle of "Canonical Structural Realizations" (CSRs) of thematic roles. According to this principle, selectional properties stated in the lexicon receive a stipulated syntactic encoding, doing away with the need for a separate lexical statement of syntactic (i.e., categorial) selection, since it would be redundant:

3 Canonical Structural Realizations:

Let us assume that if a verb (or other head) s-selects [i.e., semantically selects] a semantic category C, then it c-selects [i.e., categorially selects] a syntactic category that is the "canonical structural realization of C" (CSR(C)). [Chomsky 1986a.87)

The idea of CSRs is both an extension to the Projection Principle, since it formally relates semantic and categorial selection, and a way to formally execute it in a grammar.

In CSR terms, assuming that \bar{S} is the default realization of propositional arguments means that we assume that CSR (Propositional Object) = \bar{S} . But if a CSR is canonical, there can be other, non-canonical, Structural Realizations of propositional objects, for instance NP-complements like those in (4):

- 4 a) We watched the enemy's destruction of the city.
- b) We persuaded John of the importance of going to college. (= Chomsky 1986a (58)iii))

Propositional objects may, also, arguably, be encoded as other categories, e.g., as in the Stowell-Chomsky-Contreras analysis of small clauses. With \bar{S} regarded as canonical, there are two possibilities for handling the other cases. One, obviously, is to distinguish formally between canonical encodings of propositions (e.g., as \bar{S}^1) and marked encodings (NP and possibly others). Let us call this the "strong" approach. A second, "weak," approach is to weaken the tie between s-selection and c-selection, and allow an s-selected proposition to be encoded as any constituent made up of a subject and a predicate, or possibly even any linked subject and predicate, regardless of whether they form a syntactic constituent.

Whatever approach is taken, the problem must be confronted of how to know whether the Projection Principle's requirements are met by a particular syntactic description. As a way to check this, the CSR principle is a natural and long overdue addition to the theory, and the absence of it or something like it, in work on small clauses, is an obvious logical gap. This gap becomes noticeable with small clauses, but exists as well even with the syntactic realization of θ -roles like Agent as NPs.

Let us now turn to the competing analyses of the small clauses exemplified in (1). Stowell (1981, 1983) argues that complement small clauses function as predicate phrases with the categorial status of AP, PP, Prtcpl Phr, etc., rather than \bar{S} , because of the "locality" principle of subcategorization: "since subcategorization features are simply addenda to slots in thematic grids, the verb is unable to specify the categorial features of anything other than the entire complement" (1981:259). There appears to be selection between the matrix verb and the predicate of the small clause:

- 5 a) *I consider John off my ship.
*I consider John killed by the enemy.
- b) *I expect that sailor very stupid.
- c) *We feared John very stupid.
*We feared John off the ship already.

(Stowell 1981's (15), and his judgments)

(5a) shows, according to Stowell, that *consider* cannot be followed by a small clause whose predicate is a PP or Participial Phrase, (5b) that *expect* cannot take one whose predicate is an AP, and (5c) that *fear* cannot take one whose predicate is an AP or PP. But because of the locality principle, such restrictions cannot be stated. Rather, the entire small clauses in such examples must be assumed to have the categories of the heads of their predicates. Under this analysis the sequence *John off my ship* in the first example of (5a) would be a PP, the sequence *John killed by the enemy* in the second example in (5a) would be a Participial Phrase, and the sequence *that sailor very stupid* in (5b) would be an AP.

But how can PP, Prtcpl Phr, AP, etc., be considered propositional, and thus in accord with the Projection Principle? Referring to examples like (1), Stowell says

- 6 each [matrix] verb...takes a complement that is assigned the θ -role of Propositional Object. In each case, the "small clause" ...is assigned exactly the same θ -role as the full infinitival clause [e.g., as in *I consider [S John to be very stupid]*] ...As with the Exceptional Case-marking construction, THE CLAUSAL STRUCTURE IS IMPLIED BY THE PROJECTION PRINCIPLE [*my emphasis--JK*], since the governing verb assigns just one θ -role (to a propositional complement) at LF...If the locality of strict subcategorization is to be maintained, then the clausal status of the complements..forces the conclusion that APs, PPs, and participial phrases may contain lexical NP subjects..." (Stowell 1981: 259)

Notice that "the clausal structure is implied by the Projection Principle" is the exigency of a theory, not an empirical argument. What licenses calling AP, PP, etc., "clauses"? Stowell's answer is that they are clauses because they have subjects and predicates; given his analysis, Stowell says "any syntactic position may project to include a subject position, THUS FORMING A CLAUSE" (1981, p. 261) [*my emphasis--JK*]. Stowell's 1983 paper has more to say on this:

7 Each of the matrix verbs [e.g., those in (1)] takes a complement which is interpreted as a clause at Logical Form..the interpretation of a constituent at Logical Form must be independent of its syntactic category label, if categories such as AP and PP may be interpreted as clauses. Any constituent which consists of a subject/predicate configuration may be interpreted as a clause at LF, although the clause may not function as a complete proposition if it lacks an internal tense operator. Naturally this generalization of the notion 'clause' is only possible if the subject position itself generalizes across categories (Stowell 1983.298).

Generalization from what? A reasonable guess would be, "from \bar{S} ." If so, \bar{S} is the assumed category for clauses, and Stowell's proposal here is to extend clause categories to include others.

Stowell, then, reads the Projection Principle as requiring that propositional objects be encoded syntactically as clauses, and proposes interpreting "clause" as any subject + predicate constituent. This is consistent with the "weak" interpretation of the Projection Principle/CSR principle, since, under Stowell's analysis, a propositional object can be realized as any subject + predicate constituent.

Consider now expressions like *the enemy's destruction of the city*. Are such nominalizations, with subjects and predicates, clauses? By Stowell's definition they may be. But are they "propositional," i.e., do they encode no more than a proposition? Some are ambiguous between an activity reading and a result reading. In

8 a) The enemy's destruction of the city amazed us.
 b) We saw the enemy's destruction of the city.

both readings are available. The activity reading is propositional (and favored by a main verb like *watch* , as in *We watched the enemy's destruction of the city*), but the result reading, selected by a predicate like *lay before us*, is not:

9 The enemy's destruction of the city lay before us.

Other result- "nominalization" cases make the same point; they might be "clauses" under Stowell's characterization, but aren't "propositional":

10 Al's gift to the hospital of \$3000 brings the total to \$4 million.

If comprising a subject and a predicate means being a clause, then *Al's gift to the hospital of \$3000* might be a clause. But it is not propositional, since it encodes not just the proposition GIVE (AL, \$3000, THE HOSPITAL), but also a special focus on, or status of, the proposition's predicate (*give*).

The same problem could conceivably arise with "picture" NPs like *Bill's pictures of himself*. Surely such expressions are not clauses, but depending on how the notion "subject/ predicate configuration" is clarified, by Stowell's definition they might be. Yet they are not "propositional."

To summarize the problem, under Stowell's analysis small clause constructions with the category of AP, PP, etc. are clausal (because they comprise subject and predicate) and hence satisfy the Projection Principle's requirement that they encode

propositional arguments (on the tacit assumption, embodying the CSR idea, that "clauses" encode propositions). But there are constructions which seem to comprise subject + predicate which aren't propositional. So how are we to know that small clauses with the categories of AP, PP, etc., and comprising subject + predicate, satisfy the Projection Principle? For Stowell's analysis to work, a precise definition of subject and predicate would be needed, as well as a way to ensure that only propositional constructions are clausal. (To define clauses as subject + predicate configurations which encode propositions would not do, of course, because what can count as a realization of a propositional argument is precisely the question we are trying to answer.)

Kitagawa 1985 offers arguments for the "clausality" of small clauses, "clausality" being taken as "having the category \bar{S} ":

11 ..SCs are fully clausal, containing not only INFL but also COMP (i.e., $SC = \bar{S}$) (p. 210).

If a string has the category \bar{S} , a sub-string of it has the category S . Kitagawa argues as follows that small clauses are S s. Given the Extension of the Projection Principle ("Clauses must have subjects" (Chomsky 1982)), if small clauses are sentential, the requirement that some of them need pleonastic subjects (as in *I prefer *(it) hot in summer*) is predicted. Stowell's 1983 claim that it is possible to extend the EPP from S to predicate phrases, Kitagawa says,

12 would require one to assume that NPs have an exceptional status on this matter, since NPs allow neither pleonastics nor extraposition except when they appear as SCs, as illustrated by the contrast between (16) and (17) below:

(16) a. *its hotness (with pleonastic reading)
b. *its unlikeliness that he will win

(17) a. I consider [**(it)* a possibility that he will win]
b. I consider [**(it)* a cinch (for him) to win] (1985.213-214)

That Kitagawa implicitly assumes the strong version of the Projection Principle/CSR principle is made clear by his conclusion to his argument that small clauses are \bar{S} s:

13 This conclusion, in fact, is quite reasonable in the light of the Projection Principle (Chomsky (1981)), since SCs clearly receive a clausal θ -role just as other clausal complements do (p. 215).

Kitagawa also offers an argument, *contra* Stowell, that the restrictions between matrix verbs and complement small clauses are semantic rather than categorial in nature. Kitagawa argues that *consider* requires a complement expressing a "state of affairs" but not a "change of state," while *expect* requires one expressing a "change of state" but not a "state of affairs." Thus, against Stowell's claim that *consider* subcategorizes for AP complements (e.g., *I consider him honest*), Kitagawa adduces the ungrammatical (14a) below, with an AP complement expressing a change of state; and against Stowell's claim that *expect* subcategorizes

for PP complements (e.g., *I expect that sailor off my ship by midnight*), Kitagawa adduces the ungrammatical (14b) below, with a PP complement expressing a state of affairs.

14 a) *The doctor considers that patient dead tomorrow.
 b) *I expect that island off our route.

Contreras 1987 counters this argument and supports Stowell's analysis against Kitagawa's, on the grounds that Kitagawa's finding that the restrictions between matrix verb and small clause complement are semantic rather than categorial is wrong, or at least incomplete, with some categorial restrictions remaining: *expect*, supposedly selecting only "change of state" complements, and indifferent to the category of its complement, cannot in fact occur with an NP small clause complement, even if it expresses a change of state:

15 *I expect [you an attorney by the end of the year]. (=Contreras (21))

Contreras concludes on the basis of this and other arguments that complement small clauses are predicate phrases of varying syntactic categories, in fact, just the sort of constituents that Stowell proposed.

Williams, both in his syntax textbook (van Riemsdijk and Williams 1986) and his 1983 article *Against small clauses*, denies that there is a clausal node dominating a small clause. Rather, the subject-predicate relation required (e.g.) to account for the reflexive--

16 John considers Mary_i proud of herself_i.

--can be established by co-indexing subjects and predicates, an approach Williams labels the "predication theory." An analysis such as

17 John considers [NP Mary]_i [AP proud of herself]_i.

violates the Projection Principle (Chomsky 1981.32-33); *consider* takes a "clausal" complement and by the Projection Principle can't have any other sort of complement at any level. Williams argues that with his new definition of subject it is possible to treat "clausal" in a new way:

18 [Why consider the complement of *consider* clausal?] [One reason] might be to reflect the intuition that the complement to *consider* is a semantic unit. But what is a semantic unit? Must it be a syntactic constituent? Suppose we take a subject and its predicate to be a semantic unit. THEN WE DO NOT HAVE TO INSERT AN S-NODE IN LF [my emphasis: JK] to reflect the unithood of a subject-predicate pair...Which is the primitive notion, the *subject-predicate relation* or the *clause*? The predication theory takes the subject-predicate relation as primitive...Thus it appears that the Projection Principle can be maintained under the predication theory.

Williams' suggestion is consistent with the "weak" version of the Projection Principle/CSR principle. But the standard assumption he is reacting against is close to the strong understanding of it, as can be seen by the capitalized passage. That is,

Williams' working assumption is that a proposition (a semantic unit comprising subject and predicate) is standardly realized as an S.

However, the same problem that arose for Stowell's theory can be seen to arise for Williams' (the approach he wants to take, not the one he assumes as the standard position). If the Projection Principle is satisfied when a propositional argument is encoded as a co-indexed subject and predicate, the same linked subject and predicate expressions that were a problem for Stowell's analysis are a problem for Williams': result nominalizations and picture NPs. For these may have linked subjects and predicates, but are not propositional; hence the fact that an expression comprises linked subject and predicate cannot be taken to show that it encodes a propositional argument.

Let us see what Chomsky has to say on the subject. In LGB we read

19 Consider next such items as *seem*, *appear*. The lexicon specifies these as monadic predicates with a propositional argument to which they assign a θ-role. So far we have not introduced a notion corresponding to "proposition," but have kept to notions expressible in the syntax of LF. Let us see what happens if we persist in this vein. Consider..

(11) (i) it seems [that John hit Bill]
(ii) John seems [t to have hit Bill]
(iii) John seems sad

Suppose we assume (I) that there is a uniform entry for *seem* in the lexicon, while (II) persisting with the assumption that the projection principle holds..As (11i) indicates, *seem* takes a clausal argument and thus must have the lexical entry: $\underline{\text{S}}$. (1981.105-106)

This passage indicates that for Chomsky \bar{S} equals clause and is the sole realization of propositional arguments. Regarding complement small clauses, however, Chomsky accepts Stowell's analysis, so that *They consider John stupid* would have the structure

20 they consider [AP John [A stupid]]

Chomsky continues:

21 The verb *consider*, then, subcategorizes for AP, so that the selection of the complement...is no longer a problem..AP with subject is now regarded as a "proposition" in the sense required at LF, along with S. (1981.112)

Immediately, however, Chomsky adds

22 In the examples of (32), however, we continue to assume that the small clause is of the category S rather than AP, since there is not selection of AP by the main verb in this case, presumably.

The "examples of (32)" contain adjunct small clauses:

23 (i) John [VP left the room] [PRO angry]
 (ii) John[VP left the room] [PRO empty] (=Chomsky 1981 ex. 32)

So Chomsky's 1981 view was that propositional arguments are encoded as S or \bar{S} in the default case, but as other categories when needed. This view embodies a logical gap, filled five years later by the CSR proposal. The gap, of course, is the question in (24C):

24 A. The Projection Principle requires syntactic encoding of lexical properties at all syntactic levels.
 B. If a verb is lexically marked as selecting a propositional complement, the Projection Principle requires that at all syntactic levels the verb have a propositional complement.
 C. But what determines whether a particular syntactic form encodes a propositional complement?

Summing up this literature survey, we see that the Stowell-Chomsky-Contreras analysis, however sound on other grounds, is at variance with the requirements of the Projection Principle, since in that analysis there is no way to know that those requirements are met by a syntactic description. Williams' analysis suffers from the same problem. Kitagawa's analysis, however, in a sense meets the requirements of the Projection Principle, since it is consistent with the strong version of the CSR idea, which provides a way to check for conformity with the Projection Principle.

There is a difference, of course, between implicitly assuming a needed element in a theory, and overtly recognizing it and including it in argumentation and results arrived at within a particular framework. None of the research I have surveyed overtly recognizes the need for the CSR principle, except Chomsky 1986a, which is exploratory and non-technical, and which suggests, sketchily, a different approach to small clauses². Thus, with that partial exception, all work to date on small clauses, as far as I can tell, suffers from a logical gap.

Let me sketch the way the interplay between empirical evidence and theoretical concerns should be interpreted with respect to the category question for small clauses. Given the Projection Principle, a formal device is needed within a grammar to ensure conformity with it. The CSR idea is suitable for this purpose. Let the Canonical Structural Realization of the θ -role of Propositional Argument be \bar{S} . This is needed for "fully clausal" propositional arguments: *that S* and infinitival structures. Verbs which s-select propositional complements, may, however, allow other categories to encode the θ -role of Propositional Object. Each such other subcategorization is, of course, non-canonical, and must be lexically stipulated as a marked Structural Realization of the θ -role of Propositional Object. This will permit the Stowell/Chomsky/Contreras description of small clauses, as well as one other kind of marked structural realization of Propositional Argument, the NP category of propositional complements of such verbs as *support*, *favor*, and *like*, e.g.,

25 a) support:

- i) We support *Ron's firing Ollie*.
- ii) *We support *that Ron fired/s Ollie*.
- iii) *We support *it that Ron fired/s/Ø Ollie*.
- iv) *We support *that Ron fire Ollie*.

b) favor:

- i) We favor *Ron's firing Ollie*.
- ii) *We favor *that Ron fires Ollie*.
- iii) *We favor *it that Ron fires/Ø Ollie*.
- iv) *We favor *that Ron fire Ollie*.

c) like:

- i) We like *Ron's firing Ollie*.
- ii) *We like *that Ron fired/s Ollie*.
- iii) We like *it that Ron fired Ollie*.
- iv) *We like *that Ron fire Ollie*.

Such verbs are subcategorized for NP, and not for \bar{S} , except for *like*, which allows an \bar{S} with extraposition. Taking \bar{S} as the Canonical Structural Realization of the θ -role of Propositional Argument means that the subcategorization requirements of these verbs will need to be lexically stated (i.e., they are non-canonical), despite the NP category of their complements being in a sense "unmarked," since it is obligatory for these verbs.

In conclusion: A problem in GB theory is how to ensure that the Projection Principle is satisfied by a syntactic description. This problem is thrown into particular relief by complement small clauses. The CSR principle proposed in Chomsky 1986a, plus lexical marking for non-canonical realizations, is offered as a solution for this problem.

FOOTNOTES

*I would like to acknowledge a debt of gratitude to Sherri L. Condon for very helpful comments and suggestions on an earlier draft of this paper.

1. Or as S; see comments below by Williams and by Chomsky.

2. Chomsky suggests that a "more complex mode of s-selection" (1986a.91-92) may be involved with small clauses, in which the direct-object-like behavior of small clause subjects might be accommodated by letting the main verb s-select proposition, while allowing JOINT selection by both the main verb and the embedded predicate of the small clause subject. However, Chomsky points out that such an idea is not without problems, e.g., it would predict that small clauses could not have expletive subjects, which are sometimes possible (*We consider IT obvious that John is intelligent*).

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NEW COMPOUNDS FROM THE OLD:
AN UNEXPECTED SOURCE OF VERB + NOUN COMPOUNDS IN ROMANCE

Kathryn Klingebiel
University of California, Davis

This paper argues for a direct link between several Romance Verb + Noun compounds and their verb-final counterparts, e.g., Sp. (15th c.) cantamisano 'priest', Occitan-Catalan (16th c.) lligacama 'garter', as against earlier and synonymous Sp. (11th c.) misacantano ['Mass' + 'sing'], Occ.-Cat. (14th c.) camalliga ['leg' + 'bind'], respectively. (*) Such pairs highlight the importance of the paradigmatic aspect of word formation processes, inviting close attention to pressures exerted on derivational patterns by other patterns. The following corpus results from more than five years of research into Romance compounding, during which there have come to my attention pairs of compounds whose members share oppositely ordered lexical elements: e.g., in addition to camalliga/lligacama, Raeto-Rom. (Valais) mēn̩pa 'sustenance for Alpen shepherds' (from Med.L. manūpāstus ['hand' + 'fed'] '[member of one's] household; servant')/Raeto-Rom. (Engad.) paschamaint 'head cowman's third helper'; Occ. peltirar ['hair' + 'pull'] 'to pull by the hair or clothes'/fa à tiro-piaus idem; Gasc. arre-bau ['nothing' + 'is worth']/bau-arré 'good for nothing, lazy'; and Cat. feina-fuig ['flee' + 'work'] 'lazy'/Occ. fuglòbra idem. These pairs, each with a V + N member, differ widely in their relative morphological comparability and semantic identity. Among the vast numbers of Romance V + N compounds, it is true, few appear to result from reversal, such that version X, with pattern X, undergoes restructuring or remodeling (perhaps "renovation") into version Y. Yet evidence of deliberate one-way inversion is available in the corpus below; I identify, as the source of that reversal, pressure from the higher frequency of Romance pattern Y, Verb + Noun, which has yielded an unexpected corpus of novel nominal, adjectival, and adverbial compounds derived from existing verb-final formations.

An early parallel for camalliga/lligacama 'garter' occurs in Greek personal names: nike-phóros ['victory' + 'bear']/pheré-nikos lit. "victory-bearing". (1) The use of actual verb stems as first constituents was traced by Brugmann to reinterpretation of originally nominal stems, e.g., Gk. philo(s) 'dear' --> 'loving', in philó-xenos 'to whom a stranger is dear, loving a stranger, hospitable' (1891:§29). In his study of Greek word formation, Albert Debrunner (1917:80, §160) mentions in passing, only to ultimately reject, the possibility of direct reversal of elements, e.g., Gk. borboro-táraxis 'mud-stirrer', against which is cited not a exact converse, but Aristophanes' taraxi-kárdios 'heart-troubling' ['disturb' + 'heart'], with V + N structure. Debrunner's conclusion: the syntactic relationship between constituents must ultimately be considered unclear.

Mirror-image pairs occur in Latin as well, e.g., aequanimus 'mentally calm, composed', as against animaequus. According to Françoise Bader (1962:398–99), it is Greek which provides the most likely source of Latin V0-type compounds whose first element governs the second; beyond animaequus, other rare examples include Plautus' Conterebromius 'where Bromius (= 'god of the grape') is crushed', flexanimus 'persuasive; distracted', verticordia 'the changer of hearts' (= Venus), and other forebears of the compound pattern today most typical of Romance.

Central to my discussion of mirror-image lexical items must be the factor of relative chronology, which furnishes cogent support for a claim of deliberate reversal in compounds. Oppositely-ordered patterns correspond to earlier vs. later states of a given language or members of a language family. Compound patterns depend at an elementary level upon syntax, hence can represent syntactic patterns otherwise fallen into disuse in the wake of language change (Kurylowicz 1976). New compounds, nonetheless, can be formed from older models, just as older syntactic structures may long survive in evolving languages. Patterns corresponding to older states of syntax may retain, or regain, stylistic prestige, or alternatively may find themselves reinforced by adstratum influence: the apparent preference for Adj + N ordering in Northern, as against Southern, Gallo-Romance, is as likely to hinge on adstratal pressure from Germanic as on the greater archaicity of prenominal adjective placement (Fernández González 1981).

In the search to document chronological progression in compositional patterns, studies of Romance are privileged to draw upon the copious evidence of ancestral Latin. Within a typological perspective, Romance N + V compounds represent the verb-final OV structure typical of Indo-European and Classical Latin, whereas V + N coincides with VO structure in modern Romance. Misacantano and camalliga represent a type of compositional activity not predictable for languages with unmarked (S)VO order, although their pattern is still unexpectedly well-represented in Western Romance (Klingebiel 1985, forthcoming). Compounds of the V + N type have functioned as naming devices since their earliest attestations in Romance. They continue to arise in response to on-going social and technological developments: Fr. (12th c.) couvre-chef ['cover' + 'head'] 'kerchief', gratte-ciel ['scrape' + 'sky'] 'skyscraper', lave-vaisselle ['wash' + 'dishes'] 'dishwasher', It. lavapiatti idem, Sp. limpiabotas ['clean' + 'boots'] 'bootblack, shoeshine boy'.

The Romance V + N pattern, traceable back to 9th-c. Tenegaudia, a toponym in Latin guise (Le Testament d'Abbon, A.D. 805), has received extensive attention. The plethora of studies of V + N compounding, whether comparative or devoted to individual Romance languages, fails to ask whether V + N compounds ever result from the restructuring of older compounds. Arsène Darmesteter, in his definitive study of French compounding, never explicitly links V + N with N + V. Nor does the historical Catalan grammar of Antoni

Badia i Margarit (1962:§352), with its concurrent handling of the two patterns.

In my survey of the literature devoted to French, Occitan, Catalan, and Spanish compounding, I found a sole attempt to account for the parallel existence of mirror-image compounds through an appeal to reversal. With specific reference to the Occitan dialects, as well as appropriate cross-references to Greek and Latin, Jules Ronjat (1980:473, §734 delta) discusses Gasc. bau-arré/arré-bau 'good-for-nothing, lazy' in this light, although he does not seek to motivate the actual inversion. Ronjat emphasizes the eventual loss of imperative flavor in the verb, such that third-person singular forms of verbs in which the imperative is lacking (Occ. valer, Gasc. bale 'to be worth', verbal constituent of bau-arré/arre-bau) could eventually find their way into V + N compounds. (2) It is important to specify, with Ronjat, that in this pair the logical relation between verbal bau '[X] is worth' and nominal arré 'nothing' (cf. Fr. vaurien idem) remains unchanged despite the reversal of surface ordering; there is clear contrast with logically dissimilar compounds of the type sled dog/dog sled), which play no part in the present corpus.

Given the great regularity with which a certain number of verbs appear in V + N compounds (lever, lier, porter, tenir, tourner, virer 'to raise, bind, carry, hold, turn' respectively; see Bierbach 1982:165-405), cases of purely coincidental resemblance are inevitable. A number of compounds having identical nominal and verbal elements lack formal or semantic comparability to such a degree as to warrant their exclusion from consideration. No direct relationship appears to link Béar. nas-tapà ['nose' + 'seize'] 'to catch cold' with tape-nas 'muffler; part of a bridle'. Only the long arm of coincidence seems responsible for any resemblance between Gasc. nas-lhebà ['nose' + 'raise'] 'to be proud' and 16th-c. Fr. lève-nez 'movement of raising the head', (3) although structurally parallel Haut Lim. levona 'insolent, impudent' appears to correspond semantically to the compound verb. With their less-than-fully comparable elements, these few examples, which cross both chronological and political/cultural lines, stand against the following corpus in which a concatenation of internal and external factors points to a more than casual relationship between members.

Mirror-image formations occur in a number of compositional patterns, extending to onomatopoeic pairs such as Gasc. bire-bare, bare-bire ("ha toustemps bire-bare, bare-bire" 'he's always changing his mind') 'fickle, changing' (Lespy), in which logical relations are barely discernible. (4) Fr. grand-mère/mère-grand 'grandmother' (Harris) document a highly visible instance of deliberate inversion, these variants remaining in competition into the 17th century, when the Adj 'grand' + N 'mother' version prevailed. In southern Gallo-Romance, this formal ambivalence is still apparent in Gasc. grand-mai/Niçois mai-grand 'grandmother' (Mistral), as well as Gasc. grand-paire, grand-pai, Niçois gran, père (Mistral) vs. Niçois, Gasc. paigran, peregran 'grandfather'

(Pellegrini). While the Adj + N variants echo French, and are influenced by it, in either case the N + Adj pattern predominates across the modern Occitan dialects. Additional nominal + adjectival examples: Belg. pi-stant/stant-pi ['standing' + 'foot'] 'standing, on foot' (FEW, s.v. "stare"), and Fr. vif-argent ['quick' + 'silver'] / OPr. argen viéu (Mistral), Gasc. (from 14th c.) argent-biu 'mercury' (Lespy). (5) This introductory slice of material concludes with a lone N + N pair in which inversion functions to distinguish two varieties of fig: Gasc. higue-eslou ['fig' + 'flower'] 'July fig' / eslou-higue ['flower' + 'fig'] 'figue abortée' (d'Estalenx). These phytonyms stand against the remainder of the corpus, in which no semantic distinctions are achieved through reversal; to borrow a phrase, "c'est blanc, blanc bonnet"--it's one and the same.

Among compounds with a verbal constituent, I first recall Gasc. arré-bau/bau-arré 'good-for-nothing, lazy'. The members of this Adv + V/V + Adv pair are semantically equivalent; moreover, they are morphologically comparable, in respect of both constituents and also resultant part of speech. Similar formal alternation within a chronological progression occurs in OPr. porregitar ['far' + 'throw'], synonymous with gietar porre 'to project forward, neglect, waste' (similarly OFr., MFr. jetar puer 'to throw far away'), continued by Mod. Occ. pourre-jita/jita-pourre, jita à pourre idem (FEW, s.v. "porro"). (6)

Among pairs contrasting an N + V past participle structure with a demonstrably more recent V + N compound, consider a pair of items which have survived in the pastoral terminology of outlying Gallo-Romance: through Lat. manūpāstus, OFr. (13th c.) mainpast 'member of one's household, servant' (REW §5338 *manūpāstus, §6263 pāscēre), Raeto-Rom. (Valais) mē[n]pa 'sustenance for Alpen shepherds' contrasts with (Engad.) paschamaint 'head cowman's third helper'. (7) Here, as in a small number of additional compounds, e.g., pi-stant 'standing, on foot', palavira 'to (turn over with a) shovel', the nominal element functions as an adverbial complement to the verb; in the majority of cases, however, the relationship is one of patient, or more rarely, agent to verb.

Contrastive structures with nominal + verbal elements furnish the most cohesive body of compounds on which to base a hypothesis of direct reversal. Verb-final Occ. peltiar ['hair' + 'pull'], Béar. peutira, has spawned mirror-image periphrases: jouga à la péu-tiro 'to pull s.o.'s hair or clothing', against synonymous fâ à tiro-piaus, Béar. ha a tire-peu (Mistral [péu-tiro, tiro-péu 'hair-pulling']); FEW, s.v. "martyrium"). Occ. coullevo ['butt' + 'raise'] 'seesaw', one of a number of N + V-structured variants occurring across the Occitan domain, contrasts with Prov. lévo-quiol idem (Azais), the pair distinguished by semantic identity, if not strict formal parallelism. V + N structures fall into two primary types, the first of which pairs an N + V compound verb with an inverted nominal formation:

Lim. chapavar ['head' + 'wash'] 'to scold'/Béar. labe-cap 'reprimand' (FEW, s.v. "lavare");

Aude gorjo-badà ['throat' + 'open'] 'to open wide one's mouth'/Loire bada-gorgi 'gawker, on-looker', Auv. bado-gorjo 'fool, silly, inane; nitwit, simpleton' (Becquevort);

Béar. came-poudà-s ['leg' + 'break'] 'to break one's leg' /poude-cames 'fatiguing task';

Gasc. sang-birar ['blood' + 'turn'] 'to upset (morally), be troubled'/Gasc. bire-sang 'violent emotion' (d'Estalenx);

Béar. pè-pic ['foot' + 'strike'] 'club-foot' (FEW, s.v. "*pikkare"; cf. Béar. pè-picà 'to walk, striking one's heel')/picapè 'club-foot';

Gasc. cot-birà ['neck' + 'turn'] 'to twist one's neck'/Lang. viro-col 'stiff neck', Gasc. bire-còt 'movement of turning the neck; dangerous passage' (d'Estalenx);

Occ. talh-virar ['cutting edge' + 'turn'] 'to blunt the cutting edge (of a knifeblade)'/Gasc. bire-talh 'whetstone for the woodsman's cutting tool' (Arnaudin). (8)

A facetious flavor, discernible in, e.g., bada-gorgi, bado-gorjo 'gawker, on-looker, fool, nitwit, simpleton', is frequently identifiable with the naming function of V + N-structured nominals. For the most part, verb-final compounds in the corpus above function as verbs, noun-final as nouns, adjectives, and occasionally adverbs. The following verb-final compounds stand against V + N adverbs:

Gasc. bie-passà ['way' + 'pass'] 'to go one's way; go too far, exceed', as against a passe-bie 'on the way' (Palay);

Occ. cambo-tirar ['leg' + 'pull'] 'to trip someone' /a tire-cames 'as fast as one's legs will go' (FEW, s.v. "camba");

Fr. (17th-18th c.) à main-tourner ['hand' + 'turn'] /Fr. (16th c.) en moins d'un tourne-main, (mod.) en un tourne-main 'immediately' (FEW, s.v. "tornare") (for corroboration of the first member of this set, cf. Fr. sans coup férir, sans bourse délier, and other frozen syntagmata);

Occ. palavirar ['shovel' + 'turn'] 'to (turn over with a) shovel' is flanked by contrasting derivations: a palavira/a viro-palados 'by the shovelful, in profusion' (note the characteristic plural noun of Occitan V + N) (Mistral, Alibert).

If a process of reversal or inversion can be shown to obtain, it must be no mirage imposable upon the records of disparate speech communities by a willing disregard for spatial and chronological realities. Among the small number of compounds set forth in the beginning section of this paper, dates of attestation once again enhance formal, logical, and semantic continuity to support a claim for direct and deliberate reversal. OCat. (13th c.) lloctinent ['place' + 'holding'] precedes (14th c.) tinentlloc 'lieutenant', as do Cat. camalliga, -lligues 'garter' vis-à-vis lligacama, -cames (echoed in borrowed 16th-c. Sp. liga-gamba).

Within the series of 'garter' compounds, an additional type of relationship becomes visible in novel compounds with one divergent element. These are independent creations with close ties to back formation: e.g., babysit, with subsequent babytend, babysquat (Pennanen 1966). Against Lang. cambalié, Fr-Pr. chambaille stand both V + N-structured lie-chambo ['bind' + 'leg'] 'garter', dating back to OPr. liecamba, and also novel lie-causso ['bind' + 'stocking'], with post-nominal liocaussar, Lim. liétaussà 'to don garters'; I note that no 'leg' + 'bind' compounds occur through chaining. (9) Last, and perhaps most interestingly, Sp. (11th c.) misacantano ['Mass' + 'sing'] and Andal., Mex. (post-15th-c.) cantamisano 'priest' document chronological stratification, semantic identity, and reversal of nominal and verbal elements in the actual presence of a suffix. It is clear that interchanging of constituent elements necessarily involves a high degree of morphological transparency, implicitly present in any instance of replacement or reversal. (10)

This study cannot fail to highlight the paradigmatic dimension of the compositional process. Van Marle's 1985 work on Dutch word formation, an attempt to integrate European structuralism with a rule-based approach to word formation, intersects neatly with on-going discussion of morpheme- vs. word-based studies in the literature. Halle, Aronoff, and others have defended an approach through word formation rules, although an alternate trend, toward a model in which morphemes are concatenated in accordance with subcategorization frames, is now recognizable (Scalise 1984, Jensen 1987). Van Marle argues against any mono-relational approach, which would exclude other systematic inter-word relationships, particularly the paradigmatic.

Linguists working within the framework of Gallo-Romance have presented independent evidence of paradigmatic support for the creation of novel compounds. In his 1953 monograph on plant names in the Central Pyrenees, Jean Séguy coined the term "enchaînement associatif", or associative chaining, for the process which allows replacement of either element of a compound by other elements within a given semantic series, e.g., Occ. canta-loubo, canta-merle, etc. Pierre Guiraud's (1967) set of 'turn, spin around' compounds with tautological V + V structure, e.g., Fr. tournevirer, exemplifies a Northern Gallo-Romance environment conducive to chaining. In the realm of N + V, Medieval Latin and Romance compounds representing 'Lent' straddle learned and vernacular vocabularies; in this series, seven verbs (laxare 'to release', levare 'to raise', ligare 'to bind', privari 'to deprive', siccare 'to dry', tollere 'to remove', vetare 'to forbid') are compounded with unchanging carnem 'meat' (Klingebiel 1985, forthcoming: Chapter 3). (11) In each case, semantic content comes to be identified with a given two-part structure, providing a pattern for creation of new compounds.

Associative chaining is easily documented in the various types of compounds discussed above. (12) Against Gasc. arré-bau 'ne'er-do-well' (13) there occur synonymous bau-arré, Gasc. bau-

poc, bau-chic. OPr. liecamba 'garter', mod. lie-chambo is paralleled by lie-causso idem. Cat. feina-fuig ['work' + 'flee'], apparently a modern creation despite its N + V structure, stands opposite Occ. fuglòbra ['flee' + 'work'] 'lazy' (Alibert), flanked in turn by Occ. deilobra ['leave' + 'work'] and Niçois fugefatica ['flee' + 'work'].

The inter-word relationship argued in this paper takes a different form, constituents being inverted rather than individually replaced as they are through associative chaining. Constituents remain transparent, often identical; semantic shifts, if any, remain minimal; pattern pressure is of paramount importance. A select number of N + V-ordered compounds provide clear parallels--formal, logical, semantic--with novel V + N formations. Reversal in such cases involves not merely restructuring, but actual renovation, judging from available dates of attestation. While N + V compounds themselves derive from a variety of formative processes equally identifiable in V + N--calquing, back-formation, analogical remodeling, associative chaining--reversals to V + N result from paradigmatic pressure exerted by the widespread, highly productive verb-initial pattern of Romance, in the presence of concomitant (S)VO ordering.

Notes

(*) The initial draft of this paper was presented before the Historical Linguistics Study Group at Berkeley in March, 1985. Thanks is hereby extended to all those who have made suggestions. The final stages of research were made possible by an NEH Summer Stipend (1987). I would like to thank Dr. Liliane Tyler (Univ. of California, Davis), for her help in preparing the final version of this paper.

(1) Also pheré-karpis 'yielding fruit' / karpo-phóros 'fruit-bearing'; arké-polis/poliarkos 'ruler of a city, prince'.

(2) The exact nature of the verbal element in V + N compounds continues to excite discussion; the question remains vexed.

(3) Equally coincidental are: Occ. (12th c.) manlevar 'to borrow, bail out, swear on raised hand' as against Fr. (16th c.) lèvے-main ("...[un] serment lèvے-main...", Bierbach); Béar. pe-lhèbe 'lever' (pè-levà 'to raise the foot, raise with a lever') / Fr. (19th c.) lèvے-pieds 'stairs, ladder'; Béar. pan-minjant 'day laborer' (who breaks bread at another's table, rather than eating only bread) / Béar. estadge deu minye-paa '[upper] storey where humans eat' (also bearing a chance resemblance to 14th-c. MFr. mange-pain 'one who eats only bread') (FEW, s.v. "manducare"); Fr. à chiffe-tirer 'in disagreement' (FEW, s.v., "martyrium") / (20th-c.) tire-chiffons 'hunting accessory' (Bierbach); Occ. peltirar 'to pull someone's hair or clothing' (FEW, s.v. "martyrium") / Fr. (16th c.) tire-poil 'tweezers' (Bierbach).

(4) Clearly onomatopoeic motivation is shared by Mod.Fr. chanteperte 'funnel (with a long tube)', Occ. cantaplora 'siphon' (used in olive oil-making process), Cat./Sp. cantimplora 'siphon'. There may be no direct derivational link with older OFr. plorechante 'who cries in this world, sings in the next'/OFr. chanteperte 'singer at plays' (lit. '(s)he cries and sings'), 'complaint', OPr. can-plor 'type of poetry' (Levy).

(5) Additional examples of Adjective (including past participle) + Noun:

Prov. bouan rubi/rubi-bouan 'marube blanc ou noir' (plant of the labiate genus) (Garcin);
 Occ. (Périgord) chaitord/tord-chai 'stiff neck', 'torticolis';
 Fr. (14th c.) à coeur jeun/dial. Fr. (15th c.) à jeun-coeur 'on an empty stomach';
 Fr. col tors person with a twisted or stiff neck'/MFr. tort col idem (cf. also It. coditremola/tremacoa [ornith.] 'wryneck');
 Occ. Diéu-Dounat, Dounadieu, family names (Mistral);
 Fr. a droit fil/Gasc. a fil droit 'with the grain (of a material)' (J.B.L.);
 MFr. (16th c.) failli coeur 'lacking courage'/Pic., northern dial. Fr. coeur failli 'lazy, soft' (cf. Occ. cor-fali[t] fainted; impressed') (FEW, s.v. "fallere");
 Béar. pè-tort 'club-foot, one who limps'/(hap.) Fr. (15th c.) tort pied (nom.) 'stumble', 'croque-en-jambe';
 Prov. pisso-caudo (cf. Fr. chaude-pisse)/caudo-pisso 'gonorrhea';
 Drôme roussé-pon, pon-roussé 'brown bread' (Boissier);
 Occ. sajo-femo (cf. OPr. sabia femna, Fr. sage-femme)/Gasc. (Bazas) fama-saja 'midwife' (Mistral).

(6) The placement of short, common adverbs (mal, bien) remains relatively free: Prov. (en) mauprenent 'getting hurt', 'en prenent mau [sic]' (Achard) is inconclusive as regards reversal.

(7) OPr. (14th-15th c.) salpres 'salt pork', also with N + V past participle structure, is linked by a common signifier with MFr. (16th c.) prinsel 'salt beef, jerky' (FEW s.v., "prehendere").

(8) A significant degree of semantic divergence led Wartburg to warn against linking the following oppositely-structured nominal elements: OPr. mantenen 'balustrade', Béar. maa-tien 'handle', with MFr. (15th-17th c.) tienmain 'banister, hand-rail', (mod.) dial. Fr. tient-main 'hand-hold' (FEW, s.v. "manu tenere"). The pair is otherwise less than fully satisfying, given the variety of chronological and spatial distribution. Other N + verbal N compounds include Fr. mainmise/OFr. misemain (legal) 'seizure, confiscation' and Occ. (14th c.) manobra 'manual labor, worker'/OPr. obre-mâ 'worker'.

(9) Occasionally a derived verb with V + N + -ar structure appears by back-formation from the noun-final nominal form; e.g., Gasc. lengua-birà-s/virolengà 'to become tongue-tied, trip over one's tongue' (Lespy); Occ. pato-virà/viropatà 'to trip'.

(10) Two sets of adjectival 16th-c. French-language calques, coined in the experimental heyday of the Pléiade, give evidence of deliberate reversal of elements in artistic compounds: Fr. (16th c.) loin-tirant, tire-loin lit. "far-throwing"; and lierre-porte, porte-lierre 'ivy-bearing' (Marty-Laveaux).

(11) 'Lent':

- a. (+ laxare 'to release') Med.L. carnemlaxare, OIt. carlasciare;
- b. (+ levare 'to remove') Med.L. carnelevamine; It. carnelevale, carnavale (borrowed into Fr., Occ., Cat., and Sp. in the 16th century; cf. also OFr. [13th c.] quarnivalle);
- c. (+ liga, ligare 'to bind') Rum. cirnele(a)gă (REW §1706 "carō");
- d. (+ privari 'to deprive') Med.L. carniprivium, carnisprivium;
- e. (+ siccare 'to dry') Sard. carrasecare;
- f. (+ tollere 'to remove') Med.L. carnestoltas 'abstinence from meat'; OCat. fer carnestoltas 'to abstain from meat'; OCat. carnestoltes 'Lent', OSP. carnestolendas;
- g. (+ vetare 'to forbid') OBéar. carn-bedar.

(12) One additional source can be found in the shady area of overlap between verb and verbal noun. During the Middle Ages, OV-ordered L. terrae motus 'earthquake' found itself reinterpreted or calqued, with no change of meaning, both as OV and as VO compounds: vernacular OFr. (11th c.) terremote, OPr. (13th c.) terramovemen, (14th c.) terra tremol, Gasc. (16th c.) terrotrem, MFr. (17th c.) terre-tremble, as against MFr. (16th c.) tremble-terre. The latter compound corresponds structurally to std. Fr. tremblement de terre, with N + N structure attested as early as OFr. [hap.] tremble de terre (FEW, s.v. "terra").

(13) Cf. also Gasc. (Béar.) poc balé 'to be worth little', with identical verb.

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Challenges in a Psychotherapy Group

Elizabeth Krainer
Stanford University

Discourse analysts have looked at several varieties of verbal discord, including Gumperz's (82) studies of interethnic crosstalk, Atkinson and Drew's (79) examination of courtroom disputes and Marjorie Goodwin's (82, 83, 87) analyses of disagreement among children.¹ What all verbal discord has in common is its disquieting, face-threatening nature. Discord violates general interactive expectations of agreement, cooperation and harmony; and the expression of disagreement violates the addressee's want for external acceptance and approval. Therefore we can assume that whenever discord is verbally expressed either it is unavoidable, or it is allowable within a very particular context. Discord can seem dangerous; small wonder, then, that it is usually masked, mitigated, or deniably ambiguous.

There are a few contexts that do allow discord. The courtroom and the university seminar room are two obvious examples, as is sounding, the verbal duelling among black urban teenagers. Another context that must allow expression of discord is psychotherapy. Differences between therapist and client, or among the members of a family, need to be brought out into the open, addressed explicitly and resolved, where possible. Also, the recent use of family or community interventions with substance abusers and other individuals whose abusive behavior affects and threatens others is opening up new contexts for the permissible and positive expression of differences. One particular psychotherapeutic context that can thrive on some degree of discord is the therapy group. Most groups allow expression of disagreement, and will use, as a therapeutic tool, the questioning of an individual member's behavior, motivations, and intentions. In fact, only in the courtroom and the therapy office is there such license to question the inner psychological process and truthfulness of another human being. I have chosen the context of a psychotherapy group for my investigation.

The data for this study was taken from audiotapings of a women's psychotherapy group, with 9 members (most of whom were themselves therapists) and 1 paid facilitator. I have concentrated on three episodes, extracted from three separate group sessions. These three episodes share a common topic, the present life circumstances and life choices of one group member, Kathleen, who is absent for the first two episodes and present for the third. Each of the other group members expresses judgements of Kathleen's choices, both when she is absent and to her face.

One particular expression of discord and judgement is the challenge. Challenges can be found in the courtroom, on the

streets, in classrooms, on soccer fields, and in the therapy office. There are many uses of challenges in therapy groups which are easily recognizable to all members of the speech community; challenges can be used in joking behavior, as practice or mock challenges (when the addressee is not present), in confrontations, and as unpredictable interventions mirroring or commenting upon another group member's behavior or affect in a constructive way. I define challenges as the expression of a negative judgement of the speaker toward a past or present act a) of the addressee, whereby this act a) can be an action, attitude, assumption, utterance, or plan; the challenge further includes the speaker's implicit or explicit preference for the addressee to either not do act a) or rather do a different act b).

There are felicity conditions that are fulfilled in successful challenging.² Many of these are specifically formulated for a psychotherapy group context, yet can be restated for other contexts. The contextual condition stipulates that the speaker (S) has positive intentions and sympathy toward the addressee(s) (A), and toward A's welfare. This is a necessary condition for the establishment of trust in any therapy group; it cannot be presupposed elsewhere. The preparatory conditions include that S negatively judges act a) of A, that S believes A will continue with act a) unless challenged, that S does not believe that act a) is in A's, S's, or the group's best interest, that S believes a different act b) would be in A's, S's or the group's better interests, and that S believes A can do act b). Act b), by the way, can simply represent the absence of act a). The propositional content condition allows any and all past or present acts of a group member, which are relevant, to be the targets of a challenge. The sincerity condition differentiates between all serious challenges, where S does want A to discontinue act a) and do act b), and non-serious challenges, where S is joking and/or has no power to challenge A's act a). This last situation can occur when the facilitator insists upon a topic, and the group members find it uncomfortable but unavoidable. Finally, the essential condition states that the utterance counts as an attempt by S to get A to stop act a) and to change to act b). There is no uptake necessary for the utterance to count as a challenge, although the challenge definitely invites a response from A.

There are a few, and only a few canonical challenge forms, for example: So what?, Are you kidding?, Sez who?, Care to step outside?, and You gonna make me?. It is not surprising that there are so few overt challenge forms. The pool of indirect speech acts, often the analyst's despair, is so large and structurally undifferentiated precisely because so much of human verbal interaction can be face-threatening and needs to be softened in the interests of cooperation and harmony. So challenges exhibit the same familiar indirect features discussed by Robin Lakoff (75), Brown and Levinson (78), and others, such

as dummy pronouns, agentless passives, past tense, continuous aspect, hypotheticals, tag forms, contractions, use of quasi-modals and modals, more or less obliquely evaluative lexical items, delaying discourse particles, hesitation, pausing, and self-editing behavior, and phonetic and syntactic performance errors. Much of the intensifying effect of challenges is concentrated in the use of emphasis and other intonational features, which are more deniable. However, there are also stronger challenges to be found in this data, with very overt features of negation, direct address with proper name, command forms, questions which require answers, intensifiers, expletives, overtly discordant discourse particles and obviously negative evaluative lexical items.

Given that challenges, like other face-threatening acts, often depend on a low profile and camouflage for their use in verbal interactions, structural features are not enough to distinguish them clearly. Challenges do, however, have a particular sequential profile, which can be used to differentiate them in analyses of discourse, and which probably serve the participants as a main means of recognizing and interpreting them as they occur during interactions, as well. The challenge sequence consists of at least three parts: an impetus, the challenge and a response, whereby the response can be a counter-challenge (a challenge uttered in direct response to a prior challenge) or a more conciliatory, conceding remark (Resp.). The impetus need not be conversationally, or even geographically contiguous with the challenge. Schegloff (84) points out other sequences that need not be in the form of adjacency pairs, such as scolding, praising, and warning. An impetus that is an explicit utterance within the conversation is a pre-challenge (Pre-C).

The challenge response, however, does have to follow the challenge closely, or be very marked by its absense. I have differentiated two different challenging responses to a challenge, based on their sequential order of occurrence, and thus representing different degrees of aggravation. A counter-challenge (CC) follows a challenge, and marks disagreement with some part or whole of the challenge. A counter-counter-challenge (CCC) follows a counter-challenge and thus signals an even more aggravated disagreement in the challenging sequence. I have designated the challenging response to a CCC as a counter-challenge, for simplicity and due to the fact that in such a sequence the counter to a CCC is probably allied with, or even identical to, the original counter-challenger. There are also mock challenges (MC), which are challenges to someone who is not present; they can either be serious or joking. Indirect challenges (IC) are challenges expressed within the group interaction, but targeted for someone other than the explicit addressee or not present for the interaction. Target is used here in Levinson's (88:170) sense of the "informational and illocutionary destination of the

message." The difference between a MC and an IC directed toward Kathleen in her absence, for example, is that a MC contains some form of direct address, while an IC simply refers to her indirectly, if at all.

The following are examples of challenges taken from the data:³

1.(Impetus = the group seeking a meeting with Kathleen)

1 Regina =Well, V, Vanessa, you, YOU should just SAY something about it because . KATHleen won't COME . that's REAL CLEAR. She's not going to LEAVE . that JOB on a weekend between now and the da, the time she has her time off. She made that real clear to me. (2.5)

2 Vanessa Oh. (1.0)

Analysis: Impetus -> C -> Resp.

2.

1 Vanessa She MOVED and she, hasn't got a phone installed yet. (1.5) And she doesn't have an address she [could have given me, either.

2 Dana [KATHLEEN, KATHLEEN, KATHLEEN.

3 Sarah Dana, YOU'RE just CAUGHT in people tonight, huh?

4 Dana What?

5 Sarah You're caught in people tonight, huh?

6 Dana Caught in people?

7 Sarah Yeah.

8 Dana I just feel so SAD about KATHLEEN.

Analysis: Pre-C -> MC (as Kathleen is absent) -> CC -> Question for Repetition -> CC Repetition -> Request for Verification -> Verification -> Conceding Resp.

3.

1 Regina ((Kathleen's)) suggestion WAS . that perhaps she come on a Thursday night and do, her, class rap on a Thursday night. (4.0)

2 Jessica Well, THAT'S not MY first choice, definitely, for sure. (2.0) cuz I'd like her to be included in the whole group. (2.0)

3 Dana Well, my reACTION, IS to SAY, TOUGH, you know, come ANYway. (4.0)

4 Jessica Well, that's pretty hard-nosed.

Analysis: Pre-C (= IC (from Kathleen to the group) -> CC and CC -> CCC

The sequential analysis of each example is presented directly following it. In the first example Regina uses direct address to single out Vanessa as the C target. Vanessa's response in 1.2 is concessive in nature, though she does appear to balk at complying with Regina's strong suggestion. In the second example 2.1 is a Pre-C for the MC in turn 2, which

receives no response from its addressee, of course, but is counterchallenged in 2.3 and 2.5. Sarah uses direct address in 2.3 to target Dana, but leaves it out in 2.5, as Dana is already directly engaged in the challenging process with Sarah. The CC receives a conceding response from Dana in 2.8.⁴ In 3.1 Regina delivers a message, an indirect challenge from Kathleen, for the group to change the time they seek to meet with Kathleen from a weekend day to a Thursday evening. The CCs in 3.2 and 3.3 match in their non-acceptance of this challenge, although in 3.4 Jessica objects through CCC to the unyieldingness of Dana's response. There is no response to this CCC, because another turn, a neutral question simultaneous with 3.4, allowed Dana to turn her attention from the CCC and focus on the question.

Even within the permissive environment of therapy, challenges are a dangerous, almost always dispreferred move. Pomerantz (84), Labov and Fanshel (77), and Brown and Levinson (78) have all argued persuasively that speakers prefer agreement. Marjorie Goodwin (83) lists several features that mark dispreferred moves and sequences, among them discourse markers of dispreference; delaying features, such as pauses and qualifiers like I think or hypotheticals; and requests for clarification and questions that ask for repetitions or partial repetitions. Many of these features can be found in this data. Note, for instance, the occurrences of well in turn-initial position in 1.1, 3.2, 3.3, and 3.4. The pauses following 3.1, 3.2, and 3.3, as well as the silence following 1.1 and preceding 1.2 mark the dispreferred status of these moves. The hypothetical phrasing of 3.1 is responded to in kind in 3.2. Example 2 contains an excellent example of a question for repetition in 2.4, answered by a repeating of the CC in 2.5; as well as a request for verification in 2.6, followed by a verifying Yeah in 2.7.

Of great interest is the distribution of particular discourse particles. Well, with a rising intonation, started 7 challenge turns, 3 CC turns, and 2 CCCs; only 3 such wells began non-challenge turns. Well, with a level to falling intonation, initiated 13 challenge turns, 8 CC turns and 3 CCCs, while 8 falling wells began non-challenge turns. Schiffрин (82:150) claims that well functions as "a response marker...for agreement and disagreements, retreats and escalations." Lakoff (75:53,66) argues that well is a hedge that shows deference to addressees by giving them options, and marks that the speaker may be uncertain, or "unable to vouch for the accuracy of a statement." Levinson (83:307,334) reports that well often marks the dispreferred status of a turn in a sequence.

Other discourse particles with even less of a hedging flavor, appearing more overtly discordant, are not only, with falling intonation, besides, with rising intonation, and except, with rising intonation, each of which introduced at least one C, CC, or CCC.

By far the most telling particle distribution comes with but. Schiffrin (82) analyzes many examples of but as a marker of contrast. But "is often found between two utterances in which there is a polarity difference" (190), and its "adversative sense" (196) can be interpreted within the scope of a turn and across the domain of the entire sequence of the discourse. (190-209) In turn-initial position, but, with a level to slightly rising intonation, began 6 Cs, 4 CCs, and 3 CCCs; and of a total of 34 buts throughout the data, every single turn-initial and utterance-initial but began some form of challenge. 12 out of sixteen non-initial buts were used in C utterances, as well.

Pauses are another indicator of disagreement, according to Goodwin (83:666) and also Pomerantz (84:65), who differentiates them from agreements, which "are performed with a minimization of gap between the prior turn's completion and the agreement turn's initiation." I have analyzed the pauses following challenges,⁵ some of which are of very unusual length. The pauses following a challenge were equally long, whether the C was succeeded by another type of challenge or by a conceding remark. Both types of pause averaged around 2.5 seconds, although there were four times as many pauses preceding a CC or CCC as preceding a concessive response. Also 3 pauses prior to a subsequent CC or CCC were markedly long, at 6.5, 7.0, and 9.0 seconds. This parallels the findings thus far for frequency of occurrence and degree of aggravation for different challenge moves in the challenge sequence.

There were also many pauses following challenges that received no response. Their number equalled three times the number of pauses preceding a subsequent conciliatory response. Here there were 5 pauses that were inordinately long, especially for this verbal and rowdy group: 7.0, 7.5, 8.0, 10.0, and 11.0 seconds. The final pause that separated the third episode from the rest of that night's session was, in fact, 1 minute and 23.0 seconds long.

At the less direct end of the feature spectrum signalling dispreferred moves are hesitations, stutters and other indicators of self-editings. Many such features are found in this data, as well. Note the stuttering in 1.1, and the hesitations in 1.1, 2.1, 3.1, and 3.3. Such hesitation features were found to be equally distributed among ICs and CCs. There were twice as many such features, however, among the initial direct challenge turns. And only half as many again throughout the CCCs. It would seem that challenging was accompanied by more hesitation. Having the addressee absent, or being provoked to a CC reduced these hesitation features by half, and once a speaker was at the level of a CCC there were only a quarter of such hesitation phenomena left.

Separate from the question of the preference status of challenges as a discourse move, but related, is the issue of the preferred response within the challenge sequence.

Atkinson and Drew (79) found that the preferred second in a challenge sequence in the courtroom was a CC. Any delay was interpreted by the participants as a concession.⁶ In this data, that only appears to be the case with CCCs. The frequency patterns of challenge responses is 2 to 1 in favor of conciliatory or concessive responses, as opposed to CCs. The preferred response to CCs is unclear at this point, as the CCCs and conciliatory responses were found to be equally frequent. With CCCs, however, the CCs are favored 2 to 1 over other responses. It would appear, then, that only after the challenging had become more aggravated was further challenging a preferred response.

There are other questions that have arisen in examining this data. One of the most interesting regards the analysis of participant roles, and what properties of the utterances and their sequential ordering allow participants to infer the intended addressee and/or target, again as defined by Levinson (88). In a 10-member group many turns can be directed primarily toward one other group member, and yet be relevant to others, or the entire group; for this reason an entirely different individual may respond to the turn, even a challenging turn, without confusion or complaint from other group members.

Also, in two episodes one group member acted as messenger for Kathleen, who was absent; and in each of these episodes many challenges were directed toward the messenger, even though Kathleen was definitely the target. The identity shifting of these two group members was quite complex, though rarely unclear to any of the participants. In 3.1 Regina is acting as messenger and delivering Kathleen's challenge to the group. In 1.1 Regina is using her special access to information about Kathleen to directly challenge Vanessa to set up a meeting time that will be possible for Kathleen, although the group had, at that point, not agreed to such a change in meeting times. In 2.1 Vanessa is the messenger, giving the group information about Kathleen that upsets Dana and leads to her MC in 2.2. The following example illustrates shifts in role within one turn for Vanessa as messenger, and as herself:

4.

1 Vanessa Okay, I need to, I need to put out for Kathleen that, . she's had to take a quote, straight job, unquote; she's getting off for the=

2 Dana =She's HAD to? She said that?

3 Vanessa Yeah.

4 Dana OH, KATHLEEN, WHERE HAVE YOU BEEN, GIRL?

5 Vanessa I'm quoting. . She's gonna have to take off for the second and the third, that weekend,

Analysis: Pre-C -> C -> Resp. -> MC -> Resp.

In 4.1 Vanessa labels the turn as a 'putting out information for Kathleen', and uses an explicit quote/unquote framing to

distance herself from the job description that Kathleen used, which she appears to assume will evoke evaluative responses from the group. In 4.2 she is challenged on the veracity of her reporting of Kathleen's words, and she answers this C in 4.3. In 4.5 she again uses the concept of 'quoting' to keep the force of the strong MC in 4.4 off herself, the addressee by default, though not the target.

There is also the issue of permission to challenge and the distribution of challenges among the group members. There appears to be an egalitarian assumption that all members of the group have an equal right to challenge and be challenged. In point of fact, however, the facilitator, while challengeable, is not an equal target for challenging, due to her leadership role and heightened status. The distribution of power in therapy is simply non-reciprocal. In example 5, below, Sarah challenges Theodora, the facilitator, with explicit and very strong challenge turns:

5. (Impetus = a series of Cs from the group to Kathleen)

1 Sarah I, I want to interRUPT for one SEcond. I want to be the group's observer here .. that role that you were doing, because what I SEE the group doing is trying to RESHcue Kathleen around MONey, and I think that's, WEIRD. (1.0)

2 Theodora I don't, i, it's interesting cuz I don't feel like I'm trying to rescue ya, I just want (you to (Uhuh.

3 Kathleen Theodora know that, from where I'm sitting, what you're, doing, looks, real fucked. And I'm trying to, . GET it. I mean, I would be very happy ta, walk outa here and say, (1.0) sounds right, sounds on but, (1.0) some BOTtom level, (1.0) thing I have is that you're in a place where you're not gettin any feed-back, (1.5) and, you're living, in isolation, and (1.5) um (4.0 secs) [I, I felt, .

4 Sarah [I want to ask one thing, [Theodora, and so what?

5 Theodora [Uhuh? Fine. It's fine. . And, she shouldn't ha, I think it's, it's fair that you should know what I think from, from over here.

6 Sarah Okay, okay. I hear the group really wants Kathleen to do sumpin different.

7 Kathleen Yeah, uhuh.

Analysis: Impetus -> C -> CC/C -> CCC -> Resp./C -> C -> Resp.

Here Sarah uses a particular therapeutic method for commenting on the group's interactions with Kathleen, by designating herself the group observer, and then challenges the group, self-admittedly interrupting, using emphasis, the negative evaluation weird, hesitating, and even making a speech error. The facilitator responds to the challenge indirectly, in that

she denies trying to rescue Kathleen; but she addresses her remarks to Kathleen exclusively, as signaled by the pronoun you. She then goes on to further challenge Kathleen very strongly, using the expletively-evaluative verb fucked in a turn filled with hesitations. Sarah rejoins with a CCC directly addressed to Theodora, containing a canonical challenge form so what?. Theodora concedes with fine and an elaborated fine, and in continuing even begins by using she; immediately, however, she switches back to you referring to Kathleen, and justifies her previous challenge, with stuttering and self-editing. Sarah gives up directly challenging Theodora, with two okays; but she does continue her challenge to the group as a whole, and gets only a corroborating response from Kathleen, who is the only group member not addressed by Sarah's challenge. The facilitator is hard to challenge; her strategy of evading the challenge is indirect, yet clearly discernable within a sequential framework analysis.

Further, the two members newest to the group challenged by far the least, and each of their 7 challenges, with one exception, were explicitly commented upon by at least one other group member.

6.(Impetus = C directed at Kathleen)

1 Kathleen ExCEPT, I'm NOT SAYING my life is ROUGH right now.
I'm, I mean, I'm not complaining at ALL, about my
life right now. I'm not.=

2 Virginia =Just like your mom. (1.5)

3 Kathleen NO, I, =

4 Several =(General gasps and laughs for 4.0 sec.)

5 Kathleen Okay, you all have a certain,=

6 Jessica =GOOD CALL, Virginia. (2.5)

7 Kathleen [Yeah, . I don't know,

8 Virginia [Well, I've been [practicing, . last week.

9 Theodora Sounds like it (xxx) be so, is that what you're
saying? .

Analysis: Impetus = C -> CC -> CCC -> CC and laughter -> CC
Appreciation -> CC and Appreciation Acknowledgement -> New C

Virginia was the newest member of the group, rarely spoke much at all, and uttered only this one challenge move in the data analyzed. It stopped the show. Four seconds of uninterrupted laughter, followed by an explicit positive commenting upon the challenge move was rare for this group of therapists used to challenging and being challenged. Virginia's status in the group, and her lack of practice at therapeutic challenges account for this unusual sequence, which leaves Kathleen unable to respond to a very strong CCC directed at her. The strength of this challenge comes from a narrative sequence a half hour earlier during which Kathleen told how her mother had been a long-suffering wife to an alcoholic and to several demanding children, without ever complaining. Note here the emphases in

Kathleen's CC, 6.1, accompanied by the self-editing marker I mean and the turn-initial except.

The actual distribution of challenges, when analyzed completely, will probably parallel quite closely the social network ties among group members, and the power hierarchy positions of each member within the group.

Two other challenge sequences from the data illustrate further how the combined use of structural feature and sequential analyses help to make sense of seeming anomalies in the discourse.

7.

1 Dana I think if someone talks to her, I think she needs to be aware that if she comes and does her class history, that she also will have to deal with our feelings that night. (1.0) I think it's fair to let her KNOW that. An if I were her I wouldn't come to that for nothin. [(1.0) I'm just letting you know

2 Chrissie [Why?

3 Jessica [(laugh)

Dana that that gets pretty, =

4 Chrissie =Oh, you wouldn't?

5*Dana I WOULDn't. Are you KIDDing? Gi, sharing a PAINFUL CLASS HISTORY, . and then, hearing everybody being PISSED OFF at [YOU? . You'd have to be a

6 Chrissie [Oh.

Dana MASOCHIST to want to do [that, in my book. (1.5)

Chrissie [Oh.

Analysis: Pre-C = IC (to Kathleen) -> Question, Laugh, and Question -> *CC -> Backchanneling Resp.

There is a sudden increase in the appearance of strong markers of disagreement and challenging in 7.5, which also does not appear to follow the sequencing rules of impetus, challenge, response, in that there is no prior challenge that would then account for this challenge formulation that is so strong it can only be interpreted as a CC or CCC. Note that it contains the only other example of a canonical challenge form in the entire data, Are you kidding?, along with a great deal of emphasis, a negative echo of the preceding question, the perjorative pissed off, the all-inclusive everybody, the strong label masochist, as well as several signals of self-editing, from false starts to hesitations. However, if we combine an analysis of the structural features of the turn with a sequential analysis, we see that Dana has most probably interpreted Chrissie's neutrally intoned question in 7.4 as a challenge response to Dana's IC in 7.1, and thus counter-challenges strongly in 7.5. Short of stopping the course of the interaction to assure Dana explicitly that she was not challenging in 7.4, Chrissie can do what she in fact does do in 7.6 to repair the tenor of the relationship

between them: she carefully attends to Dana and offers backchanneling signals of 'answer to question received'.

8.

1 Chrissie I JUST REALIZED ReGINa isn't here and, does Regina have Saturdays available?

2 Sarah She ALSO may want to STAY longer, wasn't it?

3 Dana We TRIED to get ahold of her and Vane, she left [the day before.

4 Vanessa [And I called IOwa and talked to her MOM! (1.0) 'N she'd left left THAT MORNING. Dana, it was a good idea. I'm just sorry you didn't have it the day before.

5 Dana Yeah, me too.

6 Sarah Well we TALKed about it last WEEK. She'd left that last week? (1.5)

7 Dana We TALKed aBOUT, we didn't talk about CALLING her out THERE at her parents',=

8 Sarah =YEAH we DID, cuz we said HOW could you get in touch? 'member? and you guys were saying that CANDY would know, 'n .

9 Vanessa I didn't REALize we were gonna, no I, I didn't probl, I didn't, that didn't seem=

10 Sarah =I THOUGHT that was the whole [POINT, was to call her ta,

11 Vanessa [But we were, WELL, I ALready TOLD her!

12 Sarah Yeah.

Analysis: Pre-C -> C -> Resp. and Resp. /Elaboration/Acknowledgement -> Acknowledgement Acceptance -> C -> Resp./CC -> CCC -> CC -> CCC -> CC -> Conceding Resp.

This example shows a complex exchange of Cs and CCCs from Sarah and defenses and CCs from Dana and Vanessa, who take turns defending themselves and each other, and a final backing down by Sarah. The frequency and strength of the challenge features increases noticeably from 8.2, with some emphasis, intensifier also, quantifier longer, and a tag question; through 8.6, the challenge renewal that uses turn-initial well, more emphasis, this time on the contested activity talk, past and past perfect tenses to buttress her time argument, and the use of a question requiring a response; to the strong CCC in 8.8, which includes a direct countering of Dana's CC in 8.7: we didn't with: YEAH we DID, even more emphasis, direct quoting of a previous question from the previous week, with emphasized question pronoun HOW, a question form requiring response: 'member?, and a further indirect quoting of the very speakers denying the conversation, with listing behavior, that threatens to go on with even further instantiations of the rightness of her position. Dana's CC in 8 begins as a response, echoing Sarah's challenging we talked about it, but breaks off in a self-editing move and turns into a counter-challenging we didn't talk about and goes on to

emphasize the activity of calling, which is at question. Dana's CC is latched onto by Sarah in her stongest 8.8 CCC move. Vanessa's response to this CCC is full of only false starts, self-edited into yet other attempts to counter Sarah, none of the 5 (!) of which are completed. This cannot be characterized as a conceding remark, however, because Vanessa includes some form of negation in each of these 5 false starts, indicating her adversarial stance to Sarah's position in 8.8. Sarah then latches onto Vanessa's string of stuttered partial CCs with a further CCC. This CCC is much weaker in tone, still using emphasis, but this time on I THOUGHT, which relativizes the argument by the double hedging of I think and past tense. Vanessa responds by interrupting Sarah right after this portion of 8.10 to continue a CC with but and move right on into a well, an intensifier already, an even further distant past perfect activity regarding Regina and telling, and all of this highly emphasized. At this point Sarah concedes with a simple Yeah; she has countered strongly, but once Vanessa counters in turn with a past tense verb and already there is nothing left for Sarah to argue.⁷

Challenges are a real entity in psychotherapeutic group interaction. They are a means of expressing both negative judgements and preferences for alternative behavior. Using structural feature and sequential analyses of their use, we can learn much about the functions they perform in a therapeutic context, as well as in ordinary conversation; and we can then extrapolate these methodologies and insights into differentiating other face-threatening, indirect speech acts.

Footnotes

¹ I wish to thank Charles Ferguson, Robin Lakoff, Steve Levinson, Charlotte Linde, and John Rickford for their helpful comments and criticisms of this paper. All errors and oversights remain mine, of course.

² The felicity conditions are based on those devised by J.L. Austin and J. Searle, using Searle's formalizations.

³ The examples have been edited because of space considerations, with extraneous material deleted. The transcription notation follows the conventions developed by Gail Jefferson and explicated in Atkinson and Heritage (84).

⁴ In the question period Melinda Givens raised the question of how evaluative lexical items can be distinguished from factual descriptions, especially with regard to caught in people from 2.3, 2.5 and 2.6. There is a level of recognizing negative evaluation that is common to all native speakers and community members, then there is a level of recognition that is activity- or discipline-specific. In this case, to be caught in people is a characterization of a lack of what this group would describe as emotional sobriety; it reflects a therapeutic judgement. Interactionally, though, non-therapists would have been able to

pick out a negative judgement as well, because Dana, with her arm in a cast, had pounded with her cast arm on the floor, punctuating each of her KATHLEENs. A sequential analysis of this passage helps to alleviate any ambiguity, showing that something in the nature of 2.3 and 2.5 is leading Dana to response by hedging in 2.4 and 2.6, and finally to respond concessively in 2.8. The direct address name and pronoun, the use of what Labov (85:45) terms the intensifying no less than this usage of just, and the tag form huh? already signal challenging; the recognition of the negative value of being caught in people simply corroborates that. Givens' question points to the issue of the validity of using intuition in analyzing discourse. I believe that one cannot avoid it and refer the reader to Tannen (84:37-40) for a well-stated defense of the permissibility of intuition in interpretation.

5 In the question period Charles Fillmore expressed concern that transcribing pauses as belonging to the prior utterance may be less helpful analytically than noting them at the beginning of the subsequent turn. Levinson (83:299) differentiates between gaps, lapses, and silences, and uses the term pause for all of these. Technically, only those pauses that follow a turn with clearly designated next speaker qualify as silences, and can validly be placed at the beginning of a next-speaker turn, if in fact the next speaker is the designated speaker. The (2.5) pause between 1.1 and 1.2 is an example of silence. In the group in question there were always eight to ten people participating, and often questions, opinions, and statements were directed more generally to the group at large. In such cases the lack of speech is either a gap or a lapse, not attributable to a designated next speaker. The (4.0), (2.0) and (4.0) pauses following 3.1, 3.2 and 3.3 are such pauses. The data is also limited to audio recordings, thus eliminating visual clues for next-speaker designations. Fillmore's point is well-taken, with these further clarifications.

6 The nature of courtroom challenges is very different from therapy challenges. The courtroom is a win-lose situation, and challenges there have the function of questioning the veracity or accuracy of witness's or defendant's statements to the court. Therapy, on the other hand, functions properly as a win-win situation, with challenges functioning as signalers of ambiguous, troubling or otherwise noteworthy features of personality or behavior.

7 During the question period, Paul Kay expressed concern that my assignment of C, CC, CCC, or response may be arbitrary. I believe that this example 8 provides good evidence for the non-arbitrariness of these assignments of challenge move labels. There are many structural features in each move of example 8 that corroborate the sequential analysis.

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Discourse and Functional Factors in the Development of Southern
Interior Salish Ergative Case Marking

Paul D. Kroeker
University of Chicago

1. The twenty or so closely related languages of the Salish family, spoken in the Pacific Northwest (Table 1), offer a potentially fertile field for the study of morphosyntactic change. Case marking (CM) of NPs is one point of divergence within Salish. It seems that some of the Southern Interior languages have developed an ergative type of CM on the analogy of passive clauses, passives having grammatical and discourse functions that give them a high text frequency.

A. Bella Coola (Be)	D. Coast Salish (CS):
B. Interior Salish (IS):	Tillamook (Ti)
Northern (NIS):	Central Coast Salish (CCS):
Lillooet (Li)	Comox (Cx)
Thompson (Th)	Pentlatch (Pt)
Shuswap (Sh)	Sechelt (Se)
Southern (SIS):	Squamish (Sq)
Okanagan (Ok)	Halkomelem (Hk)
Columbian (Cm)	Northern Straits (NStr)
Kalispel (Ka)	Klallam (Kl)
Spokane (Sp)	Nooksack (Nk)
Coeur d'Alene (Cr)	Lushootseed (Ld)
C. Tsamosan (Ts)	Twana (Tw)

Table 1: Branches of the Salish family, with abbreviations for language and branch names (after Thompson 1979)

I restrict my attention here to the core case roles of object (O), intransitive subject (S), and transitive subject (A) (cf. Dixon 1979). It will be convenient to refer to the agent of a passive clause as A as well. Salish transitive verbs are inflected for person and number of object as well as subject; in most languages of the family there is at least some distinction between the A and S series of person/number markers (note in particular 3A *-as vs. 3S *Ø, both widely distributed) and both are different from O (but 3O also is usually Ø) (Newman 1980). However, I will be concerned here primarily with the CM of independent NPs, not pronominal affixes.

2. In most languages of the family for which satisfactory data is available, O and S NPs are consistently left unmarked; A in active clauses also receives no special mark, while A in passive clauses is marked by a preposition.

1) Hk (intr) ni ʔímas̕ tə sɬeni? 'the woman walked'
ptc walk Det woman(S) (Gerdts 1981: 43)

1)(cont.) (tr-act) ni *lic'-at-as* *ts* *sléni?* *k^wθ*, *saplil*
 ptc cut-Tr-3A Det woman(A) Det bread(0)
 'the woman cut the bread' (Gerdts 1981: 39)

(tr-pass) ni *q'^wel-at-əm* *ts* *θ* *sléni?* *t^w*, *scé-ltən*
 ptc bake-Tr-Pass Obl Det woman(A) Det salmon(0)
 'the salmon was baked by the woman' (Gerdts 1981:
 195)

2) Sh (intr) m *q'acéc* *y* *k^wuk^wpy'* 'the chief left'
 ptc leave Det chief(S) (Kuipers 1974:77)

(tr-act) m *t-7éy-n-s* *y* *x^wélmx* *y* *sk'lep*
 ptc prf-meet-Tr-3A Det fox(A) Det coyote(0)
 'Fox met Coyote' (Kuipers 1974: 92.1)

(tr-pass) m *cún-t-m-as* *y* *sq^wyic* *t* *x^wélmx*
 ptc tell-Tr-Pass-sf Det rabbit(0) Obl fox(A)
 'Rabbit was told by Fox' (Kuipers 1974: 78)

(See also, e.g., Davis 1980 [Cx], Kuipers 1967:169f. [Sq], Jelinek and Demers 1985 [NStr], Davis and Saunders 1978:38 [Be].) The preposition used to mark A in passive clauses is *tsə* in most CS languages (but *t* in Squamish) and *t* in most IS languages (but *te* in Cr). The same preposition that marks A in passives also marks instrument and demoted O in antipassive constructions.² All Salish languages have verb-initial word order; in active transitive clauses A typically precedes O, but this does not seem to be rigidly required in all languages.

Most Salish languages, then, distinguish none of the core case roles in active clauses. At least some of the languages of the Southern Interior subbranch of the family, however, display an ergative type of CM: the A of active clauses is marked with the same preposition as is the A of passive clauses, while S and O are consistently left unmarked.

3) Ka (intr) *hoi* *x^wist* *li?*^w *ltətaw'it* 'then the youth walked
 then walk Det youth(S) away' (Vogt 1940:82.2)

(tr-act) *u k^wém't k^wé-i-s* *li?*^w *t* *ltətaw'it* *li?*^w *səm?*^w
 and then grab-Tr-3A Det Obl youth(A) Det woman(0)
 'and then the youth grabbed the woman' (Vogt 1940:84.7)

(tr-pass) *č-x^wt'ap-əmínt-əm* *t* *st'alt'əlá?m* *li?*^w *sx^wəllötqs*
 toward-rush-Tr-Pass Obl thunder(A) Det rabbit(0)
 'Thunder rushed upon Rabbit' (Vogt 1940: 84.12)

4) Ok (tr-act) *u?* *n'ín'w'i?* *cəm'* *ixi?* *wah-ənt-s-is*
 and then ptc ptc bark-Tr-2s0-3A
i? *t* *kkəw?*^w*apa?* 'and then the dogs will
 Det Obl dogs(A) bark at you'
 (Mattina 1985: 102.128)

(tr-pass) *cù-nt-əm* *i?* *t* *sk^wuy-s*
 tell-tr-Pass Det Obl mother(A)-his
 'his mother told him' (Mattina 1985: 80.22)

5) Cr (tr-act) *ek^w-stu-s* *le čicil'ix^w* *luw'e* *?*^w *t'ik'w*^w*t'ik'w*^w
 tell-Tr-3A Det muskrat(0) Det Obl old.woman(A)
 'the old woman told Little Muskrat' (Reichard 1938:
 694)

This ergative pattern of active transitive clause CM seems to be obligatory in Kalispel, but not in Ok or Cr, where A in active clauses may also be left unmarked as in the rest of Salish.

6) Ok *m̥et way' cù-nt(-s)-s yə? ylmix^wəm*
I.suppose tell-Tr-2s0-3A Det chief(A)
'I suppose the chief will tell you' (Mattina 1985:102.120)

7) Cr ... *a-t-qix^w-st-me-s x^we hin-číčey'e?*
aspect-prf-warn-Tr-1s0-3A Det my-grandmother(A)
"(so that's why) my grandmother warns me' (Reichard 1938: 696)

The scanty texts available to me in Spokane (a dialect closely related to Ka) and Columbian also have only the general Salish unmarked-A pattern, though it is unclear what conclusions to draw from this (Carlson 1978, Kinkade 1978).

It seems a reasonable guess, then, that some of the SIS languages are acquiring an ergative pattern of CM, the process being complete in Ka but in progress in Ok and Cr. It may be significant that certain non-Salish languages spoken near SIS, namely the Sahaptian languages, have suffixal case systems that sometimes distinguish A, S, and O from each other (Aoki 1970:136, Jacobs 1931:224). But there are also factors internal to Salish that surely facilitated the postulated shift in CM, to which I now turn. Suggesting a plausible historical route for development of the ergative pattern will naturally help support the claim that this is indeed the innovative pattern.

3. As the ergative markers in the SIS languages are the same prepositions used to mark A in passive clauses both in those languages and elsewhere in Salish, it seems reasonable to attribute the ergative pattern of CM to extension of passive-clause CM to active clauses--the preposition has other functions to be sure, but nothing else likely to lead to its use to mark A. Note that this is not the same thing as the passive-to-ergative reanalyses attested in various South Asian languages (Anderson 1977), in which a passive construction is reinterpreted as (non-passive) ergative because no corresponding active construction exists. In SIS a distinction between active and passive verbal inflection is productively maintained, although verbal inflection is the only overt difference between passive and ergatively-marked clauses.

One reason why passive clauses should influence the surface form of active transitive clauses is that there are close morphological parallels between active and passive verbs throughout Salish. Except in a few clearly-innovating Coast Salish languages, passive verbs retain O person and number marking, differing from actives only in that subject person and number marking is replaced by a Passive suffix (typically *-m* or *-(V)t*; the choice of suffix is differently conditioned in IS and CS).

Verb-initial word order means that there is no dramatic difference in the linear position of A NPs between active and passive clauses, especially given the prevalence of zero-anaphora (sec. 4).³

Second, the passive constructions of Salish languages, unlike those of typical Western European languages, are of quite high frequency in texts. In the most extended Hk (CS) text that I have been able to inspect (Hukari et al. 1977), of over 300 lines, the passive may actually be more frequent than the active; other Salish languages seem less extreme, but in all of them the passive is frequently used where a smooth English translation would require an active. Beyond the cross-linguistically expectable function of signalling an unspecified agent, Salish passives have various other functions--not enormously surprising in cross-linguistic perspective either, but unusually strongly developed--that help explain their prevalence in discourse and so motivate the influence of passive on active clauses that I postulate.

4. The first function of passives relates to the prevalence of zero anaphora in Salish. The typical choice of referring expression in Salish languages is between a full NP (proper name, Det + N, and so on) and no NP at all. Pronouns are rare and may carry very specific meanings of contrast and the like; the normal way of referring to a highly thematic referent is just to have no overt NP, letting verbal person/number morphology do the work of referring.

9) Hk *ʔi wəɬ q'ʷəqʷəɬəm?* Ø 'he was already barbecuing'
 and then barbecuing Ø(S) (Hukari et al. 1977:46.72)
ni? *ʔəw'wəɬ kən-nəxʷ-əs* Ø *tθə q'ʷaqʷəq*
 ptc then take-Tr-3A Ø(A) Det bladder-wrack
 'then he got the bladder-wrack' (Hukari et al. 1977:48.92)

10) Sh *yθí?* *y s-cún-θ-s* Ø *y ʔuq'ʷy-s*
 then Det Nom-tell-Tr-3A Ø(A) Det brother(0)-his
 'then he told his brother' (Kuipers 1974: 104.11)

11) Ka *kʷəm'ít cù-i-s* Ø Ø "tá" 'then he told her "no"!
 then tell-Tr-3A Ø(A) Ø(0) no (Vogt 1940: 84.10)

Overt NPs and zero anaphora are not equally frequent in all case roles: many Salish languages prefer that active clauses not have an overt NP as A. It has even been reported that some Coast languages prohibit overt NP As in active clauses in which the O is a third-person zero anaphor (Kuipers 1967:172 [Sq], Jelinek and Demers 1985 [NStr]) or in which O is any third-person expression, zero or not (Hukari 1976: 308f. [Ld]).

The Interior languages (and Be, for that matter) evidently do

allow overt NPs in the A role in active clauses, even when the O role is filled by anaphoric zero: this is true even of Shuswap, where nominal CM does not distinguish A from O in active clauses.

12) Sh m cún-∅-s y x^u^{kw}elmx ∅ 'Fox said to him ...'
ptc tell-Tr-3A Det fox(A) ∅(0) (Kuipers 1974: 92.3)

13) Ka cù-i-s yé t l^ətəw'it ∅
tell-Tr-3A Det Obl youth(A) ∅(0)
'the youth said to her ...' (Vogt 1940: 84.8)

However, a preliminary count of transitive clauses in the two longest Shuswap texts in Kuipers (1974) (14) shows that passive is preferred to active if the A is an overt NP, both in absolute and in percentage terms.

14) Transitive clauses in Kuipers 1974, texts VII and VIII

Active:	A = ∅	134
	A = overt NP	14
Passive:	A = ∅	88
	A = overt NP	51

If such results persist in further text counts in Sh and elsewhere, it can safely be said that both the Interior and the Coast languages share a₅ preference for putting clauses with overt As into the passive. This is evidently one reason for the high textual frequency of passives in Salish.

5. Besides the above tendency, the passive/active voice opposition of the Interior languages also serves the rhetorical function of signalling what Whistler (1986) calls 'focus'; 'relative thematicity of A and O' might be a more precise term. If an entity that is relatively focal (more central to the narration at that point) is A, while a less focal entity is O, active voice is typically used; while if O is more focal than A, passive voice is typically used.

Probably not all choices of active vs. passive in Interior languages can be explained thus. But clear instances can be found of narrated dyadic interactions in which one participant--typically the hero of the story--is consistently focal, with its case role determining voice choice in the manner just sketched, while the other participant is non-focal. (Cf. Kuipers 1974: 78f.)

15) Sh ... kákéw y s-x^ət-éqs y x^u^{kw}elmx 'Fox_i was far ahead,
far Det ahead Det fox(S)_i
nq'-ilx-mnt-m ∅ ... he_i (A) looked
look.back-sf-Tr-Pass ∅_j(0) back at him_j(0),
?u... c-plq'-ilx y x^u^{kw}elmx oh, Fox_i came
oh hither-turn-sf Det fox(S)_i back.
m s-t-yéñ-mnt-m ∅ and ran circles
ptc hither-prf-circle-Tr-Pass ∅_j(0) around him_j(0),

15)(cont.) s-t-yéñ-mnt-m \bullet k^w \emptyset , ran circles
 hither-prf-circle-Tr-Pass ptc $\emptyset_j(0)$ around him(\emptyset),
 cún-t-m \emptyset ... said to him(\emptyset)...'
 tell-Tr-Pass $\emptyset_j(0)$
 (referent j is focal [he goes on to win the race], i [Fox] is not) (Kuipers 1974: 104.15,16)

16) Sh ... m t'úx w t-st-m-as \emptyset t spy?úy ...
 ptc fly-Tr-Pass-sf $\emptyset_i(0)$ Obl eagle(A) \emptyset_j
 'The eagle \emptyset_j flew with him \emptyset_i ...
 cún-t-m-as \emptyset t spy?úy ...
 tell-Tr-Pass-sf $\emptyset_i(0)$ Obl eagle(A) \emptyset_j
 the eagle \emptyset_j told him \emptyset_i ...
 kax-t-és y?éne l spy?úy.
 feed-tr-3A this, (A) Det eagle $\emptyset_j(0)$
 he \emptyset_i fed the eagle \emptyset_j .
 cún- \emptyset -s \emptyset \emptyset t'?ene ...
 tell-Tr-3A $\emptyset_i(0)$ $\emptyset_j(0)$ then
 then he \emptyset_i told him \emptyset_j ...' (Kuipers 1974: 111.41-44)
 (referent i is focal--the hero of the rest of the story--, j [eagle] is not)

17) Ka u \check{c} ic-i-s \emptyset \emptyset , 'And he \emptyset_i went up to
 and approach-Tr-3A $\emptyset_i(0)$ $\emptyset_j(0)$ her \emptyset_j ,
 u q^w elq w él-st- \emptyset \emptyset , and she \emptyset_j spoke to
 and speak.to-Tr-Pass $\emptyset_i(0)$ him \emptyset_i ,
 cún-t- \emptyset \emptyset ... she \emptyset_j said to him \emptyset_i ...
 tell-Tr-Pass $\emptyset_i(0)$
 cú-i-s \emptyset \emptyset ... He \emptyset_i said to her \emptyset_j ...'
 tell-Tr-3A $\emptyset_i(0)$ $\emptyset_j(0)$ (Vogt 1940: 84.4)
 (referent i is focus--and hero of story--, j is not)

This focus-tracking function is found in both Shuswap (NIS) and Kalispel (SIS), despite the different surface morphosyntax of active transitive clauses in the two languages, and so can safely be assumed to be old in Interior Salish. We may note, too, that there is no real conflict between the focus-tracking function and the facts about Salish passives noted in sec. 4 above: since passives in many Salish languages are associated with lesser thematicity of the A, and since overt NPs as against pronouns or zero are cross-linguistically associated with lesser thematicity of the referent (cf. the studies in Givón 1983 and fn.5), it is not too surprising that overt NP As should be more frequent in passive than in active clauses.

6. In consequence of the focus-tracking function of voice in Interior Salish--and despite the tendency for overt NP As to

evoke passive voice--passives with omitted A are fairly common in discourse contexts where there is no doubt as to who the A is. Omission of the A in passive clauses, then, often functions very much like zero anaphora of O or of S or of A in active clauses, where likewise no overt NP appears to fill a case role but a particular referent can nevertheless be recovered from context as the understood filler of that role: see especially examples (15) and (17) above.

In the morphological parallelism of active and passive verb inflection and in the parallelism of As in active and passive clauses with respect to discourse anaphora, we have the basis for an analogical proportion in the Southern Interior languages:

18) (A = anaphoric Ø) (A = overt NP)

stem-Tr-Pass	:	stem-Tr-Pass	Obl NP _A	(Passive: Ø is focal)
:: stem-Tr-3A	:	X		(Active: A is focal)
X = stem-Tr-3A Obl NP _A				

--resulting in the ergative pattern of CM.

Functional pressure to disambiguate A and Ø case roles may in part account for the direction of analogy--from passive clauses, where A and Ø are differently marked, to active clauses, where originally both roles were marked identically. The sheer greater frequency of overt As in passive clauses as opposed to active clauses which it seems plausible to attribute to most Salish languages was surely also important in determining the direction of the proportion. As I noted earlier, neighboring languages with case systems may have had some influence too, but this is hard to show conclusively, since no case affixes have been borrowed into Southern Interior Salish languages.

7. To strengthen the historical account offered here, I should briefly argue against a reverse course of events, in which the ergative case marking of SIS would be taken to represent the Proto-Salish pattern and the rest of the family would be taken to have innovated a non-ergative pattern. It is difficult to come up with plausible analogical sources for the putatively innovative pattern in this alternative account.

(a) As I noted in sec. 1 above, Salish verbal person/number inflection follows a partly ergative pattern if anything, with 3Ø Ø = 3S Ø ≠ 3A *-as in particular. Consequently the marking of case roles in verbal inflection could not provide a good model for loss of ergative case marking.

(b) As I mentioned in sec. 2, Salish languages also have antipassive constructions, in which the verb loses its Tr suffix (usually taking a suffix -m instead) and is inflected as an intransitive verb, the underlying A being treated as an intransitive subject--so getting no case marker in any Salish language--while the Ø becomes oblique and is marked with a preposition.

Such constructions also do not provide a particularly good model for the non-ergative, non-accusative pattern of most of Salish. Apart from the fact that the match between active and antipassive verbal morphology is not as close as that between active and passive verbal morphology, one would need to explain why the oblique CM of the demoted 0 of antipassives should not have been carried over into active clauses along with the zero CM of the underlying A in antipassives. Moreover, impressionistically at any rate, the omitted 0 in antipassives in Salish seems mostly to be indefinite, rather than being used in anaphorically, in contrast to the omitted A in passive constructions.

In view of these difficulties, there would seem to be no attractive alternative to the account presented in this paper, in which ergative CM arose in the Southern Interior languages on the analogy of the passive.

Notes

1 Thanks to John Richardson, Barbara Need, Doug Varley, David Testen, John Myhill, and Richard Rhodes for comments on oral versions of this paper. Any errors are of course my responsibility. Sources of examples are cited with page number, and also paragraph, sentence or line number if this is marked in the source. I have made a few purely cosmetic changes to the transcriptions of my sources for orthographic consistency; the transcription used here is the standard Americanist one. I am responsible for morpheme divisions, morpheme-by-morpheme glosses, and translations of cited examples. The following abbreviations not explained in the text are used in glosses: 1,2,3 = first, second, third person; s,p = singular, plural; Det = determiner (article or demonstrative); Nom = Nominalizer; Obl = oblique marker (preposition); Pass = passive; Tr = transitive; prf, ptc, sf = prefix, particle, or suffix whose explicit glossing would be cumbersome and irrelevant; act = active; intr = intransitive. -- For background on Salish, see Thompson (1979).

2 Bella Coola and Tsamosan have yet other prepositions. This formal diversity of functionally similar prepositions is hard to interpret: are ?a and t both to be attributed to Proto-Salish? At any rate t seems to be the typical Obl marker in IS.

Note, by the way, that in the Southern Interior languages to be discussed below prepositions follow Det rather than being external to the NP.

3 Unfortunately shortage of data leaves it uncertain whether there are any covert syntactic differences between active and passive clauses in the various Salish languages. If there are no such differences, of course, it becomes questionable whether one really wants to speak of 'passive' constructions at all. Gerdts (1981:198) claims that the A of passive clauses in Hk cannot be extracted (e.g. in relative clauses and cleft-like constructions), unlike

S, 0, or A of active clauses: this suggests that the A of passive clauses has been syntactically demoted. In Sh, however, it seems that the A of passive clauses can be extracted (i); and, despite Kuipers' denial of the possibility (1974: 83), I have found a text example of extraction of A from an active clause (ii):

i) 1 $k'w$ séltktn-s t [m $\mathfrak{t}wéł-nt-m$]
Det relatives-her ptc [ptc abandon-tr-Pass]
'her relatives who(A) had left her(0) by herself'
(Kuipers 1974:116.4)

ii) [t'x^w-nt-és \mathfrak{y} xyúm t $k^w\mathfrak{u}k^w$ py']
Det [beat-Tr-3A Det big ptc chief(0)]
'the one who(A) had beaten the big chief(0)' (113.85)

(t in these examples marks the attributive relation within the NP, not case roles in the clause.) This suggests that despite the different surface CM of A in active and passive clauses in Sh there may be no syntactic demotion of A in the Sh passive. But more data on this and other points is needed from more languages--especially SIS--before one can speak with certainty about anything but surface morphosyntax. I continue to use the term 'passive' for its convenience as a morphological label, but do not necessarily intend the label to have deep syntactic significance.

For an account of development of ergative CM in Polynesian somewhat similar to that presented here for Salish--but in which Passive survives with quasi-aspectual functions, not the rhetorical functions to be outlined below--see Chung 1978.

⁴ Shuswap often uses a nominalized construction for sequential discourse conjunction ('and then'); this does not affect inflection or morphosyntax of transitive verbs.

⁵ Less extensive text counts in Kalispel so far show about equal distribution of overt A between active and passive clauses--perhaps not surprisingly, given that this language has eliminated overt syntactic differences between the two sorts of clauses. Overt A in the passive, impressionistically, may possibly be less frequent than in Sh. It is interesting that Sh should show such a strong differentiation in treatment of A between active and passive clauses, given that there is a bit of evidence that the syntactic difference between those clause types may be just a superficial one of CM (fn.3).

Scancarelli (1985) noted that overt NPs were rare in the A role in the Austronesian language Chamorro; she attributed this fact to the tendency of A, as opposed to S and 0, to carry old information.

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Hierarchical features of the International Phonetic Alphabet

Peter Ladefoged
University of California, Los Angeles

Most American linguists think of the International Phonetic Association (IPA) as a conservative group of traditional phoneticians, whose concerns are very different from those of contemporary phonologists. They may be right in their assessment of the traditionalist nature of many IPA members (although it should be noted that the Council of the IPA now contains several younger linguists); but they are certainly wrong in viewing the concerns of the IPA as being different from their own. Throughout its hundred year existence the main endeavour of the IPA has been to provide accurate phonetic descriptions of languages, based on phonological principles as then understood. The Association's alphabet was devised as a tool to aid in the formulation of such descriptions. The alphabet has been continually revised, and there is today a strong movement to bring the present alphabet more in line with contemporary thought. A convention for this purpose is being held in Kiel, Germany, in August 1989, and all who are interested (whether members of the IPA or not) are welcome to attend. (Further particulars are available from: IPA Convention, Linguistics Department, UCLA, Los Angeles, CA 90024-1543.)

The linguistic foundations of the alphabet are evident throughout its history. In 1900 the IPA published an *Exposé des principes* containing a table showing the recommended alphabet. This table was set up so that it included "les sons distinctifs de toutes les langues étudiées jusqu'ici". (My italics.) The principles mentioned in the title of this and other early publications of the IPA (*Aims and principles*, 1904; *Exposé des principes*, 1905) were all concerned with language teaching. It is not until the 1908 *Exposé des principes* that, in addition to a section "Principes pédagogiques," there is also a section "Principes de transcription pratique." This section notes that: "Pour chaque langue, on représente les sons distinctifs, et ceux-là seuls." Similarly, the 1912 English version, in a section headed "principles of transcription for languages hitherto not transcribed," notes, long before the phoneme became a popular notion: "It is necessary to ascertain what are the *distinctive* sounds in the language, i.e. those which if confused might conceivably alter the meanings of words." (Italics in the original.) The corresponding section in the 1922 *L'Écriture phonétique internationale*

uses the then new term 'phoneme' saying: "Pour chaque langue, on représente les *phonèmes* ou sons distinctifs, et ceux-là seuls." (Italics in the original.). The latest (1949) edition of the *Principles* makes as its first point: "There should be a separate letter for each distinctive sound; that is, for each sound which, being used instead of another, in the same language, can change the meaning of a word."

The second principle in the current edition is also relevant to contemporary phonological concerns, in that it presupposes the existence of a set of universal phonetic categories, making it meaningful to equate sounds in different languages. It says: "When any sound is found in several languages, the same sign should be used in all. This applies also to very similar shades of sound." This principle is especially important when taken into account with another IPA practice which has never been formally stated as a principle, perhaps because it is regarded as too obvious to mention. This is the principle that the symbols of the alphabet should be defined in terms of general phonetic categories very much of the kind that we now regard as features. Phonetic theory in the early days of the IPA was greatly influenced by the work of Sweet and Bell, both of whom had developed systems for classifying all the sounds that were known to be able to distinguish meanings in the world's languages. Bell's *Visible Speech* (1867) and Sweet's *Handbook of Phonetics* (1877) provided iconic symbols for showing the combinations of articulatory elements present in a sound. These same elements (or at least a subset of them) were used to define the symbols of the alphabet. Throughout its history the alphabet has consisted of symbols defined in terms of intersections of phonetic categories (features). Most of the symbols are defined by the terms naming the rows and columns of the charts, and by the convention that when there are two items in a single cell the first one designates a voiceless sound (if there is a single item in a cell it is always voiced). In addition a few symbols and several diacritics are defined by supplementary notes. The whole work -- principles, charts, symbols and notes -- constitutes the IPA's theory of phonetic description.

Given this background we may now compare an IPA description with a feature specification of the kind that is nowadays more common. The location of [m] in the chart explicitly indicates:

- + voiced
- + bilabial
- + nasal

and, by means of the labels along the lefthand edge of the chart, the fact

that this is a consonant made with the pulmonic airstream mechanism. In much the same way, Chomsky and Halle (1968:5) note that they will use symbols as "informal abbreviations for certain feature complexes." For them this symbol would be a shorthand way of designating the feature values:

- + voiced
- + nasal
- + anterior
- coronal
- + sonorant
- etc.

In both cases several other feature specifications are implied. IPA [m] implies [- dental, - alveolar, etc.; - implosive, -click, etc.]; and in SPE (Chomsky and Halle 1968), it is made clear that there are also a number of other features such as [Glottalic] the values of which, like some of those noted in (2), can be determined by marking conventions. Bearing these two approaches in mind, we may consider the extent to which the similarities between them could be increased in any future revision of the IPA *Principles*, symbols, charts, and accompanying notes.

The nature of feature systems

The first point to emphasize is that the two approaches are very different in some of their basic premises. It is true that they both describe segments in terms of features, and in some cases, such as Nasal, they both use the same terms. But, as has been shown by Halle and Ladefoged (1988), the hierarchical organization of the IPA feature set is very different from that of SPE or contemporary phonologies. In particular, the IPA has separate charts for vowels and consonants, whereas it is a major point of SPE and other phonologies in the same tradition that both vowels and consonants should be described in terms of the one set of features. As will be made clear below, I think both positions are correct. Another major difference between the two theories is that the IPA has little internal organization to the set of place categories other than (in some charts) the grouping together of some immediately adjacent places. Contemporary phonologies (e.g. Clements 1985, Sagey 1986, Halle 1988) recognize that there is far more structure imposed by the articulatory system. Considerations such as these led Halle and Ladefoged (1988) to propose that the major features that should be characterized by the symbols of the alphabet should be as shown in figure 1.

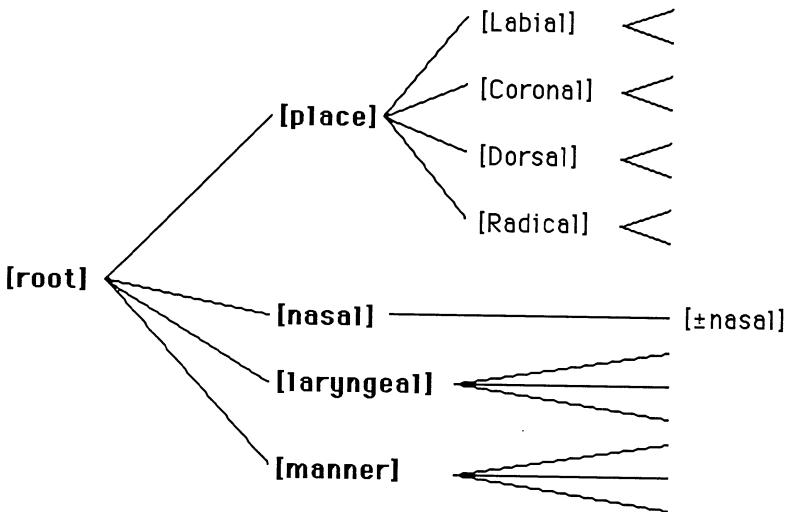


Figure 1. The hierarchical organization of the major features.

These are clearly the major features of segmental phonology; but, equally obviously, they are not sufficient for describing the sound patterns of languages. In the remainder of this paper I will sketch some of the additional structure that I consider necessary for phonological specifications. I will then consider briefly how this information should be regarded in a revised version of the International Phonetic Alphabet.

A hierarchical feature structure

An overview of the proposed structure is given in figure 2. This tree structure represents a conjecture about the phonological resources, the features and their relations, that are available to the languages of the world at the level of the segment. It should be emphasized that this figure gives only a tentative, incomplete view of the relations among features. Nevertheless, it forms part of a statement defining the phonological possibilities that can occur. The arrangement of features into a tree structure has also been used by phonologists for other purposes, notably the grouping of properties that co-occur in spreading rules. In this paper, however, the aim is simply to provide a way of representing the major constraints on phonological segments. This aim is very much in the spirit of the IPA tradition. As we have noted, the International Phonetic Alphabet has always been an attempt to

Type	Hyper feature	Major node	Feature	Traditional term	Brief description
Auditory			Voice	<i>Voiced</i>	periodic low frequency energy
			Grave	<i>Voiceless</i>	- absence of such energy
			Sibilant	<i>Sibilant</i>	aperiodic low frequency energy
			Height	<i>High vowel</i>	- absence of such energy
				<i>Mid-high vowel</i>	aperiodic high frequency energy
				<i>Mid-low vowel</i>	- absence of such energy
				<i>Low vowel</i>	low F1
				<i>Front unrounded</i>	- mid low F1
				<i>Back rounded</i>	- mid high F1
				Sonorant	- high F1
Physiological			Labial	<i>Rounded</i>	high (F2' - F1)
				<i>Unrounded</i>	- low (F2' - F1)
			Protrusion	<i>Bilabial</i>	periodic well-defined formants
				<i>Labiodental</i>	- no periodic formant structure
				<i>Linguolabial</i>	decreased lip opening
				<i>Laminal</i>	- spread lips
			Place	<i>Apicality</i>	protruded
				<i>Apical</i>	- neutral
				<i>Retroflex</i>	- retracted lower lip
				<i>Dental</i>	(tongue between lips)
Airstream			Coronal	<i>Anterior</i>	laminal
				<i>Apical</i>	- apical
				<i>Sublaminal</i>	- sublaminal
				<i>Advanced</i>	advanced
				<i>Neutral</i>	- neutral
				<i>Retracted</i>	- retracted tongue tip/blade
				<i>Front</i>	front
				<i>Back</i>	- back tongue body
				<i>High</i>	high
				<i>Low</i>	- mid
			Dorsal	<i>Velar / high vowel</i>	- low tongue body
				<i>Uvular / mid V</i>	retracted tongue root
				<i>Pharyngeal / low V</i>	- advanced tongue root
				<i>Epiglottal</i>	complete closure
				<i>Stop</i>	- nearly complete closure
				<i>Fricative</i>	- approximation of articulators
				<i>Approximant</i>	predominantly lateral airflow
				<i>Lateral</i>	- no lateral airflow
				<i>Central</i>	held gesture
				<i>Dynamic</i>	- vibrating
			Manner	<i>Trill</i>	- ballistic
				<i>Tap</i>	- ?
				<i>Flap</i>	
				<i>Nasal</i>	lowered soft palate
				<i>Nasal</i>	- raised soft palate
				<i>Stiffness</i>	stiff
				<i>Modal</i>	- neutral
				<i>Breathy</i>	- slack vocal cords
				<i>Aspirated</i>	open
				<i>Unaspirated</i>	- narrowed
			Laryngeal	<i>Glottal aperture (Closure)</i>	- closed vocal cords
				<i>Glottal stop</i>	segmental lung power
				<i>Fortis</i>	- no increased lung power
				<i>Fortis</i>	downward
				<i>Lenis</i>	- no glottal movement
				<i>Implosive</i>	- upward glottal movement
				<i>Ejective</i>	oral suction
				<i>Ejective</i>	- no oral suction
				<i>Click</i>	
				<i>Click</i>	

Figure 2. A hierarchical arrangement of features forming part of a definition of the set of possible phonological segments in the languages of the world.

represent all and only the distinctive sounds in the world's languages. We would now like to go a step further and list not just the sounds but also the features that characterize them, together with the constraints on feature interaction. In this sense figure 2 is a first step towards defining the possible phonological segments in the world's languages.

In order to serve this purpose a great deal has to be added to the tree structure in figure 2. In the first place we need to state the conventions governing the possible paths through the tree; but at the moment we do not know what these are. The general convention for reading the tree structure is that the maximum possible set of phonological segments is achieved by taking each path through every node except the terminal nodes (the features) where one of a set of choices has to be made. But this convention does not apply to the nodes in the third column. The Place node dominates a set of features such that for most sounds only one path has to be selected, but for some sounds more than one may be selected, and, arguably, for some, such as a glottal stop, none of the options is selected. Similar remarks apply to the choice of airstream mechanism, as will be elaborated later.

There are several other cases, such as the properties dominated by the Manner node, in which the inter-relations are too complex to be given in the form of a tree structure. There are also cases for which the level of our ignorance is such that we cannot even indicate the immediately superior nodes for a given sound (e.g. in the description of linguolabial consonants; Maddieson 1987). It is readily apparent that figure 2 is far from complete, and numerous additional statements are needed to define the limits of possible feature combinations. However, this should not cause us to overlook the fact that the figure does list many of the possibilities, and many of the required hierarchical properties are formalized by the lines indicating the necessary dominance relations.

As a further guide to the interpretation of this figure, very rough descriptions of the features are given in the extreme right column, the properties connected by dashes indicating sets within which choices must be made. Note that the choices are often binary, but on a number of occasions (e.g. for Protrusion and Apicality) there are three possible terms. To the left of these, in the penultimate column, there is a set of italicized terms indicating the traditional (usually IPA) terms. These terms do not have any formal standing within the theory of phonetic description being advanced here. They are simply useful (and familiar) terms summarizing certain feature combinations. Thus *Postalveolar* is equivalent to [-anterior, +coronal], and *Velar* to [+high, +dorsal].

The first and most important difference between the trees in figures

1 and 2 is that the latter tree contains another whole branch specifying auditory properties. All the features in figure 1 are ultimately defined in terms of actions of the vocal organs. But there are many important natural classes of sounds that arise because sounds have certain auditory properties in common. It is somewhat ironic that this great insight of the Prague school, much touted by Jakobson, Fant and Halle (1951), should now be overlooked by the phonologists who are their successors. The present situation arises partly because of the view of phonology first seen in SPE (Chomsky and Halle 1968), in which features are considered to be mental entities. From this point of view it is just a matter of exposition as to whether features are defined in articulatory or acoustic terms. But this is simply not true. Segments get grouped together into natural classes not because of some general mental property, but because of specific properties relating to the way sounds are heard, or to the way they are produced. Of course all features have both articulatory and acoustic properties in the sense that features are linguistic units that characterize the lexical items of a language. These lexical items have to be capable of being both spoken and heard. But it does not follow from this that we should consider the linguistic function of a feature as being required in both domains.

I do not want to overstate my case in this matter. Chomsky and Halle are correct in considering that for many aspects of sounds the correlation between the auditory properties and the physiological properties is so great that it really does not matter whether we define the feature in auditory or articulatory terms. Thus the feature Voice can be defined equally well in either way as is done by Jakobson and Halle (1956:30): "acoustically -- presence vs. absence of periodic low frequency excitation; genetically -- periodic vibrations of the vocal cords vs. lack of such vibrations." In the list in figure 2 I have, somewhat arbitrarily, chosen to put Voice among the auditory features.

No such arbitrary choice is possible for some features, such as Nasal. The articulatory correlate is clear (lowering of the velum); but despite enormous pressure from speech pathologists, who need a simple way of measuring the degree of nasality of a sound, nobody has been able to suggest an acoustic attribute common to all nasalized sounds. Again, I am not saying there are no acoustic correlates of nasality; obviously there are, else we would not be able to hear whether a given vowel is oral or nasal. But from the point of view of how segments can be grouped into natural classes, it is not the diverse acoustic properties that are the basis of the grouping, but the fact that all nasal sounds are *produced* with something in common.

Auditory feature definitions

A large proportion of the features required for phonological purposes are defined, as Nasal and the other features shown in figure 1, in terms of articulatory properties. But, just as there is no definition of the acoustic correlates of Nasal that is useful for phonological purposes, so there are other features that have no phonologically useful articulatory correlates. We will begin our more detailed examination of the features listed in figure 2 by considering these auditory features. One of the most well known is the feature *Grave*, which groups some Labial and Dorsal sounds in accordance with their spectral characteristics. Sounds such as [p,k,f,x] are produced in very different ways, but they sound similar because they have a comparatively large amount of aperiodic acoustic energy in the lower part of the spectrum. This similarity is reflected in morphological alternations such as those in Bantu languages (e.g. Rutooro; Ladefoged, Glick and Criper 1972) and historical changes such as English [x] to [f] in words such as 'rough, tough,' a change that is completely inexplicable in articulatory terms.

Chomsky and Halle discarded the feature *Grave* because they found it did not provide a satisfactory basis for characterizing differences in place of articulation. This is undoubtedly true; from an articulatory point of view the feature *Grave* does not distinguish the appropriate natural classes. But this does not mean that it fails to characterize a natural class of sounds from an auditory point of view. Throwing out *Grave* just because it does not have a useful articulatory correlate is as bad as it would be to throw out *Nasal* just because it does not have acoustic correlates that themselves form a basis for a natural class.

Note that the feature *Grave* as proposed in this paper is not exactly the same as the feature proposed by Jakobson, Fant and Halle (1951). Their definition was "the predominance of one side of the significant part of the spectrum over the other." It was intended to include both consonants and vowels. My feature *Grave* is in practice restricted to obstruents (and, perhaps, voiceless approximants) because it stipulates that the auditory characteristic of a *Grave* sound is that there is salient *aperiodic* energy in the lower part of the spectrum. In speech, this type of energy occurs only in stop bursts and fricatives (and, perhaps, a voiceless labial-velar approximant). There is no auditory property of this sort that links particular vowels with particular consonants. (But there are, of course, links between particular vowels and consonants specified by the articulatory features *High*, *Low* and *Back*.)

Note also that this definition of *Grave* implies that [-grave] sounds are not necessarily Acute in the old Jakobsonian sense. All sounds that do not have a significant amount of aperiodic energy in the lower part of

the spectrum are [- grave], irrespective of whether they have a significant amount of aperiodic energy in the upper part of the spectrum or whether they do not have any aperiodic energy at all.

Another auditory feature that is of importance in grouping consonants I have here called Sibilant, following the traditional phonetic usage. It is not exactly equivalent to the Jakobsonian feature Strident in that the feature Strident has also been used to distinguish [t,v] from [ɸ,θ], thus resulting in the rather unnatural class of strident sounds [f,v,s,z,ʃ,ʒ]. So as to make the difference in definition plain, I have retained the traditional term Sibilant, which has long been used (e.g. by Holder 1669, and many phoneticians after him) to identify the class of sounds [s,z,ʃ,ʒ].

It is interesting to consider whether it might be possible to give an articulatory definition of this feature, in that Sibilant sounds are always pronounced with the jaw raised so that there is a very narrow gap between the upper and lower front teeth. The high frequency aperiodic acoustic energy that gives rise to the auditory characteristics of this feature is due to the jet of air striking this narrow gap (Catford 1977, Shadle 1985). However, the fact that sibilant sounds have an articulatory attribute in common is an unlikely cause for their acting together in historical changes and morphological alternations. There is no evidence showing that jaw position is a salient characteristic of sounds causing them to be grouped together, whereas the auditory grouping of these sounds is evident in the perceptual confusion data of Miller and Nicley (1955) and its reanalysis by Shepard (1972), and in the perceptual similarity judgments reported by Ingram (1975).

It is appropriate at this point to consider what is at issue in claiming that a certain feature (e.g. Sibilant) should be defined in auditory rather than acoustic terms. It is not a matter of there is or is not a feature of this kind. There is little doubt that sibilants form a natural class of sounds that act together in phonological rules. Nor is it a matter of formal evaluation of rules. Given that there is a feature sibilant the system for evaluating its use within a phonology will be the same irrespective of its phonetic attributes. What is at stake is whether the auditory definition provides a better explanation for the grouping than a definition in terms of the articulatory attributes. Until there is some evidence for the shared articulatory properties being the reason for this grouping, it seems preferable to continue to maintain that the well attested salient auditory characteristics are the basis for the natural class.

The most outstanding features of the auditory type are properties of vowels. A problem that arises in discussing these features is that it

has not been generally recognized that vowels have both articulatory and auditory properties. Hence the same name has been used for something that should be regarded as two distinct features. I will use the term (Auditory) Height to refer to an attribute that has as its acoustic correlate the frequency of the first formant. The other auditory feature of vowels is here called Brightness, a term ("Helligkeit") used by Trubetzkoy (1929, 1939), and more recently by Fischer-Jørgensen (1985). The acoustic correlates of Brightness may be taken to be the difference in frequency between the first formant and F2', a form of the second formant modified so as to account for the influence of the third formant. Algorithms for determining F2' have been given by Bladon and Fant (1978). From a physiological point of view, Brightness is a combination of all three articulatory vowel features, Front, Back, and Round. High front unrounded vowels have the highest value of Brightness, low back neutral vowels have a mid value and high back rounded vowels have the lowest value.

The explanatory power of the two auditory features for vowels is best exemplified by the dominance of the five vowel system [i e a o u]. Languages as diverse as Swahili, Spanish, and Hawaiian have five vowels, with qualities something like [i e a o u]. These and only these vowels are used by approximately 20% of the world's languages (Maddieson 1984). From an articulatory point of view, there is no reason why front unrounded and back rounded vowels should be more common than the reverse combinations. Phonologists who regard all features as having only articulatory definitions have no explanation for the remarkable facts of vowel distribution. There should be no doubt that in order to form the correct phonological classes of vowels these sounds have to be characterized in both physiological and auditory terms. The action of the body of the tongue in the production of a vowel is specifiable in terms of physiological features that are also applicable to consonants (and thus show the relations between vowels and consonants). But this does not preclude there being additional auditory features that are applicable only to vowels.

The remaining auditory feature listed in figure 2 is Sonorant. This is another very necessary feature that it is hard to define in articulatory terms. The notion 'spontaneous voicing' (Chomsky and Halle 1968) does not get at the essence of what it is that causes vowels, nasals, laterals and some approximants to be grouped together. Better articulatory statements can be made in terms of the function of the articulatory system as a whole: sonorant sounds are those in which the vocal cords are vibrating and there is no significant build up of oral pressure. But there is no evidence that vocal cord vibrations plus lack of

pressure form a salient characteristic. Sonorant sounds are clearly related by having a periodic, well-defined, formant structure. Their grouping is not because they are made alike, but because they sound alike.

There are almost certainly other auditory features that will have to be included in future lists such as that in figure 2. One of these is the feature Rhotacized, which is associated with a lowering of the frequencies of the third and fourth formants. As has been shown by Lindau (1985) many forms of *r* share this characteristic. The fact that (as she also shows) some forms of *r* do not does not preclude rhotacization being an auditory feature that links some sounds in a natural class. Another possible auditory feature is Liquid, grouping together some kinds of rhotic and lateral sounds.

The organization of articulatory features

As most of the proposed articulatory features are well known, we need not consider explicit definitions of all of them. There is, however, much to be said about their hierarchical organization. The basic division into five hyper-features reflects the standard practice of articulatory phonetic description as seen in many textbooks. Abercrombie (1957) for example, notes that sounds can be described in terms of the place of articulation, the manner of articulation, the oro-nasal process, the state of the glottis, and the airstream mechanism. The same organization is apparent in Pike (1943), and has been taken over by Ladefoged (1971, 1982). The division of the Place node into four major nodes has received less formal recognition but it also has a respectable ancestry in, for example, Firth (1957). As has been noted elsewhere (Halle 1988, Halle and Ladefoged 1988), the fact that there are four major nodes attached to the hyper-feature place arises because these are the four independent articulatory possibilities. The further division of these major nodes is less clear, and full of complications. For example, the actions of the lips are extremely complex in that, in addition to being closed vertically as in a normal bilabial stop, they can also be protruded and rounded. Not all combinations of rounding and protrusion are possible. The feature system needs to be able to express the fact that bilabials and labiodentals can be rounded, and bilabials (but not labiodentals) can also be protruded. One way of doing this is by regarding Rounding and Protrusion as two separate possibilities, with Protrusion being a three valued feature accounting for the distinction between bilabial and labiodental sounds, as well as for the difference between Swedish high rounded vowels.

Below the Coronal node there are two features, Anterior and Apicality. The feature Anterior allows us to differentiate among places along the roof of the mouth, and thus distinguishes dental, alveolar, and postalveolar articulations. The three way division offers an appropriate way of showing within a single feature the low level allophonic variations that occur in such words as 'eighth, eight, tray' which in many pronunciations have dental, alveolar, and postalveolar allophones of /t/. Apicality distinguishes between articulations made with the blade of the tongue, the tip of the tongue, and the underside of the blade (cacuminal retroflexes).

The Dorsal node dominates the features necessary for specifying consonants made with the body of the tongue. These features also characterize some aspects of vowels. I have retained the terms High (Low) and Front (Back) for these physiological features as shown in figure 2, although it is not at all clear that the classes of vowels defined by tongue body positions are the same as those defined by the traditional terms which correspond more to the auditory features. We should also note that the features High and Front are multivalued features, each describing an ordered set of possibilities, although they could also be regarded as complexes of binary features, if binary terminal nodes are required. With this in mind the feature Low has been listed in parentheses. The Radical node also has implications for both vowels and consonants but it is as yet unclear how these should be formalized.

As has been noted by Sagey (1986), combinations of the major place nodes within a single segment are not uncommon. Labial plus Dorsal articulations as in [kp, gb, ɳm] are the best known; Lingual plus Dorsal articulations occur in clicks; and Radical plus Dorsal articulations occur in some Caucasian fricatives (Catford 1977). Following a suggestion made by Keating (1988) I have shown the traditional term palatal as representing a complex segment with both post-alveolar coronal and front dorsal attributes. What are traditionally known as secondary articulations (labialization, palatalization, velarization, pharyngealization) can be regarded as combinations of two different places involving different manners of articulation. There are 15 possible single and multiple combinations of the four major nodes within the hyper feature Place; we do not know how many of these can or do occur.

This leads us to a brief consideration of an interesting formal problem. Recall that figure 2 is intended to be part of a descriptive statement determining the possible phonological contrasts in the languages of the world. Every sound has to be able to have some value

of each of the terminal nodes (the features). Thus each sound is either voiced or voiceless, it is either grave or it is not, etc. Note that this use of the tree structure cannot be maintained unless we allow some features to have three (or even more) values, so that, for example, the choices below Anterior consist of the set of mutually exclusive possibilities dental, alveolar and postalveolar, and those below High include the mutually exclusive possibilities high, mid, and low, for vowels and velar, uvular, and pharyngeal for consonants.

More work is obviously needed in the characterization of the set of possible manners of articulation. The hierarchical structure of the features dominated by this node is extremely hard to formalize. The first division I have suggested in figure 2 provides us with the three possibilities stop, fricative and approximant. As these items form a set of mutually exclusive possibilities, each of them can be considered as a distinct value of a single feature, here called *Interrupted* (a name I am not very happy with). As I noted (and then rejected) earlier (Ladefoged 1971:55): "These values form a linearly ordered set, by means of which we [can] give an explanatory account of lenition phenomena, in which stops weaken to fricatives, and a further weakening gives rise to approximants." This arrangement was rejected earlier because it did not permit fricative to be regarded as a value of a separate feature that could be added to stops for the characterization of affricates. Now, however, it seems best to regard affricates as sequences of feature specifications which can, if appropriate, occur within a single timing slot.

The next division among manner features provides the distinction between central and lateral sounds. Different values of the feature *Lateral* can occur with each of the values of *Interrupted*. Distinctions between central and laterally released stops are common (e.g. in Mayan languages); clicks are also forms of stops which utilize the central-lateral opposition. Central and lateral fricatives such as [s] and [t̪] occur in Zulu and Welsh. Central and lateral approximants such as [ɹ] and [l] contrast in many languages, including most forms of English.

In addition to the more usual manner features I have suggested a new feature *Dynamic* (again, a name I am not very happy with) to account for distinctions and groupings among stops, trills, taps, and flaps. It seems likely that there is a natural class of this kind, but its internal organization is not completely clear. There is allophonic variation among stops and taps in many languages, including English. Similar variation among trills and taps occurs in languages such as Hausa; and diaphonetic variation among forms of /r/ occurs in, for example, forms of Scottish English -- Ayrshire Scottish will have a trill where other forms of Lowland Scottish English have a tap or a flap. I

am not certain whether the distinction between a tap and a flap is worth pursuing. I noted earlier (Ladefoged 1971) that "A flap is ... distinguished from a tap by having one articulator strike another in passing while on its way back to its rest position, as opposed to striking immediately after leaving its rest position [in a tap]." But this may be only an incidental difference between taps and flaps, as flaps (if defined as in the quoted sentence) always have a more retracted articulation than taps. It may therefore be appropriate to consider a flap as a tap with a different place of articulation. (Again, I am still uncomfortable with this, as the dynamics of the two gestures are so very different.)

In this paper little will be said about the Oro-Nasal and the Laryngeal hyper-features. The first of these is straightforward and needs no elaboration. The second is too complex, and too specialized, to be discussed here. I suggest that both Stiffness and Glottal Aperture are multivalued features (and if binarity is considered necessary, then it can be done by the addition of extra features, as indicated in figure 2 by the terms in parenthesis). The proposed features are similar but not identical to those proposed by Halle and Stevens (1971); they reflect more nearly the parameters proposed by Stevens (1988).

The two features beneath the laryngeal node are not in themselves sufficient for characterizing all the phonologically significant states of the glottis. Just as the articulatory features High (Low), Back and Round do not of themselves explain why vowel systems are as they are, so too the features Stiffness and Glottal Aperture do not provide a direct way of explaining why most sounds are either voiced or voiceless. There has to be a separate feature accounting for these two very natural classes of sounds. As we noted above, this feature could be given either an auditory or a physiological definition. At the moment it seems that both sets of properties distinguish the same classes of sounds, although further phonological evidence may later be forthcoming to show that one or other of these definitions provides slightly better groupings. Irrespective of whether it is considered to be an auditory or a physiological feature, there is no doubt that the feature Voice is a very necessary determiner of phonological classes.

All sounds should also be considered as having some particular airstream mechanism. It might seem as if there is no need to specify the presence of the pulmonic airstream mechanism, as it is present in all sounds; even clicks and ejectives still have a positive subglottal pressure. It is, however, necessary to note that some sounds have an increase in lung power associated with them. For example, Dart (1987) has shown that Korean so-called fortis stops have a significant increase in pulmonic pressure. Both the non-pulmonic airstream mechanisms

occur in conjunction with the pulmonic mechanism (and sometimes, as in !Xóó, in conjunction with each other as well). The glottalic airstream mechanism has three mutually exclusive possibilities: ejective [t'] as in Amharic, simultaneous glottal and alveolar stop [ʔt] as in my final allophones of /t/, and glottalic ingressive [t'<] as in Owerri Igbo.

There are many constraints on feature combinations that are not made explicit by the paths through figure 2. Some of these are absolute constraints. For example pharyngeal nasals (to use a shorthand label for [+nasal, stop interrupted, low front dorsal] are an impossibility, as are labial and radical laterals. Some other combinations of feature values are best regarded as phonological impossibilities. For example ejective nasals (to use a shorthand label for [+stop, +nasal, ejective glottalic]) can be made, but they certainly do not appear. Yet other combinations indicate another form of overspecification in figure 2. There are combinations of values of features that can be used as ways of distinguishing the sounds of one language from those of another, which have not been observed to be used contrastively within a single language. For example there is no known contrast between a voiceless alveolar lateral fricative [t̪] and a voiceless alveolar lateral approximant [l̪]; but Maddieson and Emmorey (1984) have shown that some languages consistently use one of these possibilities and others the other. Distinctions such as these should be given some special status (or perhaps omitted altogether) in a theory providing an account of all possible phonologically contrastive segments. There are also the problems concerned with defining possible paths through the tree that we noted in connection with places of articulation. We can now see that there are similar problems with the airstream node, through which one may take one or more possible paths. Bearing all these points in mind, we must obviously regard figure 2 as only a limited part of a theory specifying phonological segments. It is however a first step.

The Symbols of the International Phonetic Alphabet

To conclude, we must return to the question of what should be symbolized within the International Phonetic Alphabet. The basic answer is that we should regard the traditional terms as part of shorthand labels for feature combinations. With this in mind the symbols may be taken as depicting intersections of terms which are themselves defined in terms of features. I would like to see symbols arranged in terms of several distinct charts. For example one chart might show the cardinal vowels (and perhaps some additional symbols)

in terms of the two dimensions of Height and Brightness. Another chart would show how these same (and perhaps some additional) symbols relate to the features High (Low) and Front (Back). Much of this display would be fairly similar to our present charts. The major difference would be that the symbols would be explicitly defined as being equivalent to combinations of features.

Acknowledgements

My thanks are due to my colleagues in the UCLA phonetics group, notably Bruce Hayes, Susan Hess, Marie Huffman, Michel Jackson, Pat Keating, Mona Lindau, and Ian Maddieson.

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Linguistic Consequences of Complex Social Structures: Rank and Task in Police Helicopter Discourse

Charlotte Linde

NASA Ames Research Center/National Research Council

1. Motivation

The purpose of this paper is to show that there are complex social structures, involving moment-to-moment negotiations of the speakers' and addressees' positions, which have strong effects on the linguistic structures used by the participants. Previous studies in sociolinguistics and pragmatics have shown that speakers can mark distinctions of social hierarchy in a variety of ways including choice of pronouns and terms of reference, phonological and morphological variations, and a wide array of politeness forms, including mitigation, indirection, and explicit politeness markers. It has become increasingly clear that sociolinguistics and pragmatics must include an account of how social distinctions are negotiated and manipulated by the participants' use of language. However, thus far, the model of social structure used in most linguistic studies has been quite impoverished: a simple hierarchical model, usually defined by a few simple economic, or socio-economic categories. While studies using this model demonstrate the predictable effects of such categories, they do not do justice to the complex types of social organization which can find expression in speakers' language use. It is necessary to consider more complex cases and more complex models, in order to take seriously the "socio" aspect of sociolinguistics.

Recently, there have been a number of criticisms of sociolinguistics' simple model of social class, which argue that social class as defined by a small number of economic variables is an analyst's category, not a member's category, and does not correspond to the actual experience or judgment criteria of the subjects whose world is being described, especially given the American mythology of a classless society. For example, Milroy (1980) describes social stratification in Northern Ireland in terms of degree of membership in local networks, a description far more precise and fine-grained than simple class membership. Eckert (1987; *in press*), examines the social stratification of adolescents, for whom class is not an immediately relevant category, since their class status can only be assumed to be that of their parents. Rather, it is peer group membership, which expresses adolescents' immediate social status and partially predicts their adult status, as well as strongly predicting their linguistic behavior.

However, one aspect of social structure which is rarely considered by sociolinguistics is fluctuation and negotiation of

authority in the immediate interactional situation. Such local fluctuations have been examined in code-switching studies, such as Blom and Gumperz (1972) and Poplack (1981), which show that factors such as topic, key or seriousness of the situation, ethnic identity and choice of multiple roles, can all have effects on language choice. However, such fine-grained analyses have not been available for single language situations.

An initial attempt at such an analysis has been given by Linde *et al* (1987), which considers the linguistic effects of contradictions between permanent rank and task status in a commercial aviation simulation. Rank refers to the permanent chain of command consisting of the captain, the first officer, and the second officer. Task status refers to who is flying the airplane at a given moment and who is acting as copilot; either of these tasks may be done either by the captain or the first officer, both of whom are trained as pilots. The two hierarchies are parallel when the captain is the pilot flying; the command is thus unambiguously located in a single person. The hierarchies may be crossed, though, when the first officer is the pilot flying: since the pilot flying has the situational right to issue orders, while the overall responsibility for the flight remains with the captain. In the crossed hierarchy condition, speakers mark the social situation by the distinctive patterns of use of terms of address, and level of mitigation and speech act indirectness.

2. The Present Study: The Research Site and Data

The present study uses as data audio and video recordings obtained inflight during two weeks of operation of an airborne law enforcement agency. The aircraft is a Bell Long Ranger helicopter, which carries a flight crew of two: a pilot, who is the aircraft commander, and a flight officer, who is the mission commander. Pilots are generally former military pilots, who have received police training. Flight officers are police officers who have received paramedic training, but are not trained as pilots. Note that unlike most military and commercial aviation operations, this situation involves two parallel hierarchies, rather than a single hierarchy. The pilot is responsible for all decisions include operation of the aircraft, and aircraft safety. The flight officer is in charge of the actual police mission. Typical missions include search and rescue, emergency medical services, suspect pursuit, fire spotting, transportation of personnel to crime or disaster sites, etc.

Several weeks of day and night operations were recorded using a stationary-mount video camera focused on the crew members and cockpit panel. In addition, a voice recording system recorded both internal and external communications directly from the officers' communication lines, although only internal

communications are analyzed in this study. In addition, subjective ratings and physiological measures were taken, to evaluate the effects of stress and workload on crewmembers.

This research site is of interest for a number of reasons. One is that although there are only two participants during each flight, the social structure is quite complex, and changes from moment to moment, depending on the nature of the task in focus. This provides an important contrast to situations previously investigated, such as commercial aviation crews. These crews have a much simpler, traditionally hierarchical structure. Additionally, the current situation provides a valuable site for the study of task demands on linguistic structure, since the task demands vary widely in nature, predictability, and difficulty, ranging from extremely high to low enough so that long periods of free conversation are possible.

This paper is a pilot study, which describes an analysis of two of the 16 missions filmed. In the first mission, Flight 6, the day shift crew members came on duty for an emergency call at 2:00 a.m. and remained on call at headquarters. The mission investigated in this study began at 12:33 p.m. with a request by another facility to assist with a pursuit of a stolen vehicle, whose driver or passenger had fired shots at an officer. The vehicle crashed and burned, causing a grass fire, and the suspects had escaped on foot. The helicopter mission, which lasted until 2:04 p.m., was to assist with a search for the suspects in a heavily forested area.

The second mission, Flight 8, was also a day shift mission, lasting from 1:05 to 1:37 p.m. The crew members had had an undisturbed night, and had flown one mission previously during that shift, that last from 8:40 to 11:30 a.m.. The second mission was a response to a robbery of a VCR with a concealed micro-transmitter. The helicopter mission was to track the signal of the micro-transmitter, find the car with a path that matched the signal, establish the location of the car, and direct ground units to the car.

3. Linguistic Variables

The major linguistic variable investigated in this study is **mitigation**, as defined by Labov and Fanshel (1977): those linguistic devices which serve to make an utterance less direct, more polite, and less likely to cause offense. In the following examples, the two participants are identified as **Pilot** and **First Officer**.

High Mitigation

1. P: Say I would get a map out Dave. Of this area.

2. FO: Well you want to widen out just a little bit.

3. [FO: Why don't we go uh
P: Out to that creek?
F: Yeah I was going to say out maybe to the creek or even kind of the, not the, the bridge line, but up in there a little ways, maybe kind of work back.

Low Mitigation

4. P: OK did they have a vehicle description?

5. FO: You don't follow the light then?

6. P: That's a good reading now. When you get a constant?

7. FO: I wonder if they have canine units up here.

Direct

8. P: Direct that unit toward the gold car.

9. FO: Does it always bounce around like that?

As these examples show, there are many linguistic devices which function as mitigators: questions are more mitigating than imperatives; modal auxiliaries are more mitigating than simple verb forms; past tense forms where a present tense could be used are mitigating. This list could be continued almost indefinitely. A theory of why so many and such heterogeneous devices should all serve a similar social function has been given by Brown and Levinson (1979). This account is based on the notion that politeness is the attempt to avoid **face threatening action**, where **face** is the public self-image that every member of the culture wants to claim for him/herself. There are two types of face, negative and positive. **Negative face** is "the basic claim to territories, personal reserves, rights to non-distraction -- i.e. to freedom of action and freedom from imposition." **Positive face** is the "positive consistent self-image or 'personality' (crucially including the desire that this self-image be appreciated and approved of) claimed by interactants." (p. 66) These two types of face give rise to two types of politeness, also called negative and positive. **Negative politeness** attempts to minimize the degree of trespass to the addressee's autonomy; **positive politeness** attempts to minimize the distance between speaker and addressee, so that the speaker's and addressee's desires appear to be the same.

In order to subject the use of mitigation to a quantitative

analysis, it is necessary to devise a scale to quantify degrees of mitigation. We use a four-point scale: Aggravated, Direct, Low Mitigated, and High Mitigated. Direct utterances are assigned a value of 0, low mitigated utterances a value of 1, high mitigated utterances a value of 2, and aggravated utterances, (which are not present in this data), a value of -1. This scale has been empirically validated as conforming to the intuitions of the aviation community. That is, a reliability study was conducted, comparing sample utterance ratings of professionals to ratings by the investigators, and found that the two sets of ratings were correlated at an 80% level. This study is described more fully in Linde and Goguen (1983).

Although Linde et al (1987) showed that the use of names and terms of address is particularly sensitive to shifts in authority structure in a commercial aviation situation, this variable is not considered in the present study. We found that names and terms of address are very little used in the police helicopter situation, since there are only two crew members. Therefore, there is no ambiguity of address; when a speaker begins an utterance on the intercom, there is only one potential addressee. Similarly, there are no uses at all of terms of address like "Sir," "Captain," "Boss," etc, in strong contrast to the usage of the commercial aviation crews.

4. Findings

We found that both social hierarchy and task structure have an effect on linguistic structure. Let us begin with social hierarchy, since this is a more familiar variable in sociolinguistic studies.

4.1 Effects of Hierarchy

In order to consider the effects of social hierarchy, we must first determine what the hierarchy is in this situation. Officially, the two-man crew consists of two equals, both policemen, who both hold the rank of officer. The pilot is the aircraft commander, responsible for the safe operation of the mission. The flight officer is the mission commander, responsible for the completion of the police mission. This should, and in some respects does, mean that there are two hierarchies of command, either one of which may become salient depending on the demands of the moment. That is, piloting the aircraft or executing the police mission may be driving the crew's behavior at any moment.

However, in practice, there are a number of types of evidence which show that the pilot tends to be treated as the commander, and the flight officer as the subordinate. Perhaps

most importantly, while both crew members are paid more than ground-based officers, the pilot's supplement is higher. Thus, the pilot receives additional skill pay of 17% of his base salary, while the flight officer receives 5%. This is important evidence, since in American society it is axiomatic that rank, importance, and pay co-vary.

Another indicator that the two positions are not equal is the nature and direction of teasing and banter. In this social situation, teasing and banter are quite frequent, particularly because crewmembers can spend a great deal of time together at headquarters, waiting to be called out on a flight. A study was conducted of teasing, in which I wrote down all instances of teasing I heard during the second half of the study. (Note that the presence of an investigator, particularly a female investigator, is likely to have had an influence on the type of language used in teasing, and on the subjects of teasing.) I found that in this situation, teasing is almost always initiated by the superior. The subordinate may then tease back, but does not initiate a teasing round. This claim may appear to be circular, since the relative ranking of the pilot and the flight officer is the point at issue. However, the situation is clear in cases in which the sergeant is present, since he is officially the superior of everyone else present. It is always the sergeant who initiates any teasing round in which he is involved. Since we also see that in a teasing round between pilots and flight officers, it is the pilots who initiate the teasing, we may conclude that this is another sign of their rank relative to the flight officers. Some examples are given below.

10. [FO is putting creamer in coffee, Sergeant is watching]
S Why don't you drink your coffee like a man?
FO How about just chewing on some coffee beans?
11. [Pilot and FO are discussing Vitalogs. P is wearing it in his leg pocket, with wires coming out the fly end of the zipper, FO is wearing it in his breast pocket, with wires coming out of the top end of the zipper.]
P -> FO: You look ridiculous.
FO -> P: You look [Points, laughs]

An additional observation about the direction of teasing which supports the observation that the pilot is taken as the superior is that while flight officers are teased about poor performance of their jobs, we have not observed pilots teased this way. While it is understandable that flight officers would not care to question, even in jest, the competence of the pilots with whom they fly, this taboo itself creates a ranking of the two positions.

A further type of social evidence for the higher rank of the

pilot is that pilots tend to make decisions for both parties. A common type of decision comes in the situation in which there have been no calls for the crew members. They have the right to decide to go out on patrol, which they may do if they have not yet flown a sufficient number of hours on their shift. The question about this decision is always initiated by the pilot, and we have not seen any instances of flight officers refusing this suggestion.

Finally, we may note the interaction of the two crew members in terms of conversational management. During periods with a high workload, of course, the conversation is managed essentially by the demands of the task. This often includes, most saliently, near-continuous transmissions by both crew members on a number of radio frequencies. However, during periods when the workload is lower, for example, when the mission is completed, during the return flight to base, non-operationally relevant, social conversation does happen. Such conversation is not continuous; it is sporadic, interrupted both by radio transmissions, and by interspersed periods of silence. One common way to start conversations in this situation is to use "noticings", a form of conversational opening in which one party draws the attention of the other to some feature of the landscape as a potential conversational topic. An example of such a noticing, which follows several minutes of silence, is given in (12).

12. FO: This reservoir or lake or whatever looks pretty full, huh?
P: Yep

Noticings and initiations of non-operationally relevant new topics are more frequently initiated by the pilot than by the flight officer, as shown in Table 1. (Note that the sample size is too small for a statistical analysis, but the difference is in the expected direction.)

Table 1: Initiation of Noticings and New Topics

	<u>Pilot</u>	<u>Flight Officer</u>
Flight 8	3	1
Flight 6	15	8
Total	18	9

There is an operational explanation for this difference: although the police mission may be completed, the pilot still has the responsibility for safe operation of the aircraft as they return to base. Therefore, he can decide, more easily than can the flight officer, whether conversation is safe or desirable at

any moment. This fact, though, tends to give additional authority to the pilot; not only does he control the aircraft, he may control the intra-cockpit interaction as well.

4.1.2. Linguistic Consequences of Social Hierarchy

Previous work [Goguen and Linde 1983, Linde et al 1987] on mitigation in an aviation context suggests that mitigation follows the chain of command: there is more mitigation up the chain of command than down it. This appears to be the pattern found for most of the law enforcement flights of this project; however, one of the flights examined in detail for this study presents an exception to this pattern. because of the unusual nature of the task situation. The data shown in Table 2 indicate the pattern of mitigation we would expect, both from previous studies, and from initial examination of all the flights of this study.

Table 2: Mitigation Scores by Crew Member, Flight 6

	Mitigation			
	D	LM	HM	Score
Pilot	12	11	0	.47
Flight Officer	15	17	4	.62

In contrast, Table 3 shows the mitigation scores for the two crewmembers during Flight 8, the exceptional flight. Here the pilot actually shows a higher mitigation score than the flight officer. We can find the reason for this surprising reversal in the fact that the flight officer is not current in his knowledge of the operation of the tracking device, which is necessary for his task of locating the suspect's car. Therefore, the pilot, who is familiar with the device, must instruct him in his own task. This situation, which is potentially extremely face-threatening,² is handled by the pilot's unusually high rate of mitigation.

Table 3: Mitigation Scores by Crew Member, Flight 8

	Mitigation			
	D	LM	HM	Score
Pilot	16	10	2	.5
Flight Officer	16	9	1	.42

4.2 Task Structure

Because of the complex nature of the authority hierarchy, the task structure is an extremely interesting variable. As discussed above, there are two parallel authority structures, defined by the task demands of the moment. The pilot is the aircraft commander, while the flight officer is the mission commander, and at any moment, the demands of one of these aspects of the total mission may predominate. Therefore, at any given time, a crew member may need to make a request of the other -- either to perform some action, or to ascertain or transmit some information. A request may be categorized by its task membership -- an action needed for the performance of the speaker's task, or for the performance of the addressee's. As we shall see, these have a very different social status, depending on whether one crewmember is telling the other how to do his own task, or requesting some action which he himself needs for his performance.

In the present investigation, we consider all requests, including requests for action, and requests for information. Requests for information may be, indirectly, requests for action, if the addressee does not have the requested information, and must perform an action to obtain it. We may further subdivide requests into requests pertaining to the speaker's primary responsibility, those pertaining to the addressee's primary responsibility, those pertaining to mutual responsibilities, that is, responsibilities of the entire mission, and those pertaining to no responsibility, that is, requests involving non-operationally relevant topics. We find that crew members are extremely sensitive to the nature of task demands: requests involving the speaker's own mission tend to be quite direct, while those involving the addressee's mission, tend to be significantly more indirect. This finding is quite understandable: requesting someone to perform his own task is potentially more face-threatening than requesting him to perform some action needed for one's own task. Table 4 shows the comparison between speaker-oriented requests and addressee-oriented requests.

Table 4: Mitigation Level By Task Orientation

<u>Task Orientation</u>	<u>Direct</u>	<u>Low Mitigation</u>	<u>High Mitigation</u>	<u>Mitigation Score</u>
Speaker	12	7	1	.45
Addressee	15	17	5	.72

(Chi square = 4.49, df 1, p = .034)

These results suggest that speakers' language is not wholly predictable by their position in a long-term social hierarchy. Rather, we see that momentary changes in their relation to one another, dictated by changes in the task situation, also affect their linguistic choices.

5. Conclusions

These results show the need for a more sophisticated notion of authority structure in sociolinguistics and pragmatics, one which can model the complex situations found in ordinary life, and can reflect the kinds of moment to moment status shifts and status negotiations which participants are clearly capable of making.

Notes

1. I would like to thank the members of the law enforcement agency studied for their cooperation, courtesy, and interest in this study. I would also like to thank my colleagues Michael Bortolussi, Sandra Hart, Walter Johnson, Robert J. Shively, and Lowell Staveland for their work on the CHP project. Finally, I am grateful to Tora Bikson, Elizabeth Krainer, Hilda Kuper, and Michael Moerman for their extremely helpful comments.

2. Note that because at present only two flights have been analyzed in detail, we can not rule out the possibility that the differences represent individual differences in the linguistic styles of the crew members rather than systematic responses to the social situation. Further investigation will decide this question. However, since the results are in the directions predicted by previous research, it is expected that individual differences will not, in fact, be shown to be the determining factor.

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ENERGETIC REFLEXIVES IN SPANISH

Ricardo Maldonado

University of California, San Diego

It has traditionally been claimed that reflexive constructions are to be analyzed as the identification of subject and object with the same participant in an event. It is clear that, while this approach accounts for a restricted pattern of reflexive expressions, it leaves unexplained several classes for which the best analysis has only been to list them in the lexicon. I show that there are several productive patterns of reflexive formation whose internal structure has not yet been explained. I propose that it is necessary to start from a different set of assumptions in such a way that the classic subject/object identification will be seen as only a special instance of a more complex network of symbolic structures. This paper focuses on the dialect of Mexico. Even though there may be differences regarding the behavior of a particular item, the fundamental claim is made to account for all modern dialects of Spanish.

Sentence (1) is an example of a prototypical reflexive se-formation; sentence (2) departs from this pattern:

- (1) Juan se peinó 'Juan combed himself'
- (2) La pelota se cayó de la mesa
'The ball fell down from the table'

In (1) subject and object are identified as agent and patient with the same participant. It is obvious that (2) cannot be explained in the same manner. Inanimate objects such as balls are incapable of moving by means of their own resources. Obviously, this implies that we cannot claim the presence of an agent and a patient identified with the same participant. We are further unable to say that subject and object correspond to the same entity since the source of caerse (caer 'to fall') is an intransitive verb with only one participant. Since the coreferentiality analysis proves to be inadequate, it is clear that a different approach to these matters is necessary.

We must first determine the meaning of sentence (2). Let us start by comparing (2) with (3):

- (3) La pelota cayó de la canasta
'The ball fell down from the basket'

In (3), the falling of the ball is conceived as a natural occurrence that is in agreement with the normal course of events. This would be the case in a basketball game, in which the ball falls from the basket many times during a match. In sentence (2) the ball is expected to remain on the table and its falling constitutes an unexpected action, an event that contradicts a normal expectation. The following examples support this view:

(4) a. La pelota (*se)² cayó de la mesa como era esperado.
'The ball fell down from the table as was expected'
b. La pelota se (*Ø) cayó de la mesa inesperadamente
'The ball fell down from the table unexpectedly'

Unexpectedness is a possible reading because the event contravenes the natural conception of a state or an action. Natural events don't take the pronoun se, as the following examples show:

(5) a. La lluvia (*se) cae 'Rain falls'
b. En el otoño, las hojas (*se) caen de los árboles
'In autumn, the leaves fall from the trees'

It is natural for rain to fall. In the same manner, leaves normally fall from the trees in autumn. If leaves started falling from trees in the spring, the reflexive se would be used to impose the reading in which the action is conceived as counter to expectation. Crucially, the non-reflexive form would be ruled out:

(6) En la primavera, las hojas se (*Ø) cayeron de los árboles
'In spring, the leaves fell from the trees'

The contrast between reflexive and non-reflexive formations does not depend on whether the participant is animate or not. The same contrast can be found in processes with animate participants:

(7) Juan (*se) cayó al agua con toda elegancia
'J. fell into the water with elegance'
(8) J. se (*Ø) cayó al agua vestido
'J. fell into the water dressed'

Notice that (7) is conceived as an intended event and therefore the reflexive se is ruled out, whereas in (8) the action is accidental and only the reflexive use is adequate.

We have shown so far that the reflexive se introduces a reading of 'unexpected change'. It is pertinent now to see what theoretical assumptions are necessary to describe this phenomenon. I have already been referring informally to the first basic notion:

(9) The construal of unexpected changes depends on the canonical conception of the elements involved in the event.

This assumption interacts with Langacker's billiard-ball model (1986), by which we tend to conceive the world as being populated with discrete objects located in space. Some of these objects are capable of moving around and also of inducing movement of other, non-energetic elements in space, mainly through physical contact. We have been dealing with three different kinds of elements: a) things (leaves and balls) conceived as elements incapable of changing location by means of their own resources; b) human beings conceived as capable of exerting and controlling their own

energetic resources in order to induce changes; and c) natural forces conceived as energy sources that act constantly on any element in space. Interactions between such entities are encoded in language by means of different symbolic structures.

In order for changes to happen some kind of energy must act upon an element for it to undergo a change. Before the action takes place there may be some resistance controlling the state of the element to be affected. This creates a situation of Force Dynamics, as proposed by Talmy (1985), in which an energetic element (the antagonist) imposes a change on another element (the agonist) by blocking or overwhelming the force with which the element was maintained in a particular fashion before that energy acted on it.

Based on these notions, I will propose that the reflexive construction is used when there is a situation of opposing forces in which one force overcomes the other. Generally speaking, natural expectations and canonical conceptions of world events constitute the resisting force being overcome. In the most transparent examples, the encounter of physical forces is also of the construal of an event that runs counter to expectations. To take the simplest case, in (3) the strength of gravity makes the ball fall down. Notice that the ball, not being self-energetic, cannot offer resistance to the influence of gravity. Consequently, since there is no conflict between competing forces, the reflexive form cannot be used. In the reflexive sentence (2), the table is a resisting force that neutralizes the influence of gravity. This interaction constitutes the initial state of affairs. For a change to happen some other unspecified force must act upon the ball, moving it beyond the table's edge, in such a way that the neutralizing effects of the table have been suspended.

The different conceptions of leaves falling can be accounted for in the same way. In (5) the branch of the tree prevents the leaf from falling off during the whole year until autumn comes and leaves fall. The falling of leaves in the autumn is conceived as a normal event that follows the behavior of biological elements. In such cases, no reflexive formation can take place, as (5) shows. In (6), it runs counter to expectation to see them fall in the spring, as the tree is expected to prevent leaves from falling. This conception constitutes the baseline for the event described in the reflexive sentence. Some unspecified force (a storm, a plague, etc.) must act on the tree in order to cancel its controlling effects over the leaves in such a way that they are left to the mercy of gravity. It is this canceling effect that imposes the "unexpected" reading of sentence (6). As predicted, only the reflexive construction is used in this case.

A similar explanation can be proposed for animate participants. In (7) Juan does not offer any resistance to the natural strength of gravity. The lack of force conflict rules out the possibility of using a reflexive form. In (8) the situation is reversed. A person in a standing position neutralizes the influence of gravity, unless some kind of obstacle cancels this resisting

energy. In such a case, the change of location is not volitional and it constitutes a contradiction of natural expectations. In such cases only the reflexive formation is allowed, as (8) shows. We may now account for cases in which, even though the notion of accidentality is present, the reflexive form is ruled out:

(10) *Después de que le dispararon el ratero (*se) cayó muerto*
'After they shot him the thief fell dead'

The context imposes a different conception of the subject of caer. Notice that the act of shooting takes place before the thief falls. Consequently, the act of falling takes place when the thief is not conceived as capable of resisting the influence of gravity. Since no particular conflict of forces is being profiled the use of se is inappropriate.

The contrast between the intransitive non-reflexive sentences and the reflexive formations of this verb is based on the pattern shown in figure 1:

Figure 1 (cf. page 18)

The circle represents the participant. The downward arrow indicates change of location, whereas the downward angle stands for the strength of gravity. In caerse the upward angle shows the resisting energy imposed against gravity. This force is canceled by an unspecified force (the line crossing it) and gravity becomes a stronger force (the sign +).

The schema proposed in figure 1 constitutes the simplest case of this kind of reflexive formation in Spanish. The schema just proposed is not a semantic idiosyncrasy of this verb. I will claim that in fact, not only is this pattern quite productive in Spanish, but it also follows from a fundamental opposition between absolute and energetic construals as explained by Langacker (1986, 1987a). In the absolute construction the event can be either static or dynamic but no energy is put in profile; for instance, in the intransitive use of caer only the event of falling is being portrayed--no special reference to speed, manner, or conflict of forces has been made at all. The reflexive se in Spanish is a device by means of which absolute construals are transformed into energetic ones. For the same type of event, the verb can occur either alone or with a reflexive marker, depending on whether the event is anticipated or contravenes one's expectations. If the event runs in the direction of expectations, the construction will be absolute, but if it runs counter to this abstract force the syntactic form will be construed in force-dynamic terms and encoded with the reflexive se. Langacker (1987b) has shown that the absolute/energetic distinction is attested in other languages: in French, non-reflexive verbs that take the auxiliary être 'be' are absolute, as opposed to energetic verbs that take the auxiliary avoir 'have'. Absolute verbs like aller 'go', venir 'come', arriver 'arrive', partir 'leave', etc. make no

specification concerning the rate or the method of locomotion. On the other hand, energetic verbs like courir 'run', voler 'fly', nager 'swim' specify the manner and rate of locomotion. In a similar fashion, Langacker hypothesizes that the three morphological classes of Cupeño, as reported by Hill (1969), are based on the absolute/non-absolute distinction: verbs with the suffix -ine are volitional and active, while those marked with -axe tend to have the opposite properties. As opposed to these polar suffixes, verbs with zero marking are energy-neutral: most verbs for states of mind ('be angry'), natural bodily processes ('see'), behavior of plants, animals, inanimate objects and the weather ('bloom', 'rain'). What is crucial is how an event is viewed subjectively. In Cupeño, zero forms refer predominantly to processes that run according to the normal course of events, as they are conceived either in the physical domain or in the cultural sphere. "A process counts as energetic only when it rises above this baseline" (Langacker 1987b:8).

The opposition between absolute non-reflexive and energetic reflexive constructions is quite productive in Spanish. I will try to show the ways in which the absolute/energetic opposition is manifested in several kinds of intransitive verbs.

- (11)a. La pelota rodó por las escaleras
'The ball rolled down the stairs'
- b. Juan rodó por las escaleras como se lo habían pedido en la filmación de la película
'Juan rolled down the stairs as they had asked him to do in the shooting of the film'
- c. J. perdió el conocimiento y (*se) rodó por las escaleras
'J. became unconscious and rolled down the stairs'
- d. J. se (*0) rodó por las escaleras cuando se tropezó con Ana 'J. rolled down the stairs when he tripped over A.'

Examples (11a and b) constitute clear cases of absolute construals. They are parallel to (2) and (7) respectively. Since no opposition of forces is profiled the reflexive form cannot occur. In (11c) Juan has lost his capacity to resist gravity before the act of falling takes place, in such a way that the event is construed as absolute following the pattern of (11a). Only the energetic construal in (11d) requires a reflexive construction. It parallels example (8). Juan's stumbling over Ana cancels his resisting capacity and gravity becomes a stronger force that induces an unexpected change. The schemata proposed for caer/caerse also represent the composition of rodar/rodarse.

As might be expected, physical forces need not participate in an energetic construal. Desires and expectations constitute abstract forces that turn absolute construals into energetic ones. There is a gradation, of course: there are verbs in which the overwhelmed force is simultaneously a physical force and a mental expectation. This is shown in the following sentences:

(12)a. León sonrió al ver jugar a su hija
'León smiled when he saw his daughter play'
b. Tachita se sonrió al ver que Juan la miraba
'T. smiled when she noticed that J. was looking at her'

We are concerned now with self-energetic participants. In these cases reactions to external impressions constitute the internal energy that flows in the event, as it is manifested corporally. The contrast between (a) and (b) should be clear. In (12a) the action is perceived as a natural event. It is only seen as an instance of the capacities normally attributed to any human subject: the participant uses his own resources to smile. Even though energy is involved, the action counts as non-energetic or absolute because it is seen as natural and expected.

The explanation given for (12a) doesn't hold for (12b), in which Tachita's eye contact with Juan makes her lose control of her expression and her smiling comes as an unexpected change. Different intentions (shyness and amazement, etc.) may act as antagonistic forces, which the subject participant is unsuccessful at holding back. This emotional behavior comes from a balance-of-forces situation. In the reflexive form the person is expected to hold back any emotional manifestation. This expectation invokes a neutralizing force that prevents a reaction from emerging. When the impulse is stronger than the inhibition the resulting act contravenes the natural course of events and is grammatically encoded in Spanish by the reflexive formation. Needless to say, the schema given in figure 1 also represents the structure of these verbs, provided that the conflict of forces is now abstract.

A construal in which the resisting force that creates the environment for a reflexive formation can only be equated with desires and expectations is of course found in the language. Take, for example, the verb encoger 'to shrink':

(13)a. La lana (*se) encoge 'Wool shrinks'
b. Los pantalones de poliéster no (*se) encogen
'Polyester trousers don't shrink'
(14)a. Aunque estos pantalones son prelavados, se (*0)
encogieron
'Even though these trousers are prewashed, they
shrank (unexpectedly)'
b. La etiqueta lo advertía, pero yo no hice caso y el
sweater se (*0) encogió
'The label warned me, but I ignored it and the
sweater shrank'
c. El sweater se (*0) me encogió 'The sweater shrank on me'

Common to the set of absolute examples is the fact that they describe the tendencies of different materials to undergo a change in different situations. The view of the facts is done in an absolute fashion, as no particular expectation is imposed by the speaker on the elements involved in each process. In (13a), wool

is conceived of as a kind of material that tends to shrink. (13b) shows that the process of shrinking normally doesn't take place with certain kinds of material. The scene is construed objectively, i.e. excluding the speaker's subjectivity from the scope of predication. Notice that these examples are in present tense, the canonical linguistic strategy used to describe "ever true situations" of the type dos más dos son cuatro 'two plus two equals 4'. One can predict that when the event is construed perfectively it will be tied in to a specific set of circumstances which will allow for the speaker's expectations to play a determinant role in the use of se. If clothes shrink as a consequence of a particular set of circumstances the reflexive form can be used. This is in fact what happens in (14). Notice that the level of participation of the speaker increases gradually from (14a), in which there is a particular event reported by the speaker as unexpected; to (14b), in which the subject's carelessness causes the change of state; to (14c), where the affectedness of the speaker is explicitly encoded by means of the ethical dative me.

It shouldn't be surprising to find that the antonym of enconger, namely ceder 'to give' and its reflexive counterpart estirarse 'to stretch'³, would be construed in exactly the same manner:

(15)a. El algodón/la lana cede 'Cotton/wool gives'
 b. El sweater de lana/de algodón se cedió/se estiró
 'The cotton/wool sweater got all stretched out'

The following is a more transparent example of the same kind of construal:

(16)a. Esa pluma (*se) corre suavemente sobre el papel
 'The pen runs smoothly on the paper'
 b. Por usar la vieja pluma fuente, la tinta se (*0)
 corrió sobre el papel y ahora no hay manera de borrarla
 'Because of using the old fountain pen, the ink ran
 over the paper and now there is no way to erase it'

It should be clear that in (16a) the pen does not present any resistance to being manipulated over the paper. The construal is absolute. In (16b) the ink produces an undesired stain on the paper. The resisting force here is the desire for the event not to happen. When such a desire is contradicted the event runs counter to expectations and the energetic reflexive formation is employed.

We are now in a position to explain what in traditional grammar has been considered an anomalous case of reflexive constructions. The examples always given for the so-called 'reflexiva anómala' (Yoshida 1986) are the following:

(17) El tejado se (*0) llovió
 'The ceiling leaked because of the rain'

(18) La bañera se (*0) salió del baño
'The bathtub slid out of the bathroom'

Traditional grammars have been unable to explain this kind of sentences since their basic hypothesis is to see them as a departure from a subject/object-identification reflexive sentence.⁴ In (17) it is clear that the ceiling offers resistance up to the point where the energy exerted by the weight of the water overwhelms this resistance. Besides this physical explanation, an abstract balance-of-forces situation is present: ceilings are canonically expected to protect the space they cover from the falling of any object, and the dripping of water runs counter to normal expectations. The same explanation holds for example (18). The bathtub's change of location can only be interpreted as accidental, as the nature of the initiative force causing the process remains unspecified. Common to these examples is the fact that the overwhelmed agonistic force is an expectation imposed on an inanimate participant not capable of undergoing a change based on its own resources. It shouldn't be surprising to find that traditional grammars show an obvious confusion in the characterization of this kind of construal. Notice that whereas lloverse and salirse are considered deviations from reflexive constructions, the following examples are considered as departures from passives; the so called "pseudo-passives":

(19) Se (*0) torció el árbol 'The tree got twisted'
(20) Se (*0) secó el árbol 'The tree dried out'

From our perspective, such division is inadequate. Suffice it to say that they are also construed in an energetic fashion: the agonistic force is always a natural expectation and the antagonistic force is in general terms highly schematic. The following schema represents the internal composition of this set of verbs:

Figure 2 (cf. page 18)

The wavy line inside the circle represents the change undergone by the participant. The unspecified stronger force is the left-to-right angle with the sign '+', and the expectation being contravened is the right-to-left angle.

If this interpretation is correct, we may be in a position to explain the contrast between the next couple of sentences:

(21)a. El papá de Juan murió 'Juan's father died'
b. El papá de Juan se murió 'Juan's father died'

García has analyzed sentence (b) as a case in which the subject is doubly mentioned by the verb ending and by the clitic se. The effect of double mention is that the only participant ever involved in the event absorbs all the available 'functions' (logical 'subject' and logical 'object') and excludes the

possibility of having an 'exterior' agent. A kidnapper asking for ransom might threaten a father as follows:

(22) Me das \$1,000 o tu hijo muere
'Give me \$1,000 or your son will die'

Se "implies that the dying is the exclusive affair of the son" (1975:8). Even though García's analysis is highly suggestive, it proves inadequate not only for morirse but also for the set of energetic constructions given previously. Inanimate elements cannot act on their own accord to produce a change perversely. They do not qualify as being simultaneously logical agents and patients. Therefore the event must be induced by external forces.

Instead of claiming that se rules out all external forces, I claim that it allows such forces to act but at the same time it blocks the possibility of making a specific participant responsible for their action. This analysis can account for the ironic interpretation of examples like the following:

(23) Me das \$1,000 o tu hijo se muere en mis manos
'Give me \$1,000 or your son will die in my hands'

Some initiative force drives the event in such a way that it overwhelms a resisting expectation. However, the stronger initiative force cannot be identified with a specific participant; it can only be represented in highly schematic terms. We know that somebody (the speaker in this case) drives the event as the oblique phrase suggests, and yet the use of se portrays the identity of the participant as being unknown. These concepts allow us to characterize the absolute/ energetic contrast. In the absolute morir, the act of dying is seen objectively as a change of state in which no particular subjective expectations are included:

(24) Don Nico murió suavemente, se quedó dormido y ya no despertó
'D. N. died smoothly, he fell asleep and he didn't wake up'
(25) Cuando don Nico murió, su hijo ya tenía treinta años
'When D. N. died, his son was already thirty years old'

It is well acknowledged in the literature that morirse implies a high level of accidentality, i.e. the speaker's expectations play an important role in the construal, as they constitute the agonistic forces overwhelmed by the undesirable happening:

(26)a. Don Nico se murió sin que su hijo pudiera hablar con él
'Don Nico died without his son being able to talk to him'
b. A Juan se (*) le murió su papá
'To John died his father' = 'John's father died on him'

Similar to correrse la tinta, what constitutes the energetic

situation in (26) is the fact that death comes when some other participant didn't expect it to happen. Implicit in the meaning of (26a) is the wanting of su hijo to talk to don Kefo; it is also explicit because of the dative marker le that Juan is affected by his father's death in (26b).

The absolute/energetic contrast also allows us to explain the difference between aparecer and aparecerse.

- (27) Juan (*se) apareció en televisión por primera vez ayer
'J. was on television for the first time yesterday'
- (28) En el parto, la cabeza del bebé fue lo primero que (*se) apareció
'In the childbirth the head of the baby was the first thing that appeared'
- (29) Juan se (*0) apareció en la fiesta sin invitación
'J. showed up at the party without invitation'
- (30) El vampiro se (*0) apareció en su cuarto en la noche
'The vampire showed up in her room in the night'

In all these examples an element that was not there before appears in the scope of predication. It should be clear that the only difference is that in the reflexive construction the presence of the participant in the setting is not expected.

This analysis is not restricted to intransitive verbs. It can also account for reflexive constructions with transitive counterparts. Following the Billiard-ball model, by which some energetic entity may induce movement of other elements in space mainly through physical contact, I assume that in a prototypical finite clause, the subject is an agentive energy source who transmits energy through an action chain to an energy sink which is encoded by the object. Prototypical transitive processes are schematized as follows:

Figure 3 (cf. page 18)

The clitic se is used in Spanish to produce sentences that depart from this basic schema in different ways. In this paper, I will limit myself to discussing the most productive pattern in Spanish:

- (31)a. El ratero ahogó al anciano
'The thief drowned the old man'
- b. El anciano se (*0) ahogó 'The old man drowned'

The transitive sentence is construed following the prototypical pattern of an action chain in agreement with a Force Dynamics situation: in the initial state of affairs the object resists the influence of gravity to keep afloat. Then the subject ratero imposes enough energy to overwhelm the object's resisting force and the change of state takes place. In the reflexive construal the initial state of affairs is the same as in ahogar; but now the internal resisting energy of the patient is canceled either by an

internal force, such as fatigue, or by some external unspecified stronger energy. Contrast the following schema with the one proposed for the transitive construal (action chain).

Figure 4 (cf. page 18)

Based on these diagrams we may identify three basic ways in which the reflexive se construal departs from the prototypical action chain schema: 1) whereas the cause of the action is the agent in the transitive sentence, in the reflexive ahogarse the cause is not specified; 2) in the reflexive use, a Force Dynamics situation in which the resisting force is either canceled or overwhelmed by some unspecified force is present; 3) even though anciano is a patient, a participant downstream in the energy flow, he is encoded as the subject, instead of the object of the sentence.

This is a highly productive construal in Spanish; verbs like desinflarse 'deflate', descomponerse 'put out of order', desgastarse 'wear out', romperse 'break', doblarse 'bend down', are prototypical cases.

(32)a. Juan rompió la taza 'Juan broke the glass'
 b. La taza se (*0) rompió 'The glass broke'

The integrity of the cup is maintained based on some internal energy. When this energy is overwhelmed by a stronger unspecified force, the reflexive form is used.

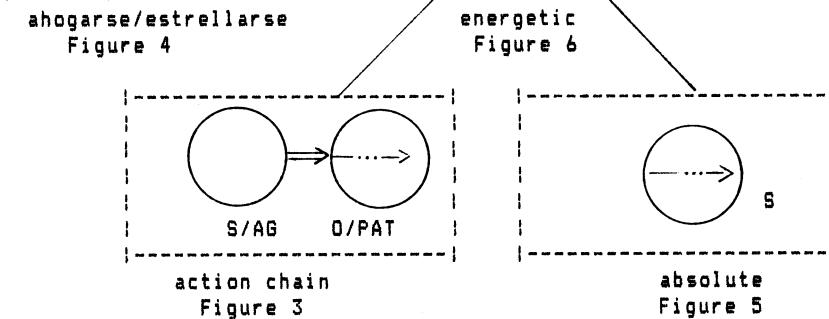
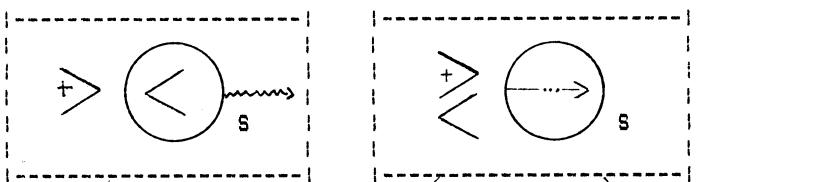
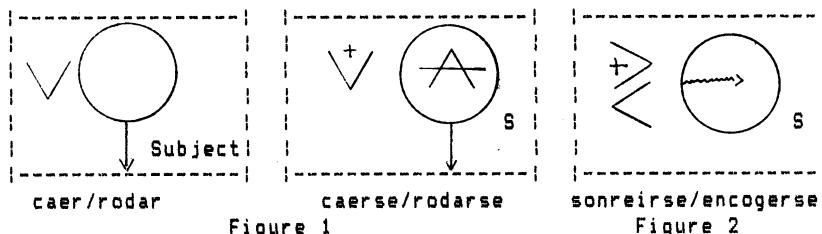
There are verbs that allow either the energy source or the energy sink to be put in profile:

(33)a. Juan estrelló el coche 'J. crashed the car'
 b. Juan se estrelló 'J. crashed'
 c. El coche se estrelló 'The car was crashed'

Sentence (33c) is construed following the pattern of ahogarse: the patient is profiled as a subject and the initiator of the event is not encoded. (33b) is more interesting, because Juan could meet the requirements to be a volitional agent and patient in subject position. But what se does is to remove volitionality. The lack of volitionality determines the construal of accidental events. The human being is prototypically conceived as being in control of his acts, despite the existence of distractors. It is when an internal or an external unspecified distractor overwhelms the internal energy of the subject that the reflexive formation can take place. The removal of agentivity and the existence of the unspecified initiative force make the event unexpected. The diagram offered for ahogarse also represents the structure of accidental verbs like estrellarse (cortarse 'cut oneself', pegarse 'hit oneself', quemarse 'burn oneself') are prototypical examples of this productive construal).

The complexity of the network of "reflexive" construals in Spanish overwhelms the limitations of this paper. Notice finally

that intransitive absolutes in which no energy is profiled (figure 5) become energetic by adding a schematic force and at the same time transitives (figure 3) become energetic by eliminating the volitional/agentivity characteristic of the action chain construal. With these two strategies polar opposite constructions coincide in the same result: the energetic schema proposed in figure 6.



Footnotes

1. The Spanish reflexive pronoun system is as follows: me 1st singular, te 2nd singular, nos 1st plural, se elsewhere.
2. The star * is used to indicate a high degree of unnaturalness of the sentence under specific circumstances. It is not used to mark a radical opposition between grammatical and ungrammatical utterances.
3. This is the equivalent form of estirarse 'to stretch' that takes place in the construal with animate participants: Juan se estiró al bostezar 'J. stretched while yawning' Notice that Juan is

able to undergo a change by means of his own resources. The notion of unexpected change is obviously not at play here. This is the case of a different construal in which internal energy of self-energetic elements induces change. The most representative examples of this construal are verbs like pararse 'stand up' and sentarse 'sit down'.

4. In fact this kind of "reflexive" is a two-step departure from real reflexives. The first step is the removal of volitional-agentivity in what has been called pseudo-reflexive constructions of the type Juan se enoja 'J. gets mad'. The second step is the removal of animacy. Since the subject of this construction type is not able to induce any kind of change and yet the affectedness of the subject participant is present as in normal reflexives, the best solution has been to recognize its anomaly in different ways: attenuated reflexive (Gili Gaya 1972 Sec.58; Real Academia Española 1978 Sec.764); the extreme weakening case of the reflexive sense (Seco 1972:200; Bello y Cuervo 1960 Sec.764).

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Semantics and Pragmatics of Noun-Modifying Constructions in Japanese¹

Yoshiko Matsumoto
University of California, Berkeley

Japanese is a verb-final language with postposed case markers. Arguments of verbs are often omitted, although verbs do not inflect according to number or person. Modifiers precede what they modify, so that clausal noun-modifying constructions in Japanese have the form of a head noun preceded by a modifying clause in which the predicate is typically in a finite form. The most often studied instances of this construction are relative clauses, which are exemplified in the (a)-sentences of examples (1) - (4); the (b)-sentences in those examples give a non-relative paraphrase of the embedded noun phrase.

- 1a) [[hon -o katta] gakusei] - wa doko desu ka.
book-ACC bought student TOP where is QUES.PART.
'Where is the student who bought a book?'
- 1b) *Gakusei -ga hon -o katta.*
student-NOM book-ACC bought
'A student bought a book.'
- 2a) [[gakusei -ga katta] hon] - wa doko desu ka.
student-NOM bought book TOP where is Q.P.
'Where is the book which a student bought?'
- 2b) *Gakusei -ga hon -o katta.*
student-NOM book-ACC bought
'A student bought a book.'
- 3a) [[hannin -ga kane -o nusunda] ginkoo] - wa doko desu ka.
criminal-NOM money-ACC stole bank TOP where is Q.P.
'Where is the bank (from) which the criminal stole money?'
- 3b) *Hannin -ga ginkoo -kara kane -o nusunda.*
criminal-NOM bank-ABL(from) money-ACC stole
'The criminal stole the money from the bank.'
- 4a) [[Taroo -ga kaisya -e iku] kuruma] - wa doko desu ka.
Taroo -NOM company-GOAL go car TOP where is Q.P.
'Where is the car (by means of) which Taroo goes to (his) company?'
- 4b) *Taroo -ga kuruma -de kaisya -e iku.*
Taroo -NOM car-INSTR company-GOAL go
'Taroo goes to (his) company in the car.'

Japanese differs from English, and many other languages, in the absence of an overt marker of the grammatical role of the head noun with respect to the predicate in the modifying clause. Thus, there is no relative pronoun, and the nominative case marker *ga*, present in the non-relative paraphrase (1b), does not appear in the relative construction in (1a). The

same is true when head nouns take oblique case markers in the non-relative paraphrases as in (3b) and (4b).

Despite the absence of an overt marking of the relation of the head noun to the predicate in the modifying clause, many analyses of Japanese relative clauses are modelled on the syntactic analysis of English relative clauses, and explain the construction in terms of a gap in the modifying clause with which the head noun is coreferent. (Inoue 1976, Okutsu 1974, etc.) This works more or less for examples (1) - (4), but does not help us when we meet similar constructions in which there is no gap in the modifying clause which should be linked to the head noun. In this paper, I will first discuss the construal of such "gapless" relative clause-like constructions as well as "gapped" relatives and argue that what is crucial for construal of such constructions is the semantic and pragmatic association between the clause and the noun. "Gapped" relatives, I will claim, are simply special cases of a larger class of clausal noun-modifying constructions. I will also consider other constructions with the same constituent structure, in the light of the general analysis.

Examples (5) - (11), which are quite different from examples (1) - (4), suggest some of the range of clausal noun modification in Japanese.

- 5a) [[atama-ga yokunaru] hon]
head-NOM improve(v.i.) book
'the book (by reading) which (one's) head improves'
- 5b) Kono hon-o yomeba atama-ga yokunaru.
this book-ACC read (cond.) head-NOM improve
'If (one) reads this book, (one's) head will improve.'
- 6) ?? [[atama-ga yokunaru] kuruma]
head-NOM improve car
?? 'the car (by driving) which (one's) head improves'
- 7) [[genki -ga deru] kuruma]
energy-NOM rise-up car
'the car (by driving/owning) which (one's) energy rises'
- 8) [[yoru toire-ni ike-naku-naru] hanasi]
night bathroom-GOAL cannot-go-become story
'the story (because of hearing) which (one) cannot go to the bathroom at night'
- 9) [[toire-ni ike-nai] komaasyaru]
bathroom-GOAL cannot-go commercial
'commercials (because of) which (one) cannot go to the bathroom'
- 10) [[gakkoo-ga yasumi-ninatta] yuki]
school-NOM closed-became snow
'the snow (because of) which the school was closed'
- 11) [[paatii-ni korare-nakatta] syukudai]
party-GOAL could-not-come homework
'the homework (because of) which (you, etc.) could not come to the party'

If one is unfamiliar with Japanese, it may not be easy to construe from the gloss alone phrases such as (5) - (11). In (5a), for instance, the verb in the modifying clause is intransitive, and its subject is the noun *atama* 'head.' This leaves no apparent gap coreferent with the head noun, *hon* 'book.' In this example, a non-relative paraphrase cannot be made simply by assigning an appropriate case marker to the head noun and inserting it into the modifying clause as it could in (1) - (4). In (5a), not only a case-marker, but also a verb in a conditional form - *yomeba* 'if one reads' - which appears in a possible paraphrase, (5b), are absent. The choice of a particular linguistic form that could specify in a paraphrase the relation between the head noun and the clause is not of primary importance either for the hearer's understanding or for the linguistic analysis. In (5b), for instance, other conditional forms of the verb *yomu*, 'to read', such as *yomuto*, or *yondara* could be substituted for *yomeba* in this context without changing the conveyed relation between the clause and the head noun.

(7) - (11) are similar examples to (5a), all of which fail to be accounted for, or often even to figure in, purely syntactic accounts of relative clauses, yet which are not out of the ordinary in Japanese. Examples such as (5) and (7) - (11) are what I called "gapless" relatives, yet as with "gapped" relatives, such as (1) - (4), the head noun can be inserted into the modifying clause in a non-relative paraphrase. The only difference is that in the "gapless" examples, there is not a specific case marker that can express the relation of the head noun to the clause. This does not seem sufficient reason for excluding "gapless" relatives from the scope of the analysis of relative clauses.

In the absence of an explicit indication of the relation between the constituents (except for the fact that the clause is subordinate to the head noun), speakers of Japanese must rely on extra-syntactic factors. The construal of (5), for instance, can be analyzed as involving two separate but related steps: first is the association of 'book' with an action which has a special affinity with the book; namely, the action of reading; second is the more complex part which is the decision that the likely relation between 'reading a book' and 'one's head improving' is that of condition and consequence, or cause and effect. Note that the second of these steps requires the interlocutors to have to some degree a shared "world-view".² In other words, the hearer can construe the meaning of the construction because the situation invoked by, or inferred from, what is expressed in the two constituents of the construction is plausible in light of the hearer's knowledge of the world, and, on the other hand, the speaker in producing such an utterance is tacitly appealing to that shared background knowledge. This implies that there are constraints on what constructions can be construed in a given situation. The unacceptability of (6) in normal situations, for instance, is due to the absence of a commonly perceived link between, say, driving or owning a car and the improvement in one's mental faculties. In contrast to (6), the clause in (7) suggests a situation with which a car can readily be associated. As long as the interlocutors share in their world-view the idea that a car can be a source of psychological energy, then what the two elements of the construction convey can form one picture, so to speak, rather than remain as two

unmatched fragments, as in (6). In the terminology of frame semantics, in (5) and (7) a whole frame is "invoked" by the interpreter who assigns coherence to the text rather than simply "evoked" by the lexical and grammatical material in the text. The successful invoking of such a frame requires the appropriate knowledge and set of expectations to be part of the "world-view" that is shared by the interlocutors.

A question we may ask about the construal mechanism of these clausal noun modification constructions in Japanese is that of what relations between head noun and modifying clause are accessible. In examples (5) and (7) - (11), the head noun is associated with a cause, for which the modifying clause expresses the effect. The effect can be an expected one such as those in (7) - (9), or can be an observed consequence such in (10) - (11). (12) exemplifies a twisted version of cause and effect; in this example, it is not that eating sweets causes one not to become fat, but that certain sweets do not make one fat *even though* one eats them.³

12) [[hutor-anai] okasi]
 get-fat-not sweets
 'the sweets (even though one eats) which (one) does not get fat'

The head noun can represent the purpose of the action expressed in the modifying clause, as in (13) and (14).

13) [[biza-o totta] ryokoo]
 visa-ACC obtained trip
 'the trip (for) which (I, etc.) obtained the visa'
 14) [[te-o araw-anaku temo ii] oyatu]
 hand-ACC wash-not O.K. snack
 'the snack (in order to eat) which you do not have to wash your hands'

The relations of simultaneity or sequentiality seem to be difficult to construe as shown in (15) and (16), except in conventionalized instances. The difficulty of construing (15) and (16) may be caused by the fact that there is no readily available frame or conventionalized situation where the action of reading a book, for example, is strongly linked to the action of walking. In other words, it is not considered conventional to associate the action of walking as being a characteristic of a book.⁴

15) ?? [[aruku] hon]
 walk book
 ?? 'the book (while reading) which (one) walks'
 16) ?? [[sugu benkyoo-sita] gohan]
 immediately study-did meal
 ?? 'the meal (after) which (one) immediately began studying'

Further investigation is in order, but a preliminary examination leads me to speculate that in a construction where one element functions to

characterize the other, strong associations that can be invoked between the situations alluded to by the two elements, for example, that of cause and effect, are preferred over more incidental associations such as temporal sequence.

A second question we may consider is the degree to which construal requires shared knowledge. (8) and (9), for instance, require considerable shared background knowledge. (8) is readily understood by most native speakers of Japanese who know that, in Japan, bathrooms were traditionally outhouses, were quite dark at night and were the setting of many ghost stories. (9) relies on a more recent experience of the Japanese, that of TV commercials which are so well made that during them one does not wish to leave one's seat.

In terms of the amount of shared knowledge required for construal, (8) and (9) are near one end of a scale of which (1a) and (2a) may represent the opposite end. In (1a) and (2a), the relation between the head noun and the predicate in the modifying clause requires little shared knowledge and inference to construe. In (1a), the head represents the agent and, in (2a), the patient of the predicate. In neither case is the relation overtly marked, but in each case that predicate has an unfilled argument position which is intrinsically associated with the head noun. Thus, the head noun *gakusei* 'student' in (1a), which is repeated as (17a), denotes a person and, consequently, a possible agent of the action of buying. If the head noun in (17a) were *mise* 'store,' as in (18a), then the head noun would be typically interpreted as denoting the location, rather than the agent, of the action unless the context in which (18a) occurred provided a metonymical interpretation of *mise* 'store'. If the head noun in (17a) were *isi* 'stone' as in (18b), then the phrase would not be comprehensible to most speakers of Japanese unless it were used in very special context such as, for example, in a fairy tale.⁵

17a)=1a)

[[hon -o katta] gakusei] - wa doko desu ka.
book-ACC bought student TOP where is QUES.PART.
'Where is the student who bought a book?'

18a) [[hon -o katta] *mise*] -wa doko desu ka.
book-ACC bought store TOP where is Q.P.
'Where is the store (at) which (you, etc.) bought a book?'

18b) ?? [[hon -o katta] *isi*] -wa doko desu ka.
book-ACC bought stone TOP where is Q.P.

In (4a), *kuruma* 'car', like the head nouns of (8) and (9), is not an argument of the verb *iku* 'to go.' But, the relation between *kuruma* 'car' and the modifying clause *Taroo-ga kaisya-e iku* 'Taroo goes to (his) company' is more readily ascertainable than in examples (8) and (9). That is to say, the knowledge required to construe (4a) is essentially just that a 'car' is a means of transportation and thus that, the most likely relation between the head noun *kuruma* 'car' and the predicate *iku* 'to go' is that the former is the instrument for the latter. Construal of (8), on the

other hand, requires a more elaborate set of assumptions. In this sense, the relation instantiated in (4a) is more semantically intrinsic than those of (8) and (9). It is no coincidence that, in a non-relative paraphrase of the complex NP in (4a), the relation between *kuruma* 'car' and *iku* 'to go' can be expressed simply by the case marker *de*. (3a) is a similar example.

As I mentioned earlier, most conventional accounts of relative clause formation in Japanese are couched in terms of deletion of the target noun along with its case marker under coreference with the head noun. Such an analysis, however, cannot explain how the deleted case marker can be recovered from the relativized construction. As the comparison between (17a) and (18a,b) shows, the possible grammatical role of the head noun with respect to the clause is determined by the meaning of the head noun and not by the syntactic requirement to fill in the missing argument position in the clause. It should be emphasized that speakers of Japanese are not inclined to interpret the phrase in (18a) as 'the store that bought a book' when a more plausible interpretation is readily available. This would be a syntactically more accessible relation, but semantically and pragmatically less natural. The importance of semantics and pragmatics is also amply illustrated by a construction whose interpretation is potentially ambiguous.

19) [[watasi-ga kita] mati]
 I-NOM came town
 'the town I came to/from'

As the English translation suggests, (19) may be ambiguous between (20a) and (20b), which are the possible paraphrases of (19).

20a) Watasi-ga sono mati-*e* kita.
 I-NOM that town-GOAL came
 'I came to that town.'
 20b) Watasi-ga sono mati-*kara* kita.
 I-NOM that town-ABL(from) came
 'I came from that town.'

Several Japanese linguists have discussed such cases, and their interpretations as (20a) or (20b) of such sentences depend very much on the particular verbs and nouns present. For example, if *kita* 'came' in (19) is replaced by *yatte-kita* 'finally came' or 'came after a long journey', or if *mati* 'town' is replaced by *eki* 'station', then the interpretation with the locative (GOAL) *e* is usually chosen, and most of the examples that one finds discussed are of this type. If, however, *ima* 'now' were inserted in the relative clause, for example, as in (21), the temporal expression makes possible only the interpretation (20b), i.e. with *-kara*, 'from'. Similarly, if one says (22), the associated postposition is certainly *-kara* 'from'.

21) [[Watasi-ga ima kita] eki] -wa totemo kondeita.
 I-NOM now came station TOP very crowded-was
 'The station which I just came *from* was crowded.'

22) [[watasi-ga kita] mati] -wa hito-ga oosugite...
 I-NOM came town TOP people-NOM too many
 'The town I came *from* has too many people ...'

In fact, according to Okutsu (1974), the original discussion of this type of sentence was by Yoshio Yamada (1908) in connection with the phrase *kimi-no kitareru sato*, which is interpreted as 'the village you came *from*'. The head noun being *sato* 'village' rather than *mati* 'town' may well be the reason that Yamada chose the interpretation with *-kara* 'from': general knowledge of demography would suggest movement from village to town. Some of the linguists who discuss sentences such as (19) claim that, for the verb *kuru* 'come' (*kita* 'came'), the goal of the action is more relevant than the origin (e.g. Teramura 1976), yet this is surely an oversimplification, and an interpretation can be chosen only after considering the meaning of the head noun as well as the verb.

The examples we have looked at illustrate that one of the points where English and Japanese differ crucially is that in English, the understanding of relative clauses is guided by the syntax of the construction, whereas in Japanese, the absence of an explicit marker specifying the relation between the head noun and the clause seems to indicate a higher reliance on the semantics and pragmatics. English speakers are usually forced to accept the single syntactically allowed interpretation, whereas, in Japanese, the hearer must seek the most plausible interpretation from the given linguistic clues and from comparison with what they know about the world. In this sense, the responsibility for the success of the communication in Japanese is on the hearer's side whereas in English the speaker is in principle expected to produce utterances in which relations between the constituents are explicitly encoded.⁶ Speakers of Japanese are pragmatically constrained in that they must make a correct assessment of the interlocutors' world-view in order to be able to transmit the message. In passing, a rough counterpart in English to these phenomena in Japanese is the construal of noun compounds, as discussed for instance in Downing (1977).

What I have been suggesting so far is a unified analysis of the construal of examples such as (1) - (22) in terms of frame semantics and pragmatics, in which the situations alluded to by the linguistic clues and the interlocutors' "world-view" play a significant role. Such a framework can encompass a larger class of clausal noun modification constructions, including some conventionally analyzed in very different terms, but which nevertheless share the same constituent structure. I will discuss these constructions briefly with reference to examples (23) - (28) which are along the lines of examples originally given by Teramura (1975-78).

23) [[tabako -o katta] oturi] -ga aru.
 cigarettes-ACC bought change (=balance of money) NOM there-is
 'There is the change from buying cigarettes'

24) 1960-nen-wa [[Taroo-ga Tokyoo-e kita] yokunen] dearu.
 1960-year-TOP Taroo-NOM Tokyo-GOAL came next-year is
 '1960 is the year after Taroo came to Tokyo.'

25) [[dareka-ga doa-o tataku] oto]-ga suru
 someone-NOM door-ACC knock sound NOM there-is
 'There is the sound of someone knocking on the door.'

26) [[sakana-o yaku] nioi] -ga suru.
 fish-ACC grill smell NOM there-is
 'There is the smell of fish grilling.'

27) [[me -o patipati-to-yaru] kuse] -ga aru.
 eye-ACC blink habit NOM exist
 '(He) has the habit of blinking (his) eyes.'

28) [[ippan-no simin-ga husyoo-sita] zizitu]-ga aru.
 general citizen-NOM be injured fact NOM exist
 'There is the fact that ordinary people were injured.'

(27) and (28) are instances of what are usually called appositive or noun complement constructions. Nonetheless, as we have seen, the absence of a gap in the clause does not distinguish appositive from relative clause constructions in Japanese. The head nouns that appear in (27) - (28) are semantically special and are sometimes called "content nouns." They function essentially as a label for the content of the preceding clause. In (23) to (26), the head noun marks, loosely speaking, the effect of the action expressed in the preceding clause. In contrast to the earlier examples, the construal of (23) - (28) depends in general not on how the head noun "fits into" the preceding modifying clause, but on how the preceding clause "fits into" what is referred to by the head noun. But the two types of examples are similar in that there is a range in the degree of responsibility of pragmatics for the construal of the relation between clause and head noun. The relation between clause and head noun in (27) and (28) is transparent and prototypical, while that in (23) - (26) requires more background knowledge and inference. In (23), for instance, the clause *tabako-o katta* 'bought cigarettes' denotes not the content of *oturi* 'change', but the cause or source. The connection is established both by the noun *oturi* 'change' in that (money) change is a product of some transaction, and by the clause *tabako-o katta* 'bought cigarettes' which evokes the situation of a commercial transaction.

The constituent structure of all of the examples that we have considered consists of a clause preceding a noun. Underlying the interpretation of these constructions is the assumption that the clause and noun are in some way relevant to each other. The task of construal is to discover the connection. In Japanese, unlike in English, the connection is not determined by an overt marker, but relies on a semantic and pragmatic understanding of the noun and clause. The choice of the most likely or "natural" connection between the clause and noun depends on matching with a shared "world-view" of the interlocutors. The degree of elaboration in the shared world-view that is required for understanding varies from little more than a common understanding of the semantic content of

the lexical items to a detailed set of shared expectations. In all cases, however, semantic/pragmatic acceptability is a requirement for successful construal.

NOTES

1. A shorter version of this paper was presented at the LSA Annual Meeting in December 1987. I would like to thank the members of the Japanese Linguistics Seminar at U.C. Berkeley, especially Yoko Hasegawa, Yuko Mogami and Seiko Yamaguchi as well as Claudia Brugman and Orin Gensler for their comments on earlier versions of my paper. I am especially indebted to Charles J. Fillmore and Robin T. Lakoff for their insights and for discussions on my project.
2. A "world-view" refers to a broader notion than that of "frame" and includes one's organization of experience, expectations, beliefs, etc. A "frame", as I understand it, is a slice of such a world-view, which is evoked or invoked as a consequence of the linguistic expressions used in the communication.
3. An equivalent to (12), at least in some colloquial dialects of English, is *a cake where you don't gain weight*. German *wo* and Greek *pou* seem to function similarly to the English *where* in analogous constructions. These facts were brought to my attention by Claudia Brugman, Hana Filip and Kiki Nikiforidou. Notice that unlike regular relative pronouns, neither *where*, *wo* nor *pou* marks the syntactic role of the head noun.
4. A construction is likely to be acceptable if the head noun refers to an occasion that has a duration of some considerable length, for instance, *natuyasumi* 'summer vacation,' and if the clause refers to some activity that can be characteristically associated with such an occasion. Thus, we could have [*arubaito-o sita*] *natuyasumi* 'the summer vacation (during) which (I) took a part-time job' or [*hiyakesita*] *natuyasumi* 'the summer vacation (during) which (I) got a tan.'
5. A reading in a more likely context than the fairy tale reading of (18b) would be 'where is the stone (on the subject of) which (I) bought a book.'
6. For an interesting discussion of the question of hearer's responsibility vs. speaker's responsibility, see R. Lakoff (1984).

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The comparative conditional construction in English, German, and Chinese

James D. McCawley

University of Chicago

The first work in which I have seen English sentences like (1) given a treatment that goes significantly beyond mere mention of their existence is Fillmore (1987):

(1) a. The kinder you are to him, the more he imposes on you.
b. The more time I spend on this problem, the less I understand it.

Fillmore argues that sentences as in (1) are simultaneously **conditional** sentences and **comparative** sentences: the two major constituents are related to one another like the protasis and apodosis of an ordinary conditional (cf. "If you are kind to him, he will impose on you") and each of those constituents contains a comparison between alternative degrees and amounts, of the sort that figures in ordinary comparative sentences (cf. "You were kinder to him than before" and "He imposed on you more than before"). According to the analysis that Fillmore sketches, such sentences, which I will henceforth call **comparative conditional** (and abbreviate 'CC'), a term suggested by Fillmore's analysis, form a construction that is defined in terms of two more basic construction types, as indicated roughly in (2):

(2) If you are DEGREE_x kind to him, he imposes on you to DEGREE_y
You are [more than x] kind to him He imposes on you to DEGREE [more than y]

According to Fillmore's view of grammatical constructions, a construction that is defined in terms of more basic constructions inherits all properties of the more basic constructions that do not conflict with rules that are specific to the derived construction. I will devote a section of this paper each to English, German, and Mandarin Chinese, listing properties of conditional and comparative constructions that are inherited by CC constructions, as well as those characteristics that are peculiar to CC sentences, and will defend a Fillmorean analysis for all three languages.

1. English

a. Properties inherited from conditional constructions

Like ordinary conditional sentences, CC sentences allow an alternative word order in which the protasis comes after the apodosis:

(3) a. I understand this problem (*the) less, the more time I spend on it.
a'. I'll understand the problem if I spend a lot of time on it.

For convenience, I will call sentences like (3a) **reversed** CCs and will call those with the order of the clauses as in (1) **normal** CCs.

Note that in reversed CCs the word order of the main S is like that of an ordinary comparative (4a) and unlike that of the main clause of normal CCs:

(4) a. I understand students' problems less than I used to.
a'. *Less I understand students' problems than I used to.
b. *The kinder you are to him, he imposes on you (the) more.

The rule for the CC construction must thus specify that the apodosis of reversed CCs has neither *the* nor preposing of the compared expression. There is a functional explanation

for the difference in internal structure of the apodosis in the two cases: the two clauses have identical internal structures in normal CCs, so mere movement of the protasis to the end would generally leave no clue that the second constituent had to be interpreted as protasis; to avoid pernicious ambiguity with regard to which constituent is protasis and which is apodosis, in reversed CCs the main clause (i.e. apodosis) reverts to a word order that main clauses normally allow.

As Fillmore has noted, future *will* is suppressed in the protasis of CCs, just as it is in ordinary conditionals:

(5) a. The faster you (*will) drive, the sooner you'll get there.
 a'. If you (*will) drive fast, you'll get there by 2:00.

The status of the protasis as a subordinate clause is confirmed by possibilities for backwards pronominalization, which are exactly as in ordinary conditionals (*he* here is supposed to refer to John):¹

(6) a. The longer he has to wait, the angrier John gets.
 a'. *He gets angrier, the longer John has to wait.
 b. If he has to wait a long time, John gets angry.
 b'. *He gets angry if John has to wait a long time.

b. Properties inherited from comparative sentences:

CC sentences involve compared constituents that exhibit ordinary comparative morphology: *-er* with short adjectives and adverbs, *more* with long adjectives and adverbs, and suppletion with *good*, *bad*, *well*, *badly*, *much*, *many*, *little*:

(7) a. The worse the weather gets, the happier I am that we stayed home.
 a'. The worse he behaved, the less attention we paid to him.
 (*worse* = *bad* + *-er* in 7a, = *bad* + *-ly* + *-er* in 7a')
 b. The better you treat him, the less trouble he'll give you.

Not all constructions that involve *more* exhibit this division of labor among *more*, *-er*, and suppletion. For example, metalinguistic comparatives as in (8) have only *more* regardless of what adjective or adverb it might be combined with:

(8) a. Roger is more happy than surprised.
 a'. He behaved more badly than inconsiderately.

This is evidence that the CC is not merely marked by *more*, the way that metalinguistic comparatives are, but involves an actual comparative construction.

The 'compared' constituent in either part of a CC stands in an unbounded dependency with the gap in the position from which it is extracted:

(9) a. The kinder he thinks you're going to be Ø to him, the more trouble you can anticipate that he'll feel like giving you Ø.
 b. The more time they tell you that you should spend Ø on a problem, the more detailed an answer you can expect them to want you to give Ø.
 c. The more you think about that Sydney Sheldon book, the worse you realize it is Ø.
 (overheard by Charles Fillmore)

This might at first seem not to be a similarity with ordinary comparative sentences, in which the compared constituent is not moved to S-initial position (Comp-position?) the

way that it is in CC sentences. However, there is in fact an unbounded dependency in ordinary comparatives between the compared constituent and the S that serves as the scope of the comparative construction, which can in principle be any superordinate S. For example, the two continuations of (10) illustrate a contrast with regard to whether the main S or the complement S is the scope of the comparative construction – in (10a) one is comparing amounts of time that you spend on a problem, in (10a') amounts of time that they tell you that you should spend on a problem:

(10) They tell you that you should spend more time on a problem than
a. you used to spend.
a'. they used to tell you that you should spend.

c. Other properties of CC sentences

I have already mentioned some properties of CC sentences that are not consequences of the rules for comparative and conditional sentences, e.g. that the compared constituent is marked with */the* and moved to the beginning of the clause except in the apodosis of reversed CCs. Another peculiarity of CC sentences is the optional omission of *be*, which is not shared by conditional sentences, nor by constructions in which constituents are moved into Comp-position.²

(11) a. The more outrageous a politician's promises (are), the bigger his vote count (is).
a'. A politician's vote count is/*Ø bigger, the more outrageous his promises (are).
b. If a politician's promises are/*Ø outrageous, his vote count is/*Ø big.
c. John wonders how concerned about justice lawyers are/*Ø.

Note that this option is available only in those parts of a CC construction that have *the* + compared constituent in initial position, which suggests that it is a characteristic not, strictly speaking, of CC constructions but of clauses having that word order. In addition, not just any *be* can be deleted but only the copula of a generic CC:

(12) a. The more obnoxious Fred is/*Ø, the less attention you should pay to him.
b. The happier the customers are/*Ø behaving, the more things you should try to sell them.

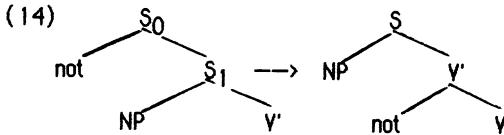
Like most syntactic constructions, the CC has idiomatic instances: *The more the merrier; The bigger they come, the harder they fall*. These idiomatic instances have sometimes been the only CC sentences mentioned in linguistic descriptions, which has often created a false impression that the construction itself is restricted to idioms. The idiomatic instances are actually atypical of the CC in that the normally available options result in reduced acceptability when applied to idiomatic CC sentences: ??*They fall harder, the bigger they come*.

Only with the 'apodosis first' word order can a CC be negated:

(13) a. John doesn't get angrier the longer he waits.
(... he maintains a constant level of anger)
a'. *The longer John waits, the angrier he doesn't get.

This characteristic need not be stipulated in the rule for the CC construction, since it is a consequence of the cyclic principle plus the analysis of negation that I wish to assume here (elaborated in chapter 17 of McCawley, in press), according to which *not* is a deep-structure S-adjunct. In that treatment of negation, *not* obligatorily triggers

application of a transformation (possibly to be identified with Raising-to-Subject) that converts it into a derived V'-adjunct:

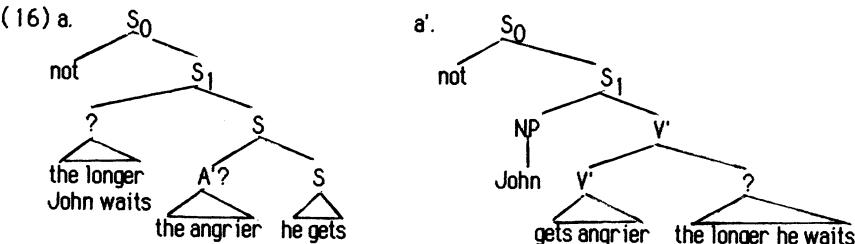


In the second structure in (14), *not* is in the position that it occupies in non-finite Ss such as (15a-b); if the S is finite, there is an additional step that combines *not* with the tensed auxiliary verb, as in (15c):

(15) a. I'm surprised at Sam [not having mailed the letter].
 b. Smith is said [not to be willing to negotiate with us].
 c. Sam hasn't mailed the letter.

The step in (14) applies to all S-adjuncts, e.g. *probably* is an underlying S-adjunct and can be either a S-adjunct or a V'-adjunct in surface structure (as argued in McCawley (1983)), but is obligatory for *not*

Suppose we have a deep structure of the form *not* + S₁, where S₁ is whatever underlies *The longer John waits, the angrier he gets*. By the cyclic principle, whatever rules are responsible for the difference between the two forms of the CC construction would have to apply on the S₁ cycle, and thus, in derivations of (13a-a'), the input to the S₀ cycle would have to be (16a) and (16a') respectively:



Actually, in (16a') *the longer he waits* could modify either the S *John gets angrier* or the V' *gets angrier*, in virtue of the optional conversion of S-adjuncts into V'-adjuncts, but only the structure in which it modifies the V' allows the normal rules for negation to apply on the S₀ cycle: *not* can be converted into a V'-modifier only if the S with which it is combined is of the form [NP V']. With the structure as in (16a'), we are in the same situation as if S₁ were *John gets angry if he has to wait*: the V'-adjunct does not prevent the usual rules for negation from applying (cf. *John doesn't get angry if he has to wait a long time*), and (13a') results. However, there is no well-formed derivation of (13a), because in (16a) S₁ is not of the form [NP V'], that is, it is not of a shape that allows the usual rules relevant to negative placement to apply.³

Another difference between the two forms of the CC sentence is that only the apodosis of a reversed CC allows 'notional' as well as morphological comparatives:

(17) a. His happiness increases, the more attention he gets.
 a'. *He gets happier, the attention he gets increases.
 b. *The more attention he gets, his happiness increases.

I tentatively suggest that a 'notional' comparative is allowed in precisely this case because in all other cases the rule for the CC construction requires a compared constituent in Comp-position, and thus the construction is limited to sentences that have such a constituent. However, in the apodosis of the reversed CC, no position is required to be filled by a constituent of any particular form, and thus any S having a meaning appropriate to the construction can play the role of the apodosis.

2. German

German has a CC construction that is very similar to that of English except that in place of *the... the*, the marker is *je... desto* or *je... um so*:

(18) a. Je länger du in Deutschland wohnst, desto besser wirst du Deutsch sprechen.
'The longer you live in Germany, the better you will speak German'
b. Je abstrakter ein Wort ist, um so geringer ist die Möglichkeit der Zeigdefinition.
'The more abstract a word is, the slighter the possibility of an ostensive definition is' (Ernst Leisi, *Praxis der englischen Semantik*, 38)

Like English, an alternative word order with apodosis first is possible, and as in English the apodosis then does not have the compared expression in initial position, though here *desto* is optional whereas in English *the* was not allowed:

(19) a. Der Bankier benahm sich desto lustiger, in je gefährlicher Laune er sich befand.
'The banker behaved more happily, the more dangerous a mood he was in' (Thomas Mann, cited by Eggeling 1961)
b. Die Berge wurden dunkler, je tiefer die Sonne stand.
'The mountains became darker, the lower the sun stood'

The word order of sentences like (18) is noteworthy. In German, main clauses have the finite verb in 2nd position, and subordinate clauses have it in final position; the *je*-clause thus has the word order of a subordinate clause and the *desto*-clause has that of a main clause. Thus, it is fairly obvious in German from the position of the finite verb that the first clause in a normal CC sentence is subordinate and the second clause is a main clause, something that was not immediately obvious in English and which it took a fair amount of arguing to establish.⁴ However, strictly speaking, the finite verb *wirst* in (18a) is not in second but in third position: the *je*-clause comes first, then the *desto* expression, then the finite verb. Note that in locating 'second position' in a German sentence, initial 'adverbial clauses' count as occupying first position:

(20) a. Wenn Hans kommt, werde ich dich ihm vorstellen. 'If Hans comes, I'll introduce you to him'
a'. *Wenn Hans kommt, ich werde dich ihm vorstellen.

Thus, there is no general rule of German word order according to which the protasis of a CC sentence would not count as occupying first position. I suggest tentatively a way of accounting for the fact that the finite verb in sentences like (18) occupies third position, namely that construction-particular rules take precedence over general rules of the particular language and general principles of language. Here, third position is the closest that one can get the verb to the generally required second position, given that the rule for the protasis-first version of the CC construction requires that the *je*-clause occupy first position and *desto* + compared constituent occupy the second position.⁵

I am not yet in a position to advance this hypothesis with much confidence, but I note that there is a well-known anomaly in the syntax of anaphora that it would render

non-anomalous. Consider the apparent violation of rules for pronoun-antecedent relations (e.g. Chomsky's binding principles) in such sentences as:

(21) The table; has a book on it;.

Here the pronoun has the subject as its antecedent but is in a position in which only an 'anaphor' such as a reflexive or reciprocal pronoun could have the subject as antecedent. Suppose, however, that one treats such sentences along the lines suggested by Ross (1967:264) (developing an idea of Fillmore (1966:25)) as derived from existential sentences (in this case, *There is a book on the table*) by moving the object of the preposition into the position of *there* and leaving a pronoun in its place. Suppose further that we adopt the suggestion of Ross that copying of NPs always leaves a nonreflexive personal pronoun in the position of the copied NP, so that (21) could be treated as an instance of copying plus predictable replacement of the original NP by a pronoun. Then the presence of a simple rather than a reflexive pronoun ceases to be anomalous: the general constraints on pronoun-antecedent relations are rendered inapplicable by a clause in the rule for a particular construction whose implications conflict with those principles.

3. Mandarin Chinese

Mandarin Chinese has a CC construction in which both clauses are marked by *yuè*:

(22) a. Ni yuè shuō, tā yuè bu tīng. 'The more you talk, the less he listens' (Chao 1968: 121)
 you CC talk he CC not listen
 b. Sǎngzì yuè dà, huà shuō-de yuè cháng, rén jiù yuè bu tīng.
 voice CC big talk speak long people then CC not listen
 'The louder the voice (and) the longer the talk, the less people listen'
 c. Nǐ yuè dǎ tā de chà, tā jiù yuè shuō-bu-tīng.
 you CC inter- he GEN -rupt he then CC speak-not-stop
 'The more you interrupt him, the more he can't stop talking' (Chao 1947:167)

While this construction at first looks very unlike the English CC construction, I will argue that it is amenable to the same sort of analysis that Fillmore proposed for English and that the differences between Chinese and English CC's are largely due to differences in the comparative and conditional constructions of the two languages.

A respect in which CCs behave like conditionals is immediately obvious in (22b,c), in which *jiù* is used as in ordinary conditional constructions:⁶

(23) Nǐ yào shí dàshēng shuōhuà, wǒ jiù bu tīng.
 You if big-voice speak I then not listen 'If you talk loud, then I don't listen'

Note that in (22), *yuè* follows the subject. In this respect, one might at first think that it resembles such 'subordinating conjunctions' as *yào shi* 'if' and *suírán* 'although', which can also appear in that position. However, the distribution of *yuè* in fact deviates from that of *yào shi* and *suírán*, since those elements can occur either after the subject (24a) or before the whole protasis (24a'), but *yuè* cannot occupy the latter position:⁷

(24) a. Sǎngmén yào shi tài dà, wǒ jiù bu tīng. 'If the voice is too loud, I don't listen'
 voice if too big I then not listen
 a'. Yào shi sǎngmén tài dà, wǒ jiù bu tīng.
 b. *Yuè sǎngzì dà, yuè wǒ bu tīng. (cf. (22b))

In this respect, the placement of *yuè* is like that of comparative 'than'-phrases:

(25) a. Zhāngsān [bì Lísì] gāo. 'Zhangsan is taller than Lisi' a'. *[Bì Lísì] Zhāngsān gāo.
than tall
b. Zhāngsān [gēn Lísì] yiyàng gāo. 'Zhangsan is as tall as Lisi'
with same tall b'. *[Gēn Lísì] Zhāngsān yiyàng gāo.
c. Zhāngsān [bì wǒ] bu tīng huà. 'Zhangsan listens less than I do'
not listen speech c'. *[Bì wǒ] Zhāngsān bu tīng huà.

Thus, a Fillmorean analysis of the CC construction will explain the placement of *yue* if it can be developed in such a way that *yue* is the counterpart of the *b1* phrase: *yue* will inherit the word order restrictions to which its counterpart in comparative constructions is subject.

Comparative constructions are an area in which Chinese differs sharply from such languages as English and Japanese.⁸ English and Japanese are relatively free of constraints on the syntactic role of the compared constituent or of the 'focus' constituent to which the sentential object of *than* can be reduced. By contrast, Chinese is subject to such severe constraints that the vast bulk of English and Japanese comparative sentences cannot be translated into Chinese except through circumlocution. For example, the compared constituent must be topmost in the predicate phrase, and violations of that constraint are often avoided by use of the ubiquitous Chinese construction in which a S or a V' is copied into topic position and the original is reduced to the predicate element plus *de*:

(26) a. *Ni [bǐ wǒ] mǎi-le (hén) duō shū. 'You bought more books than I (did)'
 You than I buy-PERF very many book
 a'. Ni mǎi shū [bǐ wǒ] mǎi-de duō.
 You buy book than I buy-EXT many
 a''. Ni mǎi shū mǎi-de [bǐ wǒ] duō.

In addition, the focus of the construction must be outside the predicate phrase. This is why the direct Chinese counterpart (27b) of the ambiguous (27a) is unambiguous, allowing the object of *bi* to be interpreted only as a subject; only through a circumlocution as in (27c) can the meaning of (27a) with the object as focus be expressed:

(27) a. Zhangsan likes Dingyi more than Lisi. (*Lisi* can be subject or object)
 b. Zhāngsān [bǐ Lisi] xǐhuan Dǐngyī. (*Lisi* can only be subject)
 than like
 c. Zhāngsān xǐhuan Dǐngyī [bǐ xǐhuan Lisi] xǐhuan-de duō.
 like than like like-EXT much
 d. Tā [chī ròu] bǐ [chī yú] chī-de duō.
 he eat meat than eat fish eat-EXT much
 'He eats more fish than meat' (Jiang Zixin)

CC sentences are subject to the same constraints, and utilize the same circumlocutions to avoid its violation:

(28) a. *Nǐ mǎi shū mǎi-de yuè duō, nǐ jiù yuè shōu rén zūnjìng.*
 you buy book buy-EXT CC much you then CC receive people respect
 'The more books you buy, the more that people respect you'
 a'. *Nǐ mǎi shū yuè mǎi-de duō, nǐ jiù yuè shōu rén zūnjìng.*
 a'. *Shū mǎi-de yuè duō,...*
 b. *Tā kǎo-shì kǎo-de yuè hǎo, tā fùqin yuè gāoxìng.*
 he take-exam take-EXT CC good he father CC happy
 'The better he does on exams, the happier his father is.'

b. Tā kǎo-shì yuè kǎo-de hǎo, tā fùqin yuè gāoxìng.
 c. Tā chī ròu chī-de yuè duō, hé jiǔ jiù hé-de yuè duō.
 He eat meat eat-EXT CC much drink liquor then drink-EXT CC much
 'The more meat he eats, the more liquor he drinks'

Note that the variation in the placement of the *bǐ* phrase in the comparatives (26a'-a') is matched by corresponding variation in the placement of *yuè* in the CC (28a-a'), which confirms the suggestion above that *yuè* is the CC counterpart of the *bǐ* phrase.

The Chinese CC allows unbounded dependencies: *yuè* can occur in a S subordinate to one of the major parts of the CC but have the superordinate 'major part' as its scope:

(29) a. Zhao tāitai yuè shuō, zìjǐ juéde yuè yǒu lǐ. (Wang 1953: 64)

Mrs. CC talk self feel CC have reason

'The more Mrs. Zhao talked, the more right she felt herself to be' [in English, one might say '... the more she felt she was right', but that is ambiguous with regard to whether 'more' expresses the degree of feeling or the degree of being right]

b. Tā yuè bù tǐng huà, fùqin yāoqiú xuéxiào pài rén bǎ ta kàn-de yuè yán.
 He CC not behave father request school send person ANTP he look-EXT CC strict
 'The more he does not behave, the more strictly his father requests the school to send people to watch over him' (Li Ligang) ANTP = 'antipassive'

c. Tā tǐng shuō qián fàng dà-de yuè jīn, jiù zhīdào Lisi huì tōngzhī jiārén bǎ
 He hear front hit-EXT CC tense then know will ask family ANTPS
 qián yuè kuài sòng wǎng guòwài. (Li Ligang)
 money CC fast send to abroad

'The more tense he hears the fighting at the front is, the more quickly he knows Lisi will ask his family to send money abroad'

While Chinese CCs in this respect seem exactly parallel to English CCs, they are not quite so clearly parallel to Chinese comparatives, which are what is directly relevant to justifying an analysis in which Chinese CCs are derived from Chinese comparatives and conditionals. To a limited extent, comparatives can indeed have a long-distance dependency between the compared expression and the scope of the construction, as in the following analog to (29b), but it is considerably harder to construct acceptable examples of long-distance dependencies in comparatives than it is in CCs, and indeed, sentences like (30) (with the indicated scope) violate the restriction that was illustrated in (26):

(30) Tā fùqin jīnniàn yāoqiú xuéxiào pài rén bǎ tā kàn-de bǐ qùnián yán.
 He father this.year request school send person ANTP he look-EXT than last.year strict
 'This year his father requested the school to send people to watch over him more strictly than last year' (comparison of degrees of strictness requested)

Another less than full parallelism between CCs and comparatives was brought to my attention by Li Ligang, who notes that CCs of comparatives are often perfectly acceptable, while comparatives of comparatives are marginal:

(31) a. Tā yuè bǐ wǒ qiáng, wǒ yuè gǎndào zhìhào. (or: Tā bǐ yǒu yuè qiáng, ...)
 he CC than I strong I CC feel proud
 'The more he is stronger than me, the prouder I feel'
 b. ?Tā bǐ yíqíán bǐ wǒ qiáng. 'He is more stronger than me than before'
 He than before than I strong

In English likewise, a CC of a comparative is more normal than a comparative of a

comparative (as illustrated by the glosses in (31)). Perhaps the lowered acceptability of examples like (31b) can be given an account of the sort that I proposed for their English counterparts in McCawley (1973), where I attributed their unacceptability to a surface constraint excluding *more* + comparative expression, arguing that such sentences were required as intermediate stages in the derivations of such sentences as:

(32) Ten years ago he was richer than me and now he's even more so.
(= richer than me to an even greater extent)

If such an account is warranted, then the discrepancy between (31a) and (31b) reflects not a discrepancy between the syntax of CC's and of comparatives but a surface constraint on repetition. I note before leaving this topic that the only two facts that I have brought up that cast any doubt on an analysis of Chinese CCs that is completely analogous to Fillmore's analysis of English CCs are respects in which Chinese and English behave alike.⁹

4. Conclusion

Recent work by Chomsky has explicitly rejected the notion of syntactic construction; in this respect it is diametrically opposed to the recent work of Fillmore, Kay, and Lakoff, which gives the notion of syntactic construction a central theoretical role and allows syntactic constructions to be described in terms of other syntactic constructions and to inherit characteristics specific to the latter. Chomsky's rejection of 'syntactic construction' amounts to the adoption of a research program of exploiting putative general principles of language and of using the lexicon as the sole repository for those properties of constructions that cannot be made to follow from general principles. His works have given far more emphasis to the first half of this research program than to the second, but the second half is clearly represented by, for example, the passages in Chomsky (1986) which touch on those details of English passives that do not follow from 'trace theory', 'government', and 'binding', i.e. the special roles that *be*, *by*, and the past participle play, and the fact that the object of *by* is to be interpreted as the semantic subject of the verb. Chomsky's brief and fragmentary remarks on those matters point to an analysis such as is worked out in Jaeggli (1986), in which *be*, *by*, and the past participle morpheme have dictionary entries that enumerate their special roles in the passive construction.

I have two principal reasons for doubting the viability of this research program. The first is that it requires that particular morphemes be held responsible for the properties specific to any construction. That is plausible enough for a construction like the English passive, which has 'markers' on which the peculiarities of the construction could be blamed. But what about syntactic constructions that do not have any 'marker' whose dictionary entry a specification of their peculiarities can be built into? A possible case of this is provided by restrictions on where negative polarity items can appear in relation to a negation, which differ considerably from language to language (English, French, and Spanish differ considerably from one another in this regard), but which cannot be built into the dictionary entry of any one negative element, because all of the many ways of expressing negation are available to satisfy requirements on where a negation may occur in relation to negative polarity items.

My second reason for doubts about the general feasibility of building construction-specific restrictions into particular dictionary entries is the inheritance by derivative constructions of properties of the constructions from which they are derived, as in the inheritance of properties of comparative and conditional constructions by CC constructions. Here, even if there are markers (such as the special use of *the* in English, and *je* and *deslo* in German) whose dictionary entries could be made the repositories of the peculiarities of the construction, Chomsky's research program would force one to

supply the dictionary entries of the markers of that construction with information about other constructions in which those markers play no role and thus in effect to treat as peculiarities of the CC construction properties that it inherits from the more basic constructions.¹⁰

NOTES

1. An additional peculiarity of conditionals that is shared by CCs has been called to my attention by John Richardson, namely that extraction from the subordinate clause is more acceptable than in other combinations with a preposed S-modifying clause:

?Sam is one of those guys who if you talk to Ø you'll like him.

?Sam is one of those guys who the more you talk to Ø the more you like him.

??Sam is one of those guys who although I've talked to Ø I don't really know him.

??Sam is one of those guys who after I talked to Ø I respected him.

2. John Richardson has pointed out that such deletions occur in 'immateriality clauses':

Remember that Frank is just a glorified file clerk, however big his salary (is).

3. For similar reasons, only a reversed CC can be made into a yes-no question:

Does Max get angrier the longer he has to wait?

*Does the longer Max has to wait, the angrier he get?

*The longer Max has to wait, does the angrier he get?

Surprisingly, a tag question formed from a normal CC is only mildly odd, a fact that I leave unaccounted for here:

(?)The longer Max has to wait, the angrier he gets, doesn't he?

Max gets angrier the longer he has to wait, doesn't he?

Tag questions provide additional evidence that the first part of a normal CC is subordinate and the second part a main clause, since it is the subject and auxiliary verb of the latter that are copied in the tag:

The more Max talks, the angrier Lucy gets, doesn't she/*he?

The longer he's studied a language, the better he can speak it, can't/*hasn't he?

4. Curme (1922:598) points out that in early modern German it was possible for both clauses of the CC to have subordinate word-order and suggests that this was "for the sake of a parallelism between the two propositions".

5. McCray (1982) notes that the finite verb is in third position in conditionals with *dann* or *so* and accounts for this word order by treating such sentences as Left-Dislocation structures, in which the dislocated constituent does not count for the word order rules and the host S must contain a resumptive pronoun corresponding to the dislocated constituent:

i. Wenn die Kleider fertig sind, dann werde ich sie sofort abholen.

'If the clothes are ready, I'll pick them up right away'

ii. Der Professor, sie lobten ihn. 'The professor, they praised him'

While McCray is surely correct that *dann/so* is a pronoun with the conditional clause as antecedent, her account seems to imply that it should also be possible to have *dann/so*

later in the sentence and a different constituent before the verb, as in (iii):

- iii. *Wenn die Kleider fertig sind, ich werde sie dann sofort abholen.
- iii'. ?Wenn die Kleider fertig sind, werde ich sie dann sofort abholen.

If *dann* appears other than at the beginning of the main clause, as in the learned-sounding (iii'), the finite verb must immediately follow the *wenn*-clause. The occurrence of *dann/so* in first position in the main clause thus appears to demand a restriction on word order peculiar to those items, as in the treatment of word order proposed here.

Hook and Manchester-Ramer (1985) point out an additional case in which the finite verb is in third position, namely where an adverbial clause appears at the beginning of a WH-interrogative:

Wenn Sie nicht sagen, wo Ihr Junge ist, wie können Sie dann erwarten, dass man Sie freiläßt? 'If you don't say where your son is, how can you expect to be released?' Here again, third position is the closest that the verb can get to second position, given that the adverbial clause and (obligatory) WH-movement force other things to fill the first two positions.

6. In this respect, Chinese is unlike English, since the English counterpart of *jiù*, namely *then*, does not appear in corresponding CCs:

- i. The louder you talk, (*then) the less people listen.

I am at a loss to explain this gap in English; one cannot, for example, argue that *then* preempts the filling of the 'Comp-position' by the preposed *the* + comparative, since *then* precedes items that are moved into Comp-position:

- ii. If you quit now, then who can I get to replace you?

7. In the following examples *yuè* can be regarded as preceding not the whole protasis but the comment of a topic-comment construction in the protasis that has a zero topic.

- i. Yuè dùzì è, jiù yuè xiāng huí jiā. (Li Ligang)
CC stomach hungry then CC want return home

'The hungrier (one) is, the more one wants to return home'

- ii. Sǎngmén yuè dà, yuè méi rén tīng. (Jiang Zixin)
voice CC large CC not-be person listen

'The louder the voice is, the fewer people listen'

In the case of (ii), this requires that one interpret *méi* not as a determiner but as a predicate element (so that *méi rén tīng* is literally 'There aren't people [who] listen')

8. Chomsky occasionally (e.g. 1986:75-6), perhaps with humorous intent, refers to 'Chinese-Japanese', as if from his point of view the syntactic differences between Chinese and Japanese were insignificant. There are of course important respects in which Chinese is like Japanese and unlike English, just as there surely are important respects in which it is like Swahili and unlike Nahuatl. However, it is doubtful that Chinese syntax in general is any more like Japanese than like English. The syntax (NB: not the morphology) of comparative constructions is one clear respect in which English and Japanese are very similar and Chinese grossly different from both; a second such respect is that the set of complementizers is relatively large in both Japanese and English and empty in Chinese.

9. There is a class of sentences that are often classed together with CCs but which I maintain are syntactically distinct, namely those in which *yuè* is combined with a dummy verb (usually *lái*; *guò* and *biàn* also occur):

i. Tā yuè lái yuè shǎ le. 'He is getting sillier and sillier' (Chao 1968:121)
 He CC come CC silly

For the following reasons, I regard these sentences as not CC constructions but rather analogs of the English *more and more* constructions. It is not possible for each of the two parts of this construction to have its own subject, the way that that is possible in CC's (ii); *jǐu* is not possible (iii); and it is possible only to a limited extent to get anything intervening between *lái* and the second *yuè*, though here there is considerable individual variation (iv):

ii. *Zhāngsān yuè lái tā fùqin yuè gāoxìng.
 CC come he father CC happy
 'Zhāngsān, his father gets happier and happier'
 (acceptable as: 'The more Zhāngsān comes, the happier his father is')
 iii. *Tā yuè lái jǐu yuè shǎ le.
 iv. a. *Xiàng yuè lái bìzī yuè cháng. a'. %Xiàng yuè lái yuè bìzī cháng.
 elephant CC come nose CC long
 'Elephants have longer and longer noses'
 b. Zhāngsān yuè lái shēntǐ yuè jiànkāng. 'Zhāngsān gets healthier and healthier'
 (name) CC come body CC healthy

10. For valuable comments on earlier versions of this paper, I am grateful to Jiang Zixin, Thomas Lee, Li Ligang, John Richardson, and Wang Chuan.

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Interpretation Under Ambiguity

Peter Norvig
University of California, Berkeley

Introduction

This paper is concerned with the problem of semantic and pragmatic interpretation of sentences. We start with a standard strategy for interpretation, and show how problems relating to ambiguity can confound this strategy, leading us to a more complex strategy. We start with the simplest of strategies:

Strategy 1: Apply syntactic rules to the sentence to derive a parse tree, then apply semantic rules to get a translation into some logical form, and finally do a pragmatic interpretation to arrive at the final meaning.

Although this strategy completely ignores ambiguity, and is intended as a sort of strawman, it is in fact a commonly held approach. For example, it is approximately the strategy assumed by Montague grammar, where 'pragmatic interpretation' is replaced by 'model theoretic interpretation.' The problem with this strategy is that ambiguity can strike at the lexical, syntactic, semantic, or pragmatic level, introducing multiple interpretations. The obvious way to counter this problem is as follows:

Strategy 2: Apply syntactic rules to the sentence to derive a set of parse trees, then apply semantic rules to get a set of translations in some logical form, discarding any inconsistent formulae. Finally compute pragmatic interpretation scores for each possibility, to arrive at the 'best' interpretation (i.e. 'most consistent' or 'most likely' in the given context).

In this framework, the lexicon, grammar, and semantic and pragmatic interpretation rules determine a mapping between sentences and meanings. A string with exactly one interpretation is unambiguous, one with no interpretation is anomalous, and one with multiple interpretations is ambiguous. To enumerate the possible parses and logical forms of a sentence is the proper job of a linguist; to then choose from the possibilities the one "correct" or "intended" meaning of an utterance is an exercise in pragmatics or Artificial Intelligence.

One major problem with Strategy 2 is that it ignores the difference between sentences that seem truly ambiguous to the listener, and those that are only found to be ambiguous after careful analysis by the linguist. For example, each of (1-3) is technically ambiguous (*with* could signal the instrument or accompanier case, and *port* could be a harbor or the left side of a ship), but only (3) would be seen as ambiguous in a neutral context.

- (1) I saw the woman with long blond hair.
- (2) I drank a glass of port.
- (3) I saw her duck.

Lotfi Zadeh (personal communication) has suggested that ambiguity is a matter of degree. He assumes each interpretation has a likelihood score attached to it. A sentence with a large gap between the highest and second ranked interpretation has low ambiguity; one with nearly-equal ranked interpretations has high ambiguity; and in general the degree of ambiguity is inversely proportional to the sharpness of the drop-off in ranking. So, in (1) and (2) above, the degree of ambiguity is below some threshold, and thus is not noticed. In (3), on the other hand, there are two similarly ranked interpretations, and the ambiguity is perceived as such. Many researchers, from Hockett (1954) to Jackendoff (1987), have suggested that the interpretation of sentences like (3) is similar to the perception of visual illusions such as the Necker cube or the vase/faces or duck/rabbit illusion. In other words, it is possible to shift back and forth between alternate interpretations, but it is not possible to perceive both at once. This leads us to Strategy 3:

Strategy 3: Do syntactic, semantic, and pragmatic interpretation as in Strategy 2. Discard the low-ranking interpretations, according to some threshold function. If there is more than one interpretation remaining, alternate between them.

Strategy 3 treats ambiguity seriously, but it leaves at least four problems untreated. One problem is the practicality of enumerating all possible parses and interpretations. A second is how syntactic and lexical preferences can lead the reader to an unlikely interpretation. Third, we can change our mind about the meaning of a sentence—"at first I thought it meant this, but now I see it means that." Finally, our affectual reaction to ambiguity is variable. Ambiguity can go unnoticed, or be humorous, confusing, or perfectly harmonious. By 'harmonious,' I mean that several interpretations can be accepted simultaneously, as opposed to the case where one interpretation is selected. These problems will be addressed in the following sections.

Syntactic and Lexical Preferences

When we take pragmatics into account, some sentences have a prohibitively large or infinite number of interpretations. Consider the following:

(4) He seems older now.

Here *he* can refer to one of several billion males, and *now* can refer to one of an infinite number of time points. Thus, while syntax and semantics may be producing discrete lists of possibilities, it seems that pragmatic interpretation must operate by proposing likely interpretations, rather than enumerating all possibilities and then choosing among them. Hobbs (1983) has argued that enumeration should be minimized even in syntactic and semantic analysis. He considers sentences with multiple lexical ambiguities, like the following, which has at least six possible interpretations:

(5) He put the dough in the bank.

put(male,money,river-side)
put(male,money,financial-institution)

```
put(male,money,snow-or-cloud-mass)
put(male,flour-mixture,river-side)
put(male,flour-mixture,financial-institution)
put(male,flour-mixture,snow-or-cloud-mass)
```

Hobbs suggests that this list obscures the real issue: that there are two points of ambiguity (in this case, lexical ambiguity), one with two possible interpretations and one with three. He would represent the semantics of the sentence with a single logical form:

```
male(x) & put(x,y,z) & dough(y) & bank(z)
```

Pragmatic interpretation of the sentence then consists of solving for x, y, and z; the paradigm is now one of solving problems rather than making choices. The points of ambiguity are isolated, even though the solution of the problem will in general involve considering several factors at the same time. The solution will be guided by rules like the following, along with various pragmatic preference rules (this varies in detail from Hobbs' proposal):

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dough(y) → money(y) | flour-mixture(y)
bank(z) → river-side(z) | financial-institution(z) | snow-or-cloud(z)
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There are several complications. First, some sentences, like *I saw her duck*, are genuinely ambiguous, and would result in two distinct syntactic and logical forms, even in Hobbs' system. Second, some predication can be "pragmatically strengthened" even when they are unambiguous. Hobbs' example is that the predicate *went* in *I went to Tokyo* can be strengthened to *flew* in most contexts. By representing ambiguity with vague predicates, the same mechanism can handle ambiguity and pragmatic strengthening.

If we combine Hobbs' approach with the Necker-cube intuition, we get the following, which is similar to the approaches used by several recent authors, including Hobbs & Martin (1987), Stallard (1987), and Charniak and Goldman (1988):

Strategy 4: Do lexical, syntactic and semantic analysis to produce one (or occasionally more) neutral representation of the input, which can contain ambiguous and vague predication. Pragmatics then attempts to 'solve' for the ambiguous predication and some of the vague ones. Each solution has a ranking, and, as in Strategy 3, the low ranking solutions are discarded, and the final interpretation alternates between the high ranking one(s).

Given this approach, we still are no closer to specifying what makes us prefer one interpretation over another. It turns out that choosing the syntactically well-formed parse with the highest pragmatic likelihood is insufficient to mimic human performance. One area where the naive strategy breaks down is the so-called garden path sentence.

A garden path sentence invites the listener to consider one possible parse, and then at the end forces this parse to be abandoned in favor of another. Listeners are conscious of this switch, and often have difficulty

discovering the second interpretation. A well-known example is (6), where *raced* is initially treated as a past tense verb. This analysis fails when the verb *fell* is encountered; after some difficulty *raced* can be re-analyzed as a past participle. For most informants, there is a distinct feeling of having to re-parse the sentence; it does not feel like both parses were being built up simultaneously, and the second one was considered after the first was ruled out. If such intuitions are to be trusted (and the jury is still out), this is evidence for a problem solving approach rather than a pipelined approach which interprets all possible parses in turn.

(6) The horse raced past the barn fell.

Most informants find (7) to be much less of a garden path than (6). My analysis of this hinges on the assertion that the difficulty in processing (6) is in abandoning the parse of *raced past the barn* as a VP, and replacing it with a parse as a past-participle modifier. This is especially difficult for the reader who spends time vainly trying to come up with an interpretation of *barn fell* as an NP. In (7), there is ample evidence that *fell down and broke its leg* is a VP, which makes it easier to re-analyze *the horse raced past the barn* as a NP. Pairs like (7) and (8) are suggestive in determining how much evidence and how much time is required to force this re-analysis, but it is difficult to draw solid conclusions, since the degree to which (7) is easier to understand than (8) may be due to the additional processing time, the additional evidence for *fell* as a verb, or both.

(7) The horse raced past the barn fell down and broke its leg.

(8) The horse raced past the barn fell down.

Now consider (9-11), which are all easier to understand than (6). While (9) has the same syntactic structure as (6), it seems that *raced past the barn* is just not as good a descriptive attribute as *raced at the Kentucky Derby*. The first modifier could be true of any healthy horse, while the second describes only a top race horse. Thus, while both make good past tense verb phrases, only (9) makes a good past participle modifier. Hirst (1987) asserts that neither (10) nor (11) is a garden path. Similar forces may be at play here; it appears that *led* is a better descriptive attribute than *raced*. For whatever reasons, the reader has the ability to consider both the main verb and past participle readings for these sentences, without the feeling of a severe problem as in (6).

(9) The horse raced at the Kentucky Derby died.

(10) The horse led a long line of wagons down the road.

(11) The horse led a long way down the road fell.

Another example of this distinction is illustrated in (12) and (13). These examples are complex because *got* is highly polysemous. It can mean 'received' (as in *got a raise*), 'became' (*got old*), 'undergo' (*got arrested*) or 'cause/achieve' (*got them arrested*). In (12) the initial interpretation of the first four words is 'the boy became obese', with *fat* interpreted as an adjective. When the final word is processed, this initial interpretation has to be

abandoned.

- (12) The boy got fat spattered.
- (13) The boy got fat spattered on his arm.

An informal experiment in Schubert (1984) shows that (12) is a quite difficult garden path sentence, while (13) is not a garden path. One explanation for this is that having fat spattered on one's arm is the kind of experience one might be described as having undergone, while 'fat spattered' is not something one undergoes, nor is it the kind of thing one normally strives to achieve. Also, as pointed out above, (12) is difficult because it asks the reader to hypothesize *spattered* as the main verb with no additional evidence, while (13) provides the reader with the complete VP *spattered on his arm*, and also provides time to abandon the interpretation of got fat as a VP.

It seems that many ambiguous interpretations are not consciously considered because they violate selection restrictions. For example, in I drank a glass of port, the noun port is unambiguously interpreted as a kind of fortified wine, even though it has other senses. Thus, we might be tempted to formulate a principle stating that word senses which violate selection restrictions are not considered when there is another sense that satisfies the restrictions. Unfortunately, sentences (14-17), taken from Reder (1983), are evidence against this principle as it stands:

- (14) The astronomer married a star.
- (15) The plumber lit his pipe.
- (16) The rabbi was hit on the temple.
- (17) The hay farmer drank through a straw.

In each of these, the final noun has one lexical sense that satisfies the selection restrictions. However, there is another sense that is suggested first, and which stubbornly refuses to go away. Thus, as in garden path sentences, there is only one sensible interpretation, but that interpretation is difficult to arrive at. No such effect exists in sentences (18-21):

- (18) The star married the astronomer.
- (19) The pipe was lit by the plumber.
- (20) He was hit on the temple, was the rabbi.
- (21) He was drinking through a straw, was the hay farmer.

These data are often explained by assuming that all lexical senses are initially considered when a word is processed, and that a spreading-activation-like process selects for senses that are associated with concepts in context. In the presence of strong associations, as in (14-17), this process can temporarily override selection restrictions, while in (18-21) there are no strong associations at the time the ambiguous word is processed, so there is no incongruous effect.

As another example, experiments by Rayner, Carlson, and Frazier (1983) showed that (22) below was interpreted by most subjects as being silly, meaning that either the walls were painted with a crack-like pattern, or that

cracks were somehow the instrument of painting. Similarly, Hirst (1987) says that informants interpret (23) as a bizarre kind of baking in the freezer, rather than a normal oven-baking of a cake that had been in the freezer. In both cases, the informants missed the interpretation where the PP attaches to the preceding NP. Similarly, in (24) the *by* adjunct was interpreted by informants as a passive marker, not as a locative PP.

- (22) The landlord painted all the walls with cracks.
- (23) Ross baked the cake in the freezer.
- (24) Ross was told what to do by the river.

All this evidence suggests that Strategy 4 is insufficient as it stands. In each of these examples informants discard—or delay considering—a semantically plausible interpretation, because they fixate on the 'wrong' syntactic parse or lexical sense, even though the resulting semantic interpretation is improbable. Strategy 4, unlike the informants, would have no trouble coming up with the semantically probable solution. For example, the following translations for (14) and (18) would both be handled equally easily by a Strategy 4 problem solver like the one outline by Hobbs.

- (14') $\text{star}(x) \ \& \ \text{married}(x,y) \ \& \ \text{astronomer}(y)$
- (18') $\text{astronomer}(y) \ \& \ \text{married}(y,x) \ \& \ \text{star}(x)$

Thus, what Strategy 4 is missing is a way of taking timing considerations into account, and a way of stating preferences for certain parses, even when those parses do not correspond to the best interpretation. Strategies like Kimball's (1973) or Frazier and Fodor's (1978) try to account for phenomena like these in terms of general syntactic preference principles, by appealing to performance issues such as limits on available memory space. Schubert (1984, 1986) provides a good summary of these principles. Kimball's principle of Right Association says that modifiers tend to attach to the most recent phrase they could possibly modify. Thus, in (25), the preferred reading is that for Mary modifies selected, not book or bought. In (26), however, the preferred reading has the PP modifying carried, not groceries. This is explained by the principle of Minimal Attachment, which prefers parses that use the longest rewrite rules, and thus result in a parse with fewer nodes. If we assume a grammar which includes the rules $\text{VP} \rightarrow \text{V NP PP}$ and $\text{NP} \rightarrow \text{NP PP}$, then attaching the PP to the V rather than the NP minimizes the number of nodes. This analysis presupposes that Minimal Attachment takes precedence over Right Association, and that carried subcategorizes for the $\text{VP} \rightarrow \text{V NP PP}$ rule, while bought does not.

- (25) John bought the book which I had selected for Mary.
- (26) John carried the groceries for Mary.

Very general strategies like these are necessarily tied to particular assumptions about the underlying grammar. For example, Minimal Attachment makes no sense in categorial grammar, where all parses have the same number of nodes. But the crucial point is that these general principles just do not hold up. It is quite easy to choose different lexical items and different

situations in which the preferred interpretations reverse from those predicted by the principles. Thus (Schubert's examples again), the pairs (27-28) and (29-30) each have the same verb and preposition, but a different preferred attachment for the PP.

- (27) John met the girl that he married at a dance.
- (28) John met the girl that he saw at a dance.
- (29) John saw the bird with the powerful beak.
- (30) John saw the bird with the powerful binoculars.

At best then, syntactic preferences are only one factor that must be considered in arriving at the best interpretation, and a rather weak one at that. Schubert and especially Kurtzman (1984) come to this conclusion.

What we need is a strategy that accounts for the preferences shown above, while maintaining the other advantages of Strategy 4:

Strategy 5: Do lexical, syntactic, and semantic analysis on a word-by-word basis, identifying points of ambiguity along the way, and using all sources of evidence to rank alternatives. Evidence for a particular choice can include lexical frequency preferences, pragmatic associations, and other factors outside of the logical form. A high-ranking interpretation can be accepted (and its alternatives discarded) before the parse is complete, if its score remains sufficiently above the alternatives for a sufficient amount of time. In addition, if at any point there are more than a maximum number n ($n = 3?$) alternatives, discard the lowest ranking alternative, even if its score is close to others. At the end, alternate between the highest ranking interpretations, as before.

Mutually Compatible Interpretations and Connotations

Consider the following quote from Richard Parsons, of the American Fur Industry Inc., on their new advertising slogan *Fur is for Life*:

"It has a good sound, a good connotation. Yes, they last a long time. Yes, they're a good product. Yes, furs support wildlife conservation."

Parsons (although not a professional linguist) is making a claim about language use: that the proper or intended meaning of a phrase can be a combination of a number of interpretations and connotations. The strategies we have developed so far assume that the reader eventually arrives at a single interpretation, or a Necker alternation between interpretations. But Parsons is saying that his slogan *Fur is for Life* is different. The slogan seems to have two primary interpretations, (31) and (32) below. But it also has important connotations, listed as (33-35), as well as another interpretation, (36), that Parsons presumably wants the public to ignore.

- (31) Fur lasts a lifetime.
- (32) The fur industry is pro-conservation.
- (33) Fur wearers are lively.
- (34) The recipient of a fur may become indebted to the giver for life.
- (35) Life is a good thing; hence fur is a good thing.

(36) Fur, while on an animal, protects its life.

Although we would not be likely to say that any of (33-35) are good candidates for the final interpretation, it seems that the intended effect of the slogan is for the reader to entertain some or all of these simultaneously. While this is a radical departure from the Hockett/Jackendoff Necker-cube theory of 'one interpretation at a time,' it appears to be quite common in poetry, politics, and advertising (see Burli-Storz, 1980).

To take another example, a pop song by David Byrne proclaims *We are creatures of love*. This can be taken as having the three interpretations listed below, but colleagues who were familiar with the song report having no feeling of switching between these interpretations.

(37) We are born as a consequence of sexual love.

(38) We have souls that contain or are composed largely of love.

(39) We are possessed or controlled by the force of love.

One could argue that this is a case of vagueness, rather than ambiguity. That would mean that *of* is analyzed as simply 'related to,' rather than the more specific 'consequence of,' 'composed of,' or 'controlled by' readings. Similarly, *love* would be analyzed as the vague 'sexual, romantic, or parental love.' However, this analysis doesn't explain how the rest of the song can coherently refer to the three themes mentioned above.

The facts are admittedly slippery; I am suggesting that alternative parses can sometimes be combined into one interpretation, but it is hard to distinguish between distinct parses that have been combined together, and a vague interpretation that has several possible entailments. Also, it is notoriously hard to introspect about the phenomenology of these cases. Perhaps the following example, from the last line of Gerard Manley Hopkins' *God's Grandeur* will be more compelling:

(40) Because the Holy Ghost over the bent

World broods with warm breast and with ah! bright wings.

The word *broods* is lexically ambiguous between 'to sit on eggs to hatch them' and 'to think long and deeply or resentfully.' This is clearly not a case of vagueness. Yet it seems that the most natural interpretation is of a bird-like god sitting on an egg-like world (or world-like egg), pensively surveying his creation, and waiting for it to come to fruition. This interpretation clearly involves no Necker-like alternation between senses for *broods*; rather, it involves a simultaneous synthesis of two images.

Note that not just any images can be superimposed this way; if the world were flat, or if eggs were cubical, the combined image would not work. It is permissible to combine the images even though the world is quite a bit larger and composed of different material than the average egg, and even though the prototypical image of God does not include wings.

Poetry, like advertising, seems to sanction this superimposition of distinct parses. To support this claim, I opened a poetry anthology at random, finding the opening line of to Dylan Thomas' poem *In the Beginning*: "In the

beginning was the three-pointed star." As the rest of the poem makes clear, the three-pointed star should be taken as referring to a stellar body in primordial space, to the light in God's performative speech act "Let there be light," to the star of Bethlehem, and to the Holy Trinity. There does not seem to be a clear feeling of shifting between these referents; rather they seem to be entertained simultaneously.

Lakoff and Turner (1988) cite, but do not fully analyze, another Dylan Thomas poem, *Do not go gentle into that good night*:

(41) Do not go gentle into that good night,
Old age should burn and rave at close of day;
Rage, rage against the dying of the light.

Understanding this passage requires knowledge of at least six metaphors for life and death. While these metaphors offer conflicting views on the nature of death, there is no feeling of having to switch between them in understanding the poem; they are all active at once. In fact, metaphors (42-47) are all used in the interpretation of the six words *go gentle into that good night*: (42) for *go*, (43) for *gentle*, (44) for *into*, (45) for *good night*, and (46) for *night*. Thus, the word *night* is being used simultaneously as a time, a destination, a container, and an adversary, all without promoting a conscious feeling of Necker-like switching.

(42) Life is a journey.
(43) Life is a struggle; death is an adversary.
(44) Life is 'here'; death is another world.
(45) Death is sleep.
(46) A lifetime is a day; death is night.
(47) Life is a fire that blazes and burns out.

At this point let us try to modify Strategy 5 to account for these new findings. There are two possibilities; we can treat the combination of two interpretations as an abnormality, and try to show how it can be sanctioned, or we can treat it as the new basic interpretation mechanism, and try to show how it can be constrained.

Strategy 6a: The Conservative Simultaneity Strategy: Amend Strategy 5 to allow a simultaneous amalgam of two or more competing top-ranked interpretations, but only when sanctioned by some as-yet-unspecified factors, and only when the result is a coherent combination of the two.

Strategy 6b: The Radical Simultaneity Strategy: Always try to combine top-ranking interpretations into one image. When a coherent combination is impossible, alternate between interpretations as in Strategy 5.

To try to choose between the two, we will first consider Strategy 6b, as it is applied to sentence (48):

(48) The chicken is ready to eat.

(48') $\text{chicken}(x) \ \& \ \text{ready}(x,e) \ \& \ \text{eating}(e) \ \& \ (\text{agent}(e,x) \mid \text{patient}(e,x))$

Using Strategy 6b, we could combine the two interpretations simply by accepting both parts of the disjunction, yielding 'the chicken is ready to eat the chicken.' This is by no means a normal interpretation of (48), so we have an argument against 6b. However, that argument only goes through if the proposed logical form (48') is accurate. Suppose we use the following logical form instead:

$\text{chicken}(x) \ \& \ \text{ready}(x,e) \ \& \ \text{eating}(e) \ \&$
 $(\text{agent}(e,x) \ \& \ \text{alive}(x) \ \& \ \text{location}(e,\text{barnyard}) \ \& \ \text{patient}(e,\text{seed}) \ \& \ \dots) \mid$
 $(\text{patient}(e,x) \ \& \ \neg \text{alive}(x) \ \& \ \text{location}(e,\text{table}) \ \& \ \text{agent}(e,\text{human}) \ \& \ \dots)$

Then we have two interpretations that cannot be combined coherently, neither under Strategy 6b nor 6a. Thus, we see that for 6b to be feasible, we need to insist on full script—or frame—like semantic interpretations, complete with default assumptions. We need a rich set of defaults to rule out unwanted unification of the two interpretations, even though we want to allow the possibility of overriding some of the defaults, as in "The chicken on the table is ready to eat her asparagus."

Let's try an example that does not bring as much background knowledge into play:

(49) She opened the door with a key.

The ambiguity is between with a key as an instrument of opening, and as a modifier of the door. Here there seems to be nothing to stop 6b from accepting both interpretations for the phrase, whereas we know that if this were the intended meaning, one would have to use something like the following:

(50) She opened the door with the key that was in/near/on it.

Thus, Strategy 6b as it stands is rejected. To evaluate Strategy 6a, we need to develop a better notion of sanctioning a combined interpretation, which we will address in the next section.

Puns

Consider the following advertisement for Flintstones brand Vitamins:

(51) We are Flintstones kids, 10 million strong and growing.

The coordinate *and growing* can modify either *kids* or *strong*, with the respective interpretations that the individual children are growing, or that the number of children is increasing. Most informants report recognizing both alternatives, but report an ability to fuse the two together into a single image where each individual child in an expanding group is growing. (However, no one interpreted *strong* as possibly modifying *kids*, perhaps because of the common idiomatic nature of the phrase *ten million strong*.) My analysis of this example is that the listener arrives at the two interpretations using something like Strategy 5, and in the process of trying to choose between them, realizes that both were intended interpretations, and successfully

superimposes the two images.

In short, (51) is a kind of pun. In a regular pun, the main point of the utterance is that the speaker has been clever, producing two meanings in one sentence. A secondary point is one of the meanings (and, for a very good pun, both of the meanings taken separately). But in (51) we have a special kind of pun, where the point is that both meanings are to be taken simultaneously. A similar example comes from another ad, for Michelin tires:

(52) Because you've got a lot riding on your tires.

Here the ambiguous phrase *got a lot riding on* is ambiguous between 'much depends on' and 'much is physically supported by,' with the resulting combined interpretation 'your family's safety while in the car depends on the tires.' Here again the reader must recognize the 'pun,' and the intended effect of combining the two interpretations, but here there is an added hitch: it is the combination of the two interpretations that resolves the phrase *a lot* to 'your family'; neither of the two interpretations strongly point to this interpretation singly, but together they do.

Let us compare these puns to the following example from Freud (1916):

(53) I met Baron Rothschild, and he treated me quite as his
equal – quite famillionaire.

This is funny (Freud claims) because of the unexpected ease of combining familiarly with millionaire to create a new word meaning 'as familiarly as is possible for a millionaire.' (In German, *familiär* + *Millionär* = *familionär*.) Freud also presents the standard definition of joking as the ability to find hidden similarities between dissimilar things. This is amended to allow for the discovery of differences, or just "to bind into a unity, with surprising rapidity, several ideas which are in fact alien to one another." In other words, the combination of disparate ambiguous interpretations is an unusual event, but one that we have an automatic capacity for.

A remaining problem is to explain why some such ambiguities are funny, while others are not. Why is it that, to my ears at least, *the rabbi was hit on the temple* is funny, while *the plumber lit his pipe* is merely confusing? Freud claims that the laughter response is illicited by the release of suppressed violent or sexual thoughts. That explains, perhaps, why the following is a fairly good joke, while other lexical and structural ambiguities in this paper are not:

(54) She criticized his apartment, so he knocked her flat.

Minsky (1980) recasts Freud's notions into the terminology of mental agents acting as censors to violent or sexual thoughts. In Minsky's terms, certain mental agents are good at combining ambiguous interpretations, but other agents notice that this is not the normal mode of operation, and act to censor them. The laughter response serves to 'shake up' the mind, get it back on track, and post a warning to avoid such thoughts. Presumably, the simultaneous combinations that sneak by uncensored are ones that do not represent 'dangerous' modes of thought.

Simultaneous Interpretation in 'Normal' Language

There are cases of combined simultaneous interpretation which don't involve poetic license or puns. Consider the use of book in (55). Book is polysemous between a physical object, a string of words, and an abstract plot or sequence of situations. The use of *beautifully bound* refers to the physical object, *one new idea* refers to the abstract content, and *50,000 words* refers to a particular (abstract) instantiation of the content. (If the book were reprinted in paperback it would still have the same number of words, whereas if it were translated into another language, it would have a different number of words, but the same number of ideas.) All three polysemous interpretations of book are used simultaneously.

It can't be that *book* is a single sense referring to all these aspects, because in (56), *book* must refer only to the 'plot or sequence of ideas' sense. One could not felicitously use (56) to describe someone who had written a single book which has had a hundred copies printed, or a single book which was translated by others into a hundred languages.

- (55) This book, although beautifully bound, contains only one new idea in 50,000 words.
- (56) He is the author of over 100 books.

Len Talmy (1977) provides a good example of image combination in non-ambiguous language. (57) forces the reader to combine the image of a woman walking through a party with the image of a leaf wafting through the air (or something similar) to arrive at an interpretation. Talmy explains just what properties of the verb are maintained, and which are taken from the complements.

- (57) She wafted through the party.

Image combination is more obvious in the case of metaphors and cliches where the derived meaning is removed than the surface form. Compare (58), which is a consistent use of metaphor, with (59). Sentence (59) provides a topological clash that cannot easily be resolved into a single interpretation, even though the meaning of the two cliches is consistent. (57) is an example of a mixed metaphor with varying effectiveness; some find it to be fine, while others report that the topology is all wrong: one should be striving to get *out of* a rat-hole, not *out from under* it.

- (58) I've always been 100% behind my husband, pushing him on as best I can.
- (59) I've always been at my husband's side, 100% behind him.
- (60) They can't afford to get out from under the rat-hole of rent payments.

Conclusion

In this paper I have investigated several strategies for pragmatic interpretation, and have presented a new strategy which (1) accounts for the little-mentioned phenomenon of a simultaneous combination of ambiguous interpretations, (2) is not inconsistent with experimental preference results, and (3) uses a combination mechanism that is needed for non-ambiguous language as well.

Acknowledgement

The author has been sponsored by the Defense Advanced Research Projects Agency (DoD), Arpa Order No. 4871, monitored by Space and Naval Warfare Systems Command under Contract N00039-84-C-0089.

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UNLIKELY LEXICAL ENTRIES
Sally Rice
University of California, San Diego

I. Introduction

It is no great revelation that many verbs in English can be used both transitively and intransitively. Variable constituent structure abounds for most lexical items, yet for verbs, linguists have felt compelled to cite a default pattern of arguments, that is, a fixed number of grammatically interpretable arguments, and list it with the lexical entry for each verb in something called the lexicon (cf. Bresnan 1982, Hale and Keyser 1985). This paper questions the extent to which implicit yet commonly-held assumptions about the lexicon can handle variable subcategorization information for verbs when the variation is not strictly a function of the verb's inherent meaning, that is, when the variation does not warrant additional lexical entries. These assumptions spring from an idealized model of the lexicon which amounts to little more than a storage bin wherein phonological, semantic, and category information about a lexical item reside [!]. This information is to be "applied", "accessed", or "projected" from the lexicon when the lexical item is selected for participation in larger constructions. However, linguists harbor only vague or coarse-grained notions about what a particular lexical entry would really consist of. As I'll argue, this vagueness is due primarily to the fact that information usually attributed to the lexicon has a multitude of sources. The examples I'll use for this paper relate to the phenomenon of transitivity.

Transitivity informs a speaker's selection of nominals to fill out a particular two-place argument structure and their subsequent arrangement in the clause as subject or object. Elsewhere, I have argued that transitivity is a matter of how the related event is conceived by the speaker (cf. Rice 1987). To that end, I have demonstrated that an argument does not always bear a set grammatical relation or semantic role to a predicate. Here, I present related data--specifically, verbs that can behave both transitively and intransitively--and argue that predicate-argument structure, that is, the actual number of overt arguments, is equally fluid and based both on construal factors and on a lexical item's value relative to a larger semantic paradigm. These differential usages do not arise from separate lexical entries for polysemous verbs. I will suggest, instead, that elements in the lexicon, if there is such a separate component of grammar, form natural categories that are subject to prototype effects and that many factors other than intrinsic meaning influence lexical insertion.

The data I examine are English transitive verbs that can permit omitted objects and intransitive verbs that can take cognate objects. The behavior of these verbs under omission or when complemented by a cognate object departs from their usual usage, but yet, these extensions occur quite frequently and signal something about how an event and its subcomponents are interpreted and coded linguistically. These departures are not strictly idiosyncratic nor novel. They give rise to discernible patterns in the language that result from a lexical item's placement in a semantic hier-

archy, the overall expression's pragmatic context, the expression's ability to evoke well-known scenarios, or from the object's degree of modification. These factors are difficult to code within a two- or three-line lexical entry, yet the omission and cognate object facts I examine here are all regular processes. These data bring into focus inadequacies associated with a static and shorthand view of a lexicon containing pre-set and only partially specified lexical entries.

2. Transitive Verbs and Omitted Objects

Researchers (cf. Langendoen 1970, Bolinger 1975, and Collinge 1984) have long noted that the omission of an object in English is verb-sensitive. However, a few generalizations can be made that do not simply attribute omissibility to particular predicates. I will discuss these generalizations in turn. First of all, though, it is important to note that object omission is neither a process nor does it represent two separate versions of a verb, a transitive and an intransitive one. Rather, certain construals of transitive events are such that they focus on the active participant and leave the acted-upon participant unspecified and, most importantly, to be filled in with a default value. Omitted objects are still objects, which is to say that they are still present at some level of organization, perhaps not at a lexical or syntactic level, but certainly at a conceptual one. Most importantly, the object does not really go away when it is omitted.

Below, I examine some of the factors affecting object omissibility. There is quite a difference between each of the sentences in (1):

- (1) a. John fell.
- b. John ate.
- c. John ate a big lunch.
- d. John ate something.

A classic Phrase Structure account would lump (1a) and (1b) together as intransitive because lexically and syntactically, the verbs lack direct objects. Nevertheless, semantically, John still ate something in (1b). EAT always represents a two-participant activity, whereas FALL does not. FALL profiles the absolute downward motion of a single participant and therefore (1a) is the only sentence of the four that can be considered wholly intransitive. (1b) is much more similar to (1c-d) than it is to (1a). (1b) and (1c) do contrast in some respects as is apparent from the way they each compare to the sentence given as (1d), which is a sort of hybrid of the two. (1d) is a compromise that a speaker might use so as to avoid the default reading engendered by (1b)—that John ate a meal--while still not specifying what John ate, as is made explicit in (1c).

The notion of a default interpretation is very important to the phenomenon of object omission. What the default reading of a missing object is, how it compares semantically to other potential objects that the predicate can take, and whether it is easy or difficult to interpolate all affect the ability of an otherwise transitive verb to occur minus its object. Below, I discuss some of the factors that contribute to or hinder the determination of the unspecified object's default value.

Objects that can be omitted tend to be those whose lexical content is most probable given the meaning of the verb. Omitted objects are generally

restricted to complements with a low degree of semantic independence from the verb. There are many verbs whose omitted objects are clearly understood because they are inferred from a very narrow, if not exclusive, range of possibilities. The lexical identity of the object is easily induced. In the examples in (2-5), I give in parentheses first the standard default interpretation along with unacceptable interpretations of what has been omitted. Notice that the default interpretation is never really schematic or super-ordinate in the Roschean sense, as indicated by the NP in capital letters. Rather, the default interpretation usually elicits the verb's prototypical complement which is a basic-level NP. Subordinate-level NPs, as indicated by the underscore, are also ruled out, that is, they tend not to be what is filled in by either speech-act participant.

- (2) John smokes (cigarettes/ *Marlboros/ *a pipe/ *SMOKING MATERIALS).
- (3) John drinks (alcohol/ *gin/ *water/ *coffee/ *LIQUIDS).
- (4) When he goes to Boston, John drives (a car/ *a Toyota/ *a motorcycle/ *A VEHICLE).
- (5) Each afternoon, John reads (a book/ *Ulysses/ *the newspaper/ *PRINTED MATTER).

Clearly, an omitted object should not be read as zero. Rather, on a neutral reading, an omission activates a prototype or a particular semantic frame in which the action is prototypical.

Another area of regularity surrounding the phenomenon of object omission involves the verb's semantic neutrality. Verbs that conflate action and manner tend to resist omission while synonymous yet more neutral verbs tend to allow it. Consider the contrasting pairs in (6-11):

- (6) a. Celia ate.
b. *Celia nibbled/ bit/ chewed/ devoured/ ingested/ munched/ gobbled.
- (7) a. Walter smoked.
b. *Walter puffed.
- (8) a. Hemingway drank.
b. *Hemingway sipped/ guzzled/ swigged/ quaffed.
- (9) a. Mike studied all afternoon.
b. *Mike perused/ memorized/ reviewed all afternoon.
- (10) a. Moses spoke.
b. *Moses uttered.
- (11) a. Samuel Pepys wrote daily.
b. *Samuel Pepys penned/ inscribed/ drafted daily.

One explanation might be that manner adds a degree of specificity to the action such that the entire event loses its basic-level status and a default interpretation becomes disfavored. Of course, some of the predicates in (6b-11b) are acceptable minus objects when occurring in nonfinite verb forms or in the imperative (e.g. "John always nibbles before dinner," "Memorizing is how she studies best," "Don't guzzle!!")

Although lack of object omission may be a conventionalized fact of English for the verbs in (6b-11b), or perhaps conflation of action and manner is sufficient to warrant a particular type of activity such that the default

reading is effectively prevented, the omission behavior of other verbs may be linked to the nature of the inferred object. If the omitted object refers to some whole entity, it is more likely to be left out than if it refers to a part of some inferred entity. Compare the examples in (12) and (14) with those in (13) and (15):

- (12) a. Travis let Billy drive (the car).
 b. Travis let Billy steer (the car).
 c. Travis let Billy brake (the car).
 d. Travis let Billy accelerate (the car).
- (13) a. Travis let Billy turn *(the wheel).
 b. Travis let Billy rev *(the engine).
 c. Travis let Billy floor *(the gas pedal).
 d. Travis let Billy gun *(the motor).
- (14) a. Mark should bathe (himself).
 b. Mark should wash (himself).
 c. Mark should dress (himself).
 d. Mark should exercise (his body).
- (15) a. Mark should brush *(his teeth).
 b. Mark should comb *(his hair).
 c. Mark should shampoo *(his hair).
 d. Mark should pluck *(his eyebrows).

In these examples, although the objects are readily inferable from the context, they differ with respect to acceptability under omission. Parts are usually smaller, more specific, more localized, and usually more definite than wholes. They also tend to be viewed as subordinate rather than basic-level NPs. There are cases which support this part-whole/overt-omitted pattern, even when the verb only admits one particular complement. The verbs in (16-21) must be accompanied by an overt object nominal despite the fact that the meaning of the verb is such that there is generally only a single possible complement that can complete the expression:

- (16) John stubbed *(his toe).
- (17) John barked *(his shin).
- (18) John crooked *(his neck).
- (19) John pursed/puckered *(his lips).
- (20) John sprained *(his wrist/his ankle).
- (21) John blew *(his nose).

In these examples, the notion of a default has no semantic utility since the sole object permitted in these expressions does not stand in opposition to a larger spectrum of possibilities. Nevertheless, there are verbs, as those in (22-25) illustrate, involving equally restricted and directly inferable body parts, that tolerate omission:

- (22) John squinted/ blinked/ winked (his eyes).
- (23) John shrugged (his shoulders).
- (24) John waved (his hand).
- (25) John stretched/flexed (his muscles).

I believe, though, that the tendency in such cases is to disfavor omission.

Likewise, object omission is generally disfavored for the verbs in (26-30). Here, the range of possible complements is confined to a fairly limited set of semantic domains or categories that furthermore seem to lack basic-level exemplars. The permissible objects are selected from either a super- or sub-ordinate level and omissibility, as I am suggesting here, appears to affect only items from the basic level of a category.

- (26) Who unplugged *(the toaster/ the TV/ THE APPLIANCE)?
- (27) I mailed *(the letter/ the package/ the postcard).
- (28) Greg fathered *(a son/ an idea/ AN OFFSPRING/ A CONCEPT).
- (29) Bob kissed and hugged *(Betty/ SOMEONE/ SOMETHING).
- (30) The Pope visited *(Mary/ Louisville/ SOMEONE/ SOMEPLACE).

By contrast, some verbs, especially if they occur in a heavily-biased context, normally invite a default reading regardless of the category level of the covert NP. The verbs in (31-39) allow omission although a wide range of possible objects can complement them:

- (31) Hemingway ate, drank, and smoked too much.
- (32) Martha cooked and cleaned while Mary entertained.
- (33) Billy Jo washed and Bobby Jo dried.
- (34) John finally married.
- (35) Horowitz practices daily.
- (36) Scott hammers and saws like a pro.
- (37) Bill always interrupts.
- (38) He paints, she pots; he sculpts, she draws.
- (39) "Those who can, do; those who can't, teach."

Because the sentences containing objectless verbs in (31-39) readily evoke general semantic frames or scenarios, the particular object is fairly unimportant as the pragmatic focus is on the activity itself.

Not only do certain out-of-context objectless verbs tend to evoke a particular frame of reference, but conversely, a particular semantic frame tends to evoke objectless verbs. Take, for example, the context-induced sentences in (40):

- (40) a. THE TYPICAL RESTAURANT SCRIPT: The man entered, he ordered, he ate, he paid, he left.
- b. A DESCRIPTION OF THE FREEDOM-FIGHTING CONTRA REBELS: They kidnap, rape, torture, and murder.
- c. THE PLIGHT OF THE AVERAGE HOUSEWIFE: She cooks, she cleans, she dusts, she vacuums, she irons, etc.
- d. THE PLAY-BY-PLAY OF A SPORTS ANNOUNCER: Simmons intercepts, now he passes. Roberts catches and scores.

Collectively, the individual objectless clauses are fine, especially when strung together, because the identity of each of the omitted objects is easily induced from the context of the larger script or from associations engendered by other lexical items in the string.

Generally, in order to interpolate the omitted object, a particular semantic frame must be isolated by the conceptualizer. If none is, then the omission is unacceptable. The verbs in (41-48) do not allow object omissions.

sion. Although they represent seemingly neutral and basic-level verbs, they each take too broad a range of possible objects. It is rather difficult, therefore, to determine exactly what was omitted since no default can be inferred.

- (41) *Someone opened/ shut/ closed/ sealed/ locked.
- (42) *He carried/ toted/ held.
- (43) *We thanked/ greeted/ introduced.
- (44) *She recognized/ acknowledged.
- (45) *They took/ gave.
- (46) *He made/ built/ fabricated/ constructed.
- (47) *I sold/ bought/ traded.
- (48) *We spent.

There seems to be, then, a happy medium for verbs that license object omission. Verbs that are very neutral but that furthermore sustain a wide variety of complements, tend always to require objects (e.g. "John loves *(lima beans/ Country and Western music).") Verbs that are neutral but whose objects are restricted to one or two possible semantic domains may generally omit them (e.g. "John bet (five dollars/ his entire pension fund).") Finally, verbs that are quite specific with regard to their complement or verbs that reveal something about the manner in which the specified activity is carried out almost always require overt objects (e.g. "John manicured *(his nails).") Thus, neither extremely schematic nor extremely specific verb-complement pairs encourage object omission.

Often, the degree of specification of a verb and its object tend to covary. If the verb is too general, so probably is the object. Under such circumstances, it would be impossible to ascertain what was missing if the object were omitted. If the verb is too specific, its object probably will be as well, to the point that it is too unique to be left out. It is the combination of a semantically basic verb and a relatively contingent object (by relatively contingent, I mean neither a wholly extrinsic or wholly intrinsic complement) that tends towards omission. In sum, omissibility has a paradigmatic character as it can be motivated for classes or strings of verbs rather than for idiosyncratic lexical items.

3. Intransitive Verbs and Cognate Objects

Likewise, it is difficult to confine the occurrence of cognate objects in English to a regular small subset of verbs as is the case in other languages. When an object is lexically cognate with its verb, it tends to repeat the meaning of the verb as in "to dance a dance" or "to sing a song." Cognate object constructions are relatively infrequent across languages and, when present, they are restricted to a limited range of semantic domains, usually to predication which are generally considered to be intransitive such as verbs of performance, bodily secretion, and elimination (cf. Austin 1982). In these expressions, the object is more intrinsic to or contingent upon the meaning of the verb than independent from it. That is, the predicate sustains only one or two possible complements as opposed to a verb like HIT, for instance, which allows an almost inexhaustible list of concrete or metric-measuring complements (e.g. "John hit his sister," "John hit the beach early," or "John hit middle-age.") When complements are selected from a range of only one or two possibilities that are, moreover, inferrable

from the meaning of the verb, they not only are often cognate with the verb but rather superfluous semantically. Thus, the cognate object is easily ommissible and, in many languages, the verb is treated lexically and syntactically as intransitive.

Not surprisingly, due to the extensive and multi-source vocabulary of the language, English tolerates a comparatively large inventory of cognate object phrases. Nevertheless, these constructions are confined to the expected domains of body function, performance, and discharge and they usually tend towards the basic Old English or Germanic vocabulary (e.g. "to give a gift" vs. "*to donate a donation"). We will find, however, that apart from these two lexical restrictions, a number of other factors affect the acceptability of the verb presenting a morphologically related object. Many of these factors relate to the way the event underlying the clause is construed and therefore do not strictly pertain to the predicate's argument structure fixed within the lexicon. These construal factors manifest themselves in the way the cognate object is set up as a distinct entity in the event being coded by the clause. For example, felicitous cognate objects in English usually require special modification of some sort either in the form of a definite or demonstrative article, or by an adjective or relative clause. To illustrate, I draw from two of the stock English cognate object constructions:

(49) a. *Susan lived a life.
b. Susan lived a good life.
c. Susan lived the life that she wanted.
d. Susan lives her life well.

(50) a. *Susan dreamed a dream.
b. Susan dreamed a frightful dream.
c. Susan dreamed the dream she used to dream as a child.
d. Susan dreams that dream almost nightly.

Clearly, the acceptability of sentences containing cognate object constructions depends on the expressions' ability to convey conceptual differentiation of process and processed object. If the cognate object is not a clearly differentiable participant in the event, or if it is not affected by the process, but merely effected from it, or if it is not somehow set up as special or otherwise pre-existing in the world, the cognate object construction does not obtain.

Analogous factors restrict cognate object predication of secretion when the nature of the object is internal to the process coded by the verb:

(51) a. ??Mr. Spock bleeds blood.
b. *Mr. Spock bleeds the blood.
c. Mr. Spock bleeds green blood.

(52) a. *Tim sweat sweat.
b. ??Tim sweat the sweat (that stained Brian's shirt).
c. Tim sweat hard-earned sweat during the hockey game.

When the secreted object is modified as in the (c) sentences in (51-52) and thus foregrounded as a separate and perhaps readily categorizable entity (by virtue of modification), the cognate object is permissible.

Several predication of facial activity and facial expression permit

cognate objects under varying circumstances. The sentences in (53-55) illustrate these points. For these predications, the cognate object is usually just an instance of the activity. If the instance becomes a type (as in the (b) and (d) sentences), it gains in general accessibility and currency and is thus construable as something more than the result of the relevant process, indeed, as a separate entity in the world. Modification (via the addition of a definite article, adjective, or relative clause) usually renders noun phrases more concrete and objectified. If a single instance is replicated (as in the (e) and (f) sentences), the cognate object may approach or achieve type status, especially if the multiple instances are all construed as different from one another.

- (53) a. *Willy sneezed a sneeze.
- b. Willy sneezed a sneeze that would wake up the dead.
- c. *Willy sneezed the sneeze.
- d. Willy sneezed the sneeze of a hay-fever sufferer.
- e. ?Willy sneezed several sneezes.
- f. Willy sneezed several sneezes in rapid succession.

- (54) a. *Neil laughed a laugh.
- b. Neil laughed a hearty laugh.
- c. *Neil laughed the laugh.
- d. Neil laughed the laugh of a very disturbed man.
- e. Neil laughed many laughs.
- f. Neil laughed many ridiculous laughs for the kids.

- (55) a. *The actress smiled a smile.
- b. The actress smiled a most provocative smile.
- c. *The actress smiled the smile.
- d. The actress smiled the smile of a temptress.
- e. *The actress smiled smiles for the photographer.
- f. The actress smiled various smiles for the photographer.

When a cognate object achieves this status as a type, as an entity generally replicable across many particular instances, it seems to take on an independent existence. It is made more concrete conceptually and, hence, is accessible, assumable, or manipulable by other agents. Once this happens, the felicity of these otherwise marginal cognate object constructions increases.

The acceptability of the frequently cited cognate object constructions in (56-57) reinforces my claims that a cognate object conceived as a distinct type rather than as a single resulting token effects a more transitive construal of the event underlying the meaning of the predicate. Songs and dances are usually pre-composed entities. The agent is simply making a further recital through the expressed activity. This effect is especially strong for the (a) sentences in (56-57) since indefiniteness of the object NP does not make the expression unacceptable or impair the conceptual integrity of the cognate object.

- (56) a. Caruso sang a song.
- b. Caruso sang the song.
- c. Caruso sang many beautiful songs.

- (57) a. Shirley danced a dance.
- b. Shirley danced the dance.
- c. Shirley danced many wild dances.

Rather unexpectedly, other intransitive verbs for which there are related nominalizations can be coaxed into a reading with a cognate object, again, if the object is set up as a special type. Whenever a cognate object is construed as specifically referential or as a token example of some entity in the world, then otherwise unacceptable (and presumably un-lexicalized) cognate object constructions are licensable. What we have in (58-61) is evidence that a single effected token has been turned into a replicable type because of the accompanying modification and it is this conceived transformation that engenders a transitive construal. Compare the unacceptable generic statements in (a) with their more specific and special counterparts in (b):

- (58) a. *Everyone walks a walk.
b. Everyone can walk a funny walk.
- (59) a. *Marilyn is humming a hum.
b. Marilyn is humming a most annoying hum.
- (60) a. *My boss just grinned the grin.
b. My boss just grinned the grin that means "more work."
- (61) a. *Fred just hiccupped a hiccup.
b. Fred just hiccupped a hiccup that managed to disturb the entire room.

Should all such similar verbs be marked for their ability to take a cognate object? Most intransitive verbs of performance, secretion, or elimination (the semantic fields associated with cognate object constructions cross-linguistically) can be coaxed into taking cognate objects with sufficient modification. In the (b) sentences in (62-64), I give examples of atypical yet fully acceptable cognate object constructions when the cognate object achieves a necessary degree of individuation by virtue of modification:

- (62) a. *The octopus spit spit.
b. The octopus spit inky spit.
- (63) a. *The teacher winked a wink.
b. The teacher winked a final good-bye wink.
- (64) a. *He pissed some piss.
b. He pissed some pure-beer piss.

These data raise a number of questions. How do we know in advance which previously assumed intransitive verbs can even take a cognate object? A different question is whether lexical entries for any verbs should select objects on the basis of their definiteness or the presence of modifiers? Should a separate lexical component code grammatical information that seems so inherently syntactic?

4. Specifying Lexical Entries in a Dynamic and Distributed Lexicon

I return now to the problem of specifying variable subcategorization frames in the lexical entry for a verb when a verb's argument structure is not necessarily a given. The data discussed here constitute neither strictly novel nor completely fixed expressions in the English language. Many lexical items used by a speaker, for example, one of the omitted object

constructions in (40) or one of the acceptable cognate object constructions in (62-64), may conflict with those lexical items actually specified by conventionalized expressions and imagined to be in the lexicon by linguists. At best, such lexical items will be underspecified by established expressions. The set of expressions that are completely prefigured by existing or fully-sanctioned lexical entries is quite small and represents only a subset of those that a speaker is capable of utilizing or evaluating. Furthermore, it is not clear that a more complete entry in the lexicon can even begin to code some of the effects I have presented here. The differences between lexically transitive and intransitive versions of these verbs are based not on their *a priori* values but on their actual usage in a clause.

Most lexical items are polysemous. A lexical entry or set of related lexical entries will necessarily underspecify several legitimate senses of a verb. It will underspecify in terms of meaning, in terms of argument structure and in terms of the semantic roles those arguments assume. In short, whatever information is consigned to a lexical entry will at best apply to a lexical item's prototypical meaning and usage. Indeed, despite its theoretical usefulness, the notion "lexical item" is not a natural unit of linguistic organization anymore than a citation form represents natural pronunciation of a word. A lexical item is a constituent of a semantic network and semantic networks may encompass many lexical items at once. Moreover, semantic networks associated with various categories may be populated to different degrees and by elements of varying category level. The different constituents of the network may vary along many parameters beyond objective form and content, parameters that we are only beginning to understand.

If a thoroughly adequate account of, say, a verb's argument structure is to be specified, the lexicon must extend its scope to include many paradigmatic factors such as those discussed here. Taking seriously the kinds of information that would need to be in the lexicon would lead to a gross elaboration and proliferation of lexical entries. Clearly, a more distributed view of lexical knowledge is needed. Lexical and syntactic knowledge are continuous (cf. Langacker 1987). Grammaticalization amounts to the simultaneous satisfaction of multiple constraints. A verb's meaning and subsequent syntactic behavior is not atomistic. Its meaning and usage is embedded in the context in which it appears. A verb's pragmatic environment, its level in a semantic hierarchy, or the identity of its actual complements all influence the way in which it is used and the number of arguments it will bear. There is simply no economical way of spelling out conclusively, that is, in a lexicon, how a verb will be used and what it will mean. In short, whether or not a transitive verb can omit its object or an intransitive one can take on a cognate object cannot possibly reside in the lexicon as a property of certain verbs because a lexicon with fixed lexical entries does not really exist. The lexicon is truly a convenient fiction in linguistics and one that does not stand up to very much scrutiny. This is not to imply that there is no such thing as lexical knowledge. Rather, that knowledge is best thought of as part of a dynamic, interconnected network that can access sound, meaning, context, and speaker intent simultaneously.

Notes

[1] Fromkin 1987 includes orthographic information in the lexicon as well, but relegates these different types of information to different sublexicons in order to boost her argument for a modular view of language that will better accommodate, so she claims, a variety of specific aphasia deficits.

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**Encounters with Japanese Verbs:
The Categorization of Transitive and Intransitive Action Verbs***

Matthew Rispoli
University of California

This paper deals with the acquisition of two classes of action verbs in Japanese, transitive and intransitive. Action verbs refer to visually verifiable physical transformations of the state or location of an entity. Sentences A and B serve as illustrations.

A) *kodomo ga kugi o ana no naka ni ire-ta*
child NOM nail ACC hole's inside LOC put-PAST
Child put nail inside hole.

B) *kugi ga ana no naka ni hait-ta*
nail SUBJ hole's inside LOC go-PAST
Nail went inside hole.

In Japanese, transitive action verbs take nominative subjects that are semantically causers and accusative direct objects that are semantically figures or patients. Intransitive action verbs take nominative subjects that are semantically figures and patients. Unlike English which has verb pairs such as *open* transitive and intransitive, in Japanese a transitive verb cannot have an homophonous intransitive counterpart. In active sentences, nominative case is marked by the postposition *ga*, and the accusative case is marked by the postposition *o*.

The Japanese child comes to know that intransitive action verbs like *hair-go in* cannot take a causer argument, and that their figure arguments are marked by *ga*. Conversely, the child comes to know that transitive action verbs like *ire-* can take a causer argument and that their figure arguments are marked by *o*.

Accounts of how the child specifies these characteristics of an action verb are not well detailed. Pinker (1984) proposes a mechanism termed Direct Learning from Positive Evidence, by which the child hears a verb in a sentence with its array of NP arguments, and constructs a "phrase structure tree for the sentence from already acquired phrase structure rules" (p. 295). The child uses the phrase structure tree to determine the lexical entry of a new verb. Pinker also saw a problem: Direct Learning works with preexisting phrase structure trees. The child must first discover legitimate instances of subjects and objects in the target language before Direct Learning may start. This is why Pinker proposed that the first lexical entries are filled out by Canonical Mapping, which induces syntactic subcategorization directly from thematic roles. However, to make canonical

*This research was supported by a National Research Service Award, T32 HD07181-08. I thank Dan Slobin, Ceil Toupin and Carol Varey for criticisms of an earlier draft of this paper.

mapping work, Pinker (1984) stated that the child must "recover thematic roles inherent in the described action" (p. 297). The problem with this hypothesis is that actions do not come labeled "transitive" or "intransitive" in the environment. The child may recover an agent from the context when a verb is intransitive. This point led Borer and Wexler (1987) to posit the Thematic Inference Principle, which states that, "when a learner is computing thematic roles from situations, s/he assumes a thematic role only if it can be related to an appropriate phrase in the sentence" (p. 135). Thus, when the child hears an intransitive sentence, the child will not associate a causer role with the verb.

These views of the acquisition of the subcategorization of action verbs are challenged by the facts of caregiver speech in Japanese. Action sentences in caregiver speech exhibit a remarkable rate of noun phrase ellipsis. The two-year-old Japanese child seldom hears an input action sentence with the full complement of noun phrases needed to specify the correct number and type of thematic roles for a verb. When noun phrases are explicit in a sentence, they are seldom accompanied by case marking. To illustrate this point, a sample of 300 action sentences spoken by six Japanese caregivers to four children was analyzed to estimate the availability of explicit causer, figure and patient NPs, and the availability of case marking for nominative and accusative case. Two hundred and fifty of the sentences come from the author's observations of three boys, H (22-24 months), J (22-24 months), and T, J's elder brother (28-30 months). Approximately 50 sentences were taken from the transcripts of six caregivers: H's father and mother interacting with H, J's father and mother interacting with J, and T's babysitter interacting with T. These interactions occurred while the children were playing or snacking at home. In addition to these 250 sentences, 50 more caregiver action sentences were taken from the published transcripts of a Japanese boy, Taachan, interacting with his mother on his second birthday (Okubo 1981, p. 1-6). The observations of Taachan and mother were made at home, in contexts quite similar to the author's observations. To increase the independence of these sentences as data points repetitions of a sentence spoken by the child or self-repetitions were not used.

The sentences were coded for: 1) Explicit causer, figure or patient NPs, and 2) the case marking of these explicit NPs. There were 155 intransitive sentences and 145 transitive sentences (Table 1). Pooled results are reported as the individuals all showed the same basic pattern of results. Of the transitive sentences, 70% (101) lacked an explicit causer NP. Only 6% (9) of the transitive sentences had causer NPs marked with the nominative case postposition *ga*. Only 7% (10) of the transitive sentences had figure or patient NPs marked with the accusative case postposition *o*. Of the intransitive sentences, only 5% (8) had an NP marked with nominative case *ga*.

The results call into question the efficacy of Direct Learning from Positive Evidence (Pinker 1984) because of the tremendous rate of ellipsis and infrequency of case marking postpositions. The effectiveness of the Thematic Inference Principle (Borer & Wexler 1987) is also doubtful. There are so many missing causer NPs, that a child could end up assigning transitive verbs to the intransitive class. These procedures could be saved by the addition of a verb sampling

procedure, whereby the child stores in memory a number of examples of a verb, and constructs from the sample a full description of the verb's thematic roles and their syntactic encoding. Even with verb sampling intransitive verbs will be problematic. When does the child stop looking for a causer role with an intransitive verb? However, as we shall see, such augmentation may not be necessary.

Recall that Pinker's (1984) position assumes that the child knows a great deal about intentionality, causality, figure-ground relations, and changes of state. Assuming the same things, an account can be drawn of the acquisition of the transitive and intransitive verb classes without reference to explicit NPs. This account makes use of semantic causal types such as those discussed by Talmy (1976) in his description of causative types.

Around the time of their second birthday children identify the figure or patient of an action, non-linguistically. The child also differentiates between entities with intentions and objects without intentions (Golinkoff, Harding, Carlson, & Sexton, 1984). These two sets of distinctions, the perceptual and psychological are orthogonal. Their intersection is necessary for the formation of three semantic causal types: self-agentive, causal agentive and non-agentive. The semantic causal types have specialized contexts of use (Figure 1). The self-agentive type is used when the intention to act is attributed to the figure or patient. In order to know that a verb has a self-agentive use, the child must have confirming evidence that such is the case. There must be an animate figure or patient in the context. Additional evidence is the presence of a verb inflection or auxiliary, such as an imperative or desiderative, that implies the intentional origin of an action. Research on the acquisition of morphology in Japanese, indicates that the two-year-old Japanese child understands at least some of these morphemes (Okubo 1967, Clancy 1986, Rispoli, in press). In contrast, to establish that a verb can be used as a causal-agentive, the attribution of intention to the figure or patient must be blocked, as for example when the figure or patient is inanimate. If the child finds a morpheme that implies intention in a sentence with an inanimate figure or patient in the context, the child deduces that there is an intentional causer participant relevant to the meaning of the verb. This deduction occurs without regard to the lexical instantiation of an agent noun phrase. Finally, without evidence from morphology that a verb can express the self-agentive or causal-agentive types, a verb is taken to express only the non-agentive type.

The next analysis illustrates how the use of an action verb in specialized contexts can predict its syntactic classification. The same sample of 300 caregiver sentences used in the previous analysis were coded for 1) figure or patient referent animacy (including implicit figures and patients) and 2) the presence of a verb suffix or auxiliary that implied the intentional origin of an action. Animacy had three levels, 1) true animate beings, 2) animate surrogates (dolls and pictures of animates) and 3) inanimate objects. The suffixes and auxiliaries implying the intentional origin of an action were: *verb+te* "request", *verb+tai* "desiderative", *verb+(y)o* "hortatory", *verb+cha dame* "prohibitional", *verb+te ii* "permissive", *verb+te kure-* and *verb+te age-* "benefactive" (Soga 1983, p. 87-98). Recall that the semantic causal types have specialized contexts (Figure 1) defined by figure or patient referent animacy and the presence of morphemes that imply intentional

action. The observed contexts for individual verbs were fitted to the array of expected contexts for each of the three semantic causal types.

Let us take the fitting of the verbs *suwar-* "sit" (intransitive), *ire-* "put in" (transitive) *hair-* "go in" (intransitive) as examples (Figure 2). There were eight examples of the verb *suwar-*, seven with animate figure referents, and one animate surrogate referent. *Suwar-* appeared four times with morphemes that imply intention. Each of these sentences had animate figure referents. Since *suwar-* appeared in the expected context for a self-agentive type, and not in the expected context for a causal-agentive type, the verb *suwar-* was matched to the self-agentive type. There were seven examples of the verb *ire-* "put in", and all seven had inanimate figure referents. Two of the sentences with *ire-* had morphemes that imply intentional action. Since the verb *ire-* appeared in the expected context for the causal-agentive type, and did not appear in the context for the self-agentive type, the verb *ire-* was matched to the causal-agentive type. There were 11 examples of the verb *hair-*, but none had inflections or auxiliaries that imply intentional action. Therefore, the verb *hair-* was matched to the non-agentive type.

Fifteen other action verbs were fitted in the same manner. In order to reduce the effects of sampling error, only verbs that occurred five times or more were fitted. The most frequent verb, *ik-* "go" (intransitive), had 17 examples. As one can see from Table 2, there were 11 intransitive verbs and seven transitive verbs. All of the transitive verbs were matched to the causal-agentive type. All of the intransitive verbs were matched to either the self-agentive type or to the non-agentive type. These results show that there is information in the input, not contained in either case marking or explicit NPs, that can allow a semantic grouping of action verbs predicting later syntactic classification.

This approach steers a course through two extreme theoretical positions. One extreme holds that children "recover thematic roles inherent in the described action" (Pinker 1984 p. 297). The other extreme holds that a child "assumes a thematic role only if it can be related to an appropriate phrase" (Borer & Wexler, 1987 p. 135). Both of these extremes lead to problems. The middle course charted in this paper holds that the two-year-old child assumes that one participant, the figure or patient, is related to an action predicate. The child does not assume that causers in the context are destined to become thematic roles. The child assumes that the intentionality of the figure or patient will be important, and pays attention to inflections and auxiliaries that imply the intention to act. When the child is faced with an inanimate figure or patient in the context and the morphological expression of intention, the child deduces that an agent is relevant to the predicate, even if the agent NP is missing from the sentence. Thus, the child may go beyond explicit NPs.

This account also makes developmental predictions for the acquisition of Japanese. First, the acquisition of inflections and auxiliaries that imply intention should proceed more rapidly than the acquisition of the case marking postpositions. Second, since the number and type of arguments a verb takes are related to semantic causal types, then errors in producing the correct number and type of

arguments should be fewer than errors in the production of case marking. Finally, one would not expect young Japanese children to use intransitive action verbs in the causal-agentive context, or transitive verbs in the self-agentive context.

As a first check on the plausibility of these predictions the action sentences of two Japanese children were examined, T and H. Each of the children were observed for a three month period: T (28-30 mo.) and H (22-24 mo.). One hour of tape recorded interaction with caregivers was transcribed per month for both boys. The sentences were coded in the same manner as adult sentences, and similar procedures were followed to increase the independence of these sentences as data points.

As can be seen from Table 1, T was very adult-like in the sparseness of explicit NPs and the rarity of case marking postpositions. Only 4% of T's intransitive sentences had NPs with nominative case marking. Only 8% (9) of T's transitive sentences had either nominative or accusative case marking. Not reported in Table 1 is the fact that T unconventionally produced two nominative case markers on figures and patients of transitive sentences. In contrast to the production of case marking, 36% (80) of T's sentences had inflections that imply intentional action. All uses of such inflections were appropriate. Also in contrast to the acquisition of case marking, T never produced an intransitive verb with a causer NP. The number and type of arguments were entirely appropriate. T produced 13 verbs five times or more: six intransitive and seven transitive verbs (Table 3). All of T's seven transitive verbs were matched to the causal-agentive type. None of T's intransitive verbs appeared in the causal-agentive context, and none of T's transitive verbs appeared in the self-agentive context.

As one can see from Table 1, H, the younger child, produced neither nominative nor accusative case marking. H never produced an intransitive verb with a causer NP. The number and type of arguments were always appropriate. Not reported in Table 1 is the fact that, H produced 10 inflections that imply intention, and all of these inflections were found on transitive verbs. All were used appropriately. The low number of such morphemes had an effect on the matching of H's verbs to semantic causal types. H produced 11 verbs five times or more, seven intransitive and four transitive verbs (Table 3). Of H's four transitive verbs, two were matched to the causal-agentive type. The other two were classified as non-agentive verbs. Still, there is evidence of semantic grouping. None of the intransitive verbs appeared in the causal-agentive context, and none of the transitive verbs appeared in the self-agentive context.

The course of development followed by H and T is consonant with this account of how action verb subcategorization is acquired. First, the acquisition of inflections and auxiliaries that imply intention proceeded more rapidly than the acquisition of the case marking postpositions. Second, the number and type of arguments which a verb took were always appropriate. In contrast there were two case marking errors in T's sample. Such errors have also been reported by Clancy (1986), but to the author's knowledge errors in the number and type of arguments have not been reported in the literature. Finally, these children did

not use intransitive action verbs in the causal-agentive context, or transitive verbs in the self-agentive context. Taken individually, none of these observations provide strong support for the present hypothesis. However, taken together, in conjunction with the facts of Japanese input, this account of the acquisition of action verb subcategorization seems quite plausible.

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Table 1

Frequency of Explicit Causer, Figure or Patient NPs
and Case Marking in the Action Sentences of
Japanese Caregivers and Two Children

Sentence Type	Caregivers		Children		Freq.	%
	H (22-24 mo.)	T (28-30 mo.)	Freq.	%		
Intransitive Sentences						
- figure / patient NP	97	.63	91	.92	77	.71
+ figure / patient NP						
- <i>ga</i>	50	.32	8	.08	27	.25
+ <i>ga</i>	8	.05	0	.00	4	.04
Total	155	1.00	99	1.00	108	1.00
Transitive Sentences	Freq.	%	Freq.	%	Freq.	%
- causer, - figure / patient NP	44	.30	32	.56	44	.38
+ causer NP only						
- <i>ga</i>	19	.13	20	.35	6	.05
+ <i>ga</i>	6	.04	0	.00	1	.01
+ figure / patient NP only						
- <i>o</i>	48	.33	3	.05	51	.44
+ <i>o</i>	9	.06	0	.00	4	.03
+ causer, + figure / patient NPs						
- <i>ga</i> , - <i>o</i>	15	.10	2	.04	6	.05
+ <i>ga</i> , - <i>o</i>	3	.02	0	.00	4	.03
+ <i>o</i> , - <i>ga</i>	1	.01	0	.00	0	.00
+ <i>ga</i> , + <i>o</i>	0	.00	0	.00	1	.01
Total	145	1.00	57	1.00	117	1.00

Note: *ga* is the nominative case marking postposition, *o* is the accusative case marking postposition

Figure 1
Expected Contexts for Semantic Causal Types

Verb Morphology	Figure or Patient Animacy	
	Animate	Inanimate
Intentional	Self-Agentive	Causal Agentive
Non-intentional	Non-Agentive	Non-Agentive

Figure 2
Observed Contexts of *hair-* "go in" (intransitive),
suwar- "sit" (intransitive), and *ire-* "put in"
(transitive) in Caregiver Sentences

Verb Morphology	Figure or Patient Animacy	
	Animate	Inanimate
Intentional	<i>suwar-</i> (intransitive)	<i>ire-</i> (transitive)
Non-intentional	<i>suwar-</i> (intransitive) <i>hair-</i> (intransitive)	<i>ire-</i> (transitive) <i>hair-</i> (intransitive)

Table 2

Observed Contexts of Verbs
Used Five Times or More By Caregivers

Verb Type	Observed Contexts			
	Transitive Verbs	Causal-Agentive	Self-Agentive	Non-Agentive
age- "give"		y	0	y
ire- "put in"		y	0	y
kake- "hang"		y	0	y
tabe- "eat"		y	0	y
tor- "take"		y	0	0
nom- "drink"		y	0	y
mot- "hold"		y	0	y
Intransitive Verbs				
asob- "play"	0	y	y	
ik- "go"	0	y	y	
kaer- "come back"	0	y	y	
ne- "go to sleep"	0	y	y	
suwar- "sit"	0	y	y	
hair- "go in"	0	0	y	
hashir- "run"	0	0	y	
koware- "break"	0	0	y	
shin- "die"	0	0	y	
tore- "come off"	0	0	y	
tsuk- "stick to"	0	0	y	

Note: y = appeared in context at least once, 0 = did not appear in context

Table 3

Observed Contexts of Verbs Used Five Times or More
By Children H and T

Child H's Verbs

Verb Type	Observed Contexts			
	Transitive Verbs	Causal Agentive	Self-Agentive	Non-Agentive
nom- "drink"		y	0	y
tsukur- "make"		y	0	y
kak- "write"		0	0	y
mot- "hold"		0	0	y
Intransitive Verbs				
de- "go out"		0	0	y
hair- "go in"		0	0	y
ik- "go"		0	0	y
koware- "break"		0	0	y
mawar- "turn"		0	0	y
tomar- "stop"		0	0	y
tat- "stand"		0	0	y

Child T's Verbs

Verb Type	Observed Contexts			
	Transitive Verbs	Causal-Agentive	Self-Agentive	Non-Agentive
har- "spread"		y	0	y
ire- "put in"		y	0	y
kak- "write"		y	0	y
mot- "hold"		y	0	y
tabe- "eat"		y	0	y
tor- "take"		y	0	y
tsuke- "put on"		y	0	y
Intransitive Verbs				
ik- "go"		0	y	y
kaer- "come back"		0	y	y
ne- "go to sleep"		0	y	y
nor- "ride"		0	y	y
hair- "go in"		0	0	y
tomar- "stop"		0	0	y

Note: y = appeared in context at least once, 0 = did not appear in context

On Phonological Exceptions, Sound Change,
and Learned Words *

Juan A. Sempere-Martínez
University of California, Berkeley

Phonologists have had difficulties narrowing down the rules governing the deletion of Catalan */-n/* in word final position. Usually, long lists of exceptions are appended to the general rule of deletion in historical and synchronic grammars. Here we intend to demonstrate that most of the alleged exceptions can be accounted for historically and that true exceptions are due to the learned nature of the words. The following data, in phonemic transcription, should illustrate the problem.¹

DELETION OF */-n/*

1. $n \rightarrow \emptyset / \overset{V}{_} \#$

a) plural derivatives

pá	(bread)	páns	panéra	(bread bin)
tá	(tone)	táns	tonalitat	(tonality)
kamí	(road)	kamíns	kaminal	(path)

b) masc sg fem sg masc pl fem pl

plá	(flat)	plána	pláns	plánes
sá	(healthy)	sána	sáns	sánes
oportú	(opportune)	oportúna	oportúns	oportúnes

c) té téns ténen tenír~tíndre
(he has) (you have) (they have) (to have)
vé véns vénen venír~víndre
(he comes) (you come) (they come) (to come)

d) redó redóns redonét (roundish)
segó segóns segonét (fine bran)
bla bláns blanét (softish)

2. $n \rightarrow \emptyset / \overset{V}{_} \#$

a) óme ómens omenét (little man)
jóve jóvens joventút (youth)
órge órgens organista (organist)

All the */-n/* deleting items in 1 are oxytones whose underlying */-n/* surfaces when the word is modified by a morpheme designating feminine gender, plural, or a suffixal derivation. For the paroxytones in 2 (from Latin proparoxytones), we obtain the same result in Western Catalan.²

NON-DELETION OF /-n/

		<u>plural</u>	<u>derivatives</u>	
3.				
kárn	(meat)	kárns	karnisér	(butcher)
ivérn	(winter)	ivérvns	ivernénk	(wintry)
fórn	(oven)	fórvns	fornéjt	(little oven)
4.	sán	sáns	santedát	(sanctity)
žén	(people)	žéns	ženteržla	(rabble)
món	(mountain)	móns	montíkle	(hill)
5.	món	móns	mundiál	(world-wide) ³
segón	(second)	segóns	sekundári	(secondary) ³
pregón	(deep)	pregóns	pregonéza	(deepness)
6.	sén	(he feels)	sénten	(they feel)
				sentír (to feel)
7.	ofén	ofénen	oféndre	
	(he offends)	(they offend)		(to offend)
ven	venen	vendre		
	(he sells)	(they sell)		(to sell)
respón	respónen	respóndre		
	(he responds)	(they respond)		(to respond)
8.	pín	pínen	píndre	
	(she lays eggs)	(they lay eggs)		(to lay eggs)
román	románen	romándre		
	(he remains)	(they remain)		(to remain)
9.	žoán	žoáns	žoánst	(big John)
nén	(child)	néns		
ssn	(sleep)	síns	sonéta	(little sleep)
10.	ùn#número#	(one number)	número#í#	(number one)
	bón#jme#	(good man)	bmet#b#	(good man)
11.			<u>plural</u>	
	áton	(unstressed)	átons	
	ozón	(ozone)	ozóns	
	klán	(clan)	kláns	
	žérmen	(germ)	žérmens	
	žorgan	(organ)	žorgans	
		-biology-		

Items in 3 (Cn#) do not meet the structural description of the rule: n → Ø / V ____#, while those words in 4, 5, 6, 7 and 8 suggest an underlying dental stop that is recoverable in some derivatives, yielding thus the environment VnC#.

The synchronic description of the final /-n/ deletion phenomenon has leaned heavily on the concept of

idiosyncratic exceptions. With only three items as explicit data ("tenir", "venir", and [fon]), Brasington (1972) concluded that the deletion of the /-n/ of the 3sg forms of "tenir" and "venir" should be marked as idiosyncratic, considering that most verbs present the /-n/ retention feature:

$$n \rightarrow \emptyset / _ \# [-\text{verb}] \quad (\text{Brasington 1972:116})$$

A similar treatment is found in Mascaró (1978) who contends that items like /segón/ and /són/ "are simply exceptions to N-deletion that cannot be characterized but idiosyncratically" (1978:61). Mascaró proposes the following rule which, due to its broadness, would require a cumbersome number of diacritics to account for the alleged exceptions:

$$\begin{bmatrix} +\text{nas} \\ +\text{cor} \end{bmatrix} \rightarrow \emptyset / \begin{bmatrix} +\text{syll} \\ +\text{str} \end{bmatrix} _ \# \#$$

Wheeler (1979) recognizes an underlying stop in some final /-n/ retaining words and points out liaisons in popular Barcelona speech that bring up the stop. Thus [bázin] (let them go) recovers a -t- when the adverbial pronoun hi is added: [bázinti] (let them go there). Wheeler, however, being hindered by his synchronic framework, cannot account for historical exceptions like /móñ/ (world) and leaves the rule essentially with the same constraints as his predecessors. He includes a condition for those Eastern Catalan dialects with /-n/ deletion in paroxytonic plurals, e.g.; /ómes/ (men).

$$\begin{bmatrix} +\text{nasal} \\ +\text{coronal} \end{bmatrix} \rightarrow \emptyset / \begin{bmatrix} +\text{syllb} \\ <-\text{stress} \end{bmatrix}_b _ \langle +c \rangle_a \#$$

condition: if a, then b.
(Wheeler 1979:274)

Wheeler also realizes that some exceptions such as origen, organ and examen must be marked as [+learned] with respect to the main rule.

One would expect that historical phonologists could have pinpointed more precisely the nature of /-n/ deletion and retention. After all, the wealth of information on Latin, the parent language, and parallel phenomena in other Romance languages should have helped Catalan linguists to clarify this problem. Unfortunately, the uncritical reliance on analogy, the all purpose crutch of language historians, has perpetuated a

series of patchy descriptions strewn with far-fetched idiosyncrasies. This fallacy originated in Fouché's study of /-n/ exceptions (1980:124 -reprint from the 1924 edition-). Fouché contended that the /-n/ retention in 3sg verb forms like /vén/ (he sells) and /respón/ (he responds) must be due to analogy with 2sg /-ns/ forms, e.g.; /vén/s/ (you sell), /respóns/ (you respond). This proposal, however, fails to account for the lack of /-n/ in /té/ and /vé/ (he has, he comes), whose 2sg also contain /-ns/ forms: /téns/, /vén/s/. Griera (1931:63) went along with Fouché's tenet, and, what is more, so did Badía Margarit (1951: 225) who acknowledged Fouché when he discussed the reasons for final /-n/ retention: "c) la -N final se mantiene también en algunas formas verbales de 3.^a persona del singular, por analogía con otras formas: PONIT>pon pón ; DONET> ant. y dial. don dóñ ; REMANET roman fumán ; parece que el inductor de estas analogías ha sido la 2.^a persona, que lleva -n: TENES tens téns , VENIS vén/s bén/s ". Since then, most studies on Catalan final /-n/ (with the exception of generative synchronic works) have appealed to either analogy (e.g.; Rasico 1982:219 and Blasco Ferrer 1984: 51-52), or have claimed that /-n/ retention verbs do not conform to the general rule (Roca-Pons 1973:186 and Duarte i Montserrat and Alsina i Keith 1984:206). The arbitrariness of the analogical explanation for exceptions is most evident when we compare two conflicting studies that rely on analogical levelling. One of them attributes the /-n/ deletion in plural paroxytones like /s̥mes/ (men) and /tér̥mes/ (boundaries) to analogy with the singular: /s̥me/, /tér̥me/ (Rasico 1982:231). Conversely, Duarte i Montserrat and Alsina i Keith (1984:207) postulate that words like /glá/ (acorn) have undergone final /-n/ deletion "gràcies al seu ús freqüent en plural, glans". Therefore, analogy is taken to act in either direction according to the linguist's fancy. Furthermore, if analogy was responsible for the elimination of /-n/ in Eastern Catalan plural paroxytones, as Rasico suggests, why did it not apply as well to plural oxytones?⁴ Also, why does /redó/ <ROTUNDU elide its final /-n/ whereas /segón/ <SEGUNDU (with a similar historical environment for -n) does not? Duarte i Montserrat and Alsina i Keith's postulation that /segón/ has not undergone /-n/ deletion because it is mainly restricted to the masculine singular in regular speech (p.207) is not even accurate on data, for both /segóna/ (fem.) and /segóns/ (masc. pl.) are common in popular speech.

We suggested above that the environment for exceptions should be either Cn# for items in 3 or nC# for

those words in 4, 5, 6, 7 and 8. Group 3 contains the blocking consonant in the actual phonetic representation of the sg. nouns. In 4 and 6 the recovery of the underlying consonant is effected through derivatives. Groups 5, 7 and 8 pose some difficulties, however. Thus in 5 /pregón/ does not yield any blocking /d/ in derivatives⁵, while in 7 and 8 the only /d/ is found in infinitives⁶. Group 10 displays /-n/ retention of words in proclitic position⁷, but items in 9 and 11 do not show any trace of consonantal blocking. Furthermore, items like /món/ < MUNDU and /segón/ < SECUNDU contrast with /redó/ < ROTUNDU and /segó/ < SECUNDU, all having an etymological -ND- cluster but yielding different results. On the other hand, verb forms like /pón/ < PONIT and /román/ < REMANET do not originate from Latin -ND- forms but retain the /-n/. Contrary to the ad hoc analogical explanations aforementioned, we posit a single rule of deletion that affected all items conforming to the intermediate historical pattern /-Vn##/. To arrive at that stage, we propose first one rule of reduction: nd> nn> n, e.g.; SECUNDU>segónno>segóno>segón>/segó/ (bran); and then one of epenthesis for the infinitive of verbs of group 8, e.g.; PÓNERE>/pónre/ >/póndre/ which spread to the 3sg and prevented the deletion of /-n/ in /pón/ and /román/. The dental stop in verbs from group 7 are etymological, e.g.; /vén/ < VENDIT. Thus groups of words which, due to their historical makeup, would have been expected to shield the fall of /-n/ with a stop did not and viceversa. Only by positing these intermediate stages can we arrive to a satisfactory explanation of the exceptions, i.e.; when the /-n/ deletion rule took place, the changes of reduction and epenthesis must have been present necessarily, i.e.; ROTUNDU had yielded |redón| and PONIT |pónd|. Also, in order to account for the /-n/ retention in words from group 9 we must postulate a late duration of the -nn- cluster in /joán/ < JOHANNES and in /nén/ < *NINNU. The original blocking element of /són/ < /síno/ < /sónno/ < SOMNU is recoverable in the forms of the verb /somiár/ (to dream). Nevertheless, there are three historical exceptions: /món/ (world), /segón/ (second) and /pregón/ (deep). These are learned words which never participated in the general reduction (cf. /segó/ (bran) also from SECUNDU, which underwent the change). To support the differentiation between learned and common words in Catalan, we may point at parallel occurrences in two neighboring languages. In Spanish /mundo/, /segundo/ and /profundo/ a /ú/ retention (instead of an /ó/) betrays these words as learned (cf. /móndo/ <

MUNDU (clean, bare) and /óndo/ < FUNDU (deep)). French /segɔ̃/ (second) contrasts with /sɔ̃/ (bran) < SECUNDU, while /mɔ̃d/ < MUNDU contrasts with /rɔ̃/ < ROTUNDU in its retention of /-d/⁸. The proposal advanced here, therefore, calls for a general rule of -n deletion of the type: (C)VØ# < (C)Vn#, e.g.; /bɔ̃/ "good" (masculine), but /bɔ̃na/ "good" (feminine). Exceptions to this rule, on the other hand, follow the conditioning environment: (C)Vn# < (C)VnC, e.g.; /ón/ (where) but /ónt#és/ (where is it?). A minor rule will assign to the lexicon a group of specialized words like /órgan/, /ozón/, etc. as [+learned]⁹. Likewise, proclitics will be marked as non-deleting, e.g.; /bɔ̃n#óme#/ but /óme#bɔ̃#/ . The following rule formalizes what has been said:

$$[\begin{smallmatrix} +\text{nas} \\ +\text{cor} \end{smallmatrix}] \longrightarrow \emptyset / [\begin{smallmatrix} +\text{syll} \end{smallmatrix}] \text{ } _ \# \begin{smallmatrix} [-\text{proclitic}] \\ [-\text{learned}] \end{smallmatrix}$$

It must be emphasized that this rule does not represent a contemporary stage of the language. This rule stands for the reconstructed period of Catalan when the deletion of /-n/ took place. Consequently, we assume that all the items that fitted the structural description Vn# underwent /-n/ deletion.

We have attempted to delineate a principled account of Catalan /-n/ deletion. In the process, two main theoretical points have surfaced: 1. Historical exceptions reflect an archaic phonetic residue caused by external factors of a conservative tendency; for example, ecclesiastical usage of some Romance words, toponym and antroponym resistance to change, etc. 2. Unwarranted analogical levelling has been used too often in historical linguistics to describe regular sound changes which can be explained otherwise by phonological rules. Specific sound changes are best studied as overall phenomena. There is no a priori reason for which verb forms should be marked as being phonologically idiosyncratic with respect to the rest of the lexicon. This is not to say that paradigms are not susceptible to phonetic analogy. They are, as the paradigmatic spread of /-d/ from the infinitives /píndre/ and /romàndre/ indicates. Nevertheless, in the case of Catalan /-n/ deletion, sound change must have applied regardless of the grammatical nature of the lexical item¹⁰.

NOTES

* An earlier version of this paper was read at the 69th Annual Meeting of the AATSP in Los Angeles on August 14, 1987.

1. This transcription is based on the Valencian dialect spoken in the mountain areas of Alicante. Nevertheless, most of the data and the phonological phenomena here discussed are common to all Catalan dialects, with the only exception of the dialect of Ribagorza on the northwest limits of the Catalan speaking area which, according to Badía (1951:225), does not undergo final /-n/ deletion. For counter-evidence see Martí i Castell (1985:265-6): camí-camíns (road-roads). These words are written in the standard orthography from a phonetic transcription of the Ribagorzan dialect of La Litera.

2. In Eastern Catalan, however, final /-n/ is deleted in all the paroxytonic plurals, although it reappears in derivatives, e.g.; /žóbe/, /žóbes/ (young sg&pl), but /žobensá/ (youngster), /žobenéza/ (youth). In some Valencian dialects, the underlying /-n/ is productive even with nouns which have no final /-n/ etymologically, e.g.; /kafé/, /kaféns/, /kafené/ (coffee, coffees, little coffee). Conversely, in the Catalan dialect of Roussillon there is a complete elision of /-n/ in both the singular and the plural, regardless of the position of the stress, e.g.; /má/, /más/ (hand, hands); /sme/, /smes/ (man, men) (Fouché 1980:167). A transitional dialect, in this respect, seems to be the one spoken in the countryside of the province of Tarragona. Not only is there /-n/ retention in paroxytones, e.g.; /somens/, /žóbens/, in "very high percentages" (Recasens Vives 1985:152), but there also exists non-etymological /-n/ insertion in the plural (as in Valencian), e.g.; /sofá/, /sofáns/ (sofa, sofas), as recorded by Recasens Vives in 33% of the cases in his fieldwork data (*ibid*). In this regard, it is worthy to mention the phonetic realization of etymological /-nt/ among speakers of some Valencian dialects, particularly in the lowlands, e.g.; /parlánt/ (talking), /realmént/ (actually). (Cf. standard /parlán/, /realmén/).

3. The /u/ < Ú retention sets off these derivatives as learned. The regular development from Latin Ú would have yielded /o/ in Catalan.

4. Among other aspects, Eastern Catalan contrasts with Valencian in the lax pronunciation of unstressed vowels, cf. [káza] (house), [sómens] (men) (Valencian); [kázə], [sóməs] (Eastern Catalan). A lax articulation of unstressed syllables must be responsible for the loss of /-n/ in plural paroxytones. The fact that many speakers produce non-etymological -n's in oxytones but never in paroxytones (e.g.; /kafé-kaféns/ but /áire-áires/ supports our observation on the influence that stress and tenseness exert on /-n/.

5. There exists however the relic form Pregonda < PROFUNDA, a toponym on the island of Minorca.

6. The -d- in the infinitive suggests an underlying -d- in other forms of the verbal paradigm. Notice that dialects with /tíndre/ (to have) for the infinitive (e.g.; Valencian), use the imperative singular form /tín/ < CVnC, whereas those Eastern Catalan dialects with /tenír/ as their infinitive exhibit an /-n/-less imperative singular form: /té/ < CVnV. None the less, all Catalan dialects, regardless of their infinitive base (/tenír/ ~ /tíndre/), have a /té/ form for the 3sg but a /tínk/ form for the 1sg of the present indicative. This vowel alternation suggests a combination of forms from both paradigms of the two infinitives. See Nonell y Mas (1895:219-224) for a philological review of this phenomenon.

7. By proclitic here, we understand not only adjectives, pronouns and adverbs, but also nouns that, as compounds, are customarily employed along with their modifiers, e.g.; /panfígl/ (figbread), /vèrjen#maria#/ (Virgin Mary).

8. In /profí/ < PROFUNDU, the retention of inter-vocalic -f- is irregular with respect to many other French words where it has been deleted. Therefore, here we may also claim the distinctiveness of this word as learned.

9. Cf. /órgue/ (a musical instrument) and /órgan/ (biology) from the common etymon ORGANU, and the minimal pair /segón/ (second) and /segó/ (bran) from SECUNDU.

10. I wish to acknowledge the comments and criticism from some of my colleagues of the Berkeley Romance Philology Group. I am especially indebted to Al Muth. My appreciation also to Maite Bernabeu from Alcoy who helped me with the data. Any errors of content and form are solely my responsibility.

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THE BILINGUAL CHILD AS A WORD MAKER: WORD FORMATION PROCESSES IN TURKISH AND DUTCH

Ludo T. Verhoeven
Tilburg University, The Netherlands

Linguistic competence in any language includes a lexicon of well-established words and a repertoire of word formation devices for extending the existing lexicon. New meanings can be expressed with forms which fit the word formation options of that particular language. Basically, two types of word formation devices can be distinguished. On the one hand, stem modification in which a single base is related to a form which is altered in some way. On the other hand, compounding in which a set of two or more independent bases are related to a form in which they are combined in some way. Anderson (1985) has noted that there is a good deal of idiosyncrasy in word formation devices in different languages, and that in any single language word formation rules are quite diverse in terms of input classes and semantic and syntactic relations involved.

In the process of language acquisition, children must learn the diversity of options for coining words in the language under consideration. In a number of studies the acquisition of word formation devices has been investigated. For such diverse languages as English (Clark 1981; Clark & Hecht 1982; Clark, Hecht & Mulford 1986), Hebrew (Berman & Sagi 1982; Walden 1982) and Turkish (Ekmekçi 1986), it was found that children at an early age start coining words in order to fill lexical gaps. Gradually, children give up some of their own coinages in favor of words already established in the lexicon of the language. Clark has claimed that at least three general principles govern the course of acquisition of word formation rules. The first principle is semantic transparency stating that known elements with one-to-one matches of meaning and form are most transparent for constructing and interpreting new words. The second principle is regularization saying that children will use the same device everywhere to mark the same meaning. The third principle is productivity predicting that those word formation devices used most often by adults in word innovations are preferred in the language for constructing new word forms.

Clark (1982, 1983) stressed the importance of cross-linguistic evidence on the structure and use of word formation devices in different types of languages. Taking a cross-linguistic point of view as a starting point, Clark & Berman (1984) compared word formation strategies in English and Hebrew. They found that English-speaking and Hebrew-speaking children acquiring a first language indeed rely on several general principles, but that such principles must gradually be modified in light of the typology of the language being learned. What is general in acquisition appears to be gradually shaped by each particular language as children learn how different options are developed in the conventional

lexicon and how to put these options to work in constructing new words. Other attempts in highlighting cross-linguistic notions in the acquisition of word formation devices have been made with reference to bilinguals. However, studies on the development of word formation rules in bilinguals are scarce. Kennedy-Jonker (1984) conducted an experimental study on the lexical innovations of two English-Dutch-speaking children at the age of 5 and 7. The children were asked to produce names for agents and instruments in the two languages in an elicitation task. Some evidence was found for the principles of productivity and regularity in English, but not in Dutch. No instances of interference of word formation rules in the two languages were reported. Olshtain (1987) studied the acquisition of word formation processes in Hebrew in intermediate and advanced second language learners. Data collection instruments consisted of production and evaluation questionnaires dealing with the definition of specific agents, instruments and places. She found that advanced learners of Hebrew were able to produce and evaluate innovations in ways that approximate native speaker responses. Both groups of learners showed a slight preference for compounding over affixation. The intermediate group, on the other hand, tended to provide less innovations and fewer existing words. Surprisingly, they showed a preference for affixation over compounding. The latter result was explained from the fact that affixation in second language classes is highly stressed. The native language influence on second language word formation was judged minimal for all learners. In the context of the European Science Foundation project on second language acquisition in migrant workers, the development of word formation processes in talking about entities was studied (Broeder, et al., in press). Deriving from a common data base for learners of Dutch, Swedish and English, it was found that noun-noun compounding was by far the most productive word formation process, modifier-head constructions being the basic patterns. There was some evidence of source language influences. Furthermore, the occurrence of binding phonemes in Dutch and Swedish resulted in an additional problem for learners of these languages. Derivational devices of word formation played only a minor role in the early learner varieties.

In the present study cross-linguistic evidence is taken into account by studying the word formation strategies in Turkish and Dutch of Turkish children in the Netherlands. These children, most of whom were born in the Netherlands, participate in a linguistic network which is quite complex. Their early language input is Turkish, while the Dutch language comes into their lives by way of Dutch playmates, television and school. By the age of six these children can be considered bilinguals whose Turkish and Dutch language systems are in a state of flux. For the present study the development of word formation strategies in spontaneous speech was followed from age 6 to age 8 in a longitudinal design. The goals of the study were:

1. To assess the development of word formation processes in Turkish and Dutch. Specifically, it will be determined to what

extent children make use of affixation and compounding devices in the two languages. A distinction is made between conventional devices which are already established in the lexicon and innovative word forms created by the child.

2. To find out what general mechanisms underlie the choice and construction of word forms in Turkish and Dutch. As such, cross-linguistic evidence for the principles of semantic transparency, productivity and regularization is aimed at.

3. To investigate to what extent the processes of lexical development in the two languages interact. Incorporation of lexemes of one language in word formation processes in the other is analyzed. Moreover, interlingual influences of word formation devices in the two languages are examined.

The Present Study

Data collection

The data were collected from a group of 40 Turkish children (20 boys and 20 girls) at two age levels: 6 and 8 years. The children were recruited from primary schools in fairly big cities in the eastern part of the Netherlands. Turkish was the mother tongue for all children. By age 6, they had been living in the Netherlands for at least two years, during which period they attended nursery school. Turkish was not taught in Kindergarten and made up only a small part of the curriculum in primary school. The parents of the children originate from small villages in central Anatolia and the Black Sea region in Turkey; in the Netherlands they all work in factories or are owners of small shops.

Informal adult-child interviews which took approximately 30 minutes were recorded in Turkish and Dutch at the start of the first grade and by the end of the second grade of primary school. In the case of Turkish, the adult interviewers were native speakers of Turkish; in the case of Dutch, they were native speakers of Dutch. The interviews were structured in a more or less standardized way. At each occasion, speech was elicited from the children by means of three different procedures: by asking for a spatial description on the basis of a picture, by asking for a description of a sequence of events on the basis of a series of pictures, and by some free interviewing between the child and the interviewer.

The recorded speech of the interviews was transcribed. In these transcriptions the contributions of the adult interviewer were also included. All instances of derivation and compounding during the interviews were marked for further analysis.

Word formation options in Turkish and Dutch

Word formation in Turkish, being an agglutinating language, highly depends on affixation. Affixes are postposed, syllabic, regular and distinct. Turkish phonology does not subsequently obscure the borders between formatives. The inflectional system is close to a one-by-one mapping of semantic elements and surface

forms.

Not only was a broad range of affixes actually instantiated in the lexicon at the time of Ottoman Turkish; thanks to the work of the Türk Dil Kurumu (Turkish Linguistic Society), many of the word formation suffixes were applied to new forms in order to reduce the number of Arabic and Persian loanwords. In addition to the revival of existing Turkish suffixes, derivational markers were taken from non-standard dialects and from other Turkic languages. According to Lewis (1967), a broad range of suffixes can be thought of as highly productive in contemporary Turkish. Examples of productive suffixes are given below.

- (1) iş (work) ---> iş-ci (worker)
- (2) çocuk (child) ---> çocuk-luk (childhood)
- (3) oku- (to read) ---> oku-yucu (reader)
- (4) ol- (to be) ---> ol-ay (fact)
- (5) kazan- (to win) ---> kazan-ç (gain)
- (6) göz (eye) ---> göz-lemek (to keep an eye on)
- (7) şeker (sugar) ---> şeker-li (sweet)
- (8) değişim- (to change) ---> değişim-ik (different)

The suffix -CI is added to singular nouns and occasionally to adjectives to denote persons who are professionally concerned with the quality expressed by the basic word (1). The suffix -LIK is used to make abstract nouns (2). There are several suffixes used to denote deverbal nouns, e.g. (3), (4) and (5). Denominal verbs are primarily formed by the addition of -LEMEK (6). Adjectives can be formed by adding a suffix to a noun (7), or to a verb stem (8).

Turkish also favors compounding (see Dede 1978). The basic syntactic structure of a nominal compound is a head noun with a possessive, preceded by a modifying noun (9). The modified noun of a nominal compound can also be derived from a verbal predicate (10). If there is an attributive relationship between two lexemes, compounding in Turkish is also possible by simple juxtaposition, such as in (11). Words indicating nationality are nouns and are therefore joined to a following noun by the same procedure (12). Adding -LI to the same word denotes a person with that nationality, while the addition of -CE results in a word denoting of the language being spoken.

- (9) yatak oda-sı (bed room-POSS > bedroom)
- (10) yüzme havuz-u (swim pool-POSS > swimming pool)
- (11) kız arkadaş (girl friend)
- (12) İngiliz öğretmen-i (english teacher-POSS > English teacher)

Word formation in Dutch is also primarily associated with affixation and compounding. However, it seems that many items which in Turkish are dealt with affixation, are in Dutch expressed by compounding, e.g. kitap-ci/boek-verkoper (book seller), kitap-luk/boeken-plank (book shelf). As was demonstrated by Booij (1977), the productivity of rules for derivation in Dutch is

restricted by phonological, morphological and syntactic conditions on the bases of these rules. Some of these conditions are rule-independent, others are rule-specific.

Unlike Turkish, Dutch does not morphologically mark nominal compounds. Dutch compounds are often characterized by additional elements not essentially associated with any of the compound words but rather with the compound structure itself. One of the phonological elements (-e-, -s-, -en-, -er-) is often inserted between the two lexemes. From a synchronic point of view these elements can only be interpreted as a sort of morphonological glue. Van den Toorn (1982) has shown that the occurrence of such binding phonemes can at least partially be motivated by phonological, syntactic and semantic constraints.

Results

Word formation processes in Turkish

In Table 1 the distribution of word formation devices of the 6- and 8-year-old Turkish children in Turkish are presented. A distinction is made between innovated and established samples of compounding and derivation.

Table 1: Compounding and derivation in Turkish as a function of age and conventionality

	6-year-olds		8-year-olds	
	innovated	established	innovated	established
Compounding	26	68	53	63
Derivation	31	87	11	170

It can be seen that at both age levels derivation is favored over compounding. There is a clear developmental trend in that the total number of word formation devices used increases as children grow older. In general, the children's word formation devices at age 8 are carried by appropriate forms to a much higher degree than at age 6. At the age of 6, about one third of the word formation devices are innovated. At the age of 8, children relatively innovated more compounds and less derivations. However, the increase in number of innovated compounds can be accounted for by a sharp increase of children's incorporation of sey (thing) in nominal compounds.

Table 2 presents the syntactic structure of the children's devices for compounding.

Table 2: Compounding processes in Turkish as a function of age and conventionality

	6-year-olds		8-year-olds	
	innovated	established	innovated	established
Noun + Noun	18	60	40	61
Verb + Noun	1	2	5	1
Adj. + Noun	7	6	-	1
Noun + Verb + Noun	-	-	8	-

It can be seen that nominal compounds outnumber other types of compounds. As was noted before, the increase of innovated nominal compounds at age 8 can be accounted for by the children's incorporation of *şey* (thing). Apparently, at that age children have fully discovered the structure of nominal compounds as a device for filling momentary lexical gaps. *Şey* occurred in nominal compounds as the filler of the modified noun (13), or as the filler of the head noun (14), and in NVN-compounds as the filler of the head noun (15).

- (13) çay *şey-i* (tea thing)
- (14) *şey* motor-u (thing motor)
- (15) *balık tutma* *şey-i* (fish catch thing)

At age 6, the general syntactic rule for constructing nominal compounds (N1 + N2-POSS) did not cause great problems. The absence of the possessive marker was usually motivated in innovations signalling a close attributive relationship between the modified noun and the head noun, such as in oyuncak tavuk (play duck). In some cases the use of the possessive was overgeneralized, such as in oyuncak bıçakçı-1 (play knife). Only with reference to nationalities the general rule for making compounds posed a problem for children in that the possessive marker was almost never used, such as in Türk çocuk (Turkish child). However, at age 8 the non-use of the possessive marker was much more general. It occurred in 14 percent of all nominal compounds observed. It can tentatively be proposed that this deletion of the possessive marker is due to the children's process of second language acquisition. It will be remembered that the basic pattern for compounding in Dutch is the simple juxtaposition of two nouns.

Incidentally, there were cases in which compounding seemed to be avoided by the children. In cases where the target language would require a compound, some children constructed a nominal phrase (16), or added binding suffixes such as *-DEn* (17) and *-lI* (18) to the modified noun signalling an attributive relationship to the head noun.

- (16) *kadın-ın bisiklet-i* (ladies' bicycle)
- (17) *oyuncak-tan araba* (play-ABL car)
- (18) *güldürüş-lü film* (laughter-with film)

In some cases, children incorporated Dutch lexemes in nominal compounds either as the head noun (19), or the modified noun (20).

- (19) *kus staart-1* (bird tail-POSS)
- (20) *vogel ev-i* (bird house-POSS)

Table 3 presents the distribution of the main derivational markers expressed by the children in Turkish. It can be seen that at both age levels a broad variety of derivational markers is used. Furthermore, it turns out that the number of innovations decreases

as the children grow older.

Table 3: Derivational processes in Turkish as a function of age and conventionality.

	6-year-olds		8-year-olds	
	innovated	established	innovated	established
-cI	4	7	5	16
-(cI)lIk	20	17	1	60
-lE(§)mEk	-	6	1	31
-lI	-	19	3	33
-c	-	-	-	4
-cE	5	17	1	13
-gil	2	21	-	13

The markers ci, -lik, -le(s)mEk, -lI, -c and -cE displayed by the children all turn out to be productive ones in Turkish. It is remarkable that especially the very productive markers -cI and -(cI)lIk quite often occur in children's innovations. The suffix -cI is innovated in cases in which some kind of agency is to be expressed, such as in karate-ci (someone who does karate) and taksi-ci (taxi driver). The suffix is overgeneralized in nouns which already refer to people of various occupations, e.g. öğretmen-ci (teacher-AGENT). At the age of 6, -cI is also frequently used as part of the compound suffix -cIlIk denoting some kind of occupation in the context of play (21). Again, the suffix is also overgeneralized in connection with nouns which already denote the function of agent (22).

(21) ev-ci-lik oynamak (house-AGENT-NOUN play > to play housekeeping)
(22) komşu-cu-luk oynamak (neighbor-AGENT-NOUN play > to play neighbors)

In deriving adjectives, children frequently use -lI. Incidentally, this suffix is overgeneralized in some cases, such as temiz-li (clean-ADJ) and gülünclü (comic-ADJ). The formation of verbs by means of -lE(§)mEk frequently occurs at age 8. The suffix -cE is incidentally used to modify adjectives, e.g. güzel-ce (quite good) or to build nouns from verbs, e.g. saklanma-ca (hide-NOUN hide-and-seek). At both age levels the children frequently used the suffix -gil denoting 'family of'. It is usually attached to nouns expressing relatives, e.g. annem-gil my mother's family). In some cases the children used the suffix in combination with neutral persons, such as in adam-gil (the man's family).

In general, the children had trouble in attaching the right suffixes to nouns denoting nationalities. The suffixes expressing 'belonging to place' (-lI) and 'language being spoken' (-cE) were quite often absent.

In several cases, Turkish suffixes were freely attached to

Dutch lexemes. Especially the suffix **-ci** was frequently used, as in patat-ci (seller of potato chips) and ijs-ci (seller of icecream). Dutch verbal material was usually encountered as Dutch infinitives followed by one of the Turkish auxiliaries yapmak (to do) or etmek (semantically neutral). Examples are schrijven yapmak (to write) and verhaaltje lezen etmek (to read a story). However, a broad range of varieties was used to express Dutch verbs in Turkish. In (23) the different expressions for the Dutch game 'tikkertje spelen' (to play tag) as found in our data are given.

(23) **tikken** yapmak/etmek (touch-**INF** + Turkish AUX)
tikkie yapmak ('tikkie' is often vocalized during play)
tikker-ci yapmak (touch-**AGENT**-AGENT to do)
tikker-cilik yapmak (touch-**AGENT**-AGENT-NOUN to do)
tikken-lemek (touch-**INF**-INF)

Word formation processes in Dutch

Table 4 presents the distribution of word formation devices of the Turkish children in Dutch.

Table 4: Compounding and derivation in Dutch as a function of age and conventionality

	6-year-olds		8-year-olds	
	innovated	established	innovated	established
Compounding	64	118	31	143
Derivation	1	8	3	49

It can be seen that compounding is favored over derivation. Though children tend to make more derivations as they grow older, the number of derivations is relatively small at both age levels. Innovated derivations are almost absent. With regard to compounding it can be seen that the total number of compounds is about the same at the two age levels. However, the proportion of innovated compounds sharply decreases with the children's progression of age. Apparently, as they get more proficient, children give up their innovations in favor of conventional expressions.

In Table 5 the syntactic distribution of compounds in Dutch is presented as a function of age and conventionality. It can be seen that nominal compounding is by far the commonest device as regards both conventional words and the children's innovations.

There is some evidence of first language influence in Dutch compounding processes in the data. First of all, in several cases of nominal compounding children left out the binding phoneme when it was required. The effect is strongest in the youngest group. At age 6, 14 percent of the binding of two nouns caused difficulties; at age 8, this percentage was only 6. However, it should be remembered that the absence of a binding phoneme is not only the case in Turkish; it is also the more basic pattern in Dutch compounds (Van Santen 1984).

Table 5: Compounding processes in Dutch as a function of age and conventionality

	6-year-olds	8-year-olds		
	innovated	established	innovated	established
Noun + Noun	41	77	18	96
Verb + Noun	10	31	6	40
Adjective + Noun	7	5	3	5
Noun + Verb	2	-	1	1
Verb + Verb	1	-	-	-
Noun + Noun + Noun	-	5	1	1
Noun + Verb + Noun	2	-	1	-
Adj. + Noun + Noun	1	-	-	-
Verb + Noun + Noun	-	-	1	-

Moreover, there were some cases in which the insertion of binding phonemes was overgeneralized, such as in (24).

(24) *speelgoet-e-winkel* (toy shop); target variety:
speelgoedwinkel

Second, in 'verb+noun-compounds' the 6-year-old children generally used the infinitive form of the verb which is required in Turkish instead of a verb root which is required in Dutch, see (25).

(25) *slapen-deken* (sleep-INF-blanket); target variety: *slaapzak*

Third, children often used circumlocutions in cases where standard Dutch requires compounding. It is interesting to note that at age 6 many such circumlocutions showed the underlying syntactic structure of Turkish, such as in (26) and (27). Apparently, children take the compounding rules of Turkish as a starting point in establishing Dutch compounds.

(26) *winkel-zijn-tafel* (shop-POSS-table); target variety: *toonbank*
 (counter)
 (27) *fiets-zijn-sleutel* (bicycle-POSS-key); target variety:
fietssleutel (bicycle spanner)

In Table 6 the distribution of the main derivational markers used by the children in Dutch is presented. It can be seen that at age 6 the number of derivations is extremely small. The only innovation is snell-ling (fast > gears). There is some evidence that the established derivations displayed are learned as lexicalized patterns. For instance, the pattern gevaar-lij (danger-ADJ) was produced as vaar-lij, though vaar is not a meaningful lexeme in Dutch. At age 8, the patterns of derivation in Dutch are a little more diverse. By this age level, children seem to understand the basic process of derivation in Dutch, as is evidenced from such cases as boks-ing (box-INF) derived from the

verb boksen (to bump).

Table 6: Derivational processes in Dutch as a function of age and conventionality

	6-year-olds		8-year-olds	
	innovated	established	innovated	established
on-	-	2	-	3
-aar	-	-	-	1
-er	-	-	3	18
-ier	-	-	-	1
-es	-	-	-	1
-in	-	3	-	6
-erij	-	-	-	2
-heid	-	-	-	1
-ing	1	-	-	4
-te	-	1	-	-
-ig	-	-	-	3
-lijk	-	1	-	6
-(t)je	-	1	-	3

The suffix -er, being a frequently used and highly productive marker of agency in Dutch, occurs most and is also innovated in three derivational patterns. 8-year-old children have problems using the suffixes which indicate female agentive. Very occasionally, the suffixes -es and -in are used. However, in many cases the children avoided suffixation in favor of compounding (28) or circumlocution (29). In both examples Dutch requires the suffix -ster.

(28) *ijs-verkoop-mevrouw* (icecream-sell-lady)

(29) *een fiets-er met een meisje die fietst* (a bicycle-AGENT with a girl riding a bicycle)

Besides the patterns of suffixation in Table 6, there were some innovative instances of zero-derivation, e.g. hand-stant-en (hand-stand-INF > to stand on ones hands), vierkant-en (square-INF > to make a square).

Conclusions and discussion

The present study gives evidence for lexical creativity in the speech of Turkish children in the Netherlands. It is clear that these children use their knowledge of their first and second language to create new words. Their lexical innovations seem to be primarily caused by momentary gaps in lexical knowledge.

The productivity of word formation devices in Turkish and Dutch is strikingly different. Application of rules for compounding and suffixation in Turkish was highly successful. Lexical innovations were not restricted to the combination of Turkish lexemes: Dutch lexemes were properly incorporated in Turkish word formation devices as well. The application of word

formation devices in Dutch, especially that of derivation devices, was much more problematic. However, in both languages the children's word formation capacity clearly improved in the age range from 6 to 8. The difference in productivity of word formation devices in the two languages at different age levels can at least partly be explained from the difference in size of the lexicons children have at their disposal. In an earlier study (Verhoeven 1988) it was found that in the age range from 6 to 8 Turkish children make fair progress in their lexical knowledge in Turkish and Dutch, their lexical knowledge in Turkish being significantly ahead all the time.

There is evidence that the principles underlying the choice and construction of word formation principles, as earlier formulated by Clark, underlie the children's word formation processes in Turkish and Dutch. First, the principle of semantic coherence seem to apply. In both languages children prefer devices which are close to a one-to-one mapping of meaning and form. In Turkish, displaying an inflectional system which is highly regular, children prefer affixation over compounding. On the other hand, in Dutch with its irregular patterns of derivation children favor compounding over derivation. Second, there is some evidence for the principle of regularization. In either language we found clear instances of innovations showing that children attended to the semantic coherence of the new forms expressed, and regularized the resulting paradigms. The incorporation of sey (thing) in Turkish compounds and the non-use of binding phonemes in Dutch nominal compounds are cases in point. Finally, there is evidence for the principle of productivity. Lexical devices in both Turkish and Dutch were acquired in a predictable order with productive forms mastered earlier. This principle applied for the children's innovations as well as for their more established devices.

In addition, there is some minor evidence for interlingual influences in the word formation processes displayed by the children. In Turkish there was some interlingual influence at a more advanced stage of compounding when children got more proficient in coining words in Dutch. In Dutch there was some first language influence in the initial stage of acquisition.

In conclusion, bilingual children seem to rely on several general principles as they learn to use word formation devices, while they gradually modify such principles in accordance to the structure of the languages under consideration. In either language children have to learn what devices are available and how they can be used to construct new words. In doing so some minor interlingual influences can be expected.

Acknowledgements

This paper was prepared thanks to the support of the Netherlands Foundation for the Advancement of Pure Research (Z.W.O.). I am grateful to Karl Zimmer for his worthwhile comments on an earlier version of the manuscript.

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PARASESSION
ON
GRAMMATICALIZATION



Semantic substance vs. contrast in the development
of grammatical meaning

Joan L. Bybee
SUNY at Buffalo

Studies of grammaticalization over the years have emphasized the following observation: (i) Lexical material can develop into grammatical material, which implies that lexical meaning gradually evolves into grammatical meaning.* More recent cross-linguistic studies have added to this a second observation: (ii) very similar paths of development of lexical meaning into grammatical meaning may be identified in different languages, or in the same language at different periods (e.g. Givón 1975, Heine and Reh 1984, Bybee and Pagliuca 1985, 1987, and others). Elaborating the second point, similarities may be found both in the lexical sources for grammatical morphemes and in the grammatical meanings that eventually develop. These cross-linguistic similarities in paths of development are similarities in semantic substance, and not attributable solely to structural or typological similarities or to common mechanisms of change.

In this paper, I would like to examine the implications of these two observations for our understanding of grammatical meaning as a general cognitive or psychological phenomenon.

1. Grammatical meaning as opposition.

First, let us consider what has been the received view of grammatical meaning for most of this century (that is, for those who have considered it worth studying at all) -- the structuralist view that grammatical morphemes (to be called 'grams' in this paper) are assigned a value by the oppositions that they enter into. This view is espoused by Jakobson 1957, Diver 1964, Kirsner 1969, Waugh 1975 and Reid 1988, to name but a few. In this view, a gram does not have an inherent meaning of its own, but rather has its value defined as a member of a set of mutually exclusive grams.

This opposition hypothesis of grammatical meaning is largely incompatible with the two facts about grammaticalization mentioned above. First, if lexical content becomes grammatical content, then it follows that grams have inherent semantic content of their own, not just content assigned to them by the system or the grams they contrast with. Second, since there is a consistent relationship between lexical and grammatical meaning across languages and across time, grammatical meaning is determined more by its diachronic source than by the other grams in the language, since these may be very different from language to language.

Take as an example Diver's (1964) analysis of the Latin Nominative, Accusative and Dative cases, which form in his words 'the system of agency' of the Latin noun. In his analysis, the Nominative case is the marker of the Agent (the performer of the

action), the Accusative indicates the Patient (that which undergoes the action), and the Dative is the 'residual' member, indicating Non-Agent-Non-Patient. The meaning of the Dative, then, is defined by what it does not express; it has meaning only because it contrasts with the Nominative and Accusative.

According to Diver, the more particular relations expressed by the Dative are "deduced from the complex of lexical and syntactic meanings present" (1964:181). This accounts for the wide range of relations signalled by the Dative case. This analysis is not, by the way, supported by the formal marking of the cases, since if any one of them is 'unmarked' it is the Nominative, and certainly not the Dative.

From the point of view of grammaticalization theory, it is ironic that Diver chose the Dative as the 'residual' member of the agency system, since the dative case is usually the least grammaticalized member of this trio. That is, the dative is likely to have retained more of its lexical meaning than the nominative or accusative; it is more likely to be expressed as an oblique in contrast to the more grammaticalized core relations, and it is the least likely to have zero expression.

Numerous examples show a diachronic relation between the dative case and a directional adposition meaning 'towards', and many languages use the same marker for allative as for dative. For instance, in a forthcoming study by Svorou of locative adpositions in 26 languages, she finds eleven languages where the allative marker is also used to mark the recipient or dative. Even though the dative might convey different meanings in different contexts, the particular meanings covered by the dative are cross-linguistically predictable. These cross-linguistic relations would be unexplainable if the dative and other cases were semantically empty and have value only within a system of contrasts.

2. Against the notion of maximal contrast.

In the structuralist ideal, the system is reputed to have a certain economy. Like vowels spread out on the periphery of the vowel space, it is believed that grams should be distributed to make maximum contrasts and that the job of the linguist is to discover the dimensions along which these maximum contrasts are made. Even if we reject the idea that grams are imbued with meaning by the system of oppositions, it seems that most linguists still accept the idea that the essence of meaning (especially grammatical meaning) is to be found in the semantic contrasts available in the system. While I agree that contrast does play some role in communication, I would like to argue that the understanding of grammatical meaning does not rest entirely or even primarily on the identification of possible contrasts. A similar argument can be made in phonology: distinctive features were originally designed to express phonemic oppositions or capture contrasts. However, they often fail to offer good descriptions or explanations of the behavior of sounds in context

or across time, precisely because they concentrate only on the contrasting properties of sounds. (E.g. Vennemann's 1972 argument that a purely redundant articulatory feature of certain consonants -- that the back of the tongue is low (i.e. for dentals) has a lowering effect on preceding vowels.)

If grams made maximal use of the conceptual space in order to express contrast, then we would not expect grams in the same contrast set to ever be interchangeable or to overlap in meaning. On the other hand, if grammatical meaning is inherent to a gram, deriving from the lexical source of the gram, and if grams develop independently of one another, then we might expect overlaps in meaning, with fine or subtle distinctions between grams in some cases rather than maximal contrasts. This would occur particularly in cases where a younger gram is developing a meaning similar to that expressed by an older gram.

Examples of such a situation are found in present day Dutch and German, where the compound Perfect (formed with an auxiliary plus a Past Participle) is used in many cases interchangeably with the older simple Past. Differences of meaning or implication can be found in certain cases (for example in Dutch [de Vuyst 1985]), but these contrasts do not define the primary content of the grams in question. Another example is the difference between the Simple Present and the Progressive in English. In many cases, this distinction is quite clearly an aspectual one of habitual or generic vs. progressive, but in other cases the contrast in minimal pairs of sentences is quite subtle and not classifiable as an aspectual difference.

Hatcher's (1952) analysis of the Progressive is interesting in this regard. She concentrates on the most difficult cases, the ones in which both the Present and the Progressive can be used in reference to 'a single present occurrence'. That is, she is not concerned with the Simple Present as habitual, but rather as it represents an ongoing situation, as in (1). Her goal is to discover the meaning of the Present Progressive as it differs from the Simple Present, but she does not approach this, as so many others do, by examining pairs of sentences that differ only in this grammatical distinction. Rather she begins by examining the linguistic contexts and more particularly the verbs with which the Simple Present would be 'normal', as in (1a), which she characterizes as displaying no overt activity, or in (1b), which are performative contexts, in which "the activity predicated has no existence apart from the predication, but is identical to it" (p. 267).

(1a) It stings. It tickles. It smarts. My new shoes hurt me.
 This bores me. This worries me.
 My back aches. My nose itches.
 I smell something funny. I see it. I hear it.
 I remember her. Yes, I understand. I love your hat!

(1b) I insist that she will come. I tell you I won't.

I give my consent. I refuse. I deny it. I bet five dollars.

She then turns to contexts in which the Progressive would be 'normal', as in (2a), which she characterizes as describing overt activities, and (2b), which are non-overt, but indicate development by degrees.

(2a) She is washing dishes, sweeping the floor, tending the furnace.
I'm slipping. I'm losing hold.
It's falling to pieces. It's boiling over. It's spilling.
Your teeth are chattering. Your nose is running.

(2b) I'm getting hot. One of my headaches is coming on.
He is learning his lesson.
It is becoming, getting, growing late.
This is driving me nuts, getting us nowhere.

She concludes that the 'normal' use of the Progressive is for overt activities or states developing by degrees. She further notes that all of these cases contain one of the following three ideas or psychological nuances (p. 271):

(3) (i) the subject is affected by his activity,
(ii) the subject is busy or engrossed in his activity,
(iii) the subject is accomplishing something by his activity.

Thus if the Progressive is used in a context where it is not 'normal', that is, for a non-overt and non-developing activity, then its effect is to convey the involvement of the subject in one of the ways listed in (3). Consider the contrasting examples in (4).

(4) Yes, I see the picture.	Imagine: at last I'm seeing the Mona Lisa.
I consider that unfair.	I'm considering the matter carefully.
I wonder if it will rain.	I'm wondering just what is the right way to do this.
Stop, you make me nervous.	Don't you see you're only making her nervous?

Hatcher's analysis is quite consistent with grammaticalization theory and the known history of the development of the Progressive. Since the Simple Present originally was a present tense, which included contexts now covered by the Progressive, she explicitly argues that it expresses no aspectual meaning at all. In her view, "only the progressive has a positive and unified emphasis; the simple form is essentially neutral in its aspectual implications and therefore may have, or may seem to

have, different emphases according to the particular type of predication in which it appears" (p. 259).

Hatcher's analysis is compatible with grammaticalization theory in other ways as well: the meaning that she proposes for the Progressive may be argued to follow directly from the compositional meaning of its source construction. Unfortunately, the historical source of the modern Progressive is not unequivocably decidable from the available evidence, but one likely source involves the copula plus a locative adposition and the *-ing* form of the verb ('He is on hunting').¹ A locative source for progressive, which is the most common cross-linguistically, would yield an original meaning of "the subject is located in or at an activity". The sense of location in an activity is retained in the feeling that the subject is especially involved in the activity, and in the fact that the Progressive is the 'normal' way to describe present occurrences of overt activities -- activities whose location is overt.

Note further that cases where the distinction between the meaning of the Simple Present and Progressive is subtle are also predicted by grammaticalization theory. Thus where the Progressive has extended to take non-animate subjects much of its original sense is lost. Hatcher notes the examples in (5).

(5) Your slip shows.	Your slip is showing.
My nose itches.	My nose is bothering me.

It is interesting to compare Hatcher's approach to a more recent but more typically structuralist one, that of Goldsmith and Woisetschlaeger 1982, who are also searching for the meaning of the English Progressive in the same types of cases that Hatcher examines. They proceed by examining minimal pairs of sentences contrasting the Progressive with the Present. They propose that the Progressive describes "what things happen in the world" (a phenomenal description), while the Present describes "how the world is made that such things may happen in it" (a structural description) (p. 80). It's not my goal to take issue with this characterization. On one interpretation it could be said to be compatible with Hatcher's analysis. What is of interest here is the view that the authors take of the distinction they propose. They say:

In fact, it is the fairly abstract nature of this particular semantic distinction that makes it of interest to us, for if the analysis proposed here is correct, then we have learned something directly about the conceptual distinctions a speaker of English uses in every sentence uttered. (p. 79)

This passage emphasizes contrast, or the distinction made between the two grammatical forms, while Hatcher emphasizes the contribution made by the positive or non-zero form. Note that Goldsmith and Woisetschlaeger have given a 'meaning' to both the

Simple Present and the Progressive. The meaning they assign to the Simple Present, however, is in a sense a default meaning, since it signals 'the way the world is'. (Cf. Gerhardt and Savasir 1986 for a similar analysis of the use of the Simple Present in child language.)

One implication of this theoretical difference can be seen in Goldsmith and Woisetschlaeger's comments about the Progressive in another language, Spanish. Spanish Progressives do not have quite the same distribution as English Progressives², but they seem to assume that the Present and Progressive in Spanish are expressing the same contrast as in English, and thus ask "Which exhibits the unmarked state, then, English or Spanish?" (p. 88).

Their view seems to be that this 'metaphysical' distinction expressed by the English Present vs. Progressive is so basic and important that it "should be embedded within a more general theory of semantic contrasts which predicts which semantic domains a language may choose to incorporate under a single syntactic umbrella." (p. 89). This theory presumably also predicts that there is an unmarked way to express particular contrasts, but that some languages show deviations from it.

It is certainly true that we as speakers learn and know these grammatical meanings and use them (some of us more artfully than others) but that does not necessarily mean that each contrast represents a major cognitive distinction, for if it did, it would be very difficult to explain why one of these grams can take over the functions of the other, effectively obliterating what is claimed to be a very important conceptual distinction. For this reason, it seems preferable to view grammatical meaning as substance, and to concentrate our studies on the content of a gram, rather than focussing on the contrasts or distinctions that speakers supposedly have to make. Thus from a diachronic perspective, we would have to view the difference between the English and the Spanish Progressive as one of degree of development. The two constructions arise from very similar sources (the Spanish auxiliary estar is the verb used for location, earlier meaning 'to stand' in Latin), but the Spanish one has not extended its domain as much as the English one has. Whatever contrasts each of these Progressives is making at the moment is a function of how far their grammatical meaning has developed.

3. The role of contrast in grammaticalization.

I have been arguing that the notion of opposition or contrast is given too much weight in structuralist thinking. It is important to look at the real empirical evidence for the role of contrast, so that it may be put into perspective.

First, it is true that when we use one form we are not using the other and this is a choice that speakers are free to make. However, it's more likely that this choice is made for the positive content the form expresses rather than for what it does not express. Note further that contrasts are not always

available; certain grams 'go' with certain lexical items. Thus if I say "Mary knows my address" it is hardly because I chose not to say "Mary is knowing my address".

Second, there is a way in which we may consider the meaning of one gram to affect the meaning of another. A developing gram surely must constrict the domain of application of existing grams of similar meaning, for every time it is used another gram is not. This raises the very interesting question of whether or not the development of one gram may imbue another gram with meaning. In most cases, it appears that this does not occur. For instance, as will develops as a marker of prediction, it takes over many of the environments in which shall expresses prediction, in particular, all except those with first person subjects. The result for British English is that shall expresses obligation in formal styles in all persons, but expresses prediction only in first person. However, no new meaning is accrued in the process; all the meanings that shall has now it had before will developed, only now its usage is curtailed. That is, only the source meaning and meanings derivable from it continue to be operative, and some of these may be lost if taken over by another form.

The cases in which a new gram contrasts with zero, however, are more interesting and more problematic. The English Progressive vs. Simple Present is such a case. Clearly a Simple Present has a different meaning now than it did in Old English. In Old English, a sentence such as "The bird flies" could be interpreted as a present occurrence in progress, as an habitual, as a generic statement or even as a future. Its present-day interpretation is much more restricted than this; with certain verbs (such as 'fly') only the habitual or generic interpretations are possible. We cannot say, however, that the development of the Progressive has imbued the Present with habitual or generic meaning, since that meaning was always possible. Nor can we say that the Present is lacking in meaning, since it does exclude certain interpretations, namely just those that the Progressive (or Future) express. But it is certainly worth noting that the particular meaning that the Present conveys is a default meaning in the sense that it is derived from the speakers' knowledge of the world together with the linguistic context. Note that this description of the way that the meaning of zeroes arises predicts that zeroes will have just the sort of default meaning that they do. The zero expression of the singular of nouns comes about through the development of a plural marker where plurality needs to be explicitly expressed. This imbues the zero with singular meaning only because most nouns are commonly conceptualized and referred to in the singular, so that no mark for plural implies the default, or singular case.

A new locution develops because people want to say something over and above what the default case signals (Garcia 1987), not because they want to express a new contrast. The examples in (6), which might be paraphrases of the meaning of the progressive in early stages of development, are intended to

illustrate this point.

(6) She is busy reading.
He is engrossed in gardening.
They are in the process of building a table.

These expressions are rich in content: they describe a volitional agent involved in an activity. But these expressions do not contrast with the Simple Present, they say something in addition to what the Simple Present says. In fact, they are expressed in the Simple Present. It is only as the Progressive locution grows in frequency that it becomes the normal way of talking about certain ongoing activities. The Simple Present, however, remains the normal way of talking about habitual and generic acts and states. A contrast develops as a byproduct of the grammaticalization of the Progressive, but even so, the Progressive is encoding an explicit meaning, not just signalling a contrast.

4. One meaning or two?

One goal of the approach to grammatical meaning that I have been criticizing (i.e. the structuralist tradition of Jakobson 1957, Diver 1964, etc.) is to find a single meaning for each grammatical morpheme. Waugh 1975 calls this the principle of Formal Determinism and following Jakobson, says

it is assumed that differences of forms (sic) exist to differentiate meaning categories while identity of form (normally) implies identity of meaning. (p. 438)

The second part of this statement (that identity of form implies identity of meaning) is not in principle incompatible with the idea that grammatical morphemes have semantic substance. In fact, if the meaning of a gram continues its previous lexical meaning, it could very well have a single meaning for all of its uses. On the other hand, the principle cannot be rigidly adhered to for in the later stages of grammaticalization, the distribution and meaning of grams may grow complex. I will argue in the following that this complexity arises from the interaction of the semantic substance of a gram with its contexts of use, as well as from the interaction of one gram with other developing grams.

First, let us consider two examples of cases in which a single sense is sufficient to explain all of the uses of a gram, beginning with the case of be going to in English. Coates 1983 analyzes be going to as having two meanings, a root meaning of 'intention' and an epistemic meaning of 'prediction'. She draws the following examples from her corpus (p. 198):

(7a) Intention: I'm going to draw this ... so that he can have a full picture.
(7b) Prediction: We're going to have a new mum. Our dad says we're going to have a new mummy.

While there is no denying that these utterances express intention and prediction respectively, it does not follow that these are the two meanings of be going to or that be going to is polysemous. It is possible to propose a sense of be going to that makes it appropriate to both of these uses -- the statement of intention and the statement of prediction. This sense is very close to the original meaning of the construction. If we propose (as in Bybee and Pagliuca 1987) that be going to means that the subject is 'on a path moving towards a goal' and allow that the 'path', 'movement' and 'goal' need not be physical or spatial, then all of the uses can be explained. The apparent polysemy is due to the context. With a first person subject, the speaker is stating that s/he is 'on a path moving towards a goal', and this may be a statement of intention if the situation is something the speaker has control over (as in (7a)). The resolve implicit in statements of intention is signalled by the Progressive aspect of be going to which indicates that the subject is already on the path.

If the subject has no control over the situation, and if the speaker states that the subject is on a path moving towards a goal, it means that the speaker is predicting the outcome situation (as in (7b)). The comparison of be going to with will shows that be going to implies that there are already present indications the prediction will come true (Wekker 1976). Again, this is explained by the fact that be going to signals that the subject is already on the path towards the goal.

A similar analysis is possible for can which is sometimes thought to have three meanings in Modern English -- ability, permission and root possibility (again see Coates 1983). Can earlier meant 'know', and with a verbal complement, 'know how to'. It has undergone a steady generalization of meaning over the last eight hundred years, which can be schematized as in (8), which shows that generalization corresponds to the loss of specific components of its meaning:

(8) The sense of can goes through the following stages:

- (i) mental enabling conditions exist in the agent
- (ii) enabling conditions exist in the agent
- (iii) enabling conditions exist
 - for the completion of the main predicate situation

First, the enabling conditions reside entirely in the mental capacity of the agent (as in (i)), but since most activities involve both a mental and physical component, can later includes the physical capacities of the agent, and the sense is as in (ii), where the restriction that the capacities be mental is lost. The ability of an agent to perform or complete a certain predication does not in many cases reside entirely in the agent, for often external conditions enable or disenable the agent. Thus in (9) the nature of the enabling conditions depends to a large extent on

the properties of the horse and the sonata.

(9) I can ride that horse.
I can play that sonata.

So in the third stage, can includes all types of enabling conditions, and displays the sense that is usually labeled 'root possibility'.

Thus modern can has a variety of interpretations depending on the context.

(10) mental ability: I can read German.
physical ability: I can swim a mile.
root possibility: This word can be used in many contexts.
permission: I can take books out for two weeks.
I can vote in the Democratic Primary.

Note that 'permission', which is regarded as a root sense since permission is deontic, is a contextual interpretation of the more general root possibility sense. The evidence for this is that the permission use of can developed only after the root possibility sense developed. One use of can is in asking and granting permission, as in (11), but this is a use and does not mean that 'permission' is a specific sense of can.

(11) Mommy, can I have a cookie?
You can come in now.

Attempts to reduce the uses of a gram to one basic meaning can, however, be carried too far. Such is the case when, in an attempt to put all the uses of a gram under a single umbrella, the postulated sense must become so general and abstract that it cannot contain the specific components of meaning that are available in certain contexts. A good example of this problem is the 'remoteness' analysis of the past tense in languages which use their Past Tense form in hypothetical or counterfactual if-clauses. It has been suggested by Steele 1975 and Langacker 1978 that the meaning of Past Tense in languages such as English, in which Past is used in hypothetical protases, is something like 'remote from present reality' rather than 'preceding the moment of speech'. While this proposal certainly takes care of the if-clauses, it leaves a problem for the more normal use of the Past Tense, because it cannot explain why in main clauses with no counter-indications in the context, the default reading of Past Tense marking is the more specific one of 'preceding the moment of speech'. In this case, then, a single abstract meaning is not sufficient, unless it could be shown that certain components of the 'past' sense are neutralized in the context of conditional sentences.

5. Complex sense structures.

It is important to both synchronic and diachronic theory to understand what types of relations among senses are possible, and ultimately how they arise. In this final section, I will consider the development of English may to illustrate the effect of use on meaning, as well as the effect of a developing gram on existing ones.

May earlier signalled ability in the sense of physical strength or might, and it gradually generalized to root possibility, including permission, by the early Middle English period. Its development was quite comparable with the development of can, as it went through the stages shown in (12).

(12) The sense of may goes through the following stages:

- (i) physical enabling conditions exist in the agent
- (ii) enabling conditions exist in the agent
- (iii) enabling conditions exist
 - for the completion of the main predicate situation

By the beginning of the Middle English period, may had achieved stage (iii), and was roughly comparable to Modern English can; that is, it signalled root possibility. The next development for may, however, goes beyond Modern can: it is the development of an epistemic sense, as shown in the examples in (13) from Coates 1983:132-3.

(13) I may be a few minutes late, but I don't know.
 She's not of the most helpful variety. I don't know. You may hit it off.
 I may have put them down on the table. They're not in the door.

The difference between root and epistemic possibility may be seen by attempting to substitute can in these examples. May is still sometimes used for root possibility, typically only in writing, as in the following examples (where can would be an appropriate substitute):

(14) I am afraid this is the bank's final word. I tell you this so that you may make arrangements elsewhere if you are able to. (Coates 1983:132)

The difference between root and epistemic possibility may be seen by attempting to substitute 'can' in these examples.

The epistemic sense of may is characterizable as in (15):

(15) enabling conditions exist for the truth of the whole proposition

We are still dealing with the sense of 'enabling conditions' but their domain of application has shifted to a different level. Rather than applying inside the proposition affecting the relation between subject and predicate, they now apply to the whole proposition. Such a change, then, is not a simple generalization of meaning, as the changes in (12) appear to be. In the following I will argue that generalization is involved, but in addition we must recognize another mechanism of semantic change.

One mechanism of change from agent-oriented modality to epistemic, as pointed out in Traugott 1987, is inference or conversational implicature. The meaning of an utterance is taken to be not just what the utterance literally asserts, but also what is pragmatically implied by it. For instance, in some cases, a sentence with a modal of root possibility implies the epistemic. In a context in which I am estimating my arrival time, (16) implies (17):

(16) It can take me up to four hours to get there.
(17) It may take me up to four hours to get there.

We can also find many examples in older forms of English in which the use of may in its root sense implies the epistemic sense. Consider (18) from Sir Gawain and the Green Knight (l. 1209).³

(18) '3e ar a sleper ynsly3e, that mon may slyde hider;'
'You are so unwary a sleeper that someone can sneak in here;'

I have translated may with modern can to convey the root possibility reading. Note that, as shown in (19), the root possibility reading implies the epistemic reading of the sentence, so that it could be argued that (18) can have either sense.

(19) 'someone can sneak in here' implies
'someone may sneak in here'

In (20), the first use of may may be either root or epistemic (and thus may be translated into current English as either can or may), but the second occurrence, with the negative, is only root, and can only take can in present day English.

(20) For mon may hyden his harmes, bot vnhap ne may hit.
(l. 2511)
For a man may/can hide his misfortunes,
but he cannot undo them.

Again, the first clause shows the implication (21).

(21) 'a man can hide his misfortunes' implies
'a man may hide his misfortunes'

About one-third of the examples of may in Gawain can be

interpreted as either root or epistemic possibility; the rest are unambiguously root, like the negative clause above, and (22).

(22) Make we mery quyl we may and mynne vpon joye, (line 1681)
Let us make merry while we can, and think of joyful things,

For the lur may mon lach when-so mon lykez. (line 1682)
For a man can take sorrow whenever he likes.

The examples of root possibility include some indicating permission:

(23) 3e may lach quen yow lyst... (line 1502)
You may take (a kiss) when you please...

And some indicating ability:

(24) A! mon, how may thou slepe, this morning is so clere?
(line 1746)
Oh, how can you sleep, the morning is so bright?

In addition, there is at least one example of epistemic possibility, where a root reading is not possible:

(25) Hit may be such (that) hit is the better,
and 3e me breue wolde
Where 3e wan this ilk wele bi wytte of yorseluen.
(line 1393-4)
It might be better if you would tell me
Where you won such wealth by your own wits.

This means that in Middle English, may spans the semantic range that includes all of root possibility, and in addition epistemic possibility. There are contexts in which only the root reading is intended, and a few contexts (even at this stage) where only the epistemic reading is possible, but there are more in which both readings are possible, and in fact, the root reading implies the epistemic one. In order to understand how the epistemic reading becomes prominent, we must suppose that the hearer takes may to 'mean' what it implies; that is, the practical consequences of the utterance take precedence over the literal meaning.

The type of change involved in the grammaticalization of an implication appears to be quite different from the type of change involved in what I have referred to as generalization, since it accomplishes a change in scope for the modal from verb phrase scope to propositional scope. However, it should be noted that even here generalization is necessary, and the scope change may be gradual rather than abrupt.⁴ An examination of more texts is necessary to fully explicate the mechanism operative in a change by implication, but in the Gawain text the sentences in which the root meaning implies the epistemic one give us some evidence for

the gradual expansion of modal scope. First, recall that the early ability sense of may predicates internal enabling conditions on an animate agent and relates that agent to a predicate. In the later root possibility sense, not only are the enabling conditions from any source but also they are not conditions just on the agent but rather on the whole situation. Thus in the Gawain text, of the nine clear cases in which a root sense implies an epistemic one, four have the pronoun mon 'one' or 'someone' as a subject (see example (18)), so that may signals that the general situation is possible, rather than that enabling conditions exist for a particular agent. Five of the examples (including some that have mon) are in relative clauses with non-specific heads, translatable as 'wherever', 'whoever', and so on, as in (26):

(26) I hope that may him here
Schal lerne of luf-talkyng. (ll. 926-7)
I think that whoever may hear him
Will learn of courtly love-talking.

These examples also set up a general situation as possible, rather than predicating conditions on an agent.

Even the examples with first person subjects are not really agentive: one is a passive (27), while the others involve non-agentive verbs, such as lerne 'learn', mynne 'remember, be reminded of' and last 'live'.

(27) that thou schal seche me thiself, where-so thou hopes
I may be funde vpon folde... (ll. 395-6)
(give me your word)
that you will seek me yourself, wherever you think
I can/may be found on the earth...

(28) Gif me sumquat of thy gifte, thi gloue if hit were,
That I may mynne on the, mon, my mournyng to lassen.
(ll. 1799-1800)
Give me something as a gift, your glove perhaps,
That I can/may be reminded of you, man, to ease my mourning.

It appears, then, that the root sense has narrower scope when it signals ability or permission, but has a more general scope in precisely these cases where an epistemic reading may be inferred. I would claim, then, that the development of the root possibility meaning is a prerequisite for the development of epistemic meaning from a verb meaning 'able'.

As may becomes predominately associated with the epistemic use problems arise for the root sense, because there are examples in which the root and epistemic readings have different consequences. For instance, as may is still used in writing in the root sense, the epistemic interpretation is not always appropriate as in (29).

(29) Modality may be divided into three types.

If I write (29), I certainly do not mean that modality may or may not be divided into three types, but I am not sure. I am instead proposing that it is likely correct to divide modality into three types. In cases such as these, can has come to be used to ensure the root possibility reading. Thus can increases greatly in frequency between Middle English and Modern English, coming to serve precisely the role of signalling root possibility. It is only very recently, however, that can has come to be used for permission; may still occurs in this one root use. The result is that may in current (British) usage is predominately epistemic, with some permission examples remaining, as shown in (30) from Coates 1983:132.

(30) Text count of the uses of may in British English.

epistemic	root	permission	indeterminate	other	total
147	7	32	13	1	200

In a sense, the meaning of may has been shattered -- permission has been knocked off from 'possibility' by the intrusion of can, creating a gap between the previously related root and epistemic senses.

In the process of grammaticalization, then, the lexical meaning of a morpheme or construction serves as the basis for its semantic substance. This substance is gradually eroded in the sense that specific properties of meaning are lost as the gram is put to a wider and wider range of uses. I would argue that it is the use of grams -- that is, the force or effect of the gram or what it accomplishes -- that influences its changes in meaning. In the case of may, we see two examples of use affecting meaning: in the development of epistemic uses, the practical consequence of a gram's meaning is taken to be its meaning; in the case of the permission use, the pragmatic force of the gram in context is taken to be its meaning.

Finally, let me use the example of can and may to return to the issue of contrast. Certainly can and may contrast, but just as the Progressive and Present contrast as a result of the Progressive cutting its territory out of the Present's domain, can has replaced may in certain uses. As a further consequence can and may overlap in meaning also, in some written contexts. While one might argue that the root vs. epistemic contrast is of some importance (since there are clear cases where the speaker wants to convey the root meaning and not the epistemic one), still we can reasonably predict that can will develop epistemic meaning just as may has, suggesting again that it is not contrast that is the essence of grammatical meaning, but rather the inherent semantic content and what it implies.

The literature on grammatical meaning conveys the impression that if contrast sets are small (consisting of two or

three members), then the contrasts must be large, boldly written, basic, and representative of a world view of the speakers. At one level this is true, but ironically this is the same level at which we find universals, common gram-types that occur cross-linguistically, such as progressive, perfective, or dative (see Bybee 1985, Dahl 1985, Bybee and Dahl 1988). This is the level at which fine distinctions among grams within a language can be ignored and broad patterns across languages observed. But grammatical meaning also involves a certain richness of detail, especially as it combines with lexical meaning and world knowledge, and this can only be understood by considering that grams encode a meaning that is at once abstract and general, but in addition contains traces of its former lexical meaning and thus can convey a richness of nuance and implication that leads to much variety in interpretation.

NOTES

* Many of the ideas put forth in this paper grew out of seminar and private discussions with various colleagues and students at SUNY at Buffalo. I am particularly indebted to Julie Gerhardt, William Pagliuca and Nancy Woodworth. This work was completed while the author had a fellowship from the John Simon Guggenheim Memorial Foundation.

1. The other possible source of the modern Progressive would be a construction found in Old English of the verb 'to be' with the Present Participle. However, there is some question about the continuity of this older construction with the modern Progressive. Curme 1913 shows that the use of the be plus Present Participle in Old English had adjectival or stative force, rather than the active force found in the modern Progressive.

2. The difference is much greater than implied by Goldsmith & Woisetschlaeger's discussion, which focusses on the English use of the Progressive for future, where Spanish uses the Present.

3. All the Middle English examples cited are from Sir Gawain and the Green Knight.

4. I am grateful to William Pagliuca for pointing this out to me.

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TOPICS, GRAMMATICALIZED TOPICS, AND SUBJECTS

Bernard Comrie
University of Southern California

1. Introduction

A question that continues to interest me is why human languages should have syntax. Of course, this question presupposes an answer to another question, namely: do human languages have syntax? And in what follows, I will try to answer this more basic question. Let me elaborate on what I mean by these questions. If we make a tripartite division among semantics, pragmatics, and syntax, then it is reasonably clear why human languages need semantics and pragmatics. One of the functions of human languages is to convey meaning, therefore the ability to deal with meaning is a prerequisite for any human language. Since human languages are used both in social interaction and as cognitive devices, both of which require the presentation of new information against the background of existing information, it is clear why human languages need pragmatics, or at least the ability to differentiate between such concepts as old and new information. But why should human language need anything beyond this? Of course, language would need to have some way of presenting meaning and pragmatics, and one might, following the usage of logicians, call this syntax, i.e. there would be the syntax of semantics (semantic representation) and the syntax of pragmatics (pragmatic representation). But when linguists speak of syntax, they do not usually mean this; rather, they mean a set of structural properties of language that are at least potentially independent of semantic or pragmatic properties. With regard to the problem area outlined in my title, this consists in the belief that there is a valid notion of subject, distinct from the semantic notion of agent (actor) and from the pragmatic notion of topic.

With respect to this problem area, there are three positions that can be identified. The first extreme position would be that syntax as so defined does not exist. In other words, all phenomena which linguists have identified as syntactic can be reduced to semantic or pragmatic phenomena; in particular, the notion of subject would be reducible to that of agent or topic or some combination thereof. Of course, even under this approach there would have to be some means of indicating semantic and pragmatic phenomena ('syntax' in the logicians' sense): but semantics/pragmatics would determine what is to be encoded, and the only arbitrariness would be the choice of how these phenomena are to be encoded, e.g. the fact that the topic is to be encoded by a particle wa rather than sentence-initial position, to choose an example not entirely at random. As an illustration of this position applied to the notion subject, we may take the discussion in Givon (1984, chapter 5). Givon's concept of subject is deducible from the definition (p. 139):

- (1) Subjectivization is the assignment, by whatever coding means available in the language, of the pragmatic case-role of subject (or 'primary clausal topic') to one of the arguments ('semantic case roles') in the clause.

Thus, although Givon uses the term subject, it is used as a terminological equivalent to a pragmatically defined notion. Indeed Givon says further (p. 138):

- (2) A largely terminological argument used to rage as to whether one is talking about "subject" or "topic". The gist of it, it seems, was whether the main clausal topic was strongly or weakly coded. That is, whether the topic was encoded by a maximal array of word order, morphology and intonation devices, or whether it was coded by relatively few devices.

In other words, there is no notion of subject definable in terms other than pragmatics plus the devices for encoding the relevant pragmatic distinctions.

At the opposite extreme, there is the position that has come to be called autonomous syntax, which holds not only that there is such a thing as syntax but that this syntax is in principle completely independent of semantics and pragmatics, i.e. is in no way determined by semantic or pragmatic constraints. Of course, even under this approach it will ultimately be necessary to link syntax, semantics, and pragmatics together, but under this approach the structure of the syntactic component of the overall linguistic model would be essentially independent of the semantics and the pragmatics and of the relations between these and the syntax. This is the position associated with mainstream generative grammar and some of its offshoots, such as (mainstream) Relational Grammar. Since my interest in this paper lies in the interaction of syntax and pragmatics (and, in principle, semantics), I shall not devote much discussion to the more extreme variants of this view. I regard autonomous syntax in this extreme sense as a fallback position, the null hypothesis, to be accepted only if we fail in valiant attempts to explain syntax in pragmatic and/or semantic terms.

The third position is an intermediate position. It holds that syntax is potentially independent of semantics and pragmatics, in the sense that there are many syntactic phenomena in many languages that cannot be given complete or even nearly complete analyses in purely semantic or pragmatic or semantic-pragmatic terms. However, in many instances such syntactic phenomena can be given partial explanation in such nonsyntactic terms; in particular, many syntactic phenomena can be viewed as phenomena semantic and/or pragmatic in origin which have become divorced from their semantico-pragmatic origin, in other words as instances of the grammaticalization (or, more accurately,

syntacticization) of semantico-pragmatic phenomena. This is my own position, and I will try to argue for it in terms of the data to be presented in the body of the paper.

Within the third position, there are a number of different subpositions that one might adopt, some of which I will outline without necessarily committing myself to one or another. For instance, when one talks of grammaticalization (syntacticization), is this a diachronic phenomenon? In other words, if one speaks of a subject as being a grammaticalized topic, does this mean that at an earlier stage of the language the noun phrases in question were simply topics, but by diachronic change the coding properties that originally applied only to topics have been extended to certain other noun phrases (and perhaps removed from certain topics)? In some cases, the diachronic dimension does seem to be correct. For instance, Cole et al. (1980) provide a number of examples of the following diachronic development: At stage I, a given noun phrase is a topic but lacks the coding properties of subjects in the given language; at stage II, the noun phrase in question takes on some of the coding properties of subjects; at stage III, the noun phrase in question has all the coding properties of subjects. Stages I and III are illustrated by the earlier and modern English sentences below:

- (3) Them liketh the apple.
- (4) They like the apple.

In (3), the topic (and semantic experiencer) them has neither nominative case nor does it trigger verb agreement; in (4) it has both these properties. Of course, the fact that some subjects derive diachronically through the syntacticization of topics does not mean that all subjects derive in this way. Indeed, in the example just given it is crucial that English already had an independent language-internal grammatical relation of subject, defined for instance in terms of case assignment and verb agreement, to which the experiencer noun phrase could assimilate. If topics become subjects by assimilating to already existing subjects, one is in danger of an infinite regress: where did the first subject come from? Incidentally, if subjects are viewed as diachronically syntacticized topics, a further question to arise is whether this is relevant to their synchronic analysis, whether in general or in individual instances (depending perhaps on the degree of syntacticization); exemplification will be given in the body of this paper. Givon (1979) illustrates a number of other historical processes, in addition to diachronic change as traditionally conceived, that lead from pragmatic to syntactic notions, such as first and second language acquisition and pidginization.

2. Grammatical Encoding of Pragmatic Relations

It follows from the above that the term grammaticalization is potentially misleading. On the one hand, it can refer simply to grammatical encoding, for instance the grammatical encoding of topic by means of the particle wa in Japanese, without any implication that the notion we are speaking of is other than a pragmatically defined one. On the other hand, it can refer to an entity that has become divorced from its pragmatic origin, for instance to subjects that are not synchronically topics, as in Russian example (5), with the word order given:

(5) Kolumb-om byl-a otkryt-a Amerika.
Columbus-INST was-FEM discovered-FEM America-NOM
'America was discovered by Columbus.'

In this example, Amerika is syntactically the subject of the sentence, as can be seen from the feminine singular verb agreement, but 'Columbus' is the topic, as can be seen from its clause-initial position.² To avoid confusion, I will make a terminological distinction between grammatical encoding and syntacticization. Grammatical encoding refers simply to the formal encoding of a given pragmatic or semantic distinction, with no implication of departure from the strict semantic or pragmatic definition of that distinction. Syntacticization refers to a syntactic distinction that cannot be reduced to semantics, pragmatics, or a combination thereof.

As an illustration of grammatical encoding, I want to digress slightly from the main discussion, concerning topics and subjects, to examine the grammatical encoding of focus (essential new information). A number of languages have a general rule whereby the focus of a sentence must immediately precede the verb of that sentence. This phenomenon has been documented perhaps most fully for Hungarian, including recent studies by Horvath (1986) and Kiss (1987), while a rather detailed crosslinguistic study coupled with an indepth analysis of Korean is provided by Kim (1984). I will take examples here from my own work on focus in Modern Eastern Armenian (Comrie 1984).

The basic rule in Modern Eastern Armenian is that the focus must immediately precede the finite verb form. This is an absolute rule when the focus is an interrogative pronoun, for most interrogative pronouns. Thus (6) and (7) are possible, while (8) is not:

(6) Petros-n inc' kerav?
Peter-DEF what ate
(7) Inc' kerav Petros-ə?
*Inc' Petros-ə kerav?
'What did Peter eat?'

As such, this might seem to be a straightforward example of the grammatical encoding of a pragmatic relation, with no implications for syntacticization. However, further investigation shows that even in a case as apparently transparent pragmatically as this, there is in fact some degree of syntacticization.

First, the preverbal focus position, while obligatory for interrogative pronouns, is only optional for other focused noun phrases. Thus, in answer to the question in (6) one could answer with either (9) or (10):

- (9) Petros- ∂ mi xənjor kerav.
Peter-DEF a apple ate.
- (10) Petros- ∂ kerav mi xənjor.
'Peter ate an apple.'

Second, Modern Eastern Armenian has syntactic constraints on the movement of constituents, so that some focused constituents cannot be moved to the preverbal focus position one would expect. In particular, it is usually impossible in Modern Eastern Armenian to extract a constituent out of a larger constituent. For subconstituents of noun phrases, one must simply move the larger noun phrase, even though only part of it is the focus, as in (11):

- (11) Um xənjor- ∂ kerar?
whose apple-DEF you-ate
- (12) *Um kerar xənjor- ∂ ?
'Whose apple did you eat?'

For constituents of subordinate clauses, they may move to the focus position within their own clause, but not to the focus position of the main clause, which is where one would expect them to move given the semantico-pragmatic interpretation of the clause:

- (13) Petros- ∂ karcum e vor Aram-n um-n e
Peter-DEF thinking is that Aram-DEF whom-DEF is
tesel?
having-seen
- (14) *Petros-n um-n e karcum vor Aram- ∂ tesel e?
'Who does Peter think that Aram has seen?'

Moreover, in several languages that have a preverbal focus position, it has been noted that a preverbal negative particle apparently necessarily occupies this position; this is the case, for instance, in Hungarian. It is also, again apparently, the case in Armenian, as can be seen by comparing (15)-(17):

(15) Petros- ∂ xənjor-n utum e.
 Peter-DEF apple-DEF eating is
 'Peter is eating an apple.'

(16) Petros-n inc' e utum?
 Peter-DEF what is eating
 'What is Peter eating?'

(17) Petros- ∂ \mathfrak{c}' -i utum xənjor- ∂ .
 Peter-DEF not-is eating apple-DEF⁴
 'Peter is not eating the apple.'

Sentence (15) involves the most neutral focus for this statement, with utum, the present participle of the verb 'eat', formally in focus position, immediately preceding the finite verb e '(he) is'. In (16), the preverbal focus position must be occupied by the interrogative pronoun, and the present participle is thrown after the finite verb. Sentence (17) shows exactly the same phenomenon of the present participle being thrown after the finite verb, which is now immediately preceded by the negative particle c'(a)-, thus providing *prima facie* evidence that this negative particle is in preverbal focus position. Suppose, however, that a clause contains both negation and an interrogative pronoun. In this case, the only possibility is for the negative particle to precede the verb immediately, with the interrogative pronoun preceding this whole complex:

(18) Petros-n inc' \mathfrak{c}' -i utum?
 Peter-DEF what not-is eating
 'What is Peter not eating?'

In terms of a formally defined focus position, one might in principle argue either that sentence (18) has a doubly filled focus position, or that there are in fact two distinct positions occupied by the interrogative pronoun and the negative particle. There is evidence that the second alternative is correct. The verb c'uyc' tal 'show' consists etymologically of the noun c'uyc' 'demonstration' and the verb tal 'to give'. The two components are sufficiently closely bound together that they may not be separated by an interrogative pronoun, which must precede the whole complex; however, they are sufficiently loosely bound that the preverbal negative particle must separate them, being attached to the finite form of tal. Sentence (19) thus illustrates that there are two positions, in fact two nonadjacent positions:

(19) Inc' c'uyc' \mathfrak{c}' -ə-təvec'ir inj?
 what demonstration not-you-gave to-me
 'What didn't you show to me?'

Thus even if the word order behavior of negation in Modern Eastern Armenian has its origin as a special case of focus, this behavior has now become to some extent syntacticized, differing from the behavior of other elements in preverbal focus position.

These data on the preverbal focus position point to an interesting conclusion concerning the grammatical encoding of pragmatic relations. My impression is that it is extremely rare across languages to find a formal device that literally, in one-one correspondence, encodes some pragmatic distinction or combination of pragmatic (and semantic) distinctions. Thus even those instances that seem to be purely grammatical encoding of a pragmatic distinction often turn out, on closer investigation, to involve some degree of syntacticization away from the original pragmatic distinction. In my study of focus in Modern Eastern Armenian, it proved necessary to make a clear distinction between pragmatic focus (the new information requested or given) and syntactic focus (the preverbal position). Moreover, neither of these necessarily coincides with the intonational focus, which can be used to mark contrast as in (20), where the intonational focus falls on the contrastively stressed k'o 'your', while the interrogative pronoun inc' is (necessarily) in preverbal focus position:

(20) Isk k'o anun-n inc' e?
 and your name-DEF what is
 'And what is your name?'

3. Grammaticalized (Syntacticized) Topics

In section 2, I examined a phenomenon that is close to being pure grammatical encoding of a pragmatic distinction, though with some slight degree of syntacticization. In this section I wish to examine some phenomena that are widely regarded in the literature as instances of pragmatic relations, more specifically the pragmatic relation of topic, perhaps with grammatical encoding, but where in my opinion the degree of syntacticization is in fact much greater - though still not so great as in the case of a fully syntacticized subject. In other words, I will be arguing that we need to recognize, at least for some languages, a category of syntacticized topic that is neither the pragmatic relation of topic nor the syntactic (grammatical) relation of subject.

3.1. Multiple Subject Constructions in Japanese

In a paper that has been highly influential in the literature on subject and topic, Li and Thompson (1976) argue for a distinction between subject-prominent languages and topic-prominent languages, or perhaps more accurately between subject-prominence and topic-prominence as characteristics of linguistic phenomena, since a given language can have both subject-prominent and topic-prominent properties (e.g. Japanese). Perhaps the main

operational criterion for distinguishing between subject and topic in their proposal is that the subject of the clause must be subcategorized by the verb or other predicate, while the topic does not need to bear any subcategorizational relation to the predicate (pp. 461-463). One example from Japanese, originally introduced as the title of a monograph devoted to this construction type (Mikami 1960), has become the canonical example of topic-prominence and will be so cited here:⁵

(21) Zoo wa hana ga nagai.
elephant TOP nose SUB long
'The elephant's nose is long'/'The elephant has a long nose.'

In this sentence, hana 'nose' clearly bears a subcategorizational relation to the predicate nagai 'long', as can be seen from the semantic interpretation of the sentence whereby length is predicated of the nose; however, zoo 'elephant' does not bear any predicational relation to the predicate nagai, since the sentence does not imply that the elephant is long. At first sight, it might seem that this sentence can readily be handled in terms of topic-prominence: zoo will be identified as a topic and indeed takes the topic marker wa, but not as a subject, while hana will (or at least can) be identified as subject.

But first, it should be noted that while zoo 'elephant' in (21) can take the topic particle wa, it does not have to; in particular, it can occur with the subject particle, as in (22):

(22) Zoo ga hana ga nagai.

The normal interpretation of this sentence would be with 'elephant' as focus, not topic, for instance in answer to the question in (23), as discussed by Martin (1975:256-272, especially 257-258):

(23) Nani ga hana ga nagai?
what SUB nose SUB long
'What has a long nose?'

Moreover, if we look at other criteria that potentially distinguish between topics and subjects in Japanese, these rather consistently identify the 'elephant' position rather than the 'nose' position in (22) as subject, even though the subcategorizational relationship is clearly between the 'nose' position and the predicate. An interesting set of examples is provided by possessive predicate sentences, as in (24):

(24) Boku wa kuruma ga aru.
I TOP car SUB be-INAN
'I have a car.'

(25) Boku wa ii buka ga iru.
 I TOP good subordinate SUB be-ANIM
 'I have good subordinates.'

In these examples, note the collocational restriction between the 'nose' position, i.e. the possessum, and the verb, which can be stated roughly as follows: inanimate nouns take aru, animate nouns take iru; for a fuller statement, reference may be made to Martin (1975:193-198). Most predicates in Japanese have special forms to show respect to the subject. One productive such formation is to prefix the stem of the verb by o-, following this verb form with the preposition ni 'to' and the conjugated verb naru 'become'. If the basic verb is aru, this gives o-ari-ni-naru. This can be used in the construction of (24), as in (26), where respect is clearly shown to the possessor, not to the possessum (Martin 1975:194-195), i.e. by this test, it is the possessor (the 'elephant' position), not the possessum (the 'nose' position), that is subject:

(26) Syatyoo wa kuruma ga o-ari-ni-naru.
 company-president TOP car SUB have-INAN-SUB:RESP
 'The company president has a car.'

The situation with the animate possessum verb iru is more complex. Martin (1975:194-195) treats aru and iru alike, stating that in both cases respect is shown to the possessor, though since his examples are all translations of 'who has a child?', it is unclear that respect is necessarily being indicated to the possessor rather than to the possessor's child. The verb iru does not have a regularly formed subject-respect form, though it does have irregular forms, such as irassyaru and orareru. The problem that arises is deciding to whom respect is shown in sentences like (27):

(27) Syatyoo wa ii buka ga
 company-president TOP good subordinate SUB
 irassyaru/orareru.
 be-ANIM-SUB:RESP
 'The company president has good subordinates.'

The judgement is made difficult (as in the examples cited by Martin) in that the subordinates could conceivably be receiving respect vicariously, through their association with the company president. One might attempt to obviate this difficulty by having an inanimate possessor. Indeed, (28) below is acceptable, in which respect is clearly being shown to the possessum rather than to the possessor:

(28) Kono kaisya (ni) wa ii syatyoo ga
this company to TOP good president SUB
irassyaru/orareru.
be-ANIM-SUB:RESP
'This company has a good president.'

In this example, however, as generally with inanimate possessors, the possessor corresponds not to a noun phrase with the subject marker ga but to a noun phrase with the dative marker ni (which, at least in some instances, can be omitted before the topic particle wa). Of sentences (29)-(30), version (29) is highly marginal, and actually gets an interpretation where respect is shown to the company; version (30) is acceptable, with respect being shown to the president:

(29) ??Kono kaisya ga ii syatyoo ga irassyaru/orareru.
(30) Kono kaisya ni ii syatyoo ga irassyaru/orareru.

These data suggest that irassyaru/orareru behave like o-ari-ni-naru, with respect being shown to the possessor; but where the possessor is inanimate and takes the particle ni, the syntactic structure is different, with the possessum retaining all syntactic subject properties, the possessor having none.

To summarize the relevance of the Japanese multiple-subject construction: The problem posed by such sentences is not solved by calling them topic-comment structures, since the noun phrase in the 'elephant' position is not necessarily a topic, moreover this noun phrase does have independently motivated subject properties, including not only the particle ga (which is at best a weak criterion, given the use of ga to mark some objects; Martin 1975:198-201), but also the more reliable test of subject respect forms.

3.2. Grammaticalized Topics in Haruai⁶

In this section, I wish to examine another construction for which one might be led to a solution in terms of the notion of topic, but where on further examination such an analysis turns out to be at least incomplete. Haruai is a Highland Papuan (non-Austronesian) language spoken in the southwest of⁷ Madang Province, Papua New Guinea. Like many of its neighbors, Haruai has subject-verb agreement and switch-reference, both of which, at least in the simplest cases, provide good criteria for the syntactic relation of subject. Sentences (31)-(32) illustrate subject-verb agreement, which is also shown to be independent of word order variations; Haruai, incidentally, has no case-marking of noun phrases:

(31) An h&n pay-n-ŋ-a.
we pig hit-FUT:1PL-DEC

(32) H^øn an pay-n-ŋ-a.
'We will hit the pig.'

Version (32) would be used to topicalize 'pig' explicitly, i.e. sentence-initial position correlates with topic status in Haruai. In the absence of explicit topicalization, the usual word order is subject-object-verb. Switch-reference is illustrated by sentences (33)-(34); the general rule is that if two clauses combined as a single sentence have the same subject, the same subject suffix -øn is required; otherwise, the different subject suffix -m(øn) is required:

(33) An h^øn pal-øn, dy-n-ŋ-a.
we pig hit-SS, go-FUT:1PL-DEC
'We will hit the pig and we will go.'

(34) An h^øn pal-møn, dy-øn-a.
we pig hit-DS, go-FUT:3SG-DEC
'We will hit the pig and it (i.e. the pig, or
conceivably some other third person singular
referent) will go.'

Problems arise in considering the construction that is required by a number of experiencer predicates (and also possessive predicate constructions), as in (35):

(35) N kyø pl-ŋ-a.
I hunger shoot-PAST:3SG-DEC
'I was hungry,' lit. 'Me hunger shot.'

In sentence (35), it is normal for the experiencer to come clause-initially, or at least before the cause noun phrase 'hunger'; indeed, this is the only order found in my textual material and in material elicited by translation from Tok Pisin, and Haruai speakers were unhappy with made-up sentences having the word order of (36):

(36) ?Kyø n pl-ŋ-a.

However, this experiencer noun phrase is not subject of the clause in terms of verb agreement: the only verb agreement possible is third person singular, not first person singular (cf. (37)); nor is it subject in terms of switch-reference, since Haruai quite strictly requires the different subject marker in sentences like (38):

(37) *N kyø pl-m-a.
I hunger shoot-PAST:1SG-DEC

(38) N kyø pl-møn/*pl-øn, hømlø nm-m-a.
I hunger shoot-DS/shoot-SS banana eat-PAST:1SG-DEC
'I was hungry and I ate some banana.'

We may therefore conclude that this experiencer noun phrase is not a subject. Is it, however, a topic? While in most instances the experiencer noun phrase in this construction is indeed a topic, this is not a necessary requirement, since the experiencer can equally be the focus of the clause, as in the question (39), and equally in (35) if this is used as the response to (39):

(39) Y&nm ky& pl-&ŋ?
who hunger shoot-PAST:3SG
'Who is hungry?'

Thus, some such experiencer nouns are not topics. Moreover, although it is common in Haruai for topics to be preposed, this is by no means an invariant rule, with many textual examples presenting the topic, i.e. the noun phrase that would be regarded as topic in all or most current viable characterizations of topic, in noninitial position. This general pattern is in keeping with one of the salient characteristics of clause structure in most Papuan languages: changes in pragmatic role of a constituent do not lead to changes in syntactic role. There are thus no syntactic-relation changing rules like passivization. The basic syntactic relations in a clause like (31) remain the same whatever the distribution of pragmatic roles; likewise, the basic syntactic relations in the clause-type illustrated by (39) remain the same whatever the distribution of pragmatic roles. The experiencer noun phrase in (39) is not a subject, nor is it (necessarily) a topic. The fact that it occurs, at least typically, clause-initially is surely related to a high correlation between such noun phrases and topic position (their topicworthiness), and for this reason we can reasonably call them syntacticized topics, provided always that we bear in mind that this category is distinct from both topic and subject.

The Haruai experiencer construction in fact corresponds to an early stage in the diachronic development from topic to subject posited by Cole et al. (1980). The examination of switch-reference in other Papuan languages carried out by Reesink (1983) suggests that Haruai represents a minority pattern, really speaking, in this regard: the more common pattern in Papuan languages is for the experiencer in such constructions to control switch-reference (although even in such languages it is the cause rather than the experiencer that controls subject-verb agreement, and also case marking in those languages where this is relevant). In these languages, then, the experiencer has acquired more subject properties, although still not all subject properties (e.g. subject-verb agreement), so that it is still a category, in the terminology of this paper a syntacticized topic, distinct from subject. Let me emphasize that for Papuan languages there is no direct evidence of a diachronic path from topic to subject, though Papuan languages do provide evidence in

favor of a grammatical account where topic and subject are endpoints of a chain of intermediate degrees of syntacticization.

Lest one should argue that the chain is in fact a purely syntactic chain, there is clear evidence from some cases of such developments that factors of topicworthiness are involved. Let us reconsider the English examples presented above as (3)-(4), repeated below:

- (40) Them liketh the apple.
- (41) They like the apple.

One quite traditional explanation offered for the development from the construction in (40) to that in (41) is that, with the loss of morphology in the historical development of English, many constructions would in fact be ambiguous between the two analyses, e.g. (42), this providing a bridge for reanalysis of the older construction in (40) as the newer construction in (41):

- (42) The boy likes the girl.

However, Thornburg (1984) shows that the earlier evidence for transfer of syntactic properties to the experiencer comes in examples like (40), where the experiencer clearly lacks morphological subject properties, than in potentially ambiguous examples like (42). It seems thus that the subject properties are transferred first in those examples where the experiencer is more topicworthy, i.e. to personal pronouns before common nouns, etc. In other words, topic is a relevant factor in the initiation and development of this diachronic chain.

4. Conclusions

In this paper, I have tried to present evidence arguing in favor of a particular viewpoint on syntax. Syntax is not reduceable to other facets of language, in particular some combination of pragmatics and semantics; those approaches that attempt to eliminate syntax in this way do so only be failing to take into account some of the relevant evidence. But equally, syntax is not autonomous of pragmatics and semantics: many syntactic phenomena only make sense against a background of pragmatic and semantic correlates; many syntactic phenomena can be regarded as syntacticizations of semantic-pragmatic phenomena, in particular subjects can be regarded as syntacticizations of topics. In answer to the question posed earlier as to whether there is such a thing as syntax, my answer is 'yes'. In answer to my other question, as to why there should be such a thing as syntax, I can only offer a brief speculation, which another paper may ultimately elaborate. The full range of semantic and pragmatic oppositions that different languages make is immense. If speakers were required to make all these distinctions each

time they spoke, the communicative act would become impossibly unwieldy, especially given other constraints on communication (such as processability). This complexity is reduced considerably by syntacticization, which effectively means that speakers do not have to make all the semantic and pragmatic choices that face them. While part of my motivation for writing this paper was to crystallize my opposition to some of the implications of the quotations from Givon given in (1)-(2), I find myself quite sympathetic to one of his conclusions (Givon 1979:109):

(43) Syntax cannot be understood or explained without reference to BOTH its evolution ex-discourse and the communicative parameters and principles that govern both its rise out of the pragmatic mode and its selective use along the register of human communication.

Notes

1. The following abbreviations are used: ANIM - animate, DEC-declarative, DEF - definite, DS - different subject, FEM-feminine, FUT - future, INAN - inanimate, INSTR - instrumental, NOM - nominative, PL - plural, SG - singular, SS - same subject, SUB - subject, SUB:RESP - subject respect, TOP - topic.
2. In terms of the quantitative approach to topic definition advocated by Givon (1983), both Kolumbom and Amerika in sentence (5) might turn out to be topics, the former in terms of referential distance (anaphoric coherence, look-back in discourse, pp. 13-14), the latter in terms of topic persistence (cataphoric coherence, look-ahead, pp. 14-15). But in any event, there is discrepancy between which noun phrases are identified as topics and which nouns are identified as subjects in terms of syntactic coding devices.
3. More adverbial (adjunct) interrogative pronouns, such as inc'u 'why', are less strict, so that yerkink'-n inc'u kapuyt e? 'sky-DEF why blue is 'why is the sky blue?' is possible alongside yerkink'-n inc'u e kapuyt? Note that in the transcription of Modern Eastern Armenian I use the apostrophe to indicate aspiration; voiceless stops not followed by an apostrophe are ejective; j represents a voiced dental affricative. The suffixed definite article has the form -n before a vowel, -ə elsewhere.
4. The form -i is a variant of e 'is' found after the negative particle č'ə- (prevocalic variant č'-). Note that clauses with objects preceding the verb and clauses with objects following the verb are both in principle possible in Modern Eastern Armenian.
5. I am grateful to Akiko Kumahira Comrie for discussion of the Japanese examples; assignments of acceptability and interpretation reflect her judgements.
6. The Haruai material presented here is taken from Comrie (1987), which should be consulted for further details.

7. Including Kobon, for which Davies (1981:99-102) proposes an analysis for experiencer constructions in terms of the notion of topic.

8. In a fuller account, the semantic notion of agentivity might also be involved. I have in general left semantic, as opposed to pragmatic, factors out of account in this paper, not because I believe them to be unimportant, but merely in order to provide a more coherent argumentation within the allotted space limits.

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Aspect as a Discourse Category in Tamil

Susan C. Herring

University of California, Berkeley

1. Introduction.

A handful of linguists writing within the past decade, most notably Hopper (1979, 1982) and Givón (1979), but more recently also Du Bois (1987), have advanced the view that the process of grammaticalization proceeds, both diachronically and synchronically, from discourse on down to the sentence or morphosyntactic level. In other words, rather than deriving discourse functions from extensions of a core meaning associated with a particular grammatical form, as has traditionally been done (cf. Comrie 1985:26), they have essentially reversed the process by claiming that the 'core meaning' is itself a discourse function which gives rise to various 'additive' meanings, some of which become grammaticalized (or 'syntacticized') in the formal structure of a language.

As evidence for this claim, Hopper discusses the case of aspectual marking, and in particular, 'perfective' marking, as it relates to narrative discourse in a number of languages. He argues that the sense of completion associated with perfective aspect derives from a more fundamental discourse function, which is that of signalling successive events in narration. The fact that events in sequence must be discrete and bounded gives rise, in turn, to the perfective or completive interpretation of individual events. The completive interpretation tends to grammaticalize in individual languages as perfective or perfect aspect, or as past tense. In Literary Malay, for example, the primary use of the focus particle *lah* is to signal major sequential events, i.e. in narration. When *lah* appears with a nominal element in a sentence in isolation, it has an emphatic function, as in example 1):

- 1) Anjing-*lah* yang hilang, bukan kucing.
dog which lost not cat
'It was a dog I lost, not a cat.'

When the same particle follows a verb, however, it appears to function as a marker of completion:

- 2) Mati-*lah* anak raju itu.
die prince the
'The prince died/has died.'

The example of Literary Malay therefore provides an illustration of the principle of extension of meaning from discourse to sentence level, according to Hopper.

Leaving aside for the moment the larger theoretical implications of this claim, the evidence regarding the discourse origins of perfectivity is intriguing, and merits further consideration. The purpose of this paper is to present new evidence which supports the claim that perfective aspect is inherently a discourse phenomenon.

2. The Tamil situation.

The data are from Tamil, a Dravidian language with agglutinative morphology and OV word order. In addition to three simple morphological tenses (past, present, future), Tamil has three aspectual auxiliaries which derive diachronically from verbs meaning 'to leave, let' (*vitu*), 'to be holding' (*konṭiru*),¹ and 'to be'

(*iru*), and which express the notions 'completion', 'continuation', and 'perfect of resultant state', respectively. Of the three, the so-called 'completive' auxiliary *viṭu* is the most frequently used in the modern language, and also the most difficult to characterize semantically. It has been described variously as 'completive' (Dale 1975; Annamalai 1985), 'definitive' (Shanmukam Pillai 1968; Paramasivam 1983), and 'intensive' (Arden 1942; Kumaraswami Raja 1966). The situation is further complicated by the fact that the auxiliary *viṭu* has a different meaning when it appears in its so-called "conjunctive" (non-finite, also known as adverbial participle) form, i.e. between clauses intra-sententially, than when it is associated with the finite verb. In its former, non-finite use, it is disjunctive, separating clauses into discrete events essentially unrelated except by their occurrence in temporal sequence.

3) Kumār tavuṇukku pōy-viṭu pāṇṭiyāṇ ḍēṭalil cāppiṭṭāṇ.
 K. town-dat go-AvP-viṭu-AvP Pandian Hotel-loc eat-P3ms
 'Kumar went to town and (then he) ate at the Pandian Hotel.'
 (e.g. in reply to the question "What did Kumar do today?"
 The Pandian Hotel may or may not be located in town.)

4) Kumār tavuṇukku pōy pāṇṭiyāṇ ḍēṭalil cāppiṭṭāṇ.
 K. town-dat go-AvP Pandian Hotel-loc eat-P3ms
 'Kumar went to town and ate at the Pandian Hotel.'
 (The Pandian Hotel is located in town.)

This disjunctive function recalls the intransitive lexical meaning of the verb *viṭu*, which is 'to leave (off doing something)', as opposed to its transitive meaning, 'to let (something go)'; e.g., 'Kumar went to town, left off (doing that), and (then) ate at the Pandian Hotel.' *Viṭu* still functions as a fully independent verb in Modern Tamil, as in 5):

5) Patināṛu vayatāka irukkum pōtu, kumār viṭṭai vittāṇ.
 16 years-adv be-FAjP time, K. house-acc leave-P3ms
 'Kumar left home when he was sixteen.'

In addition to the main verb *viṭu* and the 'completive' auxiliary *viṭu*, Annamalai (1985) identifies another verbal auxiliary of the same form and conjugation which has extended the transitive meaning 'let' to that of 'release (of direct object following the action of the main verb)', and by extension, 'release into the hands of an intermediary', as in examples 6) and 7):

6) Ammā makaļukku pēṇ pārttu-viṭṭāṇ.
 mother daughter-dat lice search-AvP-release-P3fs
 'The mother picked lice for her daughter.'

7) Un̄ caikkilai lāriyil ērri-viṭukirēṇ.
 your bike-acc truck-loc load-AvP-release-Pr1s
 'I'll send your bicycle by truck' (i.e. have sent via an intermediary).

The differences between the two auxiliary *viṭus* are not only semantic but phonological, in that the initial syllable 'vi-' drops out in the aspectual use in the spoken language, but remains with the other. If both are present modifying the same verb, they occur in the order *viṭu*(*release*) *viṭu*(*perfective*), with tense, person,

gender, and number inflections attached to the latter, as in example 8):

8) Kumārukku pālai anuppi-viṭu-(vi)tāyā?
K.-dat milk-acc send-AvP-release-AvP-pfv-P2s-Q
'Did you finish having the milk sent to Kumar?/
Did you get the milk sent to Kumar?' (i.e. via an intermediary)

From these and other facts, we may conclude that the aspectual *viṭu* is the more grammaticalized of the two auxiliaries, in that it appears farthest from the main verb, exhibits phonological reduction, and is more abstract in meaning.

2.1. The semantic characterization of aspectual *viṭu*.

Let us turn now to the aspectual *viṭu* and the problem of determining its 'core' meaning. As I mentioned, there has been some disagreement among linguists and grammarians on this point, and not without reason. Considered in sentences in isolation, *viṭu* sometimes appears to lend a sense of completion; other times of definiteness or assurance; and at other times, emphasis on the proposition expressed by the main verb. Native speaker informants attribute a nuance of 'inadvertance' or 'unexpectedness' to some instances of its use, and a sense of 'expected' or even 'long-awaited outcome' to others. It interacts differentially with tense. This has led some grammarians to describe it as 'completive' in the past tense, and 'definitive' in the present and future. Even this compromise position is problematic, however, as I will attempt to illustrate here.

2.1.1. The 'completive' analysis.

Evidence for the completive analysis is based primarily on the fact that many if not all transitive accomplishment verbs in Tamil, such as *uṭai* 'break', *urukku* 'melt', and *kol* 'kill', imply a resultant change of state only weakly, such that the lack of that result may then be explicitly stated without contradicting the truth of the previous utterance.

9a) Aiyar tēṅkāyai uṭaittār.
brahmin coconut-acc break(tr)-P3resp.
'The brahmin broke the coconut.'

9b) Anāl tēṅkāy uṭaiya-villai.
but coconut break(int)-neg
'But the coconut didn't break.'

10a) Kumār pallyai konrān.
K. lizard-acc kill-P3ms
'Kumar killed the lizard.'

10b) Anāl palli cāka-villai.
but lizard die-neg
'But the lizard didn't die.'

If the auxiliary *viṭu* is added to the a) sentences above, however, it is no longer possible to follow them with the sentences in b):

9a') Aiyar tēñkāyai uṭaittu-(vi)tṭār.
 brahmin coconut-acc break(tr)AvP-*viṭu*-P3resp
 'The brahmin broke the coconut (and finished breaking it).'

9b) *Añāl tēñkāyai uṭaiya-villai.
 but coconut break(int)-neg

10a') Kumār palliyai konru-(vi)tṭān.
 K. lizard-acc kill-AvP-*viṭu*-P3ms
 'Kumār killed the lizard (and finished killing it).'

10b) *Añāl palli cāka-villai.
 but lizard die-neg

To characterize *viṭu* as completive in examples such as these seems valid. With intransitive accomplishment verbs, as well as with verbs of achievement, process, and state, however, such a contrast is not possible, and the use of past tense alone implies completion of the event. It is impossible to differentiate between 11) and 11'), for example, on the grounds that the action of going home in one is more 'completed' than in the other:

11) Kumār viṭṭukku pōnān.
 K. house-dat go-P3ms
 'Kumar went home.'

11') Kumār viṭṭukku pōy-(vi)tṭān.
 K. house-dat go-AvP-*viṭu*-P3ms
 'Kumar went home.'

Moreover, *viṭu* is not necessarily present in every sentence which expresses 'completion'. Explicit completion is most typically expressed by the verb *muṭi* 'finish' or by the use of adverbials, as in examples 12) and 13):

12) Cāvittiri katitattai paṭittu-muṭṭāl/paṭittu-muṭittu-(vi)tṭāl.
 Savitri letter-acc read-AvP-finish-P3fs/read-AvP-finish-AvP-*viṭu*-P3fs
 'Savitri finished reading the letter.'

13) Kumār mulu puttakattaiyum patittān/paṭittu-(vi)tṭān.
 K. whole book-acc+ read-P3ms/read-AvP-*viṭu*-P3ms
 'Kumar read the entire book.'

2.1.2. The 'definitive' analysis.

Alternatively, a number of grammarians have characterized *viṭu* as definitive in meaning, expressing (or emphasizing) the definite occurrence of an event. While a few have applied this interpretation to the use of *viṭu* in all three tenses, others have restricted it to the present and future tenses, noting further that *viṭu* in the present tense has future, rather than present time reference (cf. Annamalai 1985, also endnote 6). Examples 14) and 15) illustrate this usage:

14) Nāñ nālaikku avanitam pēci-(vi)tukirēn.
 I tomorrow he-loc speak-AvP-*viṭu*-Pr1s
 'I'll (definitely) speak to him tomorrow.'

15) Pālai iñkē vaittāl, ketṭup-pōy-(v)īṭum.
 milk-acc here put-cond go.bad-AvP-*viṭu*-F3ns
 'If you put the milk here, it will (surely) spoil.'

What should be pointed out is that the so-called 'definitive' nuance supplied by the verbal auxiliary here is a pragmatic, not a semantic one. The unrealized propositions expressed in sentences 14) and 15) would be equally certain (or uncertain) whether *viṭu* was used or not. They do contrast with the equivalent sentences in the simple present or simple future tense, but not in terms of the degree of probability of occurrence of the event. Example 14) is a promise and example 15) is a warning; without *viṭu* both would be pragmatically neutral statements about the future. The semantic notion 'definiteness', on the other hand, may be expressed adverbially, either with or without *viṭu*:

16) Kumār niccayamāka varuvāñ/vantu-(vi)tuvāñ.
 K. definitely come-F3ms/come-AvP-*viṭu*-F3ms
 'Kumar will definitely come.'

Further, *viṭu* is not incompatible with elements which express uncertainty or lack of definiteness, as example 17) shows:

17) Kumār oruvēlai varuvāñ/ vantu-(vi)tuvāñ/ vantu-(vi)tālām.
 K. perhaps come-F3ms/come-AvP-*viṭu*-F3ms/come-AvP-*viṭu*-may
 'Kumar will/may perhaps (*definitely) come.'

Thus it is evident that of the two principal semantic characterizations proposed for the Tamil verbal auxiliary *viṭu*, 'completive' and 'definitive', neither accounts for the data very satisfactorily.² The latter, as we have seen, cannot properly be considered a referential meaning at all, but rather a conventionalized pragmatic association. On the other hand, while there is evidence in partial support of the completive analysis, it cannot be meaningfully applied in the majority of instances, since the simple tenses alone tend to receive the same interpretation with respect to completion or incompleteness whether *viṭu* is used or not.

Having noted a few of the problems with ascribing grammatical meaning to *viṭu* in sentences in isolation, the question then becomes the following: does it interact with the larger discourse context in any more systematic way? Might it be possible to isolate a "core" function, rather than a core meaning, which in turn could be generalized and extended to account for a majority or even all of its diverse uses? If so, what kind of evidence would such a discovery constitute for the "discourse-down" theory of grammaticalization? I will attempt to answer these questions in what follows.

2.2. *Viṭu* in discourse.

It is clear from my work with native speaker informants that most uses of *viṭu* require extensive contextualization in order to be understood at all. A context-enriched approach reveals an additional set of nuances, some of which

appear to be pragmatically conditioned, such as the assuring/warning use in examples 14) and 15), and the sense of expected or unexpected/unintentional event attributed to it by Annamalai (1985), to mention but a few. Other nuances represent distinct discourse functions. The most important of these, 'completed event which has relevance to the following event', and 'dismissal of previous topic preparatory to change of topic', indicate that the auxiliary may function as a type of 'perfect'. Thus for example, some speakers of Tamil feel that the difference between the use of the simple past tense and the auxiliary *viṭu* in sentences such as 12)

12) Cāvittiri kaṭitattai paṭittu-muṭṭāl/paṭittu-muṭṭtu-(vi)tṭāl.
 Savitri letter-acc read-AvP-finish-P3fs/read-AvP-finish-AvP-*viṭu*-P3fs
 'Savitri finished/has finished reading the letter.'

is that the simple past variant is a matter-of-fact statement of Savitri's activity. As such, it is likely to be followed by another sentence with Savitri as the subject; e.g. what she did next. The use of *viṭu*, however, implies that we are through with Savitri for the moment; the focus is rather on the relevance of her action to the current situation. The following sentence might be about the letter itself, having as its subject one of those present at the time of utterance (e.g. 'Now you can read it').

Annamalai translates many of his *viṭu* examples with the English present perfect. He derives the meaning as an extension of the sense of completion which he posits for *viṭu*, noting that its use

suggests that the message is complete; the topic of the next sentence is most probably different; its intonation is terminal; it cannot be followed by the conjunctive participle [repetition of the predicate of the previous sentence, i.e. in narrative, in its 'conjunctive' (AvP) form] (1985: 85).

A context of two or three contiguous sentences is sufficient to establish the 'perfect' function of *viṭu*. What is revealed, then, when we consider a discourse in its entirety, as for example a narrative? Narrative has the advantage of being a relatively simplified discourse type pragmatically, since it involves much less interaction between narrator and audience than, say, between the participants in a conversation. A narrative also typically relates completed events in past time, and thus is likely to make use of the notion of completion in its organizational structure. Hopper (1979) observes that perfective aspect in a number of languages, including French, Russian, and Malay, plays an important role in the sequencing of major events within a narrative. He relates perfectivity to a complex of notions cross-linguistically, including strict chronological sequencing of dynamic, kinetic events; human topics; preservation of subject (typically presupposed); assertion of new information in the verb; and 'foregrounding', or signalling of events indispensable to the narrative.

In order to test this hypothesis, I analyzed the use of *viṭu* in Tamil oral narrative discourse with respect to each of the features mentioned by Hopper. Twenty narratives told by 9 adult native speakers have been analyzed; of these, eleven are folk stories, and nine are personal narratives.³ The results of my analysis are summarized in 18):

Feature		Frequency	%
total finite <i>viṭu</i>		210/1096	19.16%
tense:	past	171	81.43%
	present	34	16.19%
	future ⁴	5	2.34%
verb type:	accomp.	182	88.66%
	achiev.	20	9.52%
	process	5	2.34%
	state	3	1.43%
transitivity:	tr.	63	30.00%
	intr.	147	70.00%
chronologically sequenced		185/201	92.04%
dynamic/kinetic event		155	73.81%
"human" subject/topic		189	90.00%
same s/t as previous S		133/207	64.25%
same s/t as following S		121/197	61.42%
S contains no 'new' NPs (assertion in verb)		201	95.71%
narrative foreground		192	91.43%

Out of a total of 1096 finite verbs employed by the narrators in all of the stories, 210 (or 19.16%) are modified by *viṭu*. Of these, most are intransitive ⁵ accomplishment verbs inflected for past tense. As the figures in 18) show, use of *viṭu* in the oral narratives correlates strongly with clauses with human (or anthropomorphized animal) subjects (90.00%) relating chronologically sequenced (92.04%), 'foreground'--or indispensable to the story line--events (91.43%), where the main assertion is in the verb (95.71%). With regard to these features, therefore, Tamil *viṭu* is a strong indicator of narrative perfectivity as characterized by Hopper. Hopper's prediction that perfective events tend to be dynamic in nature is also borne out (73.81%), although less overwhelmingly. This is due to the fact that a number of verbs which commonly take *viṭu*, including the verbs *en* and *col* 'to say', cannot be considered to express highly kinetic events, but may nevertheless be evaluated by the speaker as indispensable to the narrative sequence. This suggests that the foregrounding function supercedes the requirement that events be dynamic.

The foregrounding function of *viṭu* is illustrated in the narrative sample in example 19) below:

19)

a. Anta..anta oru ūr ponnū vantu, anta paiyanai kūtītū atu pōy-ituccu.
that..that a town girl come-AvP that boy-acc take-AvP it go-vitū-P3ns

b. "Kalyānam paṇṇītū öti pōy-ītālām" nnu collittū pōy-ituccu.
wedding do-vitū-AvP run.away-vitū-may thus say-vitū-AvP go-vitū-P3ns

c. Pōy oru mācam, eñkēyō olīñcu iruntu-ttāñka.
go-AvP one month somewhere hide-AvP be-vitū-P3pl

d. Appurām..oru, oru appurām, vantu-ttāñkalō.
after a a after come-vitū-P3pl-DUB

e. Vantu, inta aṇṇān, tampi.. inta ponnū pōnatunāle anta family-kkē matippu
come-AvP this older.bro younger.bro this girl go-since that family-dat! respect
korañcu-tūm.
lessen-vitū-F3ns

f. Atuvum uñmai tāñ.
that+ truth emph.

g. Nāñe..eñka vitle ellām atu tāñ piraccanai.
!! our house-loc all that emph. problem

h. Oru- anta ponnū pōy-ituccu nñā, uñanē, ivañka vittilēyē,
a that girl go-vitū-P3ns cond. immediately their house-loc!
ivañkalukkulleyē, ivañka jātikkuñleyē, ivañkalai kēvalamā pēcuvāñka illai.
they-inside! their caste-inside! they-acc disgrace-adv speak-F3pl tagQ

i. Kēvalamā tāñ pēcuvāñka.
disgrace-adv emph. speak-F3pl

j. Appa..anta paiyanaiyum, anta ponnayum kūtītū, "Nñka vantu nāñka vantu
then that boy-acc+, that girl-acc+ take-AvP, you-pl come-AvP we come-AvP
uñkalukku kalyānam muticcu veccu-tarōm" appati nnu colli-tarāñka.
you-dat wedding finish-AvP keep-vitū-Pr1pl like.that thus say-vitū-P3pl

k. Collittū anta ponnaiyum..anta paiyanaiyum kūtītū vantu-ttāñka.
say-vitū-AvP that girl-acc+ that boy-acc+ take-AvP come-vitū-P3pl

l. Kūtītū vantu.. kalyānam muticcu-ttāñka.
take-AvP come-AvP wedding finish-vitū-P3pl

a. That..a girl from that place, um, *went off* with that boy.
b. She said "We can get married and then run away," and then *went off*.
c. And then for a month, they hid somewhere and *waited*.
d. Afterwards..um, afterwards, *did they come?*
e. Um, (her) older brother (and) younger brother..since the girl had gone, the
family would lose face.
f. And that('s) really true.
g. Even (with) me..in our house and everything..that('s) the problem.
h. If a- the girl has gone off, immediately they'll bad-mouth them in their home,
among themselves, in their caste, right?
i. They'll really bad-mouth them.
j. So they brought the boy and the girl, and *tell⁶* them, "You, um, we'll finalize
your wedding."
k. And then, they *brought* the girl and the boy *back*.
l. And then, they *finalized* the wedding.

In this sample, taken from a longer story about inter-caste marriages, the *viṭu* sentences relate the primary events of the narrative: 'she went off', 'they hid and waited', 'her brothers came', 'they tell them "We'll finalize your wedding"', 'they brought them back', 'they finalized the wedding'. Sentences (h) and (i), which give general background information in the future/habitual tense, and the equational (verbless) sentences f) and g) expressing the speaker's personal evaluation, do not have *viṭu*. (The use of *viṭu* with the future tense in sentence (e) does not signal a narrative event but rather indicates pragmatic assertion, as do also the *viṭu*-marked verbs within quotes in sentences (b) and (j)). Note that the stative main verb *iru* 'to be' in line (c) when followed by *viṭu* takes on a more dynamic, eventive interpretation: 'They hid somewhere and waited.' The 'waiting' here is a discrete event viewed in its entirety, without any temporal overlap with the events of the surrounding sentences. Not all of the oral narratives I have examined signal foreground events by the use of *viṭu* with such a high degree of systematicity. It is not unusual for events of the primary narrative sequence to be related in the simple past, or unmarked narrative tense, alongside of others (presumably, those to which the narrator most wishes to draw the listener's attention) marked by *viṭu*. Nevertheless, the trend is evident in virtually every narrative in which *viṭu* appears at all.⁷ Thus the evidence supports the claim that the primary function of *viṭu* in narrative discourse is that of 'perfectivity'.

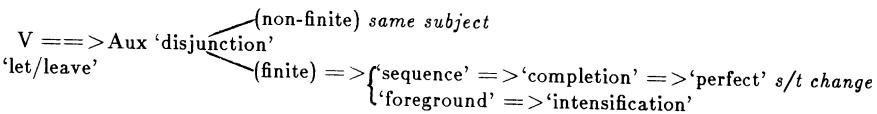
How does this finding relate to what we have seen of *viṭu* in other discourse contexts? It is interesting to note that Annamalai's predictions regarding the 'perfect'-like behavior of 'completive' *viṭu*, namely that it closes off the "message", cannot be followed by a conjunctive participle, and implies a following shift of topic, are *not* supported by the narrative data. Example 19) constitutes a single episode; the use of *viṭu* for individual events within it does not imply any special closure. Moreover, lines (c), (e), (k), and (l) all begin with a conjunctive participle repeating the finite, *viṭu*-marked predicate of the preceding sentence. In these sentences, the subject is necessarily maintained, due to a syntactic constraint⁸ on maintaining the same subject across clauses with the use of the conjunctive form. The discrepancies can be accounted for by the fact that Annamalai's observations were based on example sentences interpreted as though in the context of conversation, not narrative. It is noteworthy, however, that of the 16 *viṭu* clauses in my sample which are *not* on the narrative time line (that is, not in strict chronological sequence), 12 of them (75%) relate previously completed events and must be translated by the English past perfect. This suggests that the notion of 'perfect' as expressed by Tamil *viṭu* is not incompatible with narrative, although it clearly takes second place to the perfective, sequencing function.

2.3. 'Perfectivity' as core function.

At this point I would like to submit that the characterization of *viṭu* as a marker of narrative perfectivity can be extended to account for its non-narrative uses as well. As Hopper observed, the notion of 'completion' arises logically from narrative sequencing, since one event must be complete before the next can follow. However Tamil already has a productive past tense which alone implies 'completion'; thus the applications of 'completive' aspect on the propositional level are

somewhat restricted in the language. With transitive accomplishment verbs, as in examples 9) and 10), *viṭu* indicates that the event has reached its logical end point (as evidenced by the total affectedness of the patient). Where such a contrast cannot be made, *viṭu* preserves a more general sense of 'intensification of the verbal action' which has given rise in turn to a variety of pragmatic nuances, many of them verb or situation-specific. Probably related to the notion of 'intensity' as well are *viṭu*-marked assertions regarding the future, which have come to be associated with 'definiteness' on the speech act level; e.g. '(I definitely assert that) Kumar may perhaps come' (cf. ex.17). In the context of continuous discourse, focus on the end point of a completed event, as in the 'perfect' function of *viṭu*, extends the notion of 'completion' to the relevance of the completed event to what follows. (The fact that Tamil already has a productive perfect construction formed from the verb *iru* 'to be' may help to explain why *viṭu* has not grammaticalized further in this sense). Ultimately, we may posit that the 'disjunctive' role which *viṭu* plays in non-finite clauses (cf. ex.3) is related to both the original lexical meaning of the main verb ('to leave (off)') and the sequencing function evidenced in Tamil narrative, quite possibly as an intermediary step between the two. The extensions of meaning of *viṭu* are represented schematically in 20):

20)



In addition to relating the senses of *viṭu* in a logically plausible fashion, the direction of development which I have postulated here is consistent with maintenance of subject/topic across *viṭu*-marked clauses. The original disjunctive use typically requires that the subject of the main clause be the same as that of the subordinate clause, as in example 3). The extended 'perfect' use, on the other hand, implies a change of subject/topic. In the oral narrative sample, as summarized in the table in 18), subjects/topics are maintained following finite *viṭu* clauses only about 60% of the time. That is, they do not incline significantly one way or the other in this regard, contrary to the conflicting predictions of Annamalai and Hopper. This suggests that the explicit topic-shifting function is further removed from the disjunctive function than it is from the use of *viṭu* in narrative, as figure 20) implies.

3. Summary and conclusion.

Before returning to the theoretical issues raised in the beginning of this paper, let us summarize briefly what we have seen thus far. In §2.1., it was argued that the Tamil auxiliary *viṭu* is not adequately described on the propositional level by any of the grammatical labels which have been applied to it. There is, however, evidence that it interacts in a more systematic fashion with the larger discourse context. My analysis of 20 oral narratives revealed that in the context of narrative discourse *viṭu* functions in the overwhelming majority of its occurrences as a marker of what, following Hopper, I refer to as 'narrative perfectivity'. In §2.3., I proposed that 'narrative perfectivity' gives rise to certain additive meanings, such as 'completion' and 'verbal focus', which can be extended to

account for all of the major categories of meaning expressed by the auxiliary *vitu*, on the propositional as well as on the discourse level.

While this proposal cannot be considered to constitute "proof" of the direction of grammaticalization independent of confirmation from actual diachronic evidence, I would like to argue that the evidence of Tamil *vitu*, along with that of Malay *lah*, suggest that the functional-semantic notion of 'perfectivity' is inherently bound to the narrative discourse context, and that in Tamil at least, certain features of its meaning, such as 'chronological sequence' and 'verbal focus', would have been unlikely to arise at all outside of narrative. The objection will no doubt be made that these are not basic senses of perfectivity but rather are derived from precisely that same extended discourse context. The notions of sequence and focus are central, however, to the characterization of Tamil *vitu*. It is via the sense of 'disjunction' that the original lexical meaning of 'leave (off)' is most likely to have grammaticalized, as evidenced by the non-finite use of *vitu*, which was presumably insulated from further extension of meaning by its sentence-internal position. In sentence-final position, the only possible application of 'disjunction' (a type of conjunction) would have been in larger discourse units of events in sequence. Verbal focus, on the other hand, accounts for important uses of *vitu* on the sentence level ('intensification', pragmatic 'definiteness') as well as on the discourse level ('foregrounding').

An explanation moving in the opposite direction; that is to say, from sentence to discourse; would encounter a number of problems not posed by the current hypothesis. It would have to account for the sense of 'focus' or 'emphasis' independent of the functional notion 'foregrounding'. Similarly, it would have to account for the extension of meaning from 'disjunction' to 'completion' without passing through the intermediary of 'sequence' (a notion available only in connected discourse). It would ultimately be forced to the inelegant conclusion that the notion of 'completion' was then lost in the context of narrative (since narrative *vitu* does not display any of the features of 'completion' as described by Annamalai) and replaced with the notion of 'sequence/disjunction'! Even if solutions were to be found to these difficulties, a theoretical position taking the propositional meaning (which I assume would be 'completive', for lack of a better candidate) as primary would need to account for why the application of this meaning is so restricted on the sentence level. Given the existence of problems such as these, it is the "discourse-first" hypothesis, and not the traditional approach, which provides the more elegant and internally consistent account of the facts of Tamil *vitu*.

These conclusions should not be taken to imply that the traditional account of the grammaticalization process for other linguistic elements is necessarily incorrect, nor that it is impossible to arrive at workable semantic characterizations on the sentence level, since clearly much valuable work has been and continues to be done in these areas. What I would like to suggest is that the largely unquestioned belief in the "unidirectionality" of the grammaticalization process be reconsidered in the light of phenomena such as Tamil *vitu*, which appears to provide evidence not only for the opposite direction of change but for a bi-directional give and take (as suggested for example by the extended narrative use of the *vitu* 'perfect'). The Tamil data further illustrate that, even when there exists evidence

from a large number of languages in support of a particular development, the process of grammaticalization can never be fully predictable, inasmuch as it is influenced by the availability of grammatical categories within a given language at a given point in time. The story of Tamil *viṭu* might have been a different one altogether if the language had not already had a fully productive past tense and perfect construction in relation to which it had to negotiate its semantic and functional role. Finally, the concept that grammaticalization may be motivated by discourse functions as well as by referential meaning deserves much more serious consideration. Such a conclusion need not stand in opposition to what we already know about semantic processes, but would rather add to it a dimension which reflects a profoundly basic fact about language use: that it often serves an underlying non-referential agenda.

Endnotes

1. The 'continuous' auxiliary *konṭiru* is actually made up of two verbs, *kol* 'to hold' and *iru* 'to be'. By itself, *kol* is used as an auxiliary to express 'continuation' or 'simultaneity' in non-finite clauses, and 'reflexivity' or 'middle voice' in finite position. As it is not fully "aspectual" in the same sense as the others, I have not included it here.
2. I have not attempted to argue for or against the third characterization, 'intensive', in that this sense is impossible to demonstrate for sentences in isolation without having access to the intentions of the speaker or writer. This alone disqualifies it as a candidate for 'core meaning'.
3. As the folk narratives and the personal narratives behave similarly with respect to the use of *viṭu*, I make no further distinction between them here. A somewhat different pattern emerges when we consider written narrative, however, which suggests that 'narrative perfectivity' as indicated by *viṭu* is a characteristically oral phenomenon. This is an area which requires further investigation.
4. Instances of *viṭu* in future tense with habitual meaning have been excluded from the analysis, as the inherent imperfectivity of the future tense in Tamil tends to restrict it to 'background' functions.
5. The predominance of intransitive verbs in the foregrounded narrative event sequence might seem surprising, particularly in view of the predictions made by Hopper and Thompson's (1980) Transitivity Hierarchy. The 70% figure for intransitive verbs in this sample reflects the fact that the four verbs most commonly used with *viṭu*, and which alone account for 35.71% of its occurrences, happen to be intransitive. These are: *pō* 'go' (24 instances), *vā* 'come' (19 instances), *col* 'say' (17 instances), and *en* 'say' (15 instances).
6. Narrative uses of present tense such as this one must be considered referentially equivalent to the past. As such, the example does not contradict the observation that *viṭu* plus present tense may not refer to present time (a fact which is consistent with its perfectivity).
7. At least one instance of finite *viṭu* appears in 19 out of the 20 narratives in my sample. The narrative which lacks it is a very short (7 finite verbal forms) folk tale related predominantly in the future/habitual tense.

8. There are exceptions to this constraint (cf. Lindholm 1975; Paramasivam 1983) but these need not concern us here.

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Paradigmaticization: A Case Study from South Asia*

Peter Edwin Hook
 University of Michigan

"Paradigmaticization" refers to that late stage in grammaticalization during which the distribution of an evolving grammatical element becomes general enough for it to enter into the system of options that characterize all (or nearly all) the members of some major word-class. On the basis of data from Indo-Aryan languages I show that this stage may exhibit what at first seem to be contradictory properties: While the text-frequency of the paradigmaticizing element shows a dramatic increase overall, the syntactic environments in which it may occur actually decrease in number and variety.

This finding emerges from a family-wide study of a class of auxiliaries in Indo-Aryan, all of which are homophonous with main verbs in their respective languages: GO, GIVE, TAKE, THROW, LEAVE BEHIND, PUT, etc. A "compound verb" (CV) comprises the finite form (FF) of one of these following the non-finite (NF) form of a primary verb:

1. compound (= primary + aux) vs. non-compound:

Kashmiri:	Tyin khuul-yith dyi		Tyin khool <1>
Hindi-Urdu:	Tin khol d-o	~	Tin kholo <2>
Gujarati:	Tin khola-i d-o	~	Tin khola-o
Marathi:	Tin ughaD-un dy-aa	~	Tin ughaD-aa
	can open-NF GIVE-FF	~	can open-FF
	'Open the can!'	~	'Open the can!'

As a syntactic structure the compound verb is an innovation in Indo-Aryan <3>, one that has evolved further in some languages than in others. This is reflected in wide variation in its text frequency: In some languages (Hindi-Urdu, Panjabi) it is encountered in running text up to six times more frequently than in other languages (Marathi, Kashmiri). The full gamut of frequencies between these two extremes is represented:

Relative text-frequency of compound verbs in NIA: <4>

Shina (Gilgit)	0	
Kashmiri	1	--
Marathi	2	----
Rajasthani	3	-----
Gujarati	4	-----
Punjabi	5	-----
Hindi-Urdu	6	-----

Along with text frequencies, the differences in meaning which stem from the use of a compound as opposed to a non-compound verb vary from one language to another. For some Indo-Aryan languages it can be shown that this opposition has become part of a system of regular semantic contrasts, a part of the verbal paradigm, while in others it has not. Furthermore, while more studies need to be done, research on older forms of Bengali and Hindi indicates that the construction is becoming more general over time (Zbavitel 1970, Kapp 1972). Assuming that the direction of change is the same for all Indo-Aryan languages, a comparative study of the compound verb provides us an unusual opportunity to examine the process of paradigmaticization at different points in apparent time and to follow it through its successive phases. In the first half of this paper (one part of a more comprehensive study <5>), I consider two stages that are quite widely separated, those represented by Hindi-Urdu and Marathi. In the second part I look at an intermediate stage of development, that presently found in Gujarati.

In a language like Marathi where the overall text frequency of compound verbs is low auxiliaries retain a greater fraction of their original lexical meaning. For instance, the use of the auxiliary GIVE is limited to either situations in which outward movement is imparted to the patient of an action <6>:

2m tyaana katsraa Taak-un dilaa 'He threw out
he-ERG trash throw-NF GAVE the trash.'

or in which the result of the action is outwardly vectored, that is, in which it makes sense to think of the action as being done for another (as opposed to being done for oneself):

3m maajhaa saaThi he kaam kar-un de-Sil kaa
my-OBL sake this job do-NF GIVE-FUT2 QM
'Will you do this job for me?'

In a language like Hindi-Urdu where the compound verb is of much more frequent occurrence the connection of the auxiliary qua lexeme to its primary is harder to explain or predict. Combinations like those in 2m and 3m are, of course, not excluded <7>:

2h us-ne kacraa phE^K diyaa 'He threw out
he-ERG trash throw GAVE the trash.'
3h kya^a mere liye ye kaam kar d-o^{ge}
QM my sake this job do GIVE-FUT2
'Will you do this job for me?'

But we cannot so easily give an explanation of GIVE's occurrence in 4h where the lexical meaning of GIVE is orthogonal to the meaning of the verb phrase as a whole:

4h mAI ne uske hoThO ko...TaTol-naa...Suruu kar diyaa
 I ERG her lips DAT feel-INF start do GAVE
 'I began to feel her lips.' Vaid 1970:13

nor in 5h where the semantic element of outward orientation is inherent in the meaning of the primary verb and the auxiliary appears redundant:

5h aaxirkaar us ne mujh ko paise de diye
 finally he ERG me to money give GAVE
 'At last he gave me the money'.

Even more problematic is any explanation in lexical semantic terms of compounds like those in 6h and 7h in which the literal meaning of the auxiliary verb seems to contradict or cancel the meaning of the primary:

6h is mE us ne teraa naam le diyaa
 this in he ERG your name take GAVE
 'He implicated you in this.'
 7h idhar aa jaaو 'Come here!'
 here come GO

In Marathi, the corresponding combinations are either not acceptable or (in the case of 7) can be interpreted only as expressing two separate actions:

4m mi titse oTh tsaatsap-na suru kela (*kar-un dila)
 I-ERG her lips touch-INF start did do-NF GAVE
 'I began to feel her lips.'
 5m Sevati tyaa na ma-laa paise dile (*de-un dile)
 finally he-ERG me-to money gave give-NF GAVE
 'Finally he gave me the money.'
 6m hyaacaat tyaaa tudzha naaw ghetla (*ghe-un dila)
 this-LOC he-ERG your name took took-NF GAVE
 'He implicated you in this.'
 7m ikaDa ye 'Come here!' (*ye-un dzaa)
 here come come-NF GO
 (ye-un dzaa can only mean 'Come here and then go!')

Paradoxically, in CV-rich languages like Hindi-Urdu there are many more syntactic environments that exclude the compound verb altogether. Thus Marathi, with its far less frequent and less grammaticalized compound verb auxiliaries, permits them with negatives and semi-negatives (viz 'only'):

8m tyaa-na katsraa Taak-un dilaa naahi
 he-ERG trash throw-NF GAVE not
 'He did not throw out the trash.'

9m haa katsraa jaan-na-ts Taak-un dilaa
 this trash John-ERG-only throw-NF GAVE
 'John was the only one who threw out this trash.'

in construction with modal and phasal verbs:

10m aadz haa katsraa Taak-un de-u Sak-Sil kaa (modal)
 today this trash throw-NF GIVE can-FUT QM
 'Can (you) throw out this trash today?'

11m to katsraa Taak-un dy-aaylaa laaglaa (phasal)
 he trash throw-NF GIVE-INF began
 'He began to throw out the trash.'

and in the forms of past and conjunctive participles:

12m nuktyaa-ts ho-un gel-el-yaa goSTi...
 recently-EMP happen-NF WENT-PP-fpl things
 'things that occurred very recently...' Kolhatkar 4

13m to katsraa Taak-un dy-un aat gelaa
 he trash throw-NF GIVE-CP inside went
 'He threw out the trash and went inside.'

while Hindi-Urdu, where the compound verb is from three to four times more frequent than in Marathi, does not:

8h us ne kacraa nahII phEkaa (*nahII phEk diyaa)
 he ERG trash not threw not throw GAVE
 'He didn't throw out the trash.'

9h ye kacraa jaan ne hii phEkaa
 this trash John ERG only threw
 'John was the only one who threw out this trash.'
 (*ye kacraa jaan ne hii phEk diyaa
 this trash John ERG only throw GAVE)

10h kyaa aaj ye kacraa phEk sak-oge
 QM today this trash throw can-FUT
 'Can (you) throw out this trash today?'

(*kyaa aaj ye kacraa phEk de sak-oge
 QM today this trash throw GIVE can-FUT)

11h vo kacraa phEka-ne lagaa (*phEk de-ne lagaa)
 he trash throw-INF began throw GIVE-INF began
 'He began to throw out the trash.'

12h haal-hii-mE huii baate usko yaad nahII rahtII
 recently happened-fpl things him memory NEG remain
 'He doesn't remember things that happened recently.'

(*haal-hii-mE ho gaii baatE...
 recently happen GONE-fpl things...)

13h vo kacraa phEk-ke andar gayaa (*phEk de-ke)
 he trash throw-CP inside went throw GIVE-CP
 'He threw out the trash and went inside.'

These reduced privileges of external co-occurrence are not in contradiction with, but are rather a consequence of the greater freedom in internal co-occurrence relations shown by the Hindi-Urdu compound verb as compared to Marathi's. They follow from the presence of general, across-the-board, paradigmatic values (perfectivity, relative tense, etc.) which the opposition of compound to non-compound forms has acquired in CV-rich languages like Hindi-Urdu.

Traveling north over the thousand or so miles that separate Bombay from Delhi, one encounters languages and dialects with greater and greater compound verb frequencies. Marathi in the south and Hindi-Urdu in the north are at both geographical and, with respect to the CV construction, evolutionary extremes. Applying diagnostic tests to the Hindi-Urdu CV, we can demonstrate that (among other functions) it stands in opposition to the corresponding simple verb (SV) in a system of contrasts that include 1) relative tense and 2) perfective aspect: In a context that explicitly contrasts the time of occurrence of a pair of actions, the CV must be used to express the prior action and the SV, the later one:

14h *jab tak aap yahAA aae us ne mujhe ciT de dii thi*
 when by you here came he ERG me note give GIVEN had
 'By the time you got here he had given me the note.'

15h *jab tak aap ne mujhe ciT dii vo yahAA aa gayaa tha*
 when by you ERG me note gave he here come WENT had
 'By the time you gave me the note he had come here.'

The distribution of compound and simple forms in 14h and 15h is controlled by the relative location in time of the two actions expressed. In 14h and 15h the CV/SV opposition functions to co-express <8> relative tense.

Independent of (and at times in conflict with) this the opposition of compound and simple forms also functions to express perfective aspect in the sense which that term has in Slavistics. Since discussion of aspect in languages which do not have it (like English) tends to generate unsatisfyingly discursive explanations with recourse to visualization and impressionistic analogies (when those explanations fail), I will simply note that in aspectological studies of Russian it has been noted that clauses dependent on expressions of fear and anxiety show a preference for perfectives that borders on being categorical (Forsyth 1970:258-61, 297):

16r *mat' bojalas' kak-by ee syn ne zbolel*
 mother feared lest her son NEG took-sick-PV
 'The mother was afraid that her son might get sick.'

There is a similar (although not quite so unequivocal) preference for perfective forms in clauses dependent on expressions that mean 'until':

17r zvonite poka ne otvetyat
sound while NEG answer-PV
'Keep ringing until they answer.' (Forsyth 1970:133)

These asymmetries in distribution of aspectual forms in Russian have precise counterparts in Hindi-Urdu:

18h mujhe Dar thaa ki kahII tum use ciT na de do
to-me fear was that lest you him note NEG give GIVE
'I was afraid that you might give him the note.'
19h tum yahAA Thaharo jab-tak vo tumhe ciT na de de
you here stay until he you note NEG give GIVE
'Wait here until he gives you the note.'

Applying these same tests to Marathi we find that its CV/SV opposition does not regularly express either relative tense <9> or perfectivity:

14m tu ye-Nyaacaa agodar tyaa-na ma-laa patr dila hota
you come-INF before he-ERG me-to letter gave was
'By the time you got here he'd given me the letter.'
15m tu patr de-Nyaacaa agodar haa itha aalaa hotaa
you letter give-INF before he here came was
'By the time you gave me the letter he'd come here.'
18m ma-laa kaaLjii hoti ki tu tyaa-laa patr de-Sil
me-to anxiety was that you him-to letter give-FUT
'I was afraid that you might give him the letter.'
19m to tu-laa patr de-i paryant itha thaamb
he you-to letter give-INF until here wait
'Wait here until he gives you the letter.'

In a CV-poor language like Marathi, where each auxiliary preserves more of its lexical semantics, it plays no role in any system of general semantic oppositions that determines its presence or absence. That is, it has a tendency to form a tighter bond with its primary and to co-occur with it in all environments open to the primary itself. For the CV-construction to participate in a system of contrasts that includes nearly every lexical verb in their domain it must be possible to find a CV form for nearly every lexical verb. This is not possible in Marathi, especially for intransitive primaries. Hence, the lack of reactivity in 14m through 19m. Since the compound forms that do occur in Marathi do not have paradigmatic values, it is not surprising that they are less sensitive to their grammatical environments and may occur in a variety of contexts (viz, 8

through 13) which are closed to their structural counterparts in Hindi-Urdu.

Hindi-Urdu and Marathi are at fairly extreme points along the scale of paradigmaticization postulated here. Let us look at a language whose CV's are intermediate in frequency: high enough to enter into a system of paradigmatic contrasts but still not so high as Hindi-Urdu's. Do the CV's in such a language have a greater degree of flexibility in their privileges of (external) co-occurrence than Hindi-Urdu's CV's have?

Gujarati, spoken in an area to the north of Marathi and to the south of Hindi-Urdu, has a CV-construction that meets this description: A compound form exists for nearly every lexical verb and by the tests in 14, 15 and 18 the SV/CV opposition participates fairly systematically in the expression of relative tense and of perfective aspect <10>:

14g tame aavyaa te pehlAA eNe paisaa aapi didhaa hataa
 you came that before he-ERG money give GAVE was
 'He had given (me) the money by the time you came.'

15g tame mane paisaa aavyaa te pehlAA e aavi gayo hato
 you me-to money gave that before he come WENT was
 'He had come by the time you gave me the money.'

18g mane bhik hati ke tame kadaac ene paisaa aapi do
 me fear was that you maybe him-to money give GIVE
 'I was afraid that you might give him the money.'

However, while adherence to the distribution of CV/SV forms shown in 14, 15 and 18 is nearly one hundred per cent for speakers of Hindi and Urdu and close to zero for speakers of Marathi, speakers of Gujarati and its dialects, (on the basis of a sample of some eighteen speakers) observe the same patterns only about 75% of the time. That is, the CV/SV opposition is well on its way to acquiring paradigmatic values in Gujarati but is not yet used with perfect regularity by every speaker. As a correlate of this incomplete incorporation of the CV/SV opposition into the verb paradigm, we may note another peculiarity of the Gujarati data which may be explained as a shift from external to internal flexibility in privileges of occurrence. In Hindi-Urdu, CV's do not in general <11> occur in negative environments. It is possible to see in this a reflection of their role in expressing anteriority and perfectivity: The time of the non-occurrence of an action is not often contrasted with the (later) time of some other action. Nor is complete or holistic conceptualization likely to be as important in talking about actions that do not occur as it is in talking about those that do. In Hindi-Urdu a disfavoring effect may be observed not

only for prototypically negative particles like nahII 'not' and mat 'do not' (prohibitive particle) but for semi-negatives like sirf...hii 'only' and Saayad hii 'hardly' as well:

20h buuRhaa haathii mar gayaa 'The old elephant died.'
old elephant die WENT
21h koi haathii nahII maraa 'No elephant died.'
any elephant NEG died
22h sirf ek hii haathii maraa 'Only one elephant died.'
only 1 EMP elephant died

In 21h and 22h we see the disfavoring effect of a negative and a semi-negative on a primary which (perhaps because of its inherent semantics) has a strong preference in Hindi-Urdu for manifestation as a CV. In Marathi, the same predicate almost always shows up as a SV and 20, 21 and 22 do not show us anything. In Gujarati, however, where the paradigmaticization of the CV/SV opposition is almost but not quite complete, we find a less sensitive reaction to negative contexts. While nearly every speaker uses the SV with full negatives like nathi 'not' more than half of them prefer the CV with semi-negatives:

20g gharDo haathi mari gayo 'The old elephant died.'
old elephant die WENT
21g ekei haathi maryo nathi 'No elephant died.'
even-one elephant died NEG
22g fakt ek-aj haathi mari gayo 'Only 1 elephant died.'
only 1-EMP elephant die WENT

In the first part of this paper we saw that the CV construction in a CV-rich language like Hindi-Urdu has poorer privileges of occurrence than it does in a CV-poor language like Marathi. This difference is understandable if we think of the less grammaticalized CV auxiliaries in Marathi as being themselves more like lexical verbs, while the more grammaticalized ones in Hindi-Urdu are less like their homophonous primaries, more like modals. As such they do not occur in places where other modals (eg, sak 'can', caahiye 'should' and par 'have to') do not occur, while the CV auxiliaries of Marathi (in general) may occur wherever their homophonous counterparts among primary lexical verbs occur. This, of course, is a coarse kind of explanation, true in general but not applicable to the graded differences in sensitivity to negation shown by a three-way comparison of the compound verb in Hindi-Urdu, Marathi, and Gujarati (particularly since the use of modals is not at all disfavored by negation). To fully understand

that sensitivity to negation we would need to look at the semantics of relative tense and perfective aspect in more detail than space here allows <12>.

Summary: On the basis of the evolution of the CV in Indo-Aryan, I propose that there is a correlation among the following three concomitants of paradigmaticization: (1) a dramatic increase in textual frequency, (2) a universalization of privileges of occurrence vis-a-vis some major word class, and (3) a reduction in privileges of occurrence with respect to some inventory of constructions.

Notes

*. I gratefully acknowledge the organizational and the financial support of the American Institute of Indian Studies, the U.S. Office of Education (Fulbright-Hays) and the Horace H. Rackham School of Graduate Studies (University of Michigan) for studies in the field which led to the findings presented here. I am also indebted to the insightful comments and suggestions of friends and colleagues, in particular, to those of John Myhill and Madhav Deshpande.

<1>. Standard Kashmiri word order has been altered here toward the South Asian norm in order to facilitate the comparison of its compound verb with those of other NIA languages. (Kashmiri is V-2 in most types of clauses.)

<2>. Transcription systems used for data from Marathi, Gujarati, Kashmiri, Hindi-Urdu and other NIA languages are those generally found in the Indo-Aryan linguistics literature except that contrastive length in vowels is shown by doubling the symbol (not by macron or colon), nasality in vowels is shown by capitalization (not by tilda or following capital N), retroflexion of apical stops and flaps is shown by capitalization (not by a sublinear dot), and palatal fricatives are represented by capitalization of the symbols for the corresponding dental fricatives (not by diacritics).

<3>. The earliest attestations of the compound verb in Indo-Aryan are to be found in Buddhist Pali, in Jataka Tales composed in Sri Lanka during the early centuries of the Christian era: Hook 1977:336. It is also found in the philosophical writing of Buddhaghosa (example A located by Madhav Deshpande in sumangalavilāsinī:180):

A yam yam virujjhati tam tam ujukam katvā denti
 what what conflicts that that straight make-NF GIVE

'(True scholars) correct whatever is contradictory.' It may have come into Indo-Aryan as a calque on similar (and more ancient) structures in Dravidian or Altaic: see Hook 1987:163-4.

<4>. Both names and numerical values are very approxi-

mate. A map of higher resolution incorporating a 250 by 250 kilometer grid is in Hook 1977.

<5>. Presented at the Symposium on Grammaticalization at the University of Oregon, May 1988.

<6>. Marathi data confirmed by Madhav Deshpande. Abbreviations used in this paper are as follows:

2.....	second person
CP.....	conjunctive participle marker
CV.....	compound verb
DAT.....	dative case or postposition
EMP.....	emphatic particle
ERG.....	ergative case or postposition
f.....	feminine gender
FUT.....	future tense
INF.....	infinitival form
LOC.....	locative case or postposition
NEG.....	negative particle
NF.....	non-finite form
OBL.....	oblique case
pl.....	plural number
PP.....	past participle
PV.....	perfective form
QM.....	yes/no question marker
SV.....	simple (=non-compound) verb

<7>. Hindi-Urdu data confirmed by Afroz Taj.

<8>. I use the term co-express because the past perfect also expresses anteriority of action here. Other situations that pattern like 14h-15h exist in which perfect tenses cannot be used (Ah is from Nesipal 1981:311):

Ah is-se pahle ki vo tumhE piiTe biicbacaav kar dEge
this before that he you beat rescue do GIVE

'Before he can hit you they'll come to your rescue.'

<9>. This is not to say that the use of the compound verb in Marathi has nothing to do with these semantic categories. On the contrary, the expression of anteriority, for example, is facilitated in Am by use of a CV:

Am mi aadhi haa ker kaaDh-un gheu. mag tu vaats.

I first this dust remove-NF TAKE then you read

'First let me sweep. Then (sit down to) read.'

But a CV is not required. In fact, for many primaries (especially intransitives) there is no compound form available even when the environment is such as to favor the use of one:

Bm aapaN aadhi sTeSanaalaa pohotsu. mag fon-karu.

we first station-DAT arrive. then telephone

'Let's first get to the station and then phone.'

<10>. Gujarati data were collected in Gujarat in 1982.

<11>. See Gaeffke 1967:13-38 for discussion of negation and the Hindi-Urdu compound verb.

<12>. For discussion of the interaction of perfective aspect and negation see Hook 1974:201-229 and Forsyth 1970:241-261.

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On the Semantics of Cantonese Changed Tone or Women, Matches, and Chinese Broccoli

Daniel Jurafsky

University of California at Berkeley

1. Introduction

As many researchers have noted, southern dialects of Chinese are particularly rich in their lexical use of tone. In Cantonese, even more than in northern dialects such as Mandarin, lexical tone bears a particularly heavy functional load. For example, Chan (1987) noted that Cantonese songs require the melody to conform to the tone contours of the lyrics, a requirement not found in Mandarin. Indeed, the lexical functional load on tone in Chinese is so high that grammatical processes involving tone are very rare. For as Schuh (1978) points out,

Were tones in Chinese languages allowed to undergo the variety of syntagmatic influences typical of African languages, where a particular syllable may have a number of tonal realizations depending on tonal environment and other factors, the lexical role of tone would be jeopardized. (p. 251)

Although this is generally the case with Cantonese, such phenomena do exist. What I'm going to talk about in this paper is a particular tone change in Hong Kong Cantonese, producing lexical items marked by what is usually called the "changed tone," one of two specific high tones.

The changed tone has been widely remarked on - in fact Giles' 1892 dictionary of Chinese mentions the changed tone, adding that "the discovery of these 'variants' has only been made within the past fifteen years" and that "these 'variants' are in full vogue through the region where the Canton group of dialects is spoken." But from that time onward, most studies have focused on describing the phonological conditions to the change, giving short shrift to the essential semantic side of the process. Most researchers have followed Y. R. Chao, who noted in 1947 that the changed tone "has a morphological meaning, namely, 'that familiar thing one often speaks of.' Few studies have pursued the matter to any further semantic depth. To be fair, even Chao noted that this rather vague abstraction was merely a "convenient summary of a variety of similar meanings." I'd like to take my cue from Chao and try to characterize these "similar meanings."

In order to do so, I will bring to bear semantic tools of the sort used by Claudia Brugman in her analysis of the English preposition "over", (Brugman 1981) and George Lakoff in *Women, Fire, and Dangerous Things* (Lakoff 1987). In particular, I will discuss the semantic radial category delimited by words occurring with the changed tone, centered around a "diminutive" function. Many extended uses of the changed tone will be shown to be motivated by this diminutive semantic core.

Along the way, I will discuss some diachronic and comparative issues in pan-Yue diminutives, and discuss some arguments considering the changed tone as the residue of earlier segmental processes.

2. The Changed Tone

Hong Kong Cantonese is normally considered extremely close to the dialect of Guangzhou. However, the dialects do seem to be diverging, particularly with respect to the changed tone. Since the process of tone change is not at the same stage of productivity in the two dialects, I will concern myself exclusively with Hong Kong Cantonese, which I will refer to as Cantonese for brevity. Thus much compiled evidence (for example Rao 1981) is used only as a guide to elicitations. The orthography used in examples is that of Lau (1977); the tones are numbered as in Figure 1, and the high-rising changed tone will be marked with an asterisk.

As is clear in Figure 1, Hong Kong Cantonese has six tone classes. Of course by traditional Chinese philology there are nine tones, but for the purposes of synchronic description, only six are tonetically distinct. Syllables with stopped finals, that is with *ru sheng*, the entering tone, do have a shorter tone than the corresponding level tones in open and nasalized segments, but this is sub-tonemic. Until quite recently, and perhaps still with some older speakers, particularly men, there were actually seven distinctive tones. However, in the idiolects of most modern speakers of Hong Kong Cantonese, the high level and high falling tones have fallen together. This is true with my informant, who is a twenty-five year old woman.

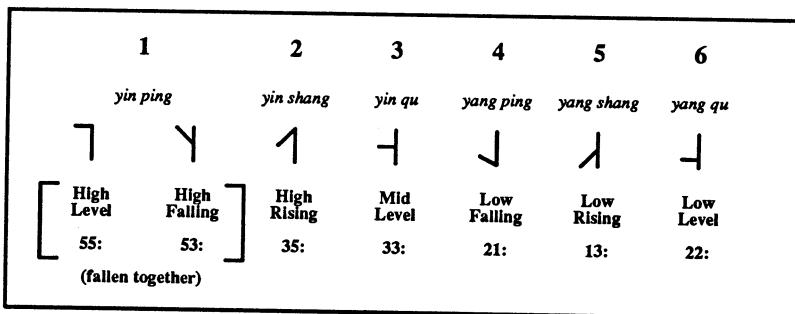


Figure 1 - Cantonese Tones

The loss of the seventh tone turns out to be relevant to the discussion of the changed tone because there are actually *two* changed tones, not just one. In other words, there are two phonetically distinct products of the tone change derivational process. With some exceptions, each of the Cantonese tones acquires a predictable one of these changed tones from the derivational process. The two changed tones are identical to the high level and the high rising tones.

The rule might be summarized as in Figure 2. Note that the high falling tone changes to the high level tone, and the other tones, with the exception of the high rising tone, change to the high rising tone. Now recalling that the high level and high falling tones have fallen together in Hong Kong, (which is to say they are in free variation) you will see that about half the data for this derivational process is lost, at least with young informants. The only clear cases where the derived high level tone is clearly noticeable are the few exceptional cases which violated the derivational rule in Figure 2. In other words, words of lower tones which changed to high level and not high rising tone. Other evidence for the high level derived tone, can readily be found in dictionaries and word lists compiled by older speakers. But in the dialect of my informant, the right half of the rule in Figure 2 is completely inoperative.

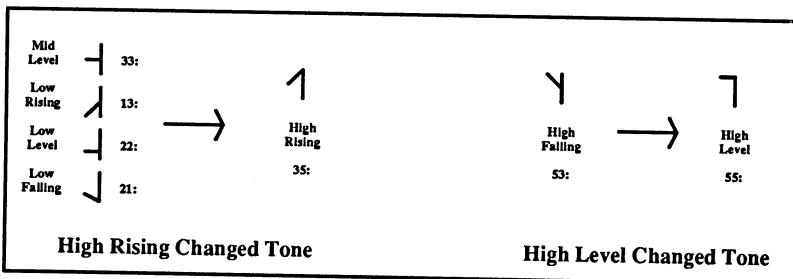


Figure 2 - Tone Change

Because the changed tone carries a morphological rather than phonological function it is best looked at as a derivational process reminiscent of the Archaic Chinese processes of derivation by tone change, and not a sandhi phenomenon. This derivational process is no longer productive in its entirety, although as will be shown later, some aspects are indeed fully productive. However, I'm going to talk about it in item-and-process terminology, even though in many cases the tone shift is completely lexicalized.

Although the derived tone is identical with the high rising tone, this wasn't necessarily always the case. In fact, it seems quite likely that the changed tone and the high rising tone fell together only very recently, a theory also advanced by Kam (1980). Evidence for this position comes from many sources, but perhaps the strongest is comparative - as we will note later, in all the other Yue dialects which we will have occasion to mention, the changed tone is a high rising one *distinct* from any lexical tone. And as recently as 1947, Y. R. Chao claimed that the Cantonese changed tone was clearly different from the high rising tone in that it began lower, at 2 instead of 3. But if this was the case then, it is certainly not now, at least not in Hong Kong.

To summarize, then, the tone change rule is a paradigmatic replacement rule (in the sense of Schuh 1978). Thus the rule is not formulated in terms of feature changes, but as absolute replacement of tone. It replaces all non-high tones with the high rising tone, and does not affect the high level and high rising tones.

3. Phonological Constraints

As might be expected from the less than fully productive state of the rule in Figure 2, it has somewhat complex phonological constraints. First is the fact that the tone shift excludes all words of original high rising tone. This is because, as discussed above, the *derived* tone is identical with the high rising tone. So the process is simply not applicable to words with high-rising tone, and of course with the loss of the level-oblique contrast in the high tone, it is applicable to no high tones at all. Thus we are in the position of having a morphological process with semantic force, but phonological constraints preventing it from applying to lexical items that it otherwise might.

Additionally, the tone shift is much more common with words of lower tones - the majority of examples are from words with original low falling or low level tones. A very small number are from words with low rising tones or mid level tones. I will propose later that many of the mid level examples are actually from a distinct nominalizing process not related to the diminutive tone shift.

The next phonological constraint is also somewhat unusual, and brings up another issue in the analysis of the tone shift. The changed tone applies only idiosyncratically to bisyllabic words. In bisyllabic words, the change seems to only be allowed in the final syllable. So there are many examples where the semantics would seem to predict a changed tone in the first syllable of a bisyllabic root, but no change occurs. We will come back to this point later as evidence for a suffixal origin for the changed tone.

4. The Changed Tone as Derivational Process

The rest of the paper will focus on the use and semantics of the changed tone, in two parts. First I'll stress the derivational nature of the tone change process. Noting that the process is primarily a nominalizing one, I'll outline a rough derivational typology, pointing out the ubiquitous use of metaphor and metonymy in the derivations. Next, I'll change the focus to the semantic domain, and illustrate the radial category formed around the concept of the diminutive.

Derivation by tone change is not a new process in Chinese. Remnants of such a very productive process in Middle Chinese are to be found in abundance in the modern Cantonese lexicon. However, the Cantonese process differs from the older pan-Chinese one in that it tends to be a *nominalizing* process, as we will see, where the older one was a more general one, and of course

in the specifics of the lexical items which have undergone the change. In addition, the Cantonese process was productive up until quite recently, and is some parts of it are still productive, while the Middle Chinese process is present only in its remains.

One of the most common of the derivational patterns is the deverbal nominalization. Below are a few examples where the derived noun is the *object* of the original verb.

家用	ga ¹ yung ^{6*} [HOUSE USE(V)]	"household necessities"
燒賣	siu ¹ maai ^{6*} [ROAST SELL(V)]	"pork dumplings"

In the second case, of course, there is not only the move to the *object* of the verb "sell", but also the idiosyncratic limitation to dumplings. Other deverbal nominalizations include quite a large number of instrument nominalizations:

掃	so ³ "to dust"	->	so ^{3*} "broom, duster"
拍	paak ³ "to hit, slap"	->	paak ^{3*} "racquet"
話	wa ⁶ "to speak"	->	wa ^{6*} "speech, dialect"
販	faan ³ "to peddle"	->	faan ^{3*} "peddler"
杖	jeung ⁶ "to beat"	->	gwaai ² jeung ^{6*} "walking stick"

Nominalizations are also quite commonly formed from noun classifiers. In the most typical case, the derived nominal expresses the central or prototypical member of the semantic class delimited by the classifier. Thus note *tiu*⁴, which is the classifier for long, narrow things, prototypically rods and sticks, forms the noun *tiu*^{4*}, "wand, bar, stick". Note that although the classifier is also used for other, metaphorical extensions of long, narrow things, such as roads and rivers, the nominalization does not include these.

條	tiu ⁴ "long, narrow Clf"	->	柳 lau ⁵ [WILLOW]
件	tiu ⁴ "long, narrow Clf"	->	金条 gam ¹ [GOLD]
件	gin ⁶ "affairs, matters Clf"	->	事件 si ⁶ [AFFAIR]
位	wai ⁶ "persons, seats Clf"	->	位 wai ^{6*} "location, place"
架	ga ³ "Clf for shelves, etc"	->	架 ga ^{3*} "shelf"

Nominalizations from adjectives are somewhat less common, and a few examples are presented.

白	baak ⁶ "white"	->	眼白 nngaan ⁵ [EYE]
黃	wong ⁴ "yellow"	->	蛋黃 daan ^{5*} [EGG]

In the rest of the cases here, the derivation proceeds from noun to noun, so rather than a nominalizing force the tone change derives new nouns through metaphoric and metonymic routes. Note the metonymic extension of "kitchen" to "someone who works in a kitchen, cook". Below this is an excellent example of a body-part metaphor, the extension of physical "face" to "dignity, prestige" or "side, covering".

厨	chui ⁴ "kitchen"	->	chui ^{4*} "cook"
面	min ⁶ "face"	->	面 suen ⁴ [SHIP]
面	min ⁶ "face"	->	面 faan ² [OPPOSE]
面	min ⁶ "face"	->	面 sue ¹ [BOOK]
面	min ⁶ "face"	->	面 bei ² [GIVE]

If we examine the words that have undergone nominalization or metaphoric extension, it immediately stands out that the vast majority of the derived words have come from words with the third or sixth tone. This is an important fact, for the third and sixth tones are the *yin* and *yang* reflexes of the Ancient Chinese *qu sheng*, the departing tone. This seems to suggest that the nominalizing process originally applied only to words in the departing tone, and of course the entering

tone words (checked syllables) that have the same tone level. If this observation is not simply due to random fluctuations in the data, it suggests two things. First, it suggests great age for the process, to have applied before the *yin-yang* split occurred. And second, that the tone rules at that time must not have distinguished between open and closed finals.

However, there are some exceptions to the generalization, three of which have been included above.

5. Semantic Domain of Changed Tone

We turn now to the semantic domain characterized by the changed tone. I have said that the domain is best expressed as a radial category with diminution as the central member. I will begin by attempting to explain the bare essentials of the notion of a radial category. In attempting to characterize the meaning marked by such grammatical tools as noun classifiers, or in this case derivation by tone change, George Lakoff proposed that instead of searching for the most abstract feature set that covers all the data - surely an impossible task in this problem, - that we characterize the semantic domain as a network of concepts. By expressing the similarities and differences among concepts and expressing the result as a set of conceptual mappings in a network formalism, we are better able to really talk about what it *means* to be "in the changed tone".

A radial category is one such category-type. Here there is a central subcategory, and non-central extensions of the subcategory. But the extensions are not generated from the central subcategory by any semantic *rule*. Indeed they must be memorized in learning the category. So the relation between the central and extended members of the category is not one of *prediction*, but one of *motivation*. I will not claim to be able to predict which extended senses arise from the central sense of the diminutive - only to explain what the motivation was for the ones that there are, and by doing so shed some light on the nature of the category.

Figure 3 shows a representation of the radial category formed by the changed tone. Note first that there are four major extensions from the central diminutive category. These are small things, familiarity, contempt, and approximations. I will now go through some of the more interesting of these peripheral categories, touching on the structure of each of the peripheral categories themselves, and the metaphorical nature of the semantic links between the central and peripheral members.

5.1. Small Things

To begin with, note the subcategory on the left, which I have called "Small (Round) Things". These are the cases where a mostly literal diminutive is applied. I have put the word "round" in parentheses because although the prototypical member of this subcategory is a small round object, many of the members do not share this feature. Typical examples of this category are cases of the well-understood diminutive derivational process. These include products of such metaphorical derivations as *toi*⁴ "terrace or stage", to *toi*² "table".

台	<i>toi</i> ⁴ "stage, terrace" ->	木	<i>toi</i> ^{4*} "table"
柴	<i>chaai</i> ⁴ "firewood" ->	火	<i>foh</i> ² [FIRE] <i>chaai</i> ^{4*} "matches"
裙	<i>kwan</i> ⁴ "skirt" ->	围	<i>wai</i> ⁴ [ENCLOSE] <i>kwan</i> ^{4*} "apron"
鏡	<i>geng</i> ³ "mirror" ->	眼	<i>ngaan</i> ⁵ [EYE] <i>geng</i> ^{3*} "eyeglasses"

5.1.1. Diseases and Bugs

A somewhat bizarre subclass of the diminutive is a class consisting of diseases or irritations with small, round skin symptoms.

麻	<i>ma</i> ^{4*} "measles"
瘡	<i>mak</i> ^{6*} "mole"

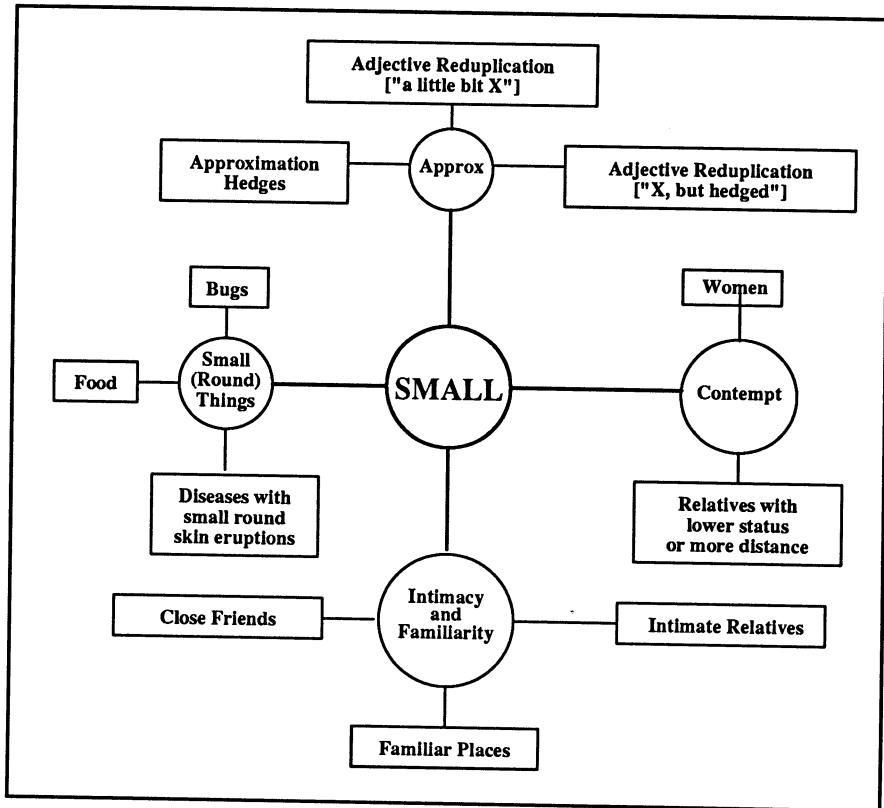


Figure 3 - The Diminutive Changed Tone

痘
瘤

dau^{6*} "smallpox"
lau^{6*} "swelling, tumor"

Many names of bugs also take the changed tone. Again, bugs are a salient small thing.

甲虫
蝴蝶

gaat⁶ jaat^{6*} "cockroach"
woo⁴ dip^{6*} "butterfly"

5.1.2. Food

An extraordinary number of words relating to food take the changed tone. I have divided these into four major subclases; fruits, vegetables, birds, and seafood. Besides these four concepts, other meanings relating to food are extraordinarily common in the changed tone, such as the following:

蛋
角

daan^{6*} "egg"
gok³ "corner" -> gok^{3*} "triangular pastry"

5.1.2.1. Fruit

The names of most fruits usually appear in the changed tone. Again, these fruits are small and round, fitting the concept of the prototypical small object discussed above.

Note here that of the fruits which do not take the changed tone, durian and pineapple are particularly large. In addition, although it is not clear what relevance this may have, both words are borrowed into Chinese. As for the final word, apricot, it is unclear to me why the tone change tone does not occur.

Changed Tone			No Change		
梨	lei ^{4*}	"pear"	李	hang ⁶	"apricot"
李	lei ^{5*}	"plum"		lau ⁴ lin ⁴	"durian"
桃	to ^{4*}	"peach"	楊	boh ⁴ loh ⁴	"pineapple"
梅	mooi ^{4*}	"plum"	蓮		
石榴	sek ⁶ lau ^{4*}	"pomegranate"			
柚子	luk ¹ yau ^{6*}	"pomelo"			
桔子	chaang ^{4*}	"orange"			

5.1.2.2. Vegetables

Again, beans and tomatoes are small and roundish. A particularly clear food-related example is gaa³ laan^{4*}, "Chinese broccoli" which contrasts with laan⁴ "orchid". As for bin² dau⁶, this exact lexical item is the only type of bean not to take the changed tone in Taishan as well as Cantonese, as Cheng (1973) comments, and is as much of an enigma for Cantonese as it is for Taishan.

Changed Tone			No Change		
大豆	daai ⁶ dau ^{6*}	"bean"	大豆	bin ² dau ⁶	"lima bean"
茄	ke ^{3*}	"eggplant/tomato"			
芥蘭	gaa ³ laan ^{4*}	"Chinese broccoli"			
西芹	sai ¹ kan ^{4*}	"celery"			

5.1.2.3. Seafood

Here note that small, edible fish and sea creatures take the changed tone, while larger, and inedible one, do not. Another puzzling example is chai⁴ yu⁴ "walleye pollack".

Changed Tone			No Change		
鯉魚	chong ¹ yu ^{4*}	"pomfret"	鯉魚	ngok ⁶ yu ⁴	"crocodile"
煙魚	fan ¹ yu ^{4*}	"smoked fish"	魚	king ⁴ yu ⁴	"whale"
魚	yau ⁴ yu ^{4*}	"squid"	魚	sa ¹ yu ⁴	"shark"
螺	loh ^{3*}	"conch"	螺	chai ⁴ yu ⁴	"walleye pollack"
蟛蜞	paang ⁴ kei ^{4*}	"land crab"	蟛蜞		

5.1.2.4. Birds

Again, small and/or edible is the key. The difficulty in deciding which is the right answer involves finding a small, inedible bird with low tone. Very likely now is that both size and edibility contribute to the characterization of the domain.

Changed Tone			No Change		
鵝	ngoh ^{4*}	"goose"	鵝	toh ⁴	"ostrich"
雀	jeuk ^{3*}	"sparrow, small bird"			
鶴	hok ^{3*}	"crane"			

duck	aap ^{3*}	"duck"
squab, pigeon	gap ^{3*}	"squab, pigeon"

5.2. Contempt

The second major extension of the diminutive is to contempt. The link between the central diminutive and contempt is a standard metaphorical one, perhaps a universal one. In section 6 we note contempt readings for the changed tone in other Yue dialects as well. In the examples below, note the extension of the word *yau*⁵, "friend", to mean someone with whom one would prefer not to be associated. In addition, note the particularly sexist category formed by tone change to the word for "woman". A droll note is that the same tone-changed word *nui*^{5*} means "daughter" - here by the metaphoric extension to intimate and especially younger kinship terms.

友	yau ⁵ "friend" ->  友	chaau ² [SPECULATE] yau ^{5*} "speculator"
	yau ⁵ "friend" ->  友	gwoo ² waak ⁶ [SNEAKY] yau ^{5*} "sneaky rascal"
	yau ⁵ "friend" ->  友	bong ⁶ [TO SPONGE] yau ^{5*} "sycophant"
	yau ⁵ "friend" ->  友	daai ⁶ geuk ³ [BIG LEG] yau ^{5*} "flatterer"
女	nui ⁵ "woman" ->  女	mo ⁵ [DANCE] nui ^{5*} "dance hostess"
	nui ⁵ "woman" ->  女	sau ¹ [AMEND] nui ^{5*} "nun"
	nui ⁵ "woman" ->  女	sek ⁶ [STONE] nui ^{5*} "frigid woman"

5.3. Familiarity and Intimacy

The third major extension is also universal, and also metaphorical. This is to familiarity and intimacy, particularly with human terms - names or kinship terms. One example is in a vocative usage with a close friend, the name of the friend can take the changed tone. Some kinship terms, such as *mooi*⁶ "sister" often take the changed tone.

5.4. Approximation

The link between diminution and approximation is a meta-linguistic one. This will be more clear as we examine each of the submembers of this category. There are three - two kinds of reduplicated adjectives and a group of hedges.

5.4.1. Reduplication of Adjectives 1

Reduplication of adjectives is an extremely common process in Chinese, and tone change in reduplicated adjectives is perhaps the most widespread form of tone change across the dialects. In Cantonese, tone change on reduplicated adjectives takes two forms. In the first, the second syllable takes the changed tone. The derived meaning is "X to a diminished extent," or "a little bit X", where X is the basic semantics of the adjective in question. Thus the changed tone has a weakening or softening force, diminishing the extent to which the associated predicate holds. An example:

 hung⁴ "red" -> hung⁴ hung^{4*} "reddish"

More often than not, this type of adjective reduplication co-occurs with the suffix *dei*², as in hung⁴ hung^{4*} dei² "reddish".

In a rather neat opposition to the tone change diminishing adjectival force, when the *first* syllable in a reduplicated adjective changes tone, the adjective acquires an emphatic force, so

 hung^{4*} hung⁴ "very red"

This process is less common than the other, as is also noted by Kam (1980).

5.4.2. Adjective Reduplication 2

The second kind of adjective reduplication differs from the first in a few ways. First is its syntactic function. Where the first type of reduplication produces a derived form that is still an adjective, in the second construction the derived form is an adverb, and appears preverbally in an AAB pattern.

慢慢行	maan ⁴ maan ^{4*} haang ⁴	[SLOW SLOW WALK]	"akin to Eng. 'drive safely'"
慢慢食	maan ⁴ maan ^{4*} sik ⁶	[SLOW SLOW EAT]	"akin to Eng. 'help yourself'"

This second construction seems to only appear in commands, and has a mild, somewhat motherly tone to it. Thus where the first type had the hedge modifying the semantic content of the adjective, diminishing its extent, in the second type the hedge modifies the utterance of the adjective, softening a command to a wish or benediction. Assuming that this second form of reduplication arose from the first, we see a diachronic change from softening or weakening the locutionary force of the adjective to softening or weakening the illocutionary force of the speech act.

Thus extending from the first to the second type of diminutive involves a change of domain from the literal meaning of the utterance to the discourse situation. The two rules' semantic structures for the two cases of reduplication might be stated as follows:

Redup1

Hedge the adjective: "Weaken or soften the locutionary force of the adjective."

Redup2

Hedge the utterance: "Weaken or soften the illocutionary force of the utterance."

5.4.3. Hedges

Quite a number of postpositions that have the sense of "approximately", or "more or less", take the changed tone.

大概	dai ⁶ koi ^{3*} "about"
上下	seung ⁶ ha ^{6*} "more or less"
左近	jo ² gan ^{6*} "more or less"
左右	jo ² yau ^{6*} "more or less" (Note minimal pair with jo ² yau ⁶ "left and right")
前后	do ³ "postposition: place, location" -> do ^{3*} "more or less"

The extension of the idea of diminution to hedges involves a change of domain from the literal meaning of the utterance to the discourse situation in exactly the same sense as the adjectival reduplication discussed above. Again, I draw on Kay's (1982) intuition that

A hedged sentence, when uttered, often contains a comment on itself or on its utterance or on some part thereof. (p 1).

In other words, the "more-or-less" hedges that occur with the changed tone are making a meta-comment on the literal meaning of an utterance. They have a pragmatic weakening force on the extent to which the speaker is committed to the truth value of the utterance.

5.5. Locatives

There are a number of examples of uses of the changed tone that seem to be related to some sort of locative notion. For example, many words for buildings or rooms take the change:

书 房	sue ¹ fong ^{4*}	[BOOK ROOM]	"study"
厨 房	chue ⁴ fong ^{4*}	[KITCHEN ROOM]	"kitchen"
亭	ting ^{4*}		"pavilion"
廟	miu ^{6*}		"temple"
電 視 局	din ⁶ bo ³ guk ^{6*}	[ELECTRIC NEWS OFFICE]	"telegraph office"

The locative preposition/copula is derived from the regular copula:

係 hai³ "copula" -> 𠵼 hai^{3*} "locative copula (to be at)"

Finally, a small number of postpositional locatives take the changed tone.

樓	樓	lau ⁴	seung ^{6*}	[BUILDING UP/ON]	"upstairs"
樓	樓	lau ⁴	ha ^{6*}	[BUILDING DOWN/UNDER]	"downstairs"
地	地	dei ⁴	ha ^{6*}	[FLOOR DOWN/UNDER]	"floor"

There are only a small number of locative uses of the changed tone, and it is unclear how they are to be related to the diminutive uses.

5.6. Perfective

Another use of the changed tone which seems independent of the diminutive uses above is as a perfective marker, functioning in a very similar way to the normal particle *joh²* which is used to mark the perfective. I will not be discussing the perfective here for lack of space.

6. Comparative and Diachronic Issues

Having talked about the semantic problems of the changed tone, I turn to a discussion of the diminutive in a broader Chinese sense. A morphologically marked diminutive is quite common in Chinese. Means for expressing the diminutive include retroflexion, change in rhyme, infixation, suffixation and nasalization in addition to tone change. In fact, one of the first comments about the Cantonese changed tone was Chao's remark on its similarity to the process of "er-hua" in Peking Mandarin.

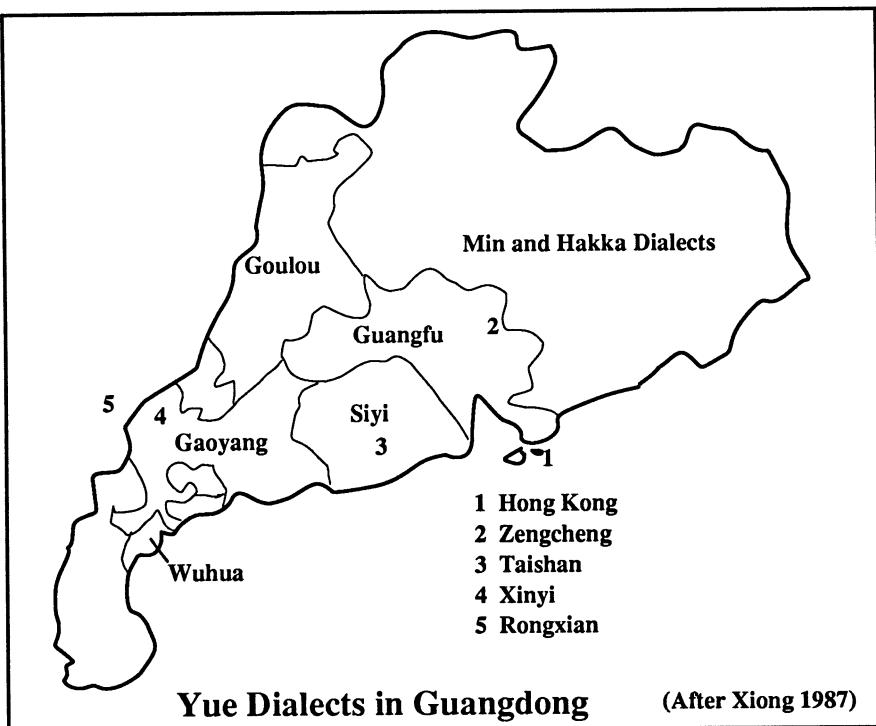
Cantonese is not alone in using tone change for diminution. Hirata (1983) notes that besides other Yue dialects, two other southeastern dialect families - Hui and Wu - also attest tone change diminution. Although the resulting tone marking diminutives varies from dialect to dialect, the most general and wide-spread tone produced seems to be a high-level or high-rising one. Indeed, as John Ohala (1984) noted, there does seem to be a cross-language tendency to use high tone sound-symbolically with words connoting smallness, or diminution.

It is important to understand the Hong Kong Cantonese diminutive in the context of the greater Yue area. With that in mind, we turn now to data from four other Yue dialects, representing three of the five Yue subfamilies distinguished by Xiong (1987). The dialects are Taishan (Cheng 1973) representing the Si Yi family, Zengcheng (He 1987), which along with Cantonese represents the Guangfu family, and Xinyi (Ye and Tang 1982) and Rongxian (Zhou 1987) representing the Gaoyang family. Thus two of the five families, Wuhua and Goulou, are not represented. Rongxian is spoken in eastern Guangxi - the rest are spoken in Guangdong. Below is a very rough map of the Yue dialects of Guangdong province, after Xiong (1987). I have marked the locations of the dialects to be discussed.

6.1. Taishan

The Taishan dialect, a Si-yi (or Sei-yap) dialect has two changed tones, one rising and one falling. The falling changed tone is used less frequently, mainly for nominalizations, and is mainly limited to applying to words in the mid level tone, (the upper departing tone or mid *yin* entering tone). It is also used for pluralization of pronouns, a much noted phenomenon. So the plural of *ni*, "you sing.", is *nek* "you plural", where the tone shifts from middle level to low falling. However with both second and third person, this tone change is accompanied by segment change, so it is highly likely to be a residue of affixation, and will not be discussed further here.

Many of the lexical items which take the changed tone and are *ying qu* tone in Hong Kong Cantonese take the falling changed tone in Taishan.



As for the rising tone, it is extremely common in Taishanese. Cheng (1973) says that "Generally speaking, isolated nouns or the last element of compound nouns always bear rising tones. (p. 278)" Phonetically speaking, the rising changed tone is higher than any lexical tone.

The Taishan dialect has two productive locative uses of the changed tone. For verbs which subcategorize for some sort of location (like *k'i* "stand" and *t'u* "sit"), when the verb is followed by a locative NP complement the verb tone can change. The shift in meaning is to an aspectually more progressive interpretation. Cheng suspects a segmental origin for this subtype of changed tone.

The second locative use is for nouns, which take the changed tone when used locatively. These two productive locative uses seem to confirm the locative sense proposed above for Hong Kong Cantonese. However, it does not help to decide whether the locative is in fact an extension of the diminutive, or whether there was originally a distinct locative tone-change process (or suffix).

6.2. Zengcheng

Like Taishan, the Zengcheng dialect also has two changed tones, one high rising and one high falling. Although these tones are not identical with any lexical tone, they do appear in normal tone sandhi processes. Also like Taishan, Zengcheng has pronoun pluralizing by tone drop, but without the segmental change that occurs in Taishan.

One of the most interesting aspects of the changed tone in Zengcheng is its use to express perfective aspect. This functions just as in Hong Kong Cantonese, changing the tone of the verb

to mark a perfect or compleptive sense. What is different about the process in Zengcheng, however, is that the *first* syllable of a bisyllabic verb can undergo the change. For example *fak tsz*, [SEND-OUT WEALTH] "get rich", where the tone on the first syllable changes. Since the diminutive changed tone almost never applies in the first syllable of a bisyllabic, this may indicate that the perfective use is a different process.

Tone change in reduplicated adjectives is also similar to Cantonese, although the weakening effect is achieved, not by changing the tone of the second adjective alone, like Cantonese, but by changing the tone of both adjectives, probably a case of tone spreading. However, while in Cantonese this reduplication phenomenon is limited to adjectives, in Zengcheng it is much more productive - both verbs and classifiers can reduplicate with tone changes. With verbs, the process is limited to psych/emotion words - so with the example *p'a*, "be afraid", *p'a p'a* with both tones changed indicates "a little scared", while changing only the first tone expresses "very scared." Classifier reduplication with the changed tone has the sense of "every one", so *ga* "family" reduplicates to *ga ga*, "every household", with the tone change on the first syllable.

6.3. Xinyi

Like the other Yue dialects, the Xinyi changed tone is different from, and higher than all lexical tones. Just as in Cantonese, the second syllable of bisyllabic words can change, but rarely the first syllable of polysyllabic words. A particularly interesting feature of the changed tone in Xinyi is that it comes with a segmental change. All syllables in the changed tone get final nasals except open syllables ending in offglides -i and -u, and of course nasals.

The changed tone is completely productive in Xinyi except for a few exceptional, foreign, or bookish words. Like Cantonese, it is used for general nominal derivation, for diminutives, for indicating contempt and familiarity, and for adjective reduplication. Like Zengcheng, it can also be used for verbal reduplication with the force of "do V a little."

An interesting meta-linguistic use in Xinyi which is not present in Cantonese is the use on classifiers after numbers to mean *only* that many - "just five fish", "just 3 inches". Here the diminutive is used not to modify the number itself, but to express a meta-linguistic comment on the number. So the utterance contains the semantic force "3 inches", and the meta-linguistic force "and that's a small number".

6.4. Rongxian

Rongxian dialect is very similar to Xinyi, which it borders geographically. As expected, the changed tone is 35, which is not a lexical tone. Like Xinyi, the changed tone comes with a segmental change, also a nasal, but in Rongxian only stopped syllables change to the homorganic nasal. Again, the first syllable word of bisyllabic words does not change tone.

The semantics are remarkably similar to what we have seen before, although the changed tone appears even more productive here than in other dialects. The tone is used as a general diminutive, to indicate contempt, with classifiers like Xinyi and in other ways, with reduplicated adjectives, and with verbal classifiers.

6.5. Summary

A first comment must be to note that all of the changed tones are high and rising, except the Taishan second changed tone, which is low falling. On that basis, and others I will mention here, I choose to reconstruct this tone shift as a different process than the diminutive one. First, unlike the diminutive process, this one, a nominalizing one, seems to pick out departing tone words (and entering tones of the same level) in Taishanese. The corresponding nominalization function in Cantonese also picks out departing tone words, and as discussed above, it does not distinguish the *yin* and *yang* registers, an argument for extreme antiquity. This process is quite reminiscent of the

Ancient Chinese process of nominal derivation by change to the departing tone, (Mei 1980, Takashima 1984) but in reverse.

As for the perfective uses of the changed tone, I would like to argue that these are also from a different process - note that it only occurs in two dialects, both in the Guangfu family, and seems to have the ability to change the first syllable in bisyllabic words, which makes it quite unusual when compared to the diminutive tone changes.

As for the reduplication phenomena, comparative evidence seems to show that the function we see in Hong Kong Cantonese is part of a larger process, where a rising tone on the bisyllable (caused by raising the second syllable) indicates diminution, while a falling tone (caused by raising the first syllable) indicates emphasis. In other words, the weakening/emphasis semantics is carried by the tone contour of the entire word, not the syllable.

Finally, let's look at the diminutive process. We could imagine two possible theories of origin. The first is that the tone is a grounding (or sandhi) from a earlier diminutive suffix, perhaps a nasal, while the second is that the change was always a productive tonal process.

Hirata (1983) presents an argument for the second hypothesis, pointing out that in all his examples, the tone that is changed to is high rising, and higher than any lexical tone. (This is also true in the dialects we have outlined, except, of course for Cantonese). Thus such an extraordinary tone could not merely have come from tone grounding from a suffix. As for the presence of the nasal in the western dialects, he accepts that in such cases there was clearly a nasal suffix, but claims suffixation must have happened after or contemporaneously with a tonal change.

The conclusion Hirata draws is not for an original tone change, either. He proposes that the extra high pitch may have come from some original glottal tension, because of its close relationship with high tone. Yet in considering Yue data, we have noted the phonological constraint that tends to prevent tone shift from occurring on the first syllable of bisyllabics. If we assume that the tone shift took place after a point where these bisyllabic words were formed, then the phonological constraint could certainly be construed as evidence that the changed tone derives from tone grounding from a dropped suffix.

Certainly more comparative evidence could help decide this issue. For example, evidence like Huang 1958's data on Amoy dialect, a Southern Min dialect, cited by Hirata, which discusses an -a suffix which can have meanings expressing smallness or condescension, act as a nominalizer, give a feeling of familiarity to a person's name, and when added to a word expressing direction mean "approximately in that direction." A remarkable similarity to the Yue phenomena we have discussed, and from an affix. The processes outlined above are summarized below in the conclusion.

7. Conclusion

I would like to draw a number of conclusions from this very preliminary study of the Cantonese changed tone. First, in the semantic domain, an important conclusion is that it is only by having a rich framework for discussing semantic categories that we are able to begin to crack this old semantic chestnut. In a sense, we get a glimpse into the diachronic as well as synchronic semantics of the phenomena - how the category might have gotten built up, and how it might be conceptualized.

From a typological viewpoint, it is clear that rather than being limited to phonological tonal processes, Asian languages do possess morphological processes like the diminutive as well as ones that would have to be called grammatical, like the perfective markers.

And finally, from a diachronic perspective, we have separated out four processes in Yue that produce a changed tone:

- a diminutive shift to high rising (or perhaps level) tone.
- a shift to falling tone applying to words in the departing (or equi-level entering) tone and carrying a nominalizing force.
- a reduplication process that seems to produce multi-syllabic contours.
- a perfectivizing process, also changing to high rising.

Of course we have only scratched the surface of this particular category. There are quite a large number of subcategories that do not fit cleanly into the domain I've just sketched, and exceptions to the ones I have noted. And from an areal point of view, it is essential for more cross-dialect studies of diminutives, following Hirata's important start, and indeed for areal studies in general - here Kam (1980) provided important comparison with Thai.

Extending this preliminary analysis to cover more of the Cantonese data as well as other dialects using derivation by tone change could certainly help get a handle on the complicated semantic problems in areal as well as genetic relationships in the linguistically rich south of China.

8. Acknowledgements

I would like to thank Claudia Brugman for her invaluable comments on the semantic analysis, as well as Steve Baron, George Lakoff, Nigel Ward, and Jim Martin for many useful comments on this paper. And I owe a special debt of gratitude to my informant, Shirley Chiu, who first called my attention to the changed tone phenomenon, and proved unstintingly generous many times in answering "just one more question."

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There was a farmer had a dog: Syntactic amalgams revisited.

Knud Lambrecht
University of Texas at Austin

"The phenomena to which I wish to direct your attention are (...) instances of disapproved linguistic usages in English. I take the social status of my phenomena as a guarantee of the importance of what I have to say about them, rather than as evidence for its triviality. Whenever we find impressive regularities in language that we know we didn't learn either at mother's knee or in Miss Fidditch's classroom, we can be sure that we are in touch with structures seated deep in the language, and not inventions externally imposed upon it."

(Charles Fillmore, "Syntactic Intrusions and the Notion of Grammatical Construction," 1985:73)

1. Introduction.¹

Under specific pragmatic circumstances, many speakers of American English use a certain type of complex grammatical construction which is exemplified in (1) through (10). Because of the substandard nature of this construction, I am quoting a relatively large number of examples, in order to enable the reader to develop a "feel" for the construction as it is used in spontaneous discourse. All of the examples are observed utterances from actual conversations.²

- (1) There was a ball of fire shot up through the seats in front of me.
- (2) There's something keeps upsetting him. (Quirk et al. 1972:959)
- (3) There's a lot of people don't know that.
- (4) Well, I have a friend of mine called me. (Prince 1981:238)
- (5) I have one of my uncles was an engineer and he told me...
- (6) A: I thought maybe your grandmother was using the room.
B: No, we had a friend of mine from Norway was staying here.
- (7) I have a friend from Chicago's gonna meet me downstairs.
- (8) Check to see if your feature matrixes came out OK. I got a couple of'em didn't come out right.
- (9) I have a friend of mine in the history department teaches two courses per semester.
- (10) I have a friend in the Bay Area is a painter.

The construction illustrated above is a bi-clausal sequence of the form [[NP V NP][VP]]. The first clause is either a *there*-construction of the "existential" subtype (examples (1) through (3)), or it contains the predicate *have* (or *got*), whose subject is a personal pronoun, typically in the first person singular (examples (4) through (10)). Both in the *there*-type and in the *have*-type the postverbal NP is always indefinite. The second clause has a "gap" instead of a subject pronoun (which gives the construction its distinct substandard flavor) and it has a tensed VP. The fact that the VP in the second clause is tensed distinguishes the construction from another, related construction involving the predicate *have*, which is illustrated in (11):

- (11) a. My friend had his watch stolen.
b. I have two buttons missing on my jacket.

In (11) the forms *stolen* and *missing* are participles, not finite verbs. I will not deal with the participial *have*-construction in this paper.

A brief but highly suggestive discourse-pragmatic analysis of the construction illustrated here is offered in Prince (1981). As far as I know, the construction has received little attention in the generative syntactic literature, no doubt in part because of its substandard nature, but perhaps mostly because of certain formal properties which make it difficult to fit it into one of the established generative analyses of English relative clauses.

The model of grammatical analysis which I will be following for my study is that of Grammatical Construction Theory as developed in recent work by Fillmore (e.g. 1985 and this volume), Fillmore, Kay & O'Connor (forthcoming), Kay (1987), Lakoff (1987; especially the case study on *there*-constructions), and Lambrecht (1984, 1986a,b). To analyze a linguistic structure as a grammatical construction in the sense of this model is to interpret it as a non-derived grammatical template in which syntactic, semantic, and pragmatic properties come together to form a unit. The structural and semantic properties of such a unit can be explained only in part in terms of other known structural or semantic properties of the grammar, even though the unit may be entirely composed of familiar phrasal pieces. My particular goal in this paper is to show that the framework of Grammatical Construction Theory is suited to describe certain phenomena of syntactic reinterpretation or reanalysis which I think can be appropriately labeled as instances of 'grammaticalization'.

In spite of its substandard character, our construction is used by speakers of standard American English. For example the sentences in (7) through (10) were uttered spontaneously by university professors, all of whom were convinced that the construction did not exist in their dialect or speech pattern. The person who uttered (8), a linguist interested in matters of discourse, had explicitly stated, after hearing me talk about the construction, that even though he had heard of such examples, they did not occur in his speech. In fact he considered them not only ungrammatical but uninterpretable.³ And the two sentences (9) and (10) were used spontaneously within fifteen minutes of unmonitored conversation by a professor whom I had interviewed earlier about the status of the construction in her speech and who had been almost insulted at the suggestion that it occurred in the speech of educated speakers.

What distinguishes our construction most strikingly from other relative clause constructions is the absence of a relative pronoun or complementizer. The presence of such a morpheme is usually considered obligatory in standard American English when the relativized element is the subject of the relative clause, as shown in the contrast between (12a) and (12b):

(12) a. I liked the woman you invited \emptyset for dinner last night.
b. *?I liked the woman \emptyset came for dinner last night.

The argument in this paper does not hinge on the contrast between (12b) and the examples in (1) through (10). If it turned out that more speakers of (standard) American English use structures such as (12b) than is generally assumed, this would be a revealing discovery concerning native speakers' intuitions about their language; it would have only minor consequences for the argument to follow. In fact I argue that the *structure* of English allows for the formal option of leaving the subject in a relative clause unexpressed even when no complementizer is present; however the situations

under which this option may be exploited vary depending on the type of relative clause, the pragmatic circumstances of the discourse, and perhaps also on the individual speaker. Suffice it to observe that speakers whose grammar does not readily permit the type in (12b) nevertheless frequently use the type in (1) through (10), though typically without acknowledging it. Many speakers perceive a difference in acceptability between a sentence such as e.g. (5), repeated below as (13a), which is merely perceived as substandard, and the modified version of (5) in (13b), which seems more severely ill-formed:

(13) a. I have one of my uncles was an engineer and he told me...
 b. *?I asked one of my uncles was an engineer and he told me...

As I will show, the difference between (13a) and (13b) hinges on the fact that the main clause predicate in (13a) is *have*. The occurrence of this predicate has to do with a specific discourse function, that of presenting a new discourse referent, which cannot be expressed, or cannot be expressed as well, with the more agentive predicate *ask* in (13b).

The sentences in (1) through (10) would of course also be acceptable if they did contain a relative pronoun or a complementizer. Thus (2) for example could also have the form in (14) and (10) could appear as (15):

(14) There's something that keeps upsetting him.
 (15) I have a friend in the Bay Area who is a painter.

Speakers who use our construction sometimes insist that they do pronounce the relative pronoun *who*, albeit it in a phonetically shortened form. This seems to make them feel better about their speech habits. While it may be true that for example in a sentence like (7) the sequence *who is* can be reduced in fast speech to something resembling the single phoneme /z/ ("I have a friend of mine from Chicago /z/ gonna ..."), the fact remains that there are clearly attested examples in which no subordinating morpheme was pronounced. Thus in (1) and (2) for example the "missing" morphemes would have to be *which* or *that*, both not reducible in the way the pronoun *who* may be in (7). As a matter of fact, in some of the examples involving the verb *have*, as e.g. (4) or (5), the utterances would be in no way "improved" by adding the subordinating *wh-* or *that* morpheme, for semantic reasons to which I will return at the end of my paper.

In Section 2, I will present a preliminary analysis of the construction in (14), i.e. the standard bi-clausal *there*-construction which does contain the subordinating *wh*-morpheme. This analysis will provide the necessary background for the discussion in Section 3, which will be centered on the construction illustrated at the beginning of my paper, in particular on the *have*-construction exemplified in (4) through (10). I will argue that the absence of the relative pronoun or the complementizer in this construction is *pragmatically motivated*, and I will suggest that the substandard phenomenon under analysis is an instance of the *grammaticalization* of certain information structure requirements in the syntactic structure of the sentence.

2. The presentational relative construction.

The *there*-construction introduced earlier, whether or not it involves an overt relative pronoun or complementizer, is akin to the well-known archetypal fairy-tale-starting

construction in (16):

(16) Once upon a time, there was an old cockroach who lived in a greasy paper bag.

As in the case of the construction in (1) through (10), the construction in (16) seems to have generated little curiosity among formal syntacticians, in spite of the fact that it is a well-established type in the grammar of many languages. One remarkable exception is McCawley's work on English relative clauses (McCawley 1982), in particular his analysis of such sentences as *There are many Americans who like opera*, which he calls 'pseudo-relative clauses'. I will return to McCawley's analysis later on. In my own work (Lambrecht 1986a and forthcoming) I have proposed an analysis of the fairy tale construction in (16) in universal discourse-pragmatic terms as a complex structure whose pragmatic function is to introduce a new discourse referent in non-initial sentence position and to express a proposition about this new referent in the same minimal sentential processing unit. I call this complex structure the *presentational relative construction*. I argue that the existence of presentational relative constructions across languages is cognitively motivated by a universal constraint on the introduction of pragmatically non-recoverable discourse referents in sentence-initial subject (or topic) position. Due to this constraint, a hypothetical sequence such as *Once upon a time an old cockroach lived in a greasy paper bag* will be converted into the bi-clausal construction in (16), because of the "brand-new" (Prince 1981) discourse status of the NP referent. This analysis is consistent with the fact that presentational relative constructions tend to be reserved across languages to indefinite NPs, or, more accurately, to NPs whose referents are assumed to be unidentifiable to the addressee at the time of utterance.⁴

The presentational relative construction consists of two clauses: (i) the referent-introducing *presentational clause* (hereafter S_1) involving the verb *be* or a similar verb; and (ii) the *relative clause* (hereafter S_2), whose relative pronoun is typically a subject. The function of the presentational clause S_1 is to locate or anchor the new ("presented") NP referent in the discourse. This anchoring of the new referent is done in English via the clause-initial locative (or pseudo-locative) expression *there*. The NP designating this referent, instead of appearing sentence-initially, appears as a non-topic NP in post-verbal *focus* position. In the relative clause S_2 , the newly introduced referent is then coded as a pronominal subject in clause-initial position; this relative pronoun is a *topic expression* in S_2 , i.e. S_2 expresses a proposition *about* the topic referent (in our example, the cockroach).

What distinguishes the presentational relative construction from other referent-introducing constructions is the tight grammatical link between the presentational clause (S_1) and the subsequent clause (S_2) which expresses the proposition about the newly introduced topic referent. As I see it, the main difference between the presentational relative construction in (16) and the functionally and structurally related *juxtaposition* construction in (17)

(17) Once upon a time there was an old cockroach; he lived in a greasy paper bag.

is that the relative pronoun *who* in (16) must be construed as being coreferential with a preceding lexical NP expression, while in the juxtaposition case the pronoun *he* may at least in principle be construed as referring to someone else other than the old

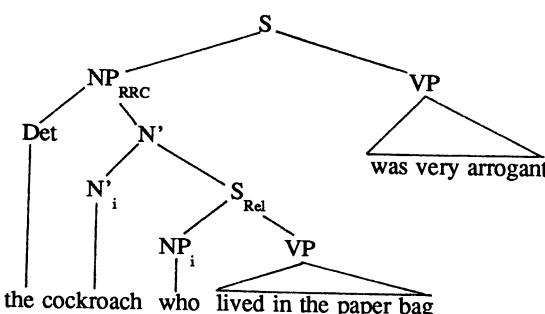
cockroach, even though pragmatically this is highly unlikely in a construction like (17). A useful way of referring to this necessary co-construal relation is to say that in (16) the two NPs are *in construction* with one another whereas in (17) they are not. This terminology implies that the coreference link is a property of the relative construction in and of itself rather than being predicted or constrained by some independent rule governing anaphoric relations in the sentence. I have argued (Lambrecht 1986b) that the necessary co-construal between the relative pronoun and the NP is one of two semantic defining criteria for all relative constructions, the second defining criterion being a necessary topic-comment relation between the antecedent NP and the relative clause. In other words, all constructions involving relative clauses have in common (i) the fact that there is an obligatory anaphoric relation between the relativized element and some antecedent NP (which is not necessarily adjacent to the relative clause), and (ii) the fact that the proposition expressed in the relative clause must be construable as a proposition which expresses some information (whether presupposed, or asserted) *about* the referent expressed by the antecedent NP.

One important structural difference between the presentational relative construction and the *restrictive* and the *appositive* relative constructions is that in the latter two the relative clause functions as a noun modifier which enters into a complex NP construction with the head noun. An example of a *restrictive relative construction* is given in (18). Sentence (18) may be thought of as appearing later in the fairy tale about the old cockroach introduced in (16), so that the proposition that our protagonist lived in a paper bag may now be considered pragmatically presupposed:

(18) The cockroach who lived in the paper bag was very arrogant.

For (18) I assume a structure such as (19):

(19) The restrictive relative construction (RRC)



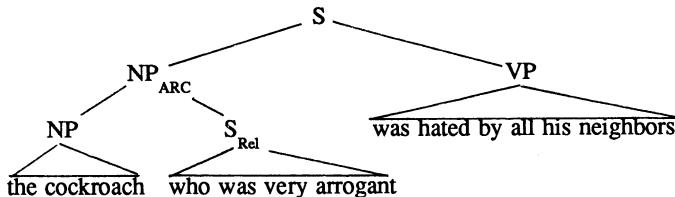
The details of the structure in (19) are not crucial for my argument and I will not discuss them here. What counts is that the sequence *the cockroach who lived in the paper bag*, which constitutes the restrictive relative construction, is a single complex NP constituent, an assumption which I take to be uncontroversial. Less uncontroversial perhaps, but by no means original, is my assumption, taken from traditional grammar, that the relative pronoun *who* is the actual subject of the relative clause, i.e., that this pronoun does not appear in the WH or COMP position needed for non-subject relative pronouns and the complementizer *that*.⁵

An example of an *appositive relative construction* is shown in (20):

(20) The cockroach, who was very arrogant, was hated by all his neighbors.

For (20) I suggest the structure in (21). Even though the appositive relative construction *the cockroach, who was very arrogant* in (21) is a single complex NP, just like the restrictive relative construction in (19), the internal constituent structure of this complex NP is different from that in (19):

(21) The appositive relative construction (ARC)



That the sequence *the cockroach, who was very arrogant* must be a single NP constituent is demonstrated by the fact that it can appear in other NP positions in the sentence, as e.g. in the active counterpart of (20) shown in (22):

(22) All the neighbors hated the old cockroach, who was very arrogant, and they avoided him.

Notice that in (21) the *internal syntax* of the appositive relative clause itself is identical to that of the restrictive relative clause in (19). It may therefore be labeled 'Rel' in both cases. However its *external syntax*, i.e. the position which the clause occupies within the wider NP constituent, is different. On the other hand, the external syntax of the entire appositive construction ARC in (21) is identical to that of the restrictive construction RRC in (19), i.e. they are both regular NPs which may occupy any NP position in a sentence. But the internal syntax of the two complex NP constructions is different. The two notions of *internal syntax* (or 'constituency') and *external syntax* (or 'distribution') will be of some importance in the discussion to follow.⁶

The difference in internal syntax between the two relative construction types in (19) and (21) may be shown by comparing the different behavior of the two types with respect to a certain kind of pronominalization. While the complex NP in the restrictive relative can be pronominalized with the expression *the one*, as shown in (23a), the complex NP in the appositive relative cannot be so changed, as shown in (23b):

(23) a. The one who lived in the paper bag was very arrogant. (cf. (18))
b. *The one, who was very arrogant, was hated by his neighbors. (cf. (20))

The pronominal expression *the one* is not by itself a well-formed NP expression but may normally only appear in combination with a modifier, be it a relative clause, as in (23a), or an adjective or a prepositional phrase (as e.g. in *the arrogant one*, or *the one in the paper bag*).⁷ As a result, this expression may not appear in the appositive relative structure in (21), because here the relative clause follows a complete NP. (This observation leaves open the problem why *one*, which behaves like an N' in that it fits

the N' node in the structure in (19), does not form a well-formed NP when preceded by the determiner *the* in the way other N' occurrences do; I will not worry about this problem here.)

The structure in (21) is consistent with the semantics of the construction, in that the relative clause stands *in apposition to* a complete NP which designates an independently identified referent (the NP in the appositive type could be a proper name). I will not try to further justify the structure in (21), as it is only of limited relevance to my analysis of the presentational relative construction. What counts in (21), as in (19), is the fact that at some level of structure the relative clause forms a single complex NP constituent with the antecedent noun. Nothing of what I am saying here about the two relative clause types claims to be original or new; it was meant merely to provide the necessary syntactic background for the analysis to follow.

One important difference between the structures in (19) or (21) and that of the *presentational* relative construction is that in the presentational relative the sequence NP + relative clause does *not* involve a complex NP of the type shown in (19) or (21). The external syntax of the relative clause in the presentational relative construction is radically different from the external syntax of the restrictive and the appositive types, even though its internal syntax is again that of an ordinary relative clause. Concerning the external syntax of the relative clause in the presentational construction I will argue that this clause is structurally on the same level as the presentational clause S_1 , i.e. that S_2 is a sister to S_1 . This entails, at a certain level of analysis at least, that the relative clause in the presentational relative construction functions as a main clause. My proposal follows from various structural and semantic properties of the construction which, unfortunately, I can mention here only briefly, given the limited scope of this paper.

A first difference between the restrictive and the presentational relative construction has to do with the different behavior of the two relative clause types in conjoined coordinate structures. In the presentational construction it is possible to conjoin a second clause either by repeating the relative pronoun, as in (24a), or by adding a coordinate main clause, as in (24b):

- (24) a. Once upon a time there was an old cockroach who lived in a paper bag and who was very poor.
- b. Once upon a time there was an old cockroach who lived in a paper bag and he was very poor.

In the restrictive relative construction however, only coordination of another relative clause is possible:

- (25) a. I told you the story about the cockroach who lived in a paper bag and who was very poor.
- b. *I told you the story about the cockroach who lived in a paper bag and he was very poor.

I believe that the contrast between (24) and (25) has to do with the fact that in the presentational construction the propositional content of the relative clause is *asserted*, not pragmatically *presupposed*; it may therefore be coordinated with an assertive main clause via *and*-conjunction. Adding a coordinated main clause to a restrictive relative clause however leads to ungrammaticality, because it causes a severe semantic clash

between the presupposed proposition in the relative clause and the asserted proposition in the main clause. I will return to the conjunction issue later on.

A second, more important, difference between the restrictive and the presentational relative construction has to do with the semantic status of S_1 . When I introduced the notion of the presentational relative construction at the beginning of this section, I observed that the presentational *there*-clause S_1 has the pragmatic function of locating the NP referent in the discourse. S_1 does not express a proposition *about* the NP but merely serves to *establish* the new NP referent in the discourse in order to make it available for some predication to follow. This can be demonstrated with a simple semantic observation. In the presentational relative, unlike in any other relative construction, the propositional content of the sequence main clause plus relative clause can also be expressed via a single clause expressing a single proposition. Thus next to the presentational construction in (16) we also have (26):

(26) Once upon a time an old cockroach lived in a greasy paper bag.

This new sentence, which has the same meaning (though not the same pragmatic and stylistic appropriateness conditions) as the bi-clausal construction in (16), contains only the predicate of S_2 in (16). Since it is an inherent property of any relative construction that the referent of the relative pronoun must be identical to the referent of the NP in S_1 we may say that the truth conditions of S_2 in the presentational relative construction are always identical to the truth conditions of the entire construction, except for the fact that the *referent* of the relative pronoun is lexically specified in S_1 . This is tantamount to saying that the presentational clause S_1 is propositionally empty, even though it has a precise pragmatic function, namely that of *naming* a previously unidentified referent in lexical NP form.

It is true that, taken in isolation, the sequence *Once upon a time there was an old cockroach* in S_1 is formally an independent sentence and semantically an independent assertion concerning the past existence of some cockroach; the point is that this sentence loses its independence upon entering into construction with the relative clause S_2 . For example its propositional content cannot be negated any more. While it is possible to say e.g. *There was no cockroach in the paper bag*, it makes no sense to say *Once upon a time there was no cockroach, who lived in a paper bag*. As I will show later on, there are instances of presentational relative constructions in which S_1 has no construction-independent interpretation at all but makes sense *only* in combination with S_2 . Such cases provide good evidence in favor of a 'constructionist' analysis of the bi-clausal presentational relative sequence, i.e., in favor of an analysis in which the construction is seen as a syntactic, semantic, and pragmatic unit which cannot be derived from, or reduced to, some other more "basic" structure in the grammar by applying the general compositional rules of syntax and semantics.

Just as the presentational clause S_1 cannot be considered a full-fledged main clause semantically, the relative clause S_2 cannot be considered a full-fledged subordinate clause, at least not from a semantic point of view, since it expresses the main assertion of the sentence.⁸ Semantically, the sequence *who lived in a greasy paper bag* expresses as much of an independent assertion as the juxtaposed clause *he lived in a greasy paper bag* in the juxtaposition construction in (17). As I observed before, the only semantic difference between the juxtaposed clause and the relative clause is that the relative pronoun *who* is necessarily co-constructed with the preceding NP, while the

personal pronoun *he* is not. Nevertheless the relative clause cannot be considered a main clause on *structural* grounds, since it is syntactically dependent on the preceding *there*-clause.

My interpretation of the semantic and syntactic structure of the presentational relative construction finds supporting evidence in the corresponding construction in German. It is well known that in modern German subordinate clauses have verb-final syntax, while in main clauses the verb must be the second constituent. In *restrictive* and *appositive* relative clauses the verb is clause-final in German, as expected. However in the *presentational* construction, the verb is in second, i.e., main clause, position. This is shown in the three sentences (27) (a), (b), and (c), which correspond to the English sentences in (18), (20), and (16), respectively:

- (27) a. Die Küchenschabe, die in der Tüte *lebte*, war sehr eingebildet. (cf. (18))
- b. Die Küchenschabe, die sehr eingebildet *war*, war allen ihren Nachbarn verhasst. (cf. (20))
- c. Es war einmal eine alte Küchenschabe, die *lebte* in einer schmierigen Tüte. (cf. (16))

Verb-second syntax in presentational relative constructions is by no means an archaic feature in modern German (as one might think because of the archaisms frequent in Grimm's fairy tale style), but it is the most natural way of forming such sentences in the modern spoken language.⁹ Notice that in German the relative pronoun *die* is identical in form with the demonstrative pronoun. As a result, the *S*₁ clause in the German presentational relative construction looks in every respect like² a main clause. I am aware that word order phenomena from German cannot be taken as direct evidence for constituent structure in English; however since the presentational relative construction is a well-attested cross-linguistic type, it seems legitimate to resort to cross-linguistic evidence to support my analysis of the English construction.

The earlier mentioned fact that in the presentational relative construction the meaning of the sequence *S*₁ plus *S*₂ can also be expressed by a single proposition establishes an interesting family resemblance between this construction and another, much better known, construction type: the so-called *it-cleft construction*. Both in the presentational and in the *it-cleft* construction, a relative clause is preceded by a short main clause containing the predicate 'be'; moreover in both constructions the main clause is propositionally empty and merely *names* the referent which corresponds to the pronoun (or the "gap") in the relative clause, typically (though not necessarily) in the form of a full lexical NP. However, there is an important *pragmatic* difference between the presentational relative construction and the *it-cleft* construction. In the *it-cleft* the proposition expressed in the subordinate clause is pragmatically presupposed, while in the presentational construction the propositional content of the relative clause is asserted. Given the limited scope of the present study, I cannot pursue this interesting parallel between the *it-cleft* and the presentational relative construction any further here. Suffice it to say that many of the observations presented in this paper about the formal and semantic properties of the presentational relative construction may be relevant in one way or another for the analysis of the cleft construction as well.

The semantic cleft character of the presentational relative construction distinguishes this construction from another, structurally closely related, relative construction, which Jespersen (1924:113) calls the *continuative* relative clause. An example of a

continuative relative is shown in (28):

- (28) a. The cockroach gave the poisoned breadcrumb to his wife, who promptly ate it.
- b. The cockroach was very arrogant, which is surprising, since cockroaches are known to be humble beings.

The continuative relative clause type in (28b), containing the relative pronoun *which*, shows particularly clearly that the relative clause in this construction cannot be part of a complex NP constituent. Nor can it be part of the VP constituent in S_1 . This follows from the fact that the antecedent of the relative expression *which* is neither a preceding NP, nor some other subconstituent of S_1 . Rather the antecedent of *which* must be the propositional content of the entire first clause.

As its name is meant to suggest, the continuative relative construction typically has the function of continuing a narrative, or of establishing a temporal or logical link between two states of affairs, rather than that of restricting the set of possible referents of a noun phrase (as in the restrictive relative), or that of adding a piece of parenthetical information to an NP referent (as in the appositive relative).¹⁰ Linking two assertions via the grammatical device of subordination has a strong rhetorical effect: it creates tight textual cohesion. This communicative function of the continuative relative explains why in this construction the relative clause must appear at the *end* of the "matrix" clause, a feature which further relates this type to the presentational relative construction.

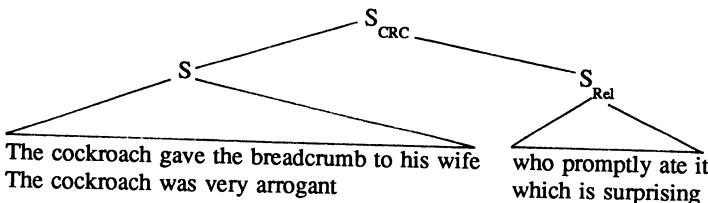
From the fact that in the continuative relative construction S_1 expresses the first of two independent but connected assertions it follows that in this type the sequence $S_1 + S_2$ does not have the semantic cleft character which we observed in the case of the presentational construction: the bi-clausal sequence cannot be expressed by a single proposition. But the continuative and the presentational type have in common that the sequence main clause plus relative clause may also be expressed by a sequence of two main clauses. This is shown in (29):

- (29) a. The cockroach gave the poisoned breadcrumb to his wife, *and she* promptly ate it. (cf. 28a)
- b. The cockroach was very arrogant, *and that* is surprising, since cockroaches are known to be humble beings. (cf. 28b)

(29) parallels (28) in much the same way (17) parallels (16). In some intuitive sense, we may say that in (29) the italicized sequences *and she* and *and that* correspond semantically to the single relative morphemes *who* and *which* in (28). Concerning the substitution of two independent clauses to the sequence main clause plus relative clause, there is a subtle difference between the continuative and the presentational type: while the former corresponds most closely to a coordinate structure involving the conjunction *and*, the latter naturally corresponds to simple juxtaposition (as in example (17)).¹¹ That the continuative type corresponds to *and*-conjunction is a direct consequence of the fact that in this type the two clauses S_1 and S_2 are semantically and pragmatically on the same level, S_2 expressing a temporal or logical sequence to S_1 , while in the presentational type the two clauses are semantically and pragmatically heterogeneous.

The syntactic, semantic, and pragmatic properties of the continuative relative construction lead me to postulate the syntactic skeleton in (30):

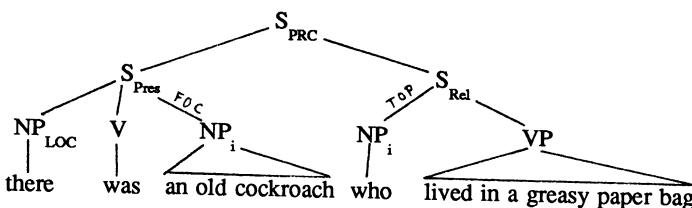
(30) The continuative relative construction (CRC)



As far as I can see, the most bothersome aspect of the structure in (30) is that it looks different from the restrictive relative clause structures which we have grown accustomed to from generative analyses and which have been taken to be representative of the species 'relative clause'.¹² (30) captures what I take to be the main properties of the continuative construction, i.e., the fact that the continuative relative clause "acts as" a juxtaposed main clause but is nevertheless a dependent clause by virtue of its internal syntax, and the fact that it must immediately follow the clause containing or constituting the antecedent (NP or S).

Given the close family resemblance between the continuative and the presentational construction, it is natural to posit the same basic structure for the two types. The presentational relative construction is represented in a little more detail in (31):

(31) The presentational relative construction (PRC)



The reason I have chosen a flat structure for S_1 in (31), i.e., a structure without a VP node, has to do with a hypothesis concerning presentational clauses which I have recently sketched elsewhere (Lambrecht 1987a and 1987b). According to this hypothesis, presentational clauses (or 'thetic' sentences, as they are sometimes called¹³) have no semantic subject-predicate bipartition, hence ought not to be analyzed as having a syntactic NP - VP structure. My hypothesis concerning the constituent structure of presentational clauses is not crucial to the argument in this paper and I will not further comment on it here.

The structure in (31) is to be understood as a non-derived grammatical template which is pragmatically associated with the specific discourse circumstances explained earlier. It is an advantage of the Construction Grammar approach to syntax that it allows us to represent syntactic constituents of various sorts, such as the constituent labeled S_{Rel} in our example, as ready-made syntactic building blocks, which can be

inserted into larger structures under specifiable semantic and pragmatic circumstances. Construction Grammar also allows us to account in simple ways for any idiosyncratic features of the internal or external syntax of the constituents which make up the global construction. To take a simple example: even though the constituent S_{Rel} is a ready-made syntactic building block, which is used in all relative clause constructions involving a finite verb, the global construction arising via combination of this building block with other building blocks may impose constraints on the internal or external syntax of S_{Rel} . For example in the presentational relative construction, the relativized element must be the subject of the relative clause, and this relative clause must be positioned after S_1 , two facts which follow directly from the pragmatics of the construction. Both facts are directly expressed in the template in (31). Moreover, by entering in construction with different types of antecedent structures, the constituent S_{Rel} may have unpredictable effects on the semantic and pragmatic nature of the whole construction, where by 'unpredictable effects' I mean effects which cannot be computed compositionally from the combination of S_1 with S_2 . One such unpredictable effect is the previously mentioned fact that the propositional meaning of S_1 may change when S_1 enters in construction with S_2 . A few striking examples of such semantic idiosyncrasy will be discussed below. Construction Grammar can account for such phenomena of unpredictable meaning changes, or at least it does not have to consider such phenomena problems for the theory, because the theory does not rely crucially on the principle of compositionality.

If we recognize the structure in (31) as a syntactic unit with construction-specific semantic and pragmatic properties, it becomes possible to subsume under it certain configurations which at first glance do not seem to fit the unit. Given the fact that in the PRC the combination of S_1 and S_2 is semantically non-compositional, in the sense that S_1 tends to lose its semantic autonomy as an existential (or presentational) assertion and has as its unique function the naming of the NP referent to be talked about in S_2 , it is not surprising to find occurrences of the construction in which the meaning of S_1 departs radically from the meaning which it would have independently of its occurrence in the bi-clausal construction. I believe that such a case obtains in the construction which McCawley (1982) calls the 'pseudo-relative' clause, and which is illustrated in (32):

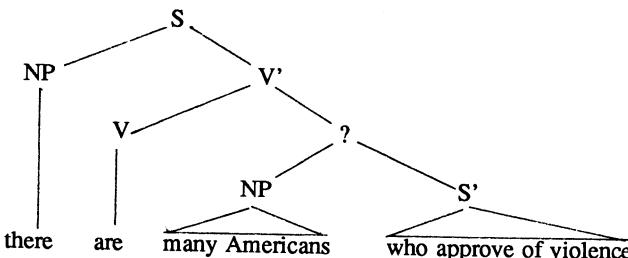
(32) There are many Americans who approve of violence.

Formally, the pseudo-relative construction in (32) is clearly related to our presentational relative construction. However it differs from the fairy tale archetype in one crucial respect. While in the archetype, S_1 names a discourse referent (in our case the old cockroach) about which some assertion is made in S_2 , the first clause in the pseudo-relative construction does not designate an independently existing discourse referent. In (32), the referent of the antecedent NP is not only non-specific, a feature which already distinguishes it from the presentational archetype, but moreover this non-specific referent simply does not exist outside of the construction in which it appears. It is the construction that "creates" the referent, i.e., the referent comes into existence via the construction. As McCawley observes, the meaning of the S_1 sequence *There are many Americans* in (32) is clearly not the same as that of the independent existential assertion *There are many Americans*. (32) does not assert that there exist many Americans, but rather that out of the total number of Americans (however small or great that

number is), a high percentage approves of violence.

McCawley, after discussing various semantic and syntactic peculiarities of the sentence type in (32), suggests, somewhat hesitatingly, the structure in (33), in which the antecedent NP forms a single constituent with the relative clause, but a constituent of an unknown sort:

(33) The pseudo-relative clause (McCawley 1982)



Given the independently motivated presentational relative structure which I postulated in (31), I claim that it is possible to subsume under that structure McCawley's pseudo-relative clause as a semantic subtype. My claim that the type in (32) represents the same grammatical construction as presentational relatives is supported by the following observation. In substandard English, the meaning of pseudo-relatives such as (32) may be expressed by two juxtaposed independent clauses, just as in the case of the presentational relative construction. The sentences in (34) and (35) are two examples of this phenomenon from observed spontaneous speech:

(34) There's some male beauty shops they deal more in your feminine men and actors (Terkel 1974:317; cit. Prince 1981)
 (35) There are some funerals they really affect you. (Terkel 1974:661; cit. Prince 1981)

The juxtaposed structures in (34) and (35) in turn resemble the presentational relative type in that their meaning could be expressed via single propositions, as shown in (36a), and in that they could appear as "full-fledged" presentational relative constructions involving a subordinating morpheme, as shown in (36b):

(36) a. Some funerals really affect you.
 b. There are some funerals that really affect you.

Pseudo-relative structures are thus in all respects similar to the presentational relative construction, except for the referential quality of the antecedent NP. Notice that the two juxtaposed clauses (34) and (35) could *not* be expressed via coordinate structures conjoined with *and*. (37) shows the range of possibilities:

(37) a. Many Americans approve of violence.
 b. There are many Americans who approve of violence.
 c. There are many Americans they approve of violence.
 d. *There are many Americans and they approve of violence.

(The star in (37d) applies of course only to the intended reading, in which (d) is

synonymous with (c).) The remarkable fact that in (37d) two clauses which by their internal syntax are independent main clauses cannot be meaningfully conjoined with the conjunction *and* is again easy to account for if we take (37c), like (37b), as a *grammatical construction* in the Construction Grammar sense. Since in this construction S_1 does not state the existence or discourse presence of an independently existing referent but receives its meaning by entering in construction with S_2 , it is not surprising that the two clauses cannot be conjoined like regular main clauses.

With the possible exception of *and*-conjunction, which in English seems to be acceptable in the case of the presentational archetype (*Once upon a time there was an old cockroach and he lived in a greasy paper bag*), we may say that exactly the same paraphrase relations hold in (37) as in the previously discussed presentational relative construction. I therefore conclude that the pseudo-relative type in (32) may be subsumed under the presentational template in (31), i.e., that pseudo-relative clauses are a semantic subtype of presentational relative clauses.

It is interesting to observe that another type of pseudo-relative clause mentioned by McCawley, which at first glance seems identical to the type in (32), must in fact be distinguished from it. This is the type which involves a non-referring NP in S_1 . The sentence in (38) is an example:

(38) There are few Americans who like opera.

In (38) no presentational discourse function is possible. Indeed (38) is logically equivalent to the sentence *There are not many Americans who like opera*; (38) can therefore not be interpreted as introducing a new discourse referent, i.e., it cannot be presentational. Compare the set of examples in (39) with that in (37):

(39) a. Few Americans like opera.
b. There are few Americans who like opera.
c. * There are few Americans they like opera.
d. * There are few Americans and they like opera.

As (39c) shows, the type in (38) differs from that in (32) in that it does not permit the juxtaposition paraphrase. (38) can therefore not be an instance of exactly the same grammatical construction as (32).

The idea that in spite of its superficial similarity with (32) the type in (38) is different in nature from the presentational relative construction is again supported by the German equivalents of the two types. While the spoken German equivalent of the presentational relative construction in (32) would have the verb in second position, the equivalent of the non-presentational (38) must have V-final syntax. This is shown in (40):

(40) a. Es gibt viele Amerikaner, die *sind* für Gewaltanwendung. (cf. (32))
b. *Es gibt wenige Amerikaner, die *hören* gern Opern. (cf. (38))
c. Es gibt wenige Amerikaner, die gern Opern *hören*.

I do not know whether the semantic and pragmatic differences between the English examples (32) and (38) are reflected in a difference in syntactic structure, as they are in German. I am inclined to think that the constituent structure of (38) must be different from that of (32), but I have at present no arguments to support this idea. I must leave the decision to future research.

3. The presentational amalgam construction.

I am now in a position to make a proposal concerning the analysis of the construction which I introduced at the beginning of my paper in examples (1) through (10). Recall that the pragmatic function of the presentational relative construction is to establish a new discourse referent and to express a proposition about it in the same minimal sentential processing unit. While in the presentational archetype, the fairy tale construction, the purpose of S_1 is indeed to pose explicitly some new referent in the discourse and then to add a piece of propositional information about it in S_2 , the construction is often used in spontaneous speech in a somewhat more condensed fashion. I hope I will not be accused of random speculation if I assume that a speaker who utters a sentence like *There was a ball of fire shot up through the seats in front of me* (example (1)) does not wish to make an independent statement concerning the existence of a ball of fire by uttering the sentence "there was a ball of fire" and then to add to that statement of existence the information that the fire ball shot up through the seats in front of him or her. It seems more natural to assume that the speaker wishes to express the simple proposition 'A ball of fire shot up through the seats in front of me', in a type of utterance which I have called 'event reporting' (and which in many languages is expressed in the form of a presentational construction, cf. Lambrecht 1987a and forthcoming, and in particular Sasse 1987). However the simple sentence expressing this proposition is perceived by the speaker as being contrary to the information structure constraint against inaccessible topic referents, hence the use of the actual structure (1). Now if the single proposition is indeed what the speaker wishes to express, it is natural to assume that the speaker will try to express it with a minimum of syntactic paraphrasing. The quickest way in which the speaker can do this is to code the lexical NP *simultaneously* as a presentational focus and as the topic of a proposition. This, I believe, is the discourse motivation behind the construction in (1).

The same explanation is available for the sentence type in (4) through (10), which involves the verb *have*. For example the speaker who utters (4) wishes to express the proposition in (41), and the speaker who utters (7) wishes to say something like (42):

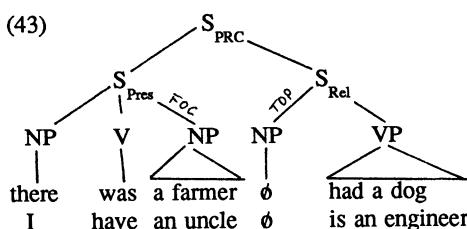
- (41) A friend of mine called.
- (42) One of my uncles was an engineer.

An obvious question to ask at this point is how the predicate *have* in (4) through (10) comes to parallel the verb *be* in (1) through (3). What motivates the occurrence of the transitive verb *have* in a construction which closely resembles the presentational *there*-construction with its intransitive predicate? The answer lies in the often noticed similarity in *semantic structure* between the predicate *have* and the predicate *be*. An early discussion of the relevance of this similarity for semantic case theory is found in Fillmore 1968 (p. 60ff). More recently, Foley & Van Valin (1984:48) have observed that there is inherent semantic as well as crosslinguistic morphological evidence that the subject argument of the verb *have* should be interpreted as having the semantic case role of *locative*. This locative case role is manifested in many languages in the fact that the argument which is the subject in English appears morphologically as a dative (e.g. in Hebrew or Latin) or as a locative (e.g. in Tagalog or Russian). The initial pronominal subject NP in (4) through (10) is therefore semantically analogous to the initial constituent *there* in (1) through (3), whose original locative function is transparent.

The pronoun *I* in the *have*-construction is also *pragmatically* analogous to the locative argument in the *there*-construction: the pronominal subject NP of S_1 serves as a (deictic) reference point with respect to which the new discourse referent is anchored or "located" in the discourse. The semantic and pragmatic parallel between *I have NP* and *There is NP* is particularly clear in spoken French, where *j'ai* 'I have' and *y'a* 'there is' are formally identical except for the person difference between *je* and *y* (cf. Lambrecht 1986a and forthcoming). As Foley & Van Valin (loc. cit.) observe, the argument structures of *have* and *be* differ from each other only in the order of the two arguments (theme-locative for *be*, locative-theme for *have*). In English, as in French and other rigid verb-medial languages, the verb *have* is therefore ideally suited for the presentational function involving a pronominal reference point because this verb allows a locative argument to appear as a "nominative" subject NP in clause-initial *topic* position, and it allows the lexical NP designating the located entity (the theme) to appear postverbally, in the preferred *focus* position. The verb *have* has the syntax of a two-place predicate, but the semantics of an "intransitive" verb.¹⁴

Given the semantic and syntactic parallel between *There is NP* and *I have NP*, it would be interesting to know the *pragmatic* motivation determining the use of one or the other of the two alternative constructions. I have not studied this issue in any depth, but I believe that the choice between the two constructions is determined at least in part by the peculiar kind of "possessive" relation which holds between the subject and the object argument of the predicate *have*. As pointed out to me by Claudia Brugman, it is this particular relation that accounts for the very frequent occurrence of *relational nouns* (kinship terms or the noun *friend*) in my data.¹⁵

To account for the syntax of the construction in (1) through (10) it would seem natural enough to assume a structure such as (43), which is similar to that in (31), except for the fact that the subject NP in S_2 is empty:



In (43), the gap in the relative clause is of the same nature as any other gap, except that it appears in the position of subject, which, as we know, normally requires the presence of the complementizer *that*. However I believe that in spite of its naturalness, the structure in (43) is not the best representation for our construction, at least not in all cases. The reason I believe that (43) does not tell the whole story has to do with the cognitive motivation for the use of our construction which I alluded to earlier. As it stands, (43) suggests that S_{Pres} and S_{Rel} are separate clauses with separate NP arguments, one of which just happens to be null. The structure does not capture our intuition that the two "clefited" clauses are in fact one sentence on the propositional level and that one and the same lexical NP functions both as a non-subject argument in S_1 and as a subject argument in S_2 .

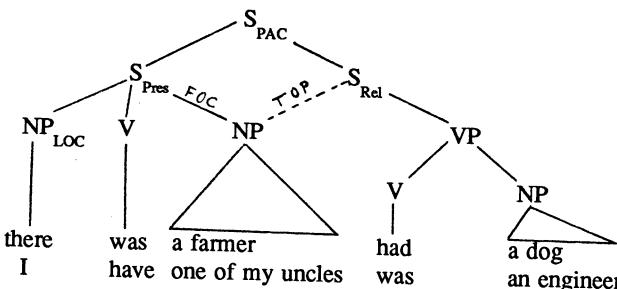
This intuition is strongly confirmed, I think, by the semantic idiosyncrasy of the S_1 clause in such examples as (4), (5), (6), and (9). In all these examples, the presentational clause S_1 is semantically highly anomalous. In fact these clauses do not in themselves express semantically well-formed propositions. Consider the S_1 clauses in (4) and (5), repeated here in (44) in isolation from the constructions in which they actually occurred:

(44) a. ?? I have a friend of mine. (cf. ex. (4))
 b. ?? I have one of my uncles. (cf. ex. (5))

From the point of view of normal language use, the propositions expressed in (44) are almost non-sensical because of the redundancy created by the cooccurrence of *I have* with the possessives *mine* and *my* in the object NPs. To correctly interpret (4), for example, the sentence must be parsed in such a way that the NP *a friend of mine* is construed as the *subject* of the proposition in S_1 -- just as in the mono-clausal version in (41) -- rather than as the object in S_1 . Similarly in (5) the NP *one of my uncles* is more naturally construed as the subject for the VP *is an engineer* (as in (42)) than as the object of the verb *have* in the presentational clause. The same is true in examples (6) and (9).

The various phenomena of semantic anomaly or non-compositionality discussed above lead me to suggest the structure in (45) as the grammatical template for our construction, which I suggest to call the *presentational amalgam construction*, with reference to a term coined some time ago by George Lakoff (1974).¹⁶

(45) The presentational amalgam construction (PAC)



In the presentational amalgam construction neither S_1 nor S_2 have any independent grammatical existence. The structure in (45) captures the intuition that in this construction one and the same NP functions both as a syntactic *object*, bearing the pragmatic relation of *focus* to the proposition in S_1 , and as a syntactic *subject*, bearing the pragmatic relation of *topic* to the proposition in S_2 . Due to the absence of a subject relative pronoun or complementizer which would mark the boundary between the two clauses, the empty NP in S_1 may become semantically identified with the full NP in S_1 . This identification is indicated by the dotted line in (45). It takes place all the more easily since, as I have repeatedly observed, the NP in S_1 has no semantic case role except that of expressing the pragmatic relation of "being there". As a result, the missing NP in S_2 may invade the object NP in S_1 , so to speak, and occupy it with its own semantic case role.

With its clear pragmatic motivation, the structure I am proposing in (45) may be seen as an instance of the *grammaticalization* of the requirements of information structure in the syntactic structure of the sentence, resulting from structural and semantic rearrangement, readjustment, and eventually reanalysis.¹⁷ In saying that the cognitive requirements of information structure are grammaticalized in the syntactic structure of the sentence I am not claiming that information structure "explains" the structural details of the presentational amalgam construction. Discourse function does not explain the form of the presentational clause S_1 . Nor does it explain the internal syntax of the constituent S_{Rel} . The form of these constituents is determined rather by the general structural and typological properties of the language. Thus it is a simple typological fact that relative clauses may have gaps instead of relative pronouns in English, but not in German. Because of this typological difference between the two languages, German could not develop a presentational amalgam construction, even though the general information structure requirements are the same in both languages. But discourse function may impose specific constraints on the form, interpretation, and use of complex grammatical constructions. The discourse function of the presentational relative construction is to combine referent introduction and predication in one grammatical unit. The external syntax of the two clauses, i.e. the way they enter in construction with one another to form a global unit, may therefore be said to be *motivated* by the presentational discourse function. Moreover the internal syntax of S_{Rel} (or what is left of it) in the presentational amalgam construction may be said to be pragmatically motivated in that the presence of the gap in subject position is favored by the particular function of the construction in discourse.

Speculative though it may be, I think that my proposal concerning the structure of the presentational amalgam construction deserves serious consideration. For example, it accounts for the fact that in the otherwise very similar *continuative* relative construction the subject pronoun cannot be omitted and an amalgam analysis is impossible. This is so because in the continuative construction the antecedent NP in S_1 is an argument in a full-fledged proposition whose various arguments have clear semantic case roles. Therefore the NP in S_1 is not available to be occupied by the case role of the relativized null NP in S_2 . To take two examples whose comparison makes a certain amount of sense:

(46) a. There was a farmer \emptyset had a dog.
b. *The farmer gave the bone to his dog \emptyset promptly started chewing it.

I claim that the perceived difference in grammaticality between the presentational sentence in (46a) and the continuative sentence in (46b) is not due to a difference in syntactic structure but to the difference in pragmatic *motivation* between the two types: since the continuative type links two independent propositions in a narrative, the functional motivation for amalgamating the two clauses which was found in the presentational type is absent in this construction. Hence the unacceptability of (46b).

By postulating the amalgam structure in (45) with its functional ambiguity between object and subject we may also be able to account for the peculiar syntactic nature of such observed English utterances as the following, which are different from those analyzed in this paper (for example (48) contains no relative clause at any level of analysis):

(47) Mom, this is Rutie wants to talk to you.

(48) I guess that was a difference between me and you was that I always thought with Sylvia it would be over at some time.

In (47) and (48), as in (45), a lexical NP with a new discourse referent appears simultaneously as a non-subject NP in one clause and as a subject NP in another clause. I think that such sentences should not be discounted as strange "non-core" exceptions to the ordinary rules of English grammar. Like the presentational amalgam construction, they should be seen as instances of what Fillmore in the passage quoted at the beginning of my paper calls "impressive regularities in language" which correspond to "structures deep seated in the language". Providing analytic tools with which to analyze such structures should therefore be a primary concern for linguistic theory.

Endnotes.

1. I would like to thank Claudia Brugman and Dale Koike for helpful comments on a earlier version of this paper.
2. Unless otherwise indicated, the sentences are from my own data collection.
3. It is all the more remarkable that a few days later the same linguist overheard himself say (8) while lecturing; he then provided me with the example. Example (8) actually differs from the other *have*-examples in the list in that the antecedent of the relative clause is not a relational noun like *friend* or *uncle*. I am including (8) here mainly because of its sociolinguistic relevance.
4. There are some remarkable exceptions to this crosslinguistic generalization. One such exception is the presentational relative construction in spoken French, which permits definite NPs of a certain pragmatic type (cf. Lambrecht 1986a and forthcoming).
5. The assumption that the relative pronoun *who* in such clauses as (18) appears in subject NP position and that such clauses therefore contain no gap is discussed and defended e.g. by Chung & McCloskey (1983). Cf. also Wiegand (this volume).
6. I am grateful to Chuck Fillmore (class lectures) for making me aware of the importance and usefulness of this distinction. Cf. also Fillmore (this volume).
7. Dale Koike (p.c.) observes that, for some speakers at least, the expression *the one* is a well-formed NP when contrasting with the correlative expression *the other*. In this use of the sequence *the one*, the sentence in (23b) is grammatical. This does not invalidate my argument, which is based on an interpretation in which the two occurrences of *the one* in (23a) and (23b) are of the same type.
8. The expression "full-fledged" main/subordinate clause is of course to be taken with a grain of salt, since it presupposes a fully understood notion of grammatical subordination, which is as yet unavailable in linguistic theory. For some discussion see Haiman & Thompson (1984).
9. Cf. Schuetze-Coburn 1984.
10. Chuck Fillmore (p.c.) suggests to name this type the 'narrative-advancing' relative construction. The construction is particularly widespread in Latin prose, and Latin grammarians refer to it as the 'linking' relative clause ('relatif de liaison' in the French tradition).
11. A cursory examination of some 50 fairy tales in the German original of Grimm's fairy tales shows, for German, that juxtaposition of S_1 and S_2 is frequent, while *und*-conjunction never occurs.
12. Interestingly, Keenan (1985:164) posits a structure similar to that in (30) for a universal subtype of restrictive relative clauses which he calls 'corelatives'. The only

difference between Keenan's corerelative structure and my (30) is that in the corerelative structure S_{Rel} precedes the "main" clause.

13. Cf. in particular Kuroda 1972 and Sasse 1987.

14. I am using "intransitive" here in its traditional sense, to refer to a predicate which takes neither a direct nor an indirect object argument. I am not claiming that the locative NP following the verb *be* is not an argument of that predicate.

15. Cf. Fillmore 1968:60ff for a discussion of the relationship between relational nouns, inalienable possession, and the verbs *have* and *be*.

16. Discussing such examples as *John invited you'll never guess how many people to his party*, Lakoff (1974) defines a syntactic amalgam as "a sentence which has within it chunks of lexical material that do not correspond to anything in the logical structure of the sentence; rather they must be copied in from other derivations under specifiable semantic and pragmatic conditions" (1974:321). What Lakoff's phenomenon and mine have in common is the fact that pieces of structure are fitted together in a construction which are not expected to go together, given a compositional derivational model of generative syntax. Lakoff's syntactic amalgams and my presentational amalgam construction differ however in the semantic and syntactic nature of the pieces of structure in question. Perhaps the term 'syntactic blend' would have been more appropriate in my case, but that would have given a less interesting title to my paper.

17. A logical next step in the suggested process of reanalysis might be that the syntactic link between the verb in S_{Pres} and the presented NP gets lost, in which case the line connecting the two nodes would be erased. This would entail that S_{Pres} would lose its clause character altogether. The remaining sequences *There was* or *I have* would then become "presentational markers" preceding the now independent clause S_2 . This is of course pure speculation at this point.

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From Bound Grammatical Markers to Free Discourse Markers: History of Some Japanese Connectives

Yo Matsumoto
Stanford University

0. Introduction

In this paper I will discuss the formal and functional aspects of historical change in certain Japanese connective expressions as they relate to theories of diachronic grammaticalization and language change in general.¹ First, I will point out that the historical change that many Japanese connectives have undergone poses a counterexample to the general direction of the formal change assumed in certain theories of grammaticalization (Givon 1979, Lehmann 1985). Second, I will show that they have undergone a pragmaticalization of meaning, and that this supports the view that pragmaticalization is a typical direction of semantic change (Traugott 1987, cf: Traugott 1982).

1. Formal changes in some Japanese connectives

In the literature of diachronic grammaticalization, it has been claimed that when a morpheme moves from one level to another, the direction of change is toward an increasing dependence of a morpheme on other words, or from word to clitic to affix, and finally, to zero. Givon (1971), for example, states this intuition in his slogan "Today's morphology is yesterday's syntax."² He has shown that this change is seen in the development of agreement markers, case markers and other grammatical markers in many languages (see Givon 1979 for a summary). Christian Lehmann (1985) also assumes that an increasing degree of boundness of a morpheme in the process of grammaticalization is the general direction of change.

This view of unidirectionality of change toward increasing boundness has been supported by data from many languages (e.g. Heine & Reh 1984). However, this view has not been unchallenged. Jeffers and Zwicky (1980), for example, have pointed out that clitic particles in Proto-Indo-European developed into the roots of relative/indefinite/interrogative words in descendant languages. That is, they claim that the opposite process, a change toward increasing freeness of morphemes, does occur in language change (see also Nevis 1986).³

It is one claim of this paper that Japanese connectives provide another instance of the change toward increasing independence of morphemes. The term *connective* is used here to refer to a variety of free forms that are used to connect two or more constituents. In Japanese they are not the only device that is used to connect two elements. The other option is relatively bound morphemes called *connective particles*, which are often referred to as enclitics (e.g. McCawley 1968) or enclitic particles (e.g. Martin 1987). Most of the connective particles are used to relate two clauses in a sentence (coordination or subordination), and occur at the clause-final position of the first clause.

One kind of connective that I want to look at in this paper is one which has the same form as a connective particle. An example is given in (1).

(1-a) *Taro-wa wakai(*-yo)-ga, yoku yar-u(-yo).*
Taro-TOP young(-PART)-but well do-PRES(-PART)
"Taro is young, but he does a good job."
b) *Taro-wa wakai(-yo). Ga, yoku yar-u(-yo).*
Taro-TOP young(-PART). But well do-PRES(-PART)
"Taro is young. But he does a good job."

In (1-a), the morpheme *-ga* is used as a connective particle, which is attached to the predicate of the first clause. In (1-b), on the other hand, *ga* is used as a connective. In this sentence what is one sentence in (1-a) is expressed in two sentences, and *ga* is used in the sentence-initial position of the second sentence. Several connectives of this type are listed in (2).

(2) Connectives / connective particles

<i>ga</i>	'but'	<i>/ -ga</i> 'but'
<i>ke(re)do(mo)</i>	'but'	<i>/ -keredomo</i> 'even though' (< <i>-kere</i> inflectional ending? + <i>-domo</i> 'even though')
<i>tokorode</i>	'by the way'	<i>/ -tokorode</i> 'when"since' (< <i>tokoro</i> 'place' + <i>-de</i> LOC)
<i>tokoroga</i>	'but'	<i>/ -tokoroga</i> 'even though' (< <i>tokoro</i> 'place' + <i>ga</i> NOM)
<i>to</i>	'just then'	<i>/ -to</i> 'when"as soon as' (< <i>-to</i> 'and')

The difference between (1-a) and (1-b) or connective particles and corresponding connectives in general may call for comment. The differences are summarized as follows. The connective particles are not used alone and therefore are bound morphemes in Bloomfield's (1933) definition. They are attached directly to a tensed form of a verb, an adjective or an auxiliary, and usually form one accentual unit with it, pronounced with one accent in that unit.⁴ The connectives, on the other hand, are used by themselves and therefore are free morphemes. They always form one accentual unit by themselves. They are separated from the preceding word (in the preceding sentence) by a long pause. Furthermore, a sentence-final particle like *-yo*, which occurs sentence-finally, but not clause-finally, can occur at the end of the preceding sentence, showing that there is a sentence boundary before the connective (cf: 1-a and b). Also, some of the connectives can be used to start a new turn in a discourse, with no related preceding utterance (see section 2).⁵ These facts show that the connective particles are bound to the preceding word, while the connectives are clearly independent of it.

There are also connectives that have the same forms as the sequences of a copula (*-da* or its variant) and a connective particle. (*-Da* is also a relatively bound morpheme or an enclitic, attached directly to a noun with or without a case marker.) One example is given in (3).

(3-a) *Taro-wa mada kodomo-da-kara sore-wa muri-da.*
Taro-TOP still child-COP-because that-TOP unreasonable-request-COP
"Since Taro is still a child, he is not equal to that task."

b) *Taro-wa mada kodomo-da. Da-kara sore-wa muri-da.*
Taro-TOP still child-COP therefore that-TOP unreasonable-request-COP
"Taro is still a child. Therefore, he is not equal to that task."

In (3-a), the form *-dakara*, which is composed of a copula *-da* and a connective particle *-kara* 'because', is attached to the predicate nominal in the first clause of the sentence. In (3-b), on the other hand, the form *dakara* is used as a connective. Since *dakara* is here a connective, there is nothing strange about the first sentence

ending in the copula *-da*. The first sentence can also end in a verb, rather than a copula. Several such connectives are listed in (4).

(4) Connectives / copula + connective particles

<i>daga⁶</i>	'but'	<i>/ -da COP + -ga</i> 'but'
<i>dakedo(mo)</i>	'but'	<i>/ -da COP + -keredomo</i> 'although'
<i>datte</i>	see below	<i>/ -da COP + -tote</i> 'even if'
<i>dakara</i>	'therefore'	<i>/ -da COP + -kara</i> 'because'
<i>dattara</i>	'if so'	<i>/ -da COP + -tara</i> 'if'
<i>nanoni</i>	'in spite of it'	<i>/ -na COP + -noni</i> 'even though'

The other kind of connective that is discussed is that which has the same form as the gerund (participial) form of a copula *-de*, by itself or with a so-called "focusing" particle. This gerund form of the copula is used to form an adverbial subordinate clause or the first conjoined clause in a sentence. One example of the use of *-de* and a focusing particle is given in (5). In (5-a), the sequence of a copula *-de* and a highlighting particle *-mo* is attached to an anaphoric term *sore* 'that', forming a subordinate adverbial clause. In (5-b), on the other hand, *demo* is used as a connective. Such connectives are listed in (6).

(5-a) *Taro-wa shippaishi-ta. Sore-de-mo kare-wa kujike-nakat-ta.*
Taro-TOP fail-PAST that-COP-even he-TOP be-discouraged-NEG-PAST
"Taro failed. Even though that was the case, he was not discouraged."

b) *Taro-wa shippaishi-ta. Demo kare-wa kujike-nakat-ta.*
Taro-TOP fail-PAST All the same he-TOP be-discouraged-NEG-PAST
"Taro failed. All the same, he was not discouraged."

(6) Connectives / gerund form of copula *-de* (+ a focusing particle)

<i>de</i>	'and' 'and then'	<i>/ -de COP</i> (gerund)
<i>demo</i>	'but'	<i>/ -de COP</i> (gerund) + <i>-mo</i> 'even'
<i>dewa (jaa)</i>	'then' "now"	<i>/ -de COP</i> (gerund) + <i>-wa</i> TOPIC

Incidentally, the complex forms like *soredemo* in (5-a) can often be regarded as complex connectives. For the purpose of this paper, I will call all cases of these complex forms *anaphoric connectives*.

How did these connective expressions develop in history? Given the general claim about the direction of language change, one might expect, for example, that the connective particles, which are relatively bound morphemes (clitics), developed from corresponding connectives, which are free, independent morphemes. However, according to the established view in Japanese linguistics this is not the case.

It has been claimed that the connectives in (2), (4) and (6) developed from corresponding particles or sequences of a copula and a particle (Doi 1969a,b, Kyogoku 1977, Kyogoku & Matsui 1973, Yuzawa 1936, *Nihon Kokugo Daijiten* (NKD), etc.). There are two different patterns of development. First, connectives like *ga* in (1-b) developed from connective particles like *-ga* in (1-a) by being separated or detached from the preceding word in the preceding clause (Kyogoku 1977, Kyogoku & Matsui 1973).⁷ This process may have been a reflection of the strategy of making a sentence sound as if it is the continuation of the preceding

sentence, which the speaker (or some other speaker) has actually finished, a phenomenon that can be found in other expressions in Japanese.⁸ Connectives in (2) and probably many in (4) fall into this category. I will call connectives formed through this process *detached connectives* for the lack of a better term.

Connectives listed in (6) and perhaps some in (4) have a different story. They are said to have arisen with the loss of an anaphoric term from anaphoric connectives like *soredemo* in (5-a) (NKD, cf: Martin 1975: 818-9). In (5-a), the sequence of a copula and a focusing particle *-demo* is used as a part of an anaphoric connective *soredemo*. In (5-b), *demo* occurs without *sore*, and is used as a connective. In this paper, I will call this type of connectives *anaphorless connectives*.⁹ The process of the loss of anaphoric terms in the formation of connective expressions is not unique to Japanese. In English, for example, (phrasal) connectives like *instead* and *as a result* developed from phrases with an anaphor, such as *instead of that* and *as a result of that* (Halliday and Hasan 1976:230). In the case of Japanese this loss of an anaphor has resulted in the use of the sequence of relatively bound morphemes (a copula and a focusing particle) as a connective.

The historical change that produced the detached connectives may require some elucidation. Historical data show that these connectives appeared in history quite recently. All of the connectives began to be used in the 17th century or afterward in texts that reflect the colloquial speech of that period, in some cases in *shoomono* (commentaries on classical writings), but in most cases in *kyoogen* and *kabuki* (popular play scripts), and so-called vulgar style Edo literature such as *kokkeibon* (Aoki 1973, Kyogoku & Matsui 1973, Yuzawa 1929, 1936, 1954).

The corresponding particles, on the other hand, had been used before that time. Some date back to Old Japanese. These particles had the same phonological/morphological properties as today before and around the time connective forms appeared. The accentual marks annotated in *Heikyoku*, which seem to reflect the accent of the 15-18th century Kyoto dialect, show that particles (including the connective particle *-ga*) and a copula almost always formed one accentual unit with the preceding word (Okumura 1981). This accentual pattern is also dominant in the accentual marks annotated in *Shizakooshiki*, which reflect the accent of Kyoto dialect around the 13th century (Kindaichi 1964).¹⁰

Take the example of (-)ga. It started as a genitive marker and a subject (nominative) marker in certain kinds of subordinate clauses in Old Japanese. -Ga developed into a connective particle from its use as a subject marker around the late 11th century (Ishigaki 1944, NKD).¹¹ Ga as a connective, on the other hand, appeared in the 17th century (Yuzawa 1936; see also Kyogoku 1977).¹² The appearance of *ga* as a connective is clearly indicated by the examples where the preceding sentence ends in a form to which a connective particle cannot be attached. In the following example, taken from a (kokanbon) *kyoogen* entitled *Asaina* (1792), the preceding sentence ends in a particle *-monoo*, which is a connective particle, but here is used as a sentence-final particle that marks the speaker's regret.

(7) *Asaina-to kii-ta-naraba semu-mai-monoo.*
Asaina-COMP hear-PAST-COND attack-NEG(FUT)-PART

Ga, Asaina-to kiite seme-ne-ba jigoku-no naore-ja.
but Asaina-COMP hear(gerund) attack-NEG-COND hell-GEN disgrace-COP

"If I had known that you were Asaina, I would not have attacked you! But if I stop attacking you after I know that you are Asaina, it is a disgrace to the world of hell."

Another connective of this type, *ke(re)do(mo)* can be traced back to two bound morphemes *-kere* and *-domo*. *-Kere* is supposed to have been an inflectional ending or an auxiliary,¹³ and *-domo* was a connective particle. The combination of *-kere* and *-domo* formed a connective particle *-keredomo* in the 15th century.¹⁴ *Keredomo* as a connective appeared later, in the 17th century (Yuzawa 1936, NKD).¹⁵ Phonologically reduced forms like *(-)kedo(mo)* appeared in the 17-19th century (Yuzawa 1936, 1954; NKD). Another connective, *tokorode*, ultimately goes back to a noun *tokoro* 'place', which was grammaticalized into a connective particle around the 11th century (Doi 1969b, NKD). The connective particle *-tokorode*, which comes from the combination of a noun *tokoro* and a locative marker *-de*, appeared in the 16th century,¹⁶ and the connective *tokorode* appeared in the 17th century in the meaning of 'since' (Yuzawa 1929, Doi 1969b, NKD),¹⁷ and in the present-day meaning of 'by the way' in the 19th century (NKD).¹⁸ The direct source of the connective *tokorode* is not the noun, since the meaning of the noun *tokoro* 'place' is not related to any meanings of the connective *tokorode* in its history. Connectives with the copula *-da*, such as *daga*, *dakeredo* and *datte*, appeared in the 18-19th century.¹⁹

Anaphorless connectives like *de*, *demo* and *dewa* also appeared in the 18th century or afterward, after their corresponding anaphoric connectives appeared.²⁰ Their component morphemes date back to a much older time. The gerund form of a copula *-de* dates back to the late 11th century, and *-wa* and *-mo* to Old Japanese (Matsumura 1969, NKD).

In all of these cases, connective forms appeared later than the corresponding clitic forms. One might think that both a connective and a connective particle originate in some common independent word of some other category. However, the history of *(-)ga*, for example, shows that this morpheme was not an independent word before it appeared as a connective. This shows that the change that took place was one from clitics to independent words. This means that the direction of change toward an increasing degree of boundness seen in the literature on grammaticalization is not exceptionless.

Then under what conditions is this exceptional change toward increasing freeness of morphemes likely to occur? What is striking in this regard is that no similar change toward increasing freeness has been reported in recent studies on the origins of connectives by Traugott (1985, 1986), Konig (1986) and others.²¹ Also, no similar phenomena can be found in the history of other grammatical markers in Japanese (cf: Matsumura 1969, Akiba 1978).²² Then what makes Japanese connectives unique in this respect? Although I cannot state clear conditions for the occurrence of this unusual change, I can point to two factors that have presumably made the detaching process possible. One of them is the fact that Japanese has connective particles as relatively bound (clitic) morphemes. The other factor is the clause-final position of those particles. Given this situation, detaching clitics from the preceding sentence is a natural measure to resort to, in order to have free sentence connectives in the sentence-initial position. These two factors are related to two typological characteristics of Japanese. The presence of connective particles can be ascribed to the agglutinating nature of Japanese. The clause-final position of connective morphemes is typical of OV (verb-final)/postpositional languages.²³ A

close study of connectives in languages typologically similar to Japanese might lead to the discovery of similar phenomena.²⁴

2 Functional change in some Japanese connectives

The second problem to be discussed is the functional (semantic) change of these connectives. Although the change that I have described produced free morphemes from relatively bound morphemes, they have not acquired the rich lexical semantic content typical of free morphemes. On the contrary, the functional (semantic) change that these connective expressions have undergone is one toward discourse/pragmatics-oriented meanings.

First, let us consider the functional change in terms of the scope of the connective morphemes, or the type of constituents that the morphemes combine. As I have described before, a connective particle combines two clauses in a sentence, while a connective combines two matrix sentences. This means that when the detaching occurred the relationship that the morpheme indicates has changed from intrasentential relationship to intersentential relationship. That is, the function of those morphemes changed from the domain of syntax to that of discourse.²⁵

The same is true of anaphorless connectives. In the original form of a complex anaphoric connective *soredemo*, for example, the form *-demo* marks the relationship between the proposition expressed in *sore* and the rest of the clause. When *demo* stands alone as a connective, it indicates directly the relationship between the preceding sentence and the sentence in which the connective occurs. Again, the function has shifted from the domain of syntax to discourse. I will point out later that many connectives including *demo* have come to relate still larger units like conversational turns.

This change of the scope of an item is also the opposite of a putatively unidirectional process of grammaticalization. Lehmann (1985) claims that grammaticalization involves the shrinkage of the scope of an item. That is, the constituents that a morpheme relates to are claimed to become smaller. In the process that I am describing, however, the constituents connected after the change are larger units.

There are more to the functional change than just this. Many of the detached and anaphorless connectives have now acquired new discourse functions. Most of these uses manifest themselves when the connectives are used in the turn-initial position, where they mark some features of the discourse units (e.g. turns) that they introduce. In many such cases, the logical relationship that original connective expressions mark has been lost.

This can be illustrated with a detached connective *dakara*. The original meaning of *dakara* 'therefore' retains the meaning of the connective particle *-kara* 'because' (see examples 3-a and -b above). When this connective is used in a turn-initial position, the "reason" that *dakara* marks can be found in the non-linguistic situation shared by the speaker and hearer. (8) is an example of this.

(8) After seeing a child drop a glass,

Dakara *chuushi-nasai-tte* *it-ta-n-da.*
 therefore take-care-IMP-QUOT say-PAST-Nominalizer-COP
 'That's why I told you to be careful.'

In some cases the notion of causality is lost. One example is given in (9). In this case, *dakara* is used to introduce an utterance in which the speaker insists on his/her opinion, in the face of a failure to understand on the part of the hearer. In

this use, a pause is often put after *dakara*, and an "interjection" particle (e.g. *-ne*) is often suffixed to it.

(9) seeing that the conversational partner talks as if (s)he has not been convinced of the speaker's point made earlier that Ken is a liar.

Dakara(-ne), Ken-wa usotsuki-na-n-da-yo.
(-PART) Ken-TOP liar-COP-Nominalizer-COP-PART
'I'm telling you that Ken is a liar!'

This semantic change of *dakara* illustrates the process of the loss of the original logical relationship that the morpheme originally marks, and also the process of pragmaticalization of meaning. As illustrated by the last example, the morpheme has come to be used as a discourse marker, a morpheme that functions to mark some feature of discourse in the interaction between speaker and hearer.

Other discourse functions²⁶ seen in detached connectives include the use of *tokorode*. This connective comes from a particle meaning 'when' or 'since' and is now used solely to change a topic of conversation to an entirely new one with some abruptness. Another connective *datte*, which comes from the copula *-da* and a particle *-tote* 'even', is used to introduce an utterance in which the speaker justifies his or her behavior or opinion.²⁷ Furthermore, *dakedo*, *ke(re)do(mo)* and *daga*, which have been used as adversative connectives, are now also used to introduce with some abruptness an utterance in which the speaker is reflecting on something.

In the case of anaphorless connectives, the acquisition of new discourse functions is sometimes paralleled by the acquisition of these functions by related anaphoric connectives. One example of this is *dewa*, which comes from *soredewa* (<*sore* 'that' + *-de* COP + *-wa* TOP). The original meaning of *soredewa* and also *dewa* is something like 'Given that is true,...'. When used in the turn-initial position, they indicate that, given the (conversational) situation, the speaker takes it as natural to move to a new stage of a conversation (cf: "Well, then..."). One typical case of this is the opening up of a closing of conversation. This seems to have led to the use of *soredewa* and *dewa* as words to say "good bye." For this purpose, phonologically reduced forms like *sorejaa*, *jaa*, and *ja* are also used, often with an "interjection" particle, as in *jaane* and *jaana*. Another typical case is to start a discourse (e.g. a meeting). This seems to have led to the use of the reduced form *jaa* as some sort of interjection, which informs or reminds the hearer that the speaker is beginning a new action. An example is given in (10). *Soredewa* cannot be used here.

(10) *Jaa ik-oo.*
go-HORTATIVE
" Let's go."

Another instance of the parallel change between anaphoric and anaphorless connectives toward discourse function is the use of *de* and *sorede* 'then (temporal and causal)'(< *sore* 'that' + *-de* COP). They are used by the hearer as a prompt for the speaker, in order to tell the speaker to go on. When pronounced in certain ways, such as *nde*, they convey the feeling that the hearer does not see the importance of the speaker's speech (cf: "Then what?").

In contrast, *demo* has acquired novel functions that have not been seen in its original form *soredemo* 'even so'(< *sore* 'that' + *-de* COP + *-mo* 'even'). There are three main novel uses in *demo*. First, it can be used as an adversative con-

nective, without any concessive meaning. When it is used in the turn-initial position, it often introduces a discourse in which the speaker tries to refute what the conversational partner has said in the preceding turn. It can also be used to introduce an utterance in which the speaker is reflecting on something (cf: *daga* and *dakeredo* above). In this case, no necessary concessive or adversative relationship is found between the preceding and following discourse.²⁸

This kind of pragmaticalization of meaning is not a process uniquely associated with the formal change that I have reported. I have already pointed out in relation to some uses of *dewa*, that in some cases anaphoric connectives have undergone the same semantic change as anaphorless connectives. Moreover, Urdaneta (1980) shows that a Spanish connective *pues* has acquired similar pragmatic uses in its history. Studies by van Dijk (1979) and Schiffrin (1987) have also revealed that special discourse uses have been acquired by English connectives like *and* and *but*. Therefore the acquisition of discourse use by connectives is a general phenomenon of the semantic change in these items, not specific to the change that I have described.

In fact, the pragmaticalization of meaning seems to be an even more general phenomenon of semantic change. Traugott (1982) suggested that in the course of grammaticalization, the accompanying meaning change is more likely to be one from propositional meanings to textual and expressive meanings, the kind of change that we have seen in Japanese connectives. Recently, she has suggested that this kind of pragmaticalization of meaning is a general trend of semantic change, not only in grammaticalization but also in other kinds of diachronic semantic change (Traugott 1987). The case of Japanese connectives reported here supports her recent view, since they show that the pragmaticalization of meaning also occurs in a change quite different from the grammaticalization process.

Notes

1 In writing this paper I am indebted to the following persons: Fumiko Arao, Joan Bybee, Charles Fillmore, Joseph Greenberg, Yoko Hasegawa, Ki-sun Hong, Michael Inman, Suzanne Kemmer, Stephen Levinson, Kenjiro Matsuda, Tara Mohanan, Toshio Ohori, William Poser, John Stonham, Nancy Wiegand, Seiko Yamaguchi, Arnold Zwicky, and, above all, Keith Denning and Elizabeth Traugott. Of course, they are not responsible for any faults found in this paper.

2 In his slogan he also claims that the morpheme order is a reflection of previous word order. I will not discuss this claim here.

3 Traugott (1982: footnote 2) also gives some sporadic examples of this type of change.

4 In Japanese enclitic particles in general (and also some auxiliaries like *-da*) are attached to free morphemes, and usually form one accentual unit with them (i.e. have only one High-pitch mora after which the pitch is Low). These morphemes have often been called *huzokugo* in Japanese linguistics, and regarded as less bound than those which are affixed to non-free morphemes. This relative freeness of particles and some auxiliaries has led some to prefer writing them separately from the free morphemes to which they are attached when they are romanized. In this paper, I will separate them with a hyphen.

5 In many cases there is a semantic difference, too. It has been pointed out to me that *ga* as a connective can only be used in an adversative meaning, whereas *-ga* as

a connective particle can often be used in a non-adversative meaning, which is the original meaning of this particle. See section 2 below for more examples.

⁶ Polite forms like *desu-ga* (<-*desu* COP (polite) + -*ga* 'but') and *de-gozaimasu-ga* (<-*de* COP (gerund) + -*gozaimasu* POLITE + -*ga* 'but') are also found.

⁷ Alternatively, the development of the connective *ga* from a particle -*ga* might have been mediated by (now obsolete) detached or anaphorless connectives such as *shitagā* 'but' (<*shi* 'do' + -*ta* PAST + -*ga* 'but') and *jaga* 'but' (<-*ja* COP (an older form) + -*ga* 'but').

⁸ There are some cases where the copula with some other elements is used as a non-connective free morpheme. One case is the use of *dasoodesu* (<-*da* COP + *soodesu* an auxiliary marking hear-say) and *datte* (<-*da* COP + -*tte*, a quotation marker) (and perhaps even *tte* (<-*tte* QUOT)). Originally, these expressions are used to report or quote someone's speech, and are usually attached to the nominalized form of a verb, an adjective or an auxiliary. They can also be used by themselves after somebody else has finished a turn, so that the speaker can pretend as if the whole preceding turn were what (s)he reports or quotes as a part of his/her sentence. This kind of pretension is also found in the use of a complementizer, together with some other elements. For example, after a long talk by a person, another person can start his/her turn by *toyuu-koto-wa* (<-*toyuu* COMP + *koto* thing + -*wa* TOP) "That means....". Here the complementizer takes the whole preceding discourse as the complement, so to speak. I owe Charles Fillmore for insisting on this point to me.

⁹ After the 16th century, some other kinds of Japanese connectives were also formed through the loss of anaphoric expressions. They include *suruto* 'if so' and then' (<*soo* 'so' + *suru* 'do"assume' + -*to* 'when"as soon as'), and *shite* 'and then' (<*soo* 'so' + *shite* 'do' (gerund)), which is now obsolete (Yuzawa 1954). I have not included these in the discussion because they are not cases of a change toward increasing freeness.

¹⁰ It has been claimed that enclitic particles in Japanese did not form one accentual unit with the preceding word in Old Japanese, and therefore had more independence than they do today. For the discussion of the transition to the present-day pattern, see Sakurai (1975, 1984) and also Martin (1987: 169-172).

¹¹ The following is a somewhat simplified description of the change from -*ga* as a subject marker to -*ga* as a connective particle. In (a), a headless relative clause, in which the subject (or the object) in the relative clause functions as the semantic head, is the matrix subject, marked with -*ga* as a subject marker. (a) was reanalyzed as (b), in which the relative clause is regarded as the first conjoined clause of a coordinate sentence, with -*ga* as a connective particle, and the remainder of (a) is regarded as one independent clause (the second conjoined clause) with an empty subject.

(a) [[S O V]_{rel-cl-ga} O V]_s
(b) [[S O V]_{conj-cl-ga} [Ø O V]_{conj-cl}]_s

This is a rare case of the type of reanalysis called *boundary addition* by Langacker (1977). Also, this is a case of change from subordination to coordination.

¹² Yuzawa (1936) cites an example from *Kooshoku Denju* (1693).

¹³ It has been suggested that it was either the so-called "literary concessive" ending of either adjectives or the auxiliary *-maji*, or the "literary concessive" form of the auxiliary *-keri* (see Doi 1969a).

¹⁴ Doi (1969) cites an example from *Shikishoo* (1477).

¹⁵ NKD cites an example from *Rooshikeishoo* (1652).

¹⁶ An example is found in *Kobunshinshooshoo* (1525) cited in Yuzawa (1929).

¹⁷ NKD and Yuzawa cite an example from *Mookyuushoo* (1633). A Catholic missionary, Rodriguez, also noted this use in *Arte da Lingoa de Iapam* (1604-1608).

¹⁸ The first citation in NKD is from the *kokkeibon Aguranabe* (1871).

¹⁹ NKD cites an example of *daga* from *Yanagidaru* (1765). Yuzawa (1954) and NKD cite an example of *dakedomo* from *Shichihenjin* (1857). The copula *-da* developed from the combination of the gerund form of an older copula *nite* and a verb *ari*, through intermediate forms like *niari*, *dearu* and *ja*. The first citation of *-da* in NKD is from *Hekigandaikuushoo* (1501).

²⁰ Here are the earliest uses known to me; *de*: *Osanagono katakiuchi* (1753) (NKD), *demo*: *Kanokomochi* (1772) (NKD), *dewa*: *Ukigumo* (1887-9) (NKD), *sorede*: a Genroku kabuki script (1689-90) (Yuzawa 1936), *soredewa*: a Genroku kabuki script (1694) (Yuzawa 1936), *soredemo*: a Chikamatsu kabuki script (1702) (Yuzawa 1936).

²¹ The origins of some other Japanese connectives are more similar to those found in other languages. They include 1) verbs (e.g. *tsunari* 'in short' (< *tsunaru* 'be stopped' 'come to an end'), 2) adverbs (e.g. *nao* 'incidentally' (< *nao* 'still'), 3) a combination of an anaphoric expression and some other words (e.g. *soshite* 'and then' (< *soo* 'so' + *shite* 'do' (gerund form)), *sorekara* 'after that' and' (< *sore* 'that' + *-kara* 'from'), *soreyue* 'for that reason' (< *sore* 'that' + *yue* 'reason' (archaic)).

²² The history of Japanese has shown many regular processes of grammaticalization. Examples include the development of many restrictive particles (e.g. *-bakari*, *-nomi*, *-dake*, *-kurai*, *-kiri*, *-hodo*) and case markers (e.g. *-e*, *-kara*) from nouns, auxiliaries (e.g. *-nu*, *-tari*) from verbs, aspectual auxiliary verbs (e.g. *-kuru*, *-oku*) from motion verbs, and honorific auxiliary verbs (e.g. *-tamau*, *-mesu*) from action verbs.

²³ Givon (1984: 71) notes that in many verb-final languages, conjoining and subordinating morphemes appear as suffixes on the main verbs in conjoined or subordinate clauses. Interestingly, the position of sentence connectives (e.g. *therefore*, *then*) does not respect this parameter in Japanese and other languages. They are in many cases free morphemes, too.

²⁴ Malayalam (a Dravidian verb-final language) has a similar pair of connective particle and connective, (-) *engilum* 'even though' or 'if so'.

²⁵ The English connective *though* has also undergone a similar functional change.

²⁶ I owe much to Morita (1980) for my thinking about the discourse use of connectives. However, I do not follow his analyses in many cases.

27 Note that the meaning of *datte* is not defined in terms of the linguistic context (i.e. the relation between the preceding sentence and the sentence in which *datte* occurs). In fact, *datte* can be preceded by many different kinds of utterances, depending on the way in which the speaker has come to justify his/her behavior or opinion, or how or whether this behavior or opinion is linguistically expressed. Take the utterance (c), used by a child to justify the neglect of homework.

(c) *Datte atama-ga itai-n-da-mon*
COP-'even' head-NOM aching-Nominalizer-COP-PART
"I have a headache, you know."

This sentence can be preceded by (1) speaker's own utterance that expresses his/her opinion or behavior which requires a justification (e.g. "I won't study today."), or the conversational partner's (2) question (e.g. "Why do you not study today?"), (3) command (e.g. "Study!"), (4) suggestion (e.g. "Why not study?"), etc. (see Morita 1980). It can even be preceded by non-linguistic reproach (e.g. staring at the speaker). In my view, these are just different patterns of linguistic manifestations of how a questioned behavior or opinion is expressed and how the speaker has come to justify it. These five cases can be boiled down to one meaning of *datte*.

28 In addition, while *soredemo* is used both as a concessive and concessive conditional connective (cf: König 1986), *demo* can only be used as a concessive connective (see Morita 1980).

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The grammaticalization of auxiliaries: Spanish clitic climbing
John Myhill
University of Michigan

0.0. Introduction: The synchronic study of grammaticalization. Studies of grammaticalization to date (e.g. Givón 1971, Heine and Reh 1984, Bybee and Pagliuca 1987) have focused on documenting and classifying types of grammaticalization processes using diachronic data (actual or reconstructed) of grammaticalization processes which have already taken place*. Typically, a grammatical morpheme is shown to be related to a word from which it has diachronically developed. Studies of this type have given us an idea of what types of words are likely to develop into what types of grammatical morphemes. However, the details of this process and the factors motivating it are still fairly obscure; this is because studies have focused on the beginning and endpoint of this process, when the morpheme in question may clearly be categorized as (respectively) lexical and grammatical. In between, the morpheme may be either lexical or grammatical, and the alternation between the lexical and grammatical uses represents a synchronic process of grammaticalization. Grammaticalization as a synchronic process has not been subjected to the sort of systematic study that grammaticalization as a diachronic process has, and so we know relatively little about it; however, the two processes represent two sides of the same coin, and we cannot understand grammaticalization without understanding both of them.

The present paper is intended to work toward an understanding of grammaticalization as a synchronic process. The specific phenomenon under study is the alternation between the following two types of constructions in Spanish:

- 1) *Voy a verlo.*
I-go to see-him
'I'm going to see him.'
- 2) *Lo voy a ver.*
him I-go to see
'I'm going to see him.'

In the construction exemplified in (1), the clitic pronoun *lo* is suffixed to the non-finite verb *ver* (in this case the non-finite verb is an infinitive but the situation is the same when it is a present participle). In the construction exemplified in (2), the clitic pronoun 'climbs' into the position before the finite verb; the process moving the pronoun to preverbal position has been referred to as 'clitic climbing'¹ (Napoli 1981) (it will be referred to as 'CC' in the remainder of this paper).

Rizzi 1976 argues that constructions like 1 involve a finite verb taking a non-finite complement in a lower clause while CC constructions like 2 involve a restructuring operation which turns the finite verb into an auxiliary and turns the infinitive or participle into the main verb². The entire structure *voy*

a ver is then under the V node, and the clitic *lo* is prefixed to this complex as it would be prefixed to a simple finite verb (cf. *lo vi*—‘him I-saw’=‘I saw him’). Rizzi presents a number of formal arguments for this analysis. On this view, the clitic does not really climb; the appearance of climbing is caused by the restructuring rule, although the term ‘clitic climbing’ has continued to be used in reference to this structure. In the non-climbing structure, on the other hand, there is no restructuring and the non-finite verb serves as a complement to the finite verb; the clitic accordingly attaches directly to the verb of which it is an argument (the non-finite one).

‘Restructuring’ involves a synchronic change from a verb to an auxiliary. The change from verb to auxiliary has been shown to be one stage in a diachronic grammaticalization process; in this process, the auxiliary eventually develops into a marker of tense, aspect, or modality. Diachronic changes of this type are well documented in a variety of languages (Heine and Reh 1984, Traugott 1972), and there have been a number of studies examining typical changes of this type; for example, the words forming the AUX class in English have all developed diachronically from main verbs (Traugott 1972), and they are now fairly far along the path to developing into markers of tense, aspect, and modality. Restructuring in Spanish is a synchronic process which is one step in a diachronic development of this type; studying it can therefore shed light on how this development takes place.

There have been quite a few studies of the formal properties of CC (e.g. Rizzi 1976, 1978, Aissen and Perlmutter 1976, Luján 1977, Suñer 1980, Napoli 1981), establishing what environments CC is at least possible in. However, these studies are only helpful to the study of grammaticalization in that they tell us when grammaticalization does not take place. Even when it is grammatically possible, CC does not always apply, and no previous study has examined the factors controlling whether or not CC actually applies in a situation where it is possible. In order to understand CC as a synchronic grammaticalization process, I have done a quantitative study of the factors affecting the actual use of CC in Spanish texts; the results of this study will be reported in section 2. First, however, I will turn in the next section to a brief review of relevant work done on CC and related topics.

1.0. Research of related topics. In this section, I will discuss research which is of direct relevance to my own study of CC.

1.1. The association between grammaticalization and certain meanings. Cross-linguistic studies of grammaticalized meaning have shown that certain meanings are much more likely than others to be expressed grammatically. The most extensive study of this type is Bybee 1985. Bybee looked at a sample of 50 languages selected as to be random and geographically and genetically diverse and determined the likelihood of various tense, aspect, and modality meanings being expressed grammatically through verbal inflections in these languages; she found that certain meanings are considerably more likely than others to be represented inflectionally.

A reasonable initial hypothesis to suggest is that the meanings most likely to be represented grammatically through inflections are also the meanings most likely to trigger a synchronic grammaticalization process such as the restructuring process associated with CC; meanings rarely associated with inflections should trigger restructuring less frequently, while meanings never associated with inflections should not allow restructuring at all³.

1.2. Earlier studies of the semantics of CC. It is clear that some finite verbs allow CC while others do not. For example, 1 and 2 show that *ir* allows CC, while 3 and 4 show that *insistir* 'insist' does not:

- 3) *Insistí en comerlas.*
I-insist on eating-them
'I insist on eating them.'
- 4) **Las insistí en comer.*

Rizzi 1978 notes that the verbs allowing CC in Italian may be divided into three semantic categories, modals, aspectuals, and motion verbs, and Suñer 1980 makes a similar observation about Spanish; *insistir* (among many other verbs) does not fall into any of these categories and so does not allow CC. Lists of verbs allowing and not allowing CC may be found in Aissen and Perlmutter 1976 and Napoli 1981.

These lists are undeniably helpful in understanding CC; however, they only tell part of the story. For one thing, as pointed out by Suñer 1980 and Napoli 1981, there are a number of verbs for which speaker's grammaticality judgments vary considerably. Additionally (and more importantly for the present study), we will see that the three classes of verbs which uncontroversially allow CC, modals, aspectuals, and motion verbs, differ in terms of their frequency of use in CC as opposed to non-CC constructions, and there are even differences in CC frequency between different verbs in each of these classes; this has important consequences for the theory of grammaticalization. In order to appreciate the differences between these classes in terms of usage, it is necessary to do text counts, which will be the topic of the next section.

2.0. The quantitative study of CC in Spanish. A Spanish data base of several hundred pages was subjected to a quantitative analysis; the writings used in this study are listed in the appendix. Two factors were found to significantly affect the likelihood of CC, namely the semantic properties of the finite verb and the relative topicality of the subject and the clitic. 750 tokens were coded for the semantic type of the finite verb, and the results of this count will be reported in section 2.1; 543 tokens were coded for the relative topicality of the subject and the clitic, and the results of this count will be reported in section 2.2.

2.1. Effect of semantic type of finite verb on likelihood of CC. It seems reasonable to hypothesize that CC should be more likely when the finite verb represents a meaning which is commonly represented grammatically in the

languages of the world and less likely when the meaning of the finite verb is less likely to be represented grammatically. Looking first at verbs which do not allow CC in Spanish (e.g. *insistir*), we find that Bybee does not report any instances of the meanings associated with these verbs being represented inflectionally, which is what we would expect. Turning now to verbs which do allow CC, I chose 11 verbs which had meanings which Bybee found could be represented inflectionally and coded a total of 750 occurrences of these verbs when they took a non-finite complement with a clitic argument, in environments where CC is possible⁴; I then counted how often CC actually took place in these environments. The basic findings confirmed the hypothesis suggested in section 1.1; verbs with meanings which Bybee found to be likely to be expressed inflectionally favored CC, while verbs with meanings which were only rarely expressed inflectionally in Bybee's sample allowed CC, but only rarely. In this section, I will present and discuss these findings.

Spanish verbs which allow CC may be divided up into a number of semantic classes, and within each class the frequency of CC from one verb to another is fairly consistent. I will list these classes from the class most likely to take CC down to the class least likely to take CC. The constructions most strongly favoring CC have progressive meaning, using the verbs *estar* 'be', *ir* 'go', *andar* 'walk', and *venir* 'come' plus the present participle (in this construction, the three motion verbs are bleached of much or all of their semantic content). Data illustrating this are given in table 1:

Table 1-Likelihood of CC in progressive constructions

	CC	non-CC	CC%
<i>estar</i> + pres. part.	75	9	89
<i>ir</i> + pres. part.	42	7	86
<i>venir</i> + pres. part.	5	1	83
<i>andar</i> + pres. part.	5	2	71

Each of these verbs may be used in non-progressive constructions, but in that case CC is not so strongly favored.

Ir 'go' may have future meaning when it is used followed by the preposition *a* and the infinitive; in this case it loses its meaning of motion and CC is quite common, as shown in table 2:

Table 2-Likelihood of CC in periphrastic future constructions

	CC	non-CC	CC%
<i>Ir</i> (a) (future meaning)	77	23	77

The next set of verb types all expressed the degree of commitment the speaker has to the proposition and may be loosely grouped together as 'epistemic modalities'. These include *ir* in its use as an irrealis marker (e.g. *¿Como te voy a olvidar?* = 'How you I-go to forget' = 'How would it be possible for me to forget you?'), *haber* followed by the preposition *de* and the infinitive (cor-

3.0. Conclusion. The findings of the present study support the formal analysis of CC in Rizzi 1976 in that the verbs characteristically used in CC constructions have meanings of the type which we would expect to be likely to be represented with more grammaticalized morphemes like auxiliaries. However, Rizzi's 1978 characterization of the semantic characteristics of the verbs allowing CC (modals, aspectuals, and motion verbs) has been shown to represent an oversimplification of the situation. Certain types of 'aspectuals' (e.g. progressives) strongly favor CC while others (inceptives) disfavor it. Among modals, epistemics favor CC while deontics disfavor it. These findings are what we would expect in the light of studies of the relationship of form and meaning such as Bybee 1985.

It is clear that the effect of the relative topicality of the subject and the clitic is secondary in importance to the semantic characteristics of the finite verb; table 9 shows that when the verb is of the type favoring CC (progressives, futures, and epistemics), CC is favored (although less so) even when the subject is higher than the clitic on the AH, while when the verb is of the type disfavoring CC (deontic modals, motion verbs, and inceptives), CC is disfavored (although less so) even when the clitic is higher than the subject on the AH.

Table 9-Effect of semantic type and AH

	Verbs favoring CC		
	CC	non-CC	CC%
Clitic outranks subject on AH	68	7	91%
Subject outranks clitic on AH	28	19	60%
	Verbs disfavoring CC		
	CC	non-CC	CC%
Clitic outranks subject on AH	23	54	30%
Subject outranks clitic on AH	12	113	10%

Nevertheless, the relative topicality of the subject and clitic has a fairly strong and statistically significant effect regardless of the semantic characteristics of the verb.

There is to my knowledge nothing that we know about the theory of grammaticalization which would predict the effect of the AH on the likelihood of CC; all of the research on grammaticalization which I know of focuses on the effect of the semantic characteristics of the grammaticalized element rather than the effect of the pragmatic characteristics of its arguments. The most plausible-sounding principle which I can suggest which might be incorporated into the theory of grammaticalization to explain this phenomenon is 'Grammaticalization of a verb is favored when the verb lacks grammatical relations with the topic of the sentence'. Thus when the clitic is more topical than the subject, the finite verb lacks grammatical relations with the most topical NP in the sentence; intuitively, it seems reasonable to suggest that this makes it a less prototypical verb, so that it is more likely to be syntactically demoted.

It is of course still unclear whether this principle, or anything similar to it, is indeed relevant to grammaticalization. Regardless of how this turns out, the effect of relative topicality on grammaticalization is clear. Additionally, there are a number of cases where neither relative topicality nor the semantics of the verbs can be responsible for the application or non-application of CC; even when the verb favors CC and the clitic is higher than the subject on the AH, CC still does not apply 9% of the time, and this suggests that there are still more factors affecting the likelihood of grammaticalization.

Diachronic studies of grammaticalization have uncovered quite a few patterns relating the semantics of a verb to its likelihood of being grammaticalized and its resulting function if it is grammaticalized. The present work suggests that synchronic study, because it looks at grammaticalization from a different perspective, will be able to uncover other factors affecting this process which have not thus far been discovered through diachronic research of this phenomenon.

Footnotes

*I thank Bill Croft, Peter Hook, and George Lakoff for their helpful comments on earlier drafts of this paper. This research for this paper was funded by a grant from Language Learning.

¹I am not including in this study constructions where the finite verb and the finite verb have different subjects (e.g. *Se la oícantar* = 'him it I-heard sing' = 'I heard him sing it').

²CC also occurs in Italian, where the relevant formal properties vis a vis arguments for the restructuring analysis are the same as in Spanish, and in fact Rizzi 1976 developed the 'restructuring' analysis of CC on the basis of data from Italian. Aissen and Perlmutter 1976 present arguments supporting a similar analysis for CC in Spanish; they refer to this phenomenon as 'clause reduction', but do not specify what part of speech the matrix verb becomes after this operation. I refer in the text here to Rizzi's analysis because viewing the finite verb in a CC construction as an auxiliary is crucial to the relevance of this construction to the theory of grammaticalization.

³It would of course be preferable if there existed a study of the likelihood of various meanings being expressed through auxiliaries in the languages of the world, as this would be more directly comparable to restructuring in Spanish, which creates an auxiliary rather than a verbal inflection. Unfortunately, I do not know of any studies of this type, and so a comparison with a study of the likelihood of different meanings being expressed inflectionally is the best possible alternative at the moment.

⁴Aissen and Perlmutter 1976 claim that epistemic *deber* (*de*) does not allow CC, while *deber* with the meaning 'ought, should' does allow it. If true, this would go against the theory of grammaticalization argued for here. However, it does not seem to be true. My data base included only two examples of *deber de* in an environment allowing CC, and CC occurred once, in the following

example:

...el río se debía de haber llevado, quién sabe desde cuándo,
the river refl must have carried who knows since when
el tamarindo que estaba en el solar de mi tía Jacinta...
the tamarind tree that was in the grounds of my aunt J.

'The river must have carried off, who knows how long ago, the tamarind tree in my aunt Jacinta's yard.'

(Rulfo 1953:30)

⁵I excluded from my count instances where the non-finite verb had two clitic arguments, as in for example *Te lo voy a decir* = 'you it I-go to say' = 'I'm going to say it to you'. This was because it was unclear how to code such examples for the relative topicality of the subject and clitic (see section 2.2), since there are two clitics. I also excluded cases where lexical material intervened between the finite and non-finite verbs (aside from prepositions subcategorized by the finite verb) as this environment strongly disfavors CC.

⁶The following table gives the number of tokens for each of the cells in table 8:

		SUBJECT		
		2	1	3HS
		2	X	58
C	1	29	X	58
L	3HS	9	53	X
	3O	23	82	66
				X

Appendix

The following are the data sources used for the quantitative study:

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The Grammaticalization of Complementizers
Evelyn N. Ransom
Eastern Illinois University

I. Introduction. One type of grammaticalization has been described by linguists like Givón, Traugott, Lehmann, and Bybee and Pagliuca as consisting of stages in simultaneous semantic and phonological reduction--from full lexical items with specific and general content to more reduced forms and more generalized meanings. These stages have been viewed as occurring on a unidirectional scale, like the following:

A GRAMMATICALIZATION SCALE

FULL LEXICAL -----> REDUCED LEXICAL
MEANING AND FORM MEANING AND FORM

This type of grammaticalization can be found with complementizers from different languages. First, we will examine the way that complementizers can be viewed as representing different stages of development on the grammaticalization scale, then the way the current meanings and forms of the complementizers are related to their lexical sources and their position on the grammaticalization scale.

The questions we will address are "To what extent are the current meanings of complementizers correlated with their lexical sources and their particular stage of development?" and "What implicational universals can be observed?"

Before we look at the data, a warning is in order. The specific complementizer analyses are based on isolated examples and commentary. More in-depth study of these languages and the history of the forms is needed for reliability.

II. Stages of Complementizer Development. When we look at complementizers in different languages, we find that many of them are related to morphemes still being used for other purposes.¹ Those related to full lexical content words, such as nouns and verbs, will be viewed as representing an early stage of complementizer development, shown on the left end of the grammaticalization scale. Those related to lexical function words, such as determiners or pronouns, will be viewed as representing a medial stage of development, shown in the middle of the grammaticalization scale. Those related to bound forms with more abstract functions, such as mood-like forms, will be viewed as representing the last stage of development before the form is

completely lost, as shown on the right side of the grammaticalization scale. Examples of these stages of complementizer development are shown in Table 1.

TABLE 1
Stages of Complementizer Development

FULL	PARTIALLY REDUCED	REDUCED
LEXICAL	LEXICAL	LEXICAL
MEANING	MEANING	MEANING
AND FORM	AND FORM	AND FORM
Korean <u>kes</u> 'thing'	Kanuri <u>de</u> & <u>-ro</u>	Basque <u>-ela</u> , or 'fact'
		def.art.&loc./dat.
Thai <u>thii</u> 'place'	English <u>that</u>	<u>-teko</u> , <u>-en</u> dem.pro.
or 'at'	for and to	loc./dat.
Thai <u>hây</u> 'cause'	Russian <u>cto(by)</u>	rel.pro.
or 'give' etc.	<u>ctò</u>	interrog. pro
Ewe <u>bé</u> 'say'		Maori <u>ki</u> loc./dat.

Because the words in the full lexical stage retain lexical content, linguists have questioned their status as complementizers, just as they have questioned the status of the more mood-like forms in the reduced stage. What characterizes all of these forms as complementizers is that syntactically they can be used to signal the closed boundary of the clause, the one that does not expand (left boundary for SVO; right for SOV); and semantically they can be used to signal the modality of the complement proposition. This scalar approach to the grammaticalization of complementizers makes it possible to deal with some of the problems in treating complementizers as a unified category and in showing their relationship to mood forms.

First let us look at the words in the left column, which can be used either with their full lexical meaning and form or as complementizers. When one of these words is used with full lexical content, it has certain semantic and syntactic values peculiar to that word. For example, the Korean word kEs in (1) has the meaning of a concrete thing and functions as the subject of the sentence:

(1) kEs as a noun = 'thing'
Ku kEs un chayk iey yo
That thing is a book. (Martin and Lee 1969)

In (2), kEs could not be interpreted as a concrete thing, since one cannot know concrete things, but it could be interpreted with an abstract meaning as the

nominal object 'fact' taking an appositive clause or else as a complementizer marking an object clause (the brackets are mine):

(2) kEs as an abstract fact or a complementizer
na nin ki ka o-nin kEs ltl al-nin-ta
I he come-PRS COMP/[fact] ACC know-PRS-M
I know [the fact] that he is coming. (Kim 1974)

However, in (3), neither nominal interpretation would be possible, since one cannot order things or facts but only acts, and a complementizer interpretation is used:

(3) na nin ki eke ka-l kEs ltl myEnglyEngha-ess-ta
I him go-FUT COMP ACC order PAST-M
I ordered him to go. (Kim 1974)

In both (2) and (3), kEs can be seen as syntactically marking the closed boundary of the object clause (the right boundary, since Korean is SOV) and as semantically signaling the modality of the complement proposition, namely that the proposition is expected to be the case.²

Now let us look at the examples in the middle of the scale. These forms are usually monosyllabic function words with little content, and they are usually viewed as the typical complementizer. For example, English that can be used as a demonstrative pronoun or as a complementizer. According to the OED, the complementizer form is generally thought to be derived from the neuter singular demonstrative pronoun that in combination with an appositive clause as in "We all know that: he once lived here."³

As a demonstrative pronoun, that has a full vowel, a plural form those, and refers to something pointed out at a distance (in contrast to this and these, which refer to something pointed out nearby), as shown in (4):

(4) That is his sportscar/Those are his sportscars.

When that is used as a complementizer, it is usually unstressed, allowing the vowel to be reduced to a schwa; it cannot take a plural form, and does not have either the general meaning of something pointed out or the more specific distal meaning, as shown in (5):

(5) They know that this is his sportscar.

In (5), that functions as a complementizer. Syntactically it marks the closed boundary of the object clause (the left boundary, since English is SVO), and semantically it signals the modality of the complement proposition, namely that it is inclined to be true.

Now let us look at the examples on the right side of the scale where the meanings lack specific and general content and the forms are reduced to bound endings. Basque seems to have the only clear-cut examples of this stage that I have found so far. The endings -ela, -teko, and -en are attached to either the auxiliary verb or the infinitive, making them somewhat like mood forms:

(Txomin Joseba Koldobika: native consultant)

- (6) -ela as complementizer or completive mode
Marik atea hertsia zu-ela gogoratu zuen
Mary door closed COMP remembered
Mary remembered that she closed the door
- (7) -teko as complementizer or genitive gerund
Marik Jon atea herts-teko bultzatu zuen
Mary John door close-COMP forced
Mary forced John to lock the door
- (8) -en as complementizer or conjunctive mode
Marik atea hertsia ote zu-en edo ez zalantzan zen
Mary door closed COMP or not doubt
Mary wondered whether she had locked the door

Traditionally, the bound form -ela is called a Completive Mode but has no specific meanings; -en is called a Conjunctive Mode with no specific meanings but is said to resemble a subjunctive mood; and -teko is called a Genitive Gerund, since it has part of the form of a gerund (-te) and part of the form of a genitive of inanimate possession or location (-eko). However, since Basque is a SOV language, these verbal endings function as markers of the closed boundary of the clause and as signals of the modality of the complement proposition, just as complementizers do.

Thus we see that complementizers can occur at different stages of development on the grammaticalization scale with full or reduced meanings and forms. Now let's turn to the meanings of complementizers.

III. Complementizer Meanings. In language after language, complementizers are used to signal the modality meanings of the complement proposition. There

are two types of modality meanings: the Information Modalities, which are related to the epistemic-deontic or root contrast, and the Evaluation Modalities, related to what Palmer calls judgments (cf. Palmer 1986 and Ransom 1986).

The Information Modalities consist of four types, (Truth, Future Truth, Occurrence, and Action) each distinguished by the type of complement predicate the proposition can take. The Truth Modality treats a complement as being about the truth or falsity of its proposition and has no restrictions on the type of predicate, as in "We know, believe, hope that her opponent is a female."

The Future Truth Modality treats a complement as about the future truth of its proposition, and requires the complement predicate to be interpreted as capable of change in the future so that permanent states, like being a female are unacceptable unless we can find a changeable interpretation. It would be acceptable for Rene Richards to say he expected/was eager to be a female.

The Occurrence Modality requires the complement predicate to be interpreted as an event and thus requires nonstative verbs or states viewed as a process of coming into being. It may be strange to say "We watched Harry become tall", but we could say "We watched Alice in Wonderland become tall".

These three modalities are related to the epistemic modalities since they are about knowledge of the world, whether something is true, will come true, or did occur. The fourth type of Information Modality is more closely akin to the deontic or root modalities. It is not about knowledge of the world but about volitional, controllable actions and thus like the imperative, promises, and permission in that the predicate must be interpreted as a controllable act and its subject must be interpreted as an agent who is either motivated by others or self-motivated. Thus neither states nor events are usually acceptable. One cannot decide to be a woman, to be tall, or to fall, unless one is Rene, Alice or a fall guy.

These four Informational Modalities can be represented by complementizers, as in the contrast in English between tell that and tell to.

The Evaluation Modalities also consist of four types: Predetermined, Determined, Undetermined, and Indeterminate. They describe judgments about the alternatives available to a proposition. A Predetermined Evaluation is interpreted as definitely the case

with no alternatives, as in the complements of sentences like "She regretted that he left"; "She forced him to leave"; or "She managed to leave".

A Determined Evaluation is interpreted as probably the case but with some alternatives, as in the complements of sentences like "I am afraid that she left"; "I told her to leave"; and "I decided to leave".

An Undetermined Evaluation is interpreted as possibly the case but with many alternatives, as in the following complements: "I hope that she left"; "I permitted her to leave"; and "I was willing to leave".

An Indeterminate Evaluation is interpreted as possibly the case or not -- with equal alternatives, as in the following complements: "I wonder whether she left"; "I wonder whether to leave"; and "I told them whether to leave".

The Evaluation Modalities are typically represented by modals like must, should, may, and may or may not, but they can also be represented by complementizers like Korean keS, ko, ki, and ci or English tell that and tell whether.

The four Information Modalities and the four Evaluation Modalities combine to make sixteen possible modalities that a complement can have. Table 2 shows examples of higher predicates that typically select certain combinations of those modalities for their complements, just as they select the semantic features of other types of arguments.

TABLE 2
HIGHER PREDICATES SELECTING THE COMBINED MODALITIES

	TRUTH	FUT	TRUTH	OCCUR	ACTION	SELF-DIRECTED-OTHER
PREDET	know regret true	foresee anticipate certain(sr)		watch cause occur	remember get obligatory	force compel
DETER	believe say probable	expect predict likely(sr)		wait tend	decide promise important	persuade command
UNDET	hope speculate possible	look for eager desirable		like(i) ready fun	willing able acceptable	permit allow
INDET	wonder know uncertain	foresee predict		watch	wonder remember	tell remind clear

(i=infinitive; sr=subject raised construction)

It is usually these sixteen combinations of modalities that are signalled by complementizers. English uses whether or if for Indeterminate Truth and Action; that for Predetermined, Determined and Undetermined Truth and for-to for Predetermined, Determined, and Undetermined Action.

Given that complementizers can be used to represent certain combinations of modality meanings, let us next look at the lexical sources of these complementizers, keeping in mind the questions that we asked earlier: "To what extent are the current meanings of complementizers correlated with their lexical sources and their particular stage of development on the grammaticalization scale?" and "What implicational universals can be observed?"

IV. Lexical Sources for Complementizers. We saw earlier that complementizers across languages differ according to their stages of development on a grammaticalization scale. Some are derived from nouns and verbs with full lexical meanings and forms; some come from function words which are usually lacking in lexical content, and some come from mood-like forms with no specific meaning. Now let us compare complementizers that come from similar lexical sources.

First of all, let us look at complementizers that come from nominals, like Korean kEs and Japanese koto meaning 'thing' or 'fact' and Thai thii meaning 'place' or 'at'. These nouns have the meaning of something concrete or abstract existing, and one thing their cognate complementizers have in common is that they are typically used to represent a Predetermined Truth Modality in the complement (= factives or epistemic necessity constructions). They differ in the ranges of modalities they can represent. Korean kEs is also typically used to represent Predetermined Action (=deontic necessity). Japanese koto tends to represent Predetermined and Determined ranges of Truth and Action, allowing more alternatives than the others do.

Complementizers that come from determiners and pronouns seem to have a similar range to those from nominals. Kanuri de is a definite article with the meaning 'all of a set'. When it is combined with the locative marker -ro, it can be used as a complementizer for Predetermined Truth complements.

Also definite are pronouns, a major source of complementizers. English and other West German languages, and Aramaic derived a complementizer from a demonstrative pronoun while Russian, Latin, and Greek

derived a complementizer from a relative pronoun. It would be interesting to trace the earliest histories of the complementizer uses to see if they began with Predetermined Truth complements, which I would predict, and then to check the current uses of the forms to see what ranges they could occur with. In the OED, the earliest examples of that as a complementizer appear to be with factual complements, but a study of earlier texts is needed for a more reliable sampling.

In current usage, English that and apparently Russian cto occur with Predetermined, Determined, or Undetermined Truth complements. English that and Russian cto+by with a subjunctive mood can occur with certain Action complements. English that+subjunctive can occur with Predetermined and Determined Action complements functioning as subjects, and a few exceptional object complements.

English whether, which is derived from an interrogative marker meaning "which of the two" retains its interrogative and its alternative meaning by representing Indeterminate Truth and Action.

These nominal, determiner, and pronominal sources tend to have in common that their complementizers can be used with Truth complements. Now let us turn to verb sources. The most common verbal source for complementizers is the verb say, and as one might suspect, the complementizers can all occur with indirect speech complements, especially Determined Truth. In Thai waa is still used to mean 'say' and the complementizer carries that meaning also. Typically, waa occurs with Determined, Undetermined, and Indeterminate Truth complements, but not with the complements of emotive factives or certain subject complements, and not with Action complements. In Krio (Givón 1980), the complementizer se from the verb 'say' appears to occur mostly with Determined and Undetermined Truth complements. Korean ko is from the verb say, and it tends to occur with both Determined Truth and Action. Lord (1976) points out that Uto-Aztecán (Munro 1974), has a complementizer from the verb 'say' that occurs only with verbs of saying, while others like Ewe, Yoruba, Akan, Tamil, Telugu, and Kera use it more extensively.

So far we have looked at the lexical sources of complementizers that tend to be used for Truth complements. Now let us look at the lexical sources of complementizers that tend to be used for Action complements. Looking first at verb sources, Thai has the complementizer hai that is derived from a verb meaning 'give' or 'cause', which is about events or

actions and so it is not surprising to find it taking Action complements.

A very popular source of complementizers is from locative and dative markers, and these tend to occur with Action complements. English for and to typically occur with Predetermined, Determined or Undetermined Action. In Kanuri, the locative-dative marker -ro appears to occur with Predetermined, Determined, and Undetermined Action complements, but it also occurs with Determined and Undetermined Truth complements. Thus the locative and dative meanings of direction, futurity, uncertainty, location, or animate receiver have become generalized to the point where these markers can occur with an extensive range of complement modalities.

By looking at the lexical sources of complementizers, we can compare languages whose complementizers may have a similar source but a different range of meanings, as with Kanuri de and English that, or a similar range but a different source, as with English that and the Thai quotative wâa. We can find out, from the types of metaphorical extensions of concrete lexical referents to abstract grammatical markers, how certain semantic fields are associated cognitively, such as definiteness and existence with truth, or direction with futurity, possibility, or purpose.

V. Conclusion. In conclusion, we can say that there appear to be tendencies for both the lexical sources and the stage of development of the complementizer to influence the kinds of modality the complementizer can be used to signal. In order to pin down these tendencies, more in-depth study of complementizers and their development in particular languages is needed. Can we claim that nominal sources tend to become grammaticalized into complementizers marking Truth complements first before spreading to other modalities, while the more adverbial locatives tend to become grammaticalized into complementizers for Action complements first before spreading to other modalities? When verbs become grammaticalized into complementizers, is it possible to claim that they tend first to become complementizers for the kinds of complements that they as verbs could take before spreading to other kinds of modalities? Based on reliable data, both synchronic and diachronic, it might be possible to establish implicational generalizations about the directions of semantic change.

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¹ Noonan 1985, in a very informative chapter on complementation, notes the following: "Complementizers typically derive historically from pronouns, conjunctions, adpositions, or case markers, and, rarely, verbs, and so may resemble words currently used in these capacities".

² Interestingly enough, kEs is occasionally found in government documents used interchangeably with the imperative mood marker:

(1) yEl si e cEk ltl kongkyEk-ha kess kEs/Ela
 10 o'clock at enemy ACC attack IMP
 Attack the enemy at 10 o'clock!

In (3) and (4), kEs looks like a modality marker for deontic necessity, while its use in (2) is like a modality marker for epistemic necessity. This word could evolve into a mood marker.

Related to kEs in Korean, pronounced [kEt], is the Japanese word koto meaning 'thing'. Koto is used with epistemic and deontic necessity, as in the complements of verbs like know and order, but it can also be used with verbs like believe and be able, which allow more possibilities.

³ The OED points out a similar development of complementizers from neuter singular demonstratives in the West Germanic languages, while Greek, Latin, and Russian developed complementizers from the neuter singular relative pronoun.

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**On Syntactic Convergence: The Case of the Verb 'say'
in Tibeto-Burman¹**

Anju Saxena
University of Oregon

Introduction

In a number of languages around the world, some form of the verb 'say' is used as a quotative marker². In South Asian languages too the quotative is a form of the verb 'say'. In these languages the verb 'say' has been further reanalyzed and is used to convey a wide range of functions, such as causal and conditional conjunction.

The grammaticalized functions of the verb 'say' in South Asian languages are: quotative, causal, purpose and conditional conjunction; it occurs with embedded questions, with onomatopoeic expressions, as a question word complementizer, as an evidential particle, as an expletive and as a naming-labelling device. In Saxena (1987) I have argued for a historical sequence of the development of these functions such that at stage I the verb 'say' functions as a linker between the tightly bound complement and the main verb (quotative), at stage II the verb 'say' also functions as a linker between adverbial clauses and the main verb (purpose, causal and conditional conjunction) and at stage III it functions as a linker between two NPs (comparative marker).

Though the quotative has been used as a feature to define India as a linguistic area, most of the studies done so far (such as Kuiper (1974), Klaiman (1977), and Southworth (1982)) focussed their attention on the quotative function in Indic and Dravidian languages ignoring Tibeto-Burman languages almost completely³.

The aim of this paper is to show that the presence of the grammaticalized functions of the verb 'say' ("quotative complex", henceforth) in Tibeto-Burman languages is due to Indic influence. The comparative Tibeto-Burman evidence indicates that areal influence was probably the stimulus for the development of the quotative complex in these languages.

In order to prove this contention, I will first briefly discuss the quotative complex in Indic and Dravidian languages. Such a description will help in establishing a normal pattern in the South Asian subcontinent. After showing the normal pattern in this area, we will examine the nature of the quotative complex in Tibeto-Burman languages. This description, we hope, will show that Tibeto-Burman languages of the

South Asian subcontinent are more similar to the neighboring Indic languages regarding the quotative complex than they are to other Tibeto-Burman languages with which they are genetically related. I will take into consideration representative languages of several branches of the Sino-Tibetan language family⁴:

- (i) Newari, Magar, Ladakhi, Sherpa, Jirel and Lhasa Tibetan (Bodish);
- (ii) Tangkhul Naga (Naga);
- (iii) Lushai (Kuki-Chin);
- (iv) Adi (Bodo-Garo?);
- (v) Methei (Mikir-Meithai);
- (vi) Lahu and Lisu (Lolo-Burmese); and
- (vii) Jinghpaw.

Six of these languages - Newari, Magar, Sherpa, Jirel, Methei and Adi - have been in close contact with Indic languages (Nepali, Bengali and Assamese), whereas Tangkhul Naga, Lhasa Tibetan, Lahu, Lisu and Jinghpaw have not been in contact with any Indic language; and Lushai and Ladakhi only marginally.

Quotative complex in South Asian languages

Two important characteristics of the quotative complex in Indic and Dravidian languages are: (i) The quotative is a form of the verb 'say'; and (ii) this form of the verb 'say' is used to convey a wide range of functions. I'm illustrating a few of these grammaticalized functions here (for details see Saxena (1987)).

Quotative:

Nepali: rām-le saroj calāk cha bhanera bhay-o⁵
Ram-ERG Saroj intelligent is say-PART say-PD
'Ram said that Saroj is intelligent.'

Causal conjunction:

Nepali: timiharu madh-e ek jana murkh ho
you PL among-LOC one CL fool is
kinabhane yo dhorohoro hoina
why-say-PART this tower be NEG
'One of you is a fool because this is not a tower.'

Onomatopoeic expressions:

Nepali: saroja dh@mm@ bhanera pacchaanhy-o
Saroja Onp say-PART fell down-PD
'Saroja fell down with a thud.'

Quotative complex in Tibeto-Burman languages of South East Asia

In Lahu (Matisoff, 1973) the quotative markers are: qhe

~ qô?, tE ~ tE? 'thus'. The following sentence is illustrative.

Lahu: te mā phE? qhe qô? pîve yo
'He said "He cannot do it"'

["Cannot do it" - thus he said]

In Lahu the embedded sentence can be "doubly set off" from the rest of the sentence by having qô? in the initial and also in the final position. For example,

Lahu: yô qô? ve: sô-pô mû-yé mā là qo vén qhô qay
ve qhe qô? ve

'He said he would go to town if it didn't rain tomorrow.'

[What he said was "if it didn't rain tomorrow, he would go to town" - thus he said.]

Normally the first qô? is deleted but never the second one. (As will be pointed out later in the paper, this condition in Lahu is very similar to a Lhasa Tibetan restriction on the occurrence of the quotative).⁶

In Lisu bê 'say' seems to occur as the quotative, as a purpose conjunction and it "has the specialized meaning 'speaking of'" (Roop, 1979:208). The following sentences are illustrative.

Purpose: gyia bêkyângû
(go=nom say=remain=nom=is=so)
'I intend to go'

Speaking of: mahâ bê, azu mawâ hâ bê; azu zanô
(reputation have=nom say=nom, our together reputation is)
'If (our daughter) has a good reputation,
(it's also) our joint reputation.'

In Jinghpaw da is used as a quotative and as an evidential particle. The following sentence is illustrative.

Evidential: anhtê galoi n jaw ga ai, nga ma da
'They say, we will never give it.'

It is important to point out that da does not seem to be a form of the verb 'say' in Jinghpaw. The forms of the verb 'say' in Jinghpaw are: sun ai or ngu ai.

Quotative complex in Tibeto-Burman languages of South Asian subcontinent

Newari, Sherpa, Magar, Jirel, Methei and Adi have the following functions of the verb 'say': quotative,

causal, purpose and conditional conjunction, as an evidential particle, as a naming-labelling device and as an expletive. It also occurs with question words, with embedded questions, with onomatopoeic expressions and it conveys the sense of "deliberateness". **dha-k-a-a** ~ **dha-i-gu** in Newari, **am-la** in Adi, **si-N** **si-ni** in Sherpa, **si-ni** in Jirel, **de-mx** in Magar and **hāi-nā** in Methei have the maximum number of grammaticalized functions, the most basic of these functions being the quotative. (In order to avoid repetition, examples of Newari, Sherpa, Jirel, Magar, Methei and Adi will be given simultaneously). I don't have enough data to say whether Adi does or does not have functions such as causal, purpose and conditional conjunction and whether it can occur with question words and with onomatopoeic expressions.

Quotative: The following sentences illustrate the use of the verb 'say' as quotative.

Newari: **rām-ɔ** **saroj** **calāk** **dha-k-a-a**
Ram-ERG Saroj intelligent say-CAUSE-PART-NF

dhal-ɔ
say-PD

'Ram said that Saroj is intelligent.'

Sherpa: **cipcang** 'ti-ki "di kalak woru 'ti yangq
jackal he-AG this crow voice that em

kangyaapq **dzop-te** **lyemu-yi** 'nok" **si-N**
surprisingly make-may beautiful-em be sayPART

sikyaa -nok
say-PD

'The jackal said: "The voice of the crow may sound extremely beautiful."

Methei: **rām-na** **kamala** **laka-ni** **hāi-nā** **khan-i**
Ram-ERG Kamala come-FUT say-PART know-PRES
'Ram knows that Kamala would come.'

Jirel: **the-me** 'the' **'thom-gi** "abii 'woi kho-tniq'
then-T2 that bear-Ag Ex Ex you-Lg-E

'cyiq kha-in gyaamu gal-ka" **si-n** 'the
what do-vd2 fat go-Q say-vd2 that

kipcyang-laq 'Thijini
jackal-G ask-vdl
'That bear asked the jackal in amazement, "How fat are you."

Magar: **ho-tik-ing** **a-lak** **ta-ha-rx** "oho nga-i-cx
Dsl-x-Dr Ds2-place arrive-P-Cjl oh I-AgB2

hi ale puci-a ? ciso le gilo le" de-a
 what Ds2 step on-P cold be soft be say-P

rx nga-ke de-a
 r-G I-G say-P

'Having gotten away (he said), "Oh, what is it
 that I stepped on? It was cold and soft." '

Causal conjunction: In all these languages, the verb
 'say' is used as part of a construction conveying a
 sense of reason or causation.

Newari: chi-pi cho-mho murkho kho **chae-dha-e-sa**⁷
 you-Pl one-CL fools are why-say-INF-if

tho dhorohora mo-khu
 this tower NEG-is

'One of you is a fool because this is not a
 tower.'

Sherpa: 'ti-'mi 'ti-ki nangje 'si-ne 'kho-re
 that man that-AG pity say-PART he-GEN

khangbaa 'khurq 'gaal-nok
 house carry go-PD

'The man felt pity for it and took it to his
 house.'

Jirel: 'the phuhyung-te sacyi-rangq phemme 'chol-apq
 that boy-that really-E wife searchv13

si-ni ngaaroq 'cyok-teq khamba-du-kiq gal-duklo
 say-vdl tomorrow like-F house-L-from go-vi6RI
 'The next day he left home to search for a wife'

Magar: nga-cx hxjur-ke usha pa-ke **de-mx**
 I- B2 sir-G medicine search-Inf say-Cj2

Dheray bon pahar pxrbxt charhya-mx hwa-a
 much jungle hill mountain wander-Cj2 moveP

''For you, Sir, I have wondered through much
 jungle and over many hills and mountains in
 search of a medicine." '

Methei: ima na aibo thabak-tu tou-de **hai-ba-gi**
 mother my I work - CL do-NEG say-PART

šao-rammi
 angry-PST

'My mother was angry because I didn't do the
 work.'

Embedded questions: The verb 'say' occurs in embedded
 question constructions as a complementizer in Metheli.

Methei: rām khadāida thadoino hāi-ba khan-dre
Ram where send Q say-PART knows-NEG
'It is not clear where to send Ram.'

Purpose conjunction:

Newari: ji kamala yato napal-e dha-k-a-a woy-a
I Kamala DAT meet NPC say-CAUSE-PART-NFcomePD
'I came to meet Kamala.'

Sherpa: 'tamaa yangq longq 'kho-re rhyicangq 'ti
then em again he-GEN shadow that

thong-simaa 'ti-laa 'phat-upq 'si-ni
see con that-to bite-ImS say-PART

tsangb-i nang-laa 'chongbal 'gep-nok
stream-LOC in -to big jump hit-PD
'Seeing his shadow again and trying to bite it,
he jumped into the stream.'

Methei: ai thabak-tu tou-ge hāi-nā lakpani
I work- CL do-FUT say-PART have come
'I have come to do the work.'

Naming-labeling: Another function of the verb 'say' is to introduce participants or other NPs by name. The following sentences are illustrative.

Newari: cho-gu des-e cho-mho sinho-pota-moyju
one-CL country-LOC one-CL Red Thika Cake
dha- i- mho⁸ misa-du
say- REL woman have
'In a country there lived a woman called Sinho-
Poto Moyju.'

Sherpa: 'lamaaq namaaq cikq 'gelukpaa 'sir-u-wi 'tangq
Lama kind one Gelukpa say-ImS-Fds come
'One Lama Gelukpa came.'

Jirel: theme-ni saanuq sir-a-te phija-la-ang
then-E Sanu say-vd5-RPron child-G-too

mur-duk-logq
bite-vi6-RI
'That time Sanu had been attacked by the
bear.'

Magar: kan-ung dungngaDi de-cx ngar-ang cho
we-Po a place say-Bl terrace field-L rice
so-khe de-mx boy rx nga nung-ani-ang
weed by hand say-Cj2 father Cj1 I go-Pf-P
'Father and I had gone to our terrace in
Dungadi, intending to weed the rice by hand.'

Methei: sumitra hāi -ba -du nupi-du
 Sumitra say-PART CL girl-CL
 'A girl called Sumitra.'

Adi: indirā am-nām mimakko gō kenduŋ
 Indira say-PART girl I know
 'I know a girl called Indira.'

Evidential: As an evidential particle, the verb 'say' occurs at the end of a sentence. It generally indicates that the speaker is conveying what he heard from a source which he does not identify.

Sherpa: ta 'tuk kyaan 'ti-ki 'ti yeti 'ti seq
 now that do that-AG that Yeti that kill

namaajuN taasam belaa yeti 'alaaq 'm si-ni
 from nowadays time Yeti many is say-PART
 'Since he did so and killed the Yeti, there
 aren't many Yetis nowadays.'

Jirel: the-me i-ne khaeu-kiq 'Tha 'se-iduk si-ni
 then-T2 up-L4 rabbit-Ag wheat eat-vi2 say-vd2
 'A rabbit was nearby eating wheat.'

Magar: gorak-rx ma-si-ke na-bi-lang rx
 morning-Cjl Neg-die-Inf C1-night-place Cjl

ma-si-ke de-mx
 Neg-die-Inf say-Cj2
 'He was to pass away neither during the morning
 nor during the night.'

Methei: indira siri hāi-bani
 Indira died say-PART
 'It seems Indira died.'

"Deliberately": Newari, Methei and Adi use the verb 'say' to convey the interpretation of doing something intentionally or deliberately. The following sentences are illustrative.

Newari: rām-3 gilās kurke dha-k-a-a⁹ kurk-19
 Ram-ERG glass breakNPc say-CAUSE-PART-NF breakPD
 'Ram broke the glass deliberately.'

Methei: rām-na gilās-tu thugai-ge hāi-nā thugai-bani
 Ram-ERG glass-CL break-FUT say-PART break-PD
 'Ram broke the glass deliberately.'

Adi: rām-a gilās ipat-pa am-la impat-to
 Ram ERG glass-CL break-FUT say-PART break-PD
 'Ram broke the glass deliberately.'

With Onomatopoeic expressions: The verb 'say' is frequently attached to onomatopoeic expressions in

Sherpa, Newari, Jirel and Magar. The following sentences are illustrative.

Sherpa: 'ti gur gur si-N kyaa 'gep -u -yi nok
that exclamation say-PART do cry-Im-s-Cont-PD
'He began to snore "Gur Gur." '

Newari: hɔp hɔp dha -k -a -a wɔl-a
hot hot say-CAUSE-PART-NF come-PART
'Very very steaming (water) came...'

Jirel: 'thangq si-ni lakp-e-ki 'gyap-tuk-lo
Onp say-vd2 hand-cm-Ins hit-vi6-RI

Damp-e 'lak-pa
cheek-cm on-L2
'He hit (the child) with his hand on the
cheek.'

Magar: ho-tik-ing kat cuti swaNk de-cx
Dsl-x-Dr one at once Onp say-Bl

se-mi-ang-ta
hear-Pf-P-RI
'Suddenly there was a loud sound of slurping.'

Question word complementizer: In Newari, Sherpa and Methei, the verb 'say' is used with question words in sentences where the verb can potentially take a sentential complement. For example,

Methei: rām-na kari hāi-nā i
Ram-ERG what say-PART writes
'What does Ram write?'

Conditional: The verb 'say' is also used in conditional conjunction in Newari and Sherpa.

Newari: chɔ ji-tɔ kāpi byu-sa dha-k-a-a ji
you I-DAT copy give-COND say-CAUS-PART-NF I
ch -tɔ kalam by-i
you-DAT pen give-PD
'If you will give me a copy then I will give
you a pen.'

Sherpa: nup-laa 'dakpu wwo-sung 'si-si phig na
night-at we come-PD say-if outside of
sur 'gothe-laa 'me gek-up
from cowshed-at fire set-Im-s
'If we come at night, they would set fire to
the cowshed from outside.'

Expletive:

Sherpa: tshowang 'kang ki 'si- 'si¹⁰ tye
 ceremonial rice what do say-if there

'tsharii nang-gu-wiq
 blessing of main Lama give-AUX-Fdj
 'Then the blessing will be given to them.'

Lushai, Ladakhi, Tangkhul Naga and Lhasa Tibetan, though spoken in the South Asian subcontinent, have at the most only been marginally influenced by the Indic languages. The following description will show that these languages behave differently from the other Tibeto-Burman languages of this region regarding the quotative complex.

Lushai has two verbs of saying, namely, *ti* and *swai*. *ti* is used as a complementizer. The following sentence is illustrative.

Lushai: rāma-cuan sarojini-cu a-fin ti
 Rama Saroj he-intelligent COMP
 a-swai
 he said
 'Rama said that Saroj is intelligent.'

Ladakhi has two grammaticalized functions of *zere*, the participial form of the verb 'say'. These are:

Complementizer:

Ladakhi: khyang Musulman in zere, n̄ga-la krtakphayod
 'It is known to me that you are a Moslem.'

Purpose:

Ladakhi: kho la lam la chang kish-kish mi go zere
 n̄ga si n̄gi bizbo yambo tangs
 'In order that he might have no trouble on the road, I sent my servant (with him).'

Tangkhul Naga doesn't have any grammaticalized functions of the verb 'say' - not even as a quotative.

Lhasa Tibetan marks the verb of the embedded sentence with a verbal suffix *-s* (which is apparently a reduced form of the verb *se* 'say') (Scott DeLancey, p.c.) besides using the quotative (which is a form of the verb 'say') to mark off direct discourse. For example,

Quotative:

Lhasa: móó -qE sè na móó -qi (rà tì)
 old woman-ERG say-COMP old woman-ERG goat this

thí^ qi-yíi-s láp-pa-reé
take FUT/CONJ-QUOTE say- PERF
'The old woman said she should take (the goat).'

In Lhasa, the quotative marker can be deleted but not the quotative suffix. Notice that Lhasa and Lahu are similar regarding the quotative construction and the restrictions on the occurrence of the quotative. It is plausible that this may be the original Tibeto-Burman pattern.

In short, the above description points out that of the Tibeto-Burman languages considered, we find a range of grammaticalized functions of the verb 'say' in Newari, Sherpa, Jirel, Magar, Methei and Adi (which are under Indic influence) whereas Tibeto-Burman languages of the South East subcontinent and Lhasa Tibetan, Ladakhi and Tangkhul (which are not under Indic influence) do not show similar development.

Discussion

The question which arises now is: Is the quotative complex in the aforementioned Tibeto-Burman languages due to independent development devoid of the influence of the neighboring languages? The answer seems to be: No. A comparison of the grammaticalized functions in Tibeto-Burman languages and in Indic and Dravidian languages reveals the extent of similarity in these languages. If the development of the process of the grammaticalized functions in Tibeto-Burman languages is due to independent innovations, then why does no other Tibeto-Burman language show development of this construction comparable to these Tibeto-Burman languages? And, further, why is such a development restricted only to those languages which are geographically contiguous to Indic languages?

The case of Sherpa and Jirel is worth mentioning here. Sherpa and Jirel are two varieties of Tibetan spoken in Nepal where the dominant language is Nepali. Regarding the quotative complex, Sherpa and Jirel are more similar to Nepali than they are to Tibetan with which they are genetically very closely related. Sherpa and Jirel differ from Tibetan regarding three points which are the main characteristics of the verb 'say' in South Asian languages. These are: (i) Sherpa and Jirel use the verb 'say' as a quotative and not the concatenation of the verb 'say' + the verbal suffix -s which is the case in Tibetan; (ii) in these languages the quotative occurs in the postsentential position whereas in Tibetan it occurs in the presentential position; and (iii) in these languages, the verb 'say' is used to convey a wide range of functions which is

not the case in Tibetan.

A frequency count of the occurrences of the verb 'say' with non-literal meanings in 83 sentences of text in Sherpa and Tibetan shows that in Tibetan, there were 8 occurrences of the verb 'say' (all of them being the quotative) whereas in Sherpa there were 24. It is important to point out that I did not choose a particular Sherpa text to show this discrepancy—rather I took the first 83 sentences from a Sherpa text from Hale (1973) and 83 sentences of a Lhasa Tibetan text.

A comparative study of Newari, Sherpa, Magar and Lhasa shows that Newari has only the postsentential complement construction (when the complementizer is a form of the verb 'say') which is the case in Indic and Dravidian languages also. And in Lhasa we only find the 'nesting' type of construction (see the examples under quotative) whereas Sherpa and Magar have the postsentential construction as well as the 'nesting' type of construction; the latter seems to be the typical Tibeto-Burman construction. The following sentences from Magar are illustrative.

Magar: raja-i "pihin sikhār ge-s-ke
king-Ag tomorrow wild game play-Ref1-Inf

nung-ke ma-xr-le" de-mx hukum ya-lhe-sa
go-Inf Ne-need-be say-Cj2 command give-be-Op
'The king said "It will be necessary to go for
wild game." '

Magar: sila-i de-a "xho TiTra naku rx nga miT
jackal-Ag say-Ag aho quail you Cj1 I friend
lxy-di-ing" de-mx TiTra-ke de-la-sa
apply-LM-let's say-Cj2 quail-G say-be-Op
'The jackal said "Oh quail, you and I should
become friends." '

It is important to point out that Newari has been heavily under Indic influence (cf. Bendix 1974). The influence of Indic on Magar and Sherpa is not so much and on Lhasa it has presumably been minimal.

Conclusion

Thus, without denying the fact that Tibeto-Burman languages have a quotative in their system, it seems that the areal influence was probably the stimulus for the development of the quotative complex in Tibeto-Burman languages. The above description suggests that the quotative complex is an areal rather than a native

Footnotes

1. This work was partly supported by National Science Foundation grant BNS - 8313502. I would like to thank Professor Scott DeLancey for encouraging me to work on this project. I would also like to thank him for giving me access to his Lhasa Tibetan text which proved very useful to me. I'm thankful to Professor Subbarao, Professor Hans.H. Hock, Professor Peter E. Hook for their comments. I am also thankful to Carol Genetti for giving me access to her Newari text. I alone am responsible for all the errors and inconsistencies in the analysis.

2. I define quotative as a morpheme used to mark off direct discourse.

3. Emeneau (1956) while dealing with the notion "India as a linguistic area" omits Tibeto-Burman languages completely. He states: 'The Indian subcontinent is inhabited by a very large population who speak languages belonging to **three major families** [emphasis added], Indo-Aryan (a subfamily of Indo-Europeon), Dravidian and Munda...This does not take account of all the languages that are included geographically in this area. There are Burushaski in Gilikit, Khasi in the hills of Assam, Nicobarese, Andamanese, and many languages of the Tibeto-Burman group in the Himalayas and Assam. Our attention will be focussed primarily on Indo-Aryan, Dravidian and Munda' (1956:5).

4. Lhasa Tibetan data is based on a text of a story entitled; 'A hungry dried-up goat tail'; Sherpa data is from Schottelndreyer and Hieiderose, Schottelndreyer (1973); Magar data is from Shepherd and Shepherd (1973), Jirel data is from Maibaum and Strahm (1973), Lisu data is from Roop (1970), Jinghpaw data is from Hanson (1917), Ladakhi data is from Francke (1979) and Koshal (1979); Balti data is from Read (1934); Adi, Methi and Lushai data was collected when I was working in the University Grants Commission project on 'A Study in the Linguistic Typology, Contact and Areal Universals in the Indian Subcontinent', Delhi University. The information regarding the Indic and Dravidian languages is based on Subbarao et al (1983).

5. The abbreviations used in this study stand for: ERG = ergative, AG = Agent, DAT = Dative, PART = Participle, NF = Non Finite, CL = Classifier, NEG = Negative, FUT = Future, PRES = Present, PL = Plural, NEG = Negative, POSS = Possessive, PPS = Perfect Participial form of the verb say, PST = Past, PNG =

Person, Number and Gender, GEN = Genitive, AUX = Auxiliary, COMP = Complementizer, em = emphasis, Q = Question marker, NPC = Non Past Conjunct, Ims = Impersonal, PD = Past Disjunct, REL = Relative Clause marker, Fd_j = Future disjunctive marker, Ex = Exclamation, Lg = Ligature, E = Emphatic word and suffix, vd₂ = Consecutive action, Q = Interrogative marker, G = Goal, vd₁ = Simultaneous action, vi₁₃ = mood:intent, F = Focus affix (attributive marker), L = Location, vi₆ = Past disjunct, RI = Reported information marker, vd₅ = base formative, dependent, R_{Pron} = Relative pronoun, L₄ = Location and direction;at/to (up), vi₂ = habitual disjunct, Onp = Onomotopoeic.

6. In Lahu there is a form *qo* 'if, when'. It is plausible that this is related to *qô?* 'to say'. I'd like to thank Professor Matisoff for providing me this information.

7. *chae-dha-e-sa* always occurs as a unit, conveying the meaning of 'because'. Such a construction is found in Shina (Gilgit) too (Peter Hook, p.c.).

8. Notice that the verb 'say' occurs with a relative clause marker. In the verb *dha-in-mho*, *mho* marks the relative clause.

9. This cannot be regarded as the literal meaning because 'will break' is not spoken. Rather, such usage conveys the interpretation of deliberateness. It is plausible that originally *dha-k-a-a* in such sentences must have been a real verb but now such sentences convey the expression of deliberateness.

10. In the speech of one of the informants, there were 13 occurrences of *kang ki* 'si 'si (as an expletive) in the total number of sentences (68).

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Grammaticalization and Semantic Bleaching

Eve E. Sweetser
University of California at Berkeley

This paper is an attempt to unify our understanding of semantic change, and in particular to treat the semantic changes attendant on grammaticalization as describable and explicable in the terms of the same theoretical constructs necessary to describe and explain lexical semantic change in general. I will argue that the semantic phenomenon known as "bleaching" may well fall out of ordinary trends in semantic change, taken together with an independently motivated understanding of lexical and grammatical meaning domains.

In 1912, Antoine Meillet wrote an essay called "L'Evolution des Formes Grammaticales." In it he stated:

The development of grammatical forms by progressive deterioration of previously autonomous words is made possible by...a weakening of the pronunciation, of the concrete sense of the words, and of the expressive value of words and groupings of words. The ancillary word can end up as an element lacking independent meaning as such, linked to a principal word to mark its grammatical role.

Meillet, tackling a subject so new that he used his innovative word "grammaticalization" in quotes, thought that weakening or loss of meaning was a way of describing the meaning-changes we often see accompanying the process of grammaticalizing a lexical item. He also thought that there was little *semantic* connection between prior lexical and later grammatical senses of a morpheme, although he himself quite insightfully discussed some of the semantic origins of negation-reinforcers in French.

The two questions raised by Meillet are still with us. First, are senses lost, or weakened, in grammaticalization, or what in fact happens to them? Second, to what extent are the directions (if not the occurrences) of such semantic developments regular or predictable? The second question has received attention from numerous scholars recently. Givon (1971 and elsewhere), Fleischman (1982, 1983), Bybee (1985), Anderson (1982), Genetti (1986), Bybee and Pagliuca (1985), Shepherd (1981), Sweetser (1984), DeLancey (1986) and others have all mapped directions of frequent semantic developments in grammaticalization. Traugott (1982, 1988, and elsewhere) has, in particular, argued that these shifts, like other meaning-shifts, follow a trend from propositional to textual to expressive, or (more recently) towards greater *situatedness* in the speaker's context.

The primary focus of this paper will be the first question: I shall attempt to define which aspects of meaning are lost in grammaticalization, and which are preserved. My claim is that an analysis of meaning-transfer as metaphorically structured will, for the range of cases I examine, allow us to predict which inferences are preserved across transfer of senses.

Generalization, abstraction, feature loss? - the case of Go-futures.

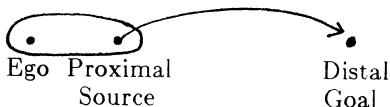
Bybee and Pagliuca (1985) suggest that *generalization* is an inherent characterization of grammaticalization sense-shifts. One of their primary examples is the frequent development of imperfect-markers from progressives and habituals; the imperfect is a broader sense, subsuming the earlier sense of progressivity or habitualness. Such an analysis would be readily understandable in terms of traditional "bleaching:" that is, in an objectivist feature-structured theory of meaning, a sense becomes more general by *losing features*. It is harder to see the development from root to epistemic modality as a process of generalization, since the epistemic sense does not in fact subsume the root sense. Bybee and Pagliuca argue here that generality is added when scope is increased; epistemic modality has scope over the whole sentence (and can often be paraphrased by "It must/may be the case that S"). However, this seems a rather different concept of generality than that involved in the example of the imperfect markers, and in this case we would be forced into the position that metalinguistic uses of a morpheme (e.g., negation (Horn 1985)) are invariably more general than content-uses.¹

With the *Go*-future, it seems to me that we can no longer talk about generalization in the usual sense. Neither futurity (or future intention) nor physical motion is an instance of the other; nor is it at all evident that meaning is "lost" in the transfer from one of these senses to the other. And although it seems intuitively plausible to posit a genuine semantic category of imperfectivity, with subcategories including progressivity and habitualness, we would need some serious justification for a semantic category which just happened to have futurity and physical going as its two natural subclasses. What, then, is more "general" about the future sense of *go*? My proposed explanation will draw crucially on the recent work of Talmy, Lakoff and Brugman. Talmy (1985 and elsewhere) has argued that grammatical meaning is inherently topological and schematic, while lexical meaning is not; we can thus expect to find grammatical morphemes marking, for example, topological relations on a linear scale (A is greater than B), but not actual distances between points on the scale - or relative spatial position of two objects, but not the colors of the objects. Lexical meaning can (indeed, does) have topological aspects, besides the other aspects of rich lexical semantic content; grammatical meaning is restricted to the schematic structuring of meaning.² Lakoff (p.c.) has proposed that metaphorical mapping inherently projects the image-schematic topological structure of the source domain into the structure of the target domain (again, the claim is that other things *may* be preserved across a metaphorical mapping from one domain to another, but image-schematic structure regularly is).

I now turn to the specific example of the *go*-future, and will use this example to clarify what is meant by image-schematic structure, and then to demonstrate that such structure is preserved in the metaphorical mapping from physical motion to futurity. The diagram below gives a

proposed image schema for *go*, which essentially consists of movement along a linear path from a source proximal to ego towards a goal which is distal. The diagram is not intended to be interpreted as a visual mental image, but rather as a schematic representation of certain topological aspects of meaning. For example, the linear continuity of a spatial path (you can't get to a point without traversing the points between your location and that point) is represented by the path-line in Diagram 1. Some of the other features will be discussed below.

Diagram 1. "Go"



The development of *go* into a future-marker is a common one crosslinguistically, so we might expect to find some strong motivation for such a shift. And in fact, the semantic domain of time appears to be metaphorically structured in terms of motion along a linear path, *independently* of the more particular semantic connection between going and futurity. Examples such as "the events *ahead*" or "day *after* day" clearly indicate the presence of such a metaphorical mapping in English, although it cannot be discussed in detail here (cf. Fillmore 1971, Lakoff and Turner (in press)).³ Such evidence for an independent metaphorical mapping is added support for an analysis of the *go*-future as metaphorical in origin.

Let us note the **partial** nature of the mapping of inferences from *go* to future prediction or intention. For example, in travelling along a physical path, I can turn around and go back the way I came - or walk facing backwards rather than forwards - or vary the speed at which I travel. None of these are possible in our experience of time, which is inherently unidirectional (we cannot reexperience the past) and does not change speed. There is an observed partial *correlation* between my experiences of time and path-traversal: presumably, my experience of physical motion has taught me that I will reach points further from the path-source at later times than points closer to the path-source. Indeed, it is very possible that this correlation is part of my *prototypical* experience of time and motion. But my experience of time is not fully correlated with spatial paths, nor inevitably experienced only in terms of them. Time passes linearly whether I sit still or travel. Yet I can use the *go*-future to refer to non-motion events and actions. The metaphorical mapping of going onto futurity is general, and not partial like the experiential correlation: it goes beyond any relationship between time and some particular instance of spatial motion, and transfers the internal schematic structure of motion to that of time in general.

Which inferences *are* preserved in mapping going onto futurity? (1) The linearity of the relationship between locations: just as to get from one point in space to another, you have to traverse the intervening points,

so to get from one point in time to another you must pass through all times between the two. (2) The location of ego at the source of the linear path: the present is proximal in time, as our current location is proximal in space. (3) Movement away from this proximal source-location towards a distal goal: we cannot move from distal to proximal in space, nor can we move from some other time to the present (once we have arrived in the present, that is). The verb *go*, which is used precisely to indicate motion from proximal to distal in space, is thus a perfect choice for movement away from the present in time; and since (as mentioned above) we can't return to the past, any distal temporal goal must be in the future.

The preserved inferences (1)-(3) are precisely those which fall out from the topology of the image schema which I proposed for *go*; the metaphorical mapping of the image-schema from going to futurity preserves this topological structure, while allowing non-identity between target and source domain in other respects. Claudia Brugman has suggested to me that verbs which explicitly *highlight* areas of the semantics of motion which cannot be mapped onto time would be less likely sources for tense-markers - e.g., *lumber*, which explicitly marks rate and physical manner of progress, would be unlikely because it would require active *suppression* of explicit meaning about speed and manner. *Go*, on the other hand, does not foreground speed or manner, although of course we inevitably infer that physical motion *has* rate and may have some identifiable manner.⁴ Therefore its image-schematic structure can be maintained in mapping onto the domain of temporal futurity.

The claim, then, is that a topologically structured image schema (leaving out such particulars as rate, manner, distance between source and goal) is abstractable from *go*, and coherently mappable onto the domain of futurity with preservation of the topology. In this mapping, we lose the sense of physical motion (together with all its likely background inferences). We gain, however, a new meaning of future prediction or intention - together with its likely background inferences. We thus cannot be said to have merely "lost" meaning; we have, rather, exchanged the embedding of this image-schema in a concrete, spatial domain of meaning for its embedding in a more abstract and possibly more subjective domain.

I shall argue that, for the *go*-future and the other cases I am about to examine:

- (1) Meaning-transfers in historical semantic change, including grammaticalization, show preservation of image-schematic structure.
- (2) Thus, precisely those inferences which are characterized topologically because of image-schematic structure are the inferences projected through these semantic shifts.
- (3) This must mean that an image-schema is *abstracted* from the earlier lexical sense; such a schema would be potentially much more general than the fully fleshed-out lexical meaning.

(4) But if the image-schema is mapped onto some specific new domain, it thus gains a new particular (and more or less fleshed-out) sense.⁵

(5) In grammaticalization, the transfer is to a fairly abstract, topological domain (whatever domain of grammatical meaning may be involved); so there is less fleshing-out of meaning. However, the meaning of the new domain itself is still added.

Paths and Motion in other domains.

I shall now discuss several other cases where the image-schematic structure is preserved across historical meaning-changes, and where the inferences preserved are those inherent in the topology of the image schema. The first case is taken from Genetti (1986), who describes the regular semantic development of postpositions as they become complementizers in various languages of the Bodic family. In these languages, nominalized verb forms are employed for subordinate clausal units; being nominalizations, the subordinate "clauses" were thus naturally subject to nominal case-marking, which has thus gradually developed senses equivalent to clausal subordinating conjunctions. Genetti shows that there are regular paths of semantic development from (a) allatives and datives to "until" or purpose-clause markers, (b) locatives and associatives to "when/while" temporal conjunction or to conditional markers ("if"), and (c) ablative and ergatives to "since" in the temporal domain and/or to causal markers. She argues that this development can be explained by an understanding of *until/when/since* or *purpose/condition/cause* as being equivalent to abstract notions of Goal, Location, and Source. In diagram 2, I have given basic image schemata for goals, locations, and sources. Let us briefly examine the structure of the mapping from physical goal to Purpose.

Diagram 2. Postpositions (> Subordinators)

- → (ablative, ergative)
- • (allative, dative)
- (locative, comitative)

In addition to the mapping of space onto time (and coherent with it), there is a mapping of spatial motion onto the domain of intentional actions. Goals are mapped onto purposes, the shared topological properties being directed motion - through time or space - towards some endpoint. The chain of action leading to some purpose is linear; i.e., we have to do all the things which lead to the goal, before getting to the goal. And that particular chain of action ends when we attain the purpose, just as physical movement along a path ends when the physical goal is reached. The metaphorical use of the language of goals to refer to paths

in English is evidenced in examples like:

How *close* are you to finishing that paper?

On the way to writing that paper, I wrote two books.

We all want the perfect analysis, but we never seem to *get there*.

I seem to be getting *stuck*, just as I thought I was *getting somewhere*.

As with going and futurity, the mapping from goals to purposes is a partial one. We assuredly do not always have to move physically to achieve intended purposes; and purposes are inherently situated in the future, so that there is a unidirectionality to an action chain (inherited from the necessity of its unfolding in time) which does not belong to physical motion itself. Once again, it seems that only certain inferences have been preserved through the process of mapping between domains - and they are the inferences which fall out from the topology of the transferred image schema. A completely parallel story can be told for the mappings of sources onto causes, or locations onto logical conditions, following from an extension of the same metaphorical mapping of spatial motion onto event-chains.

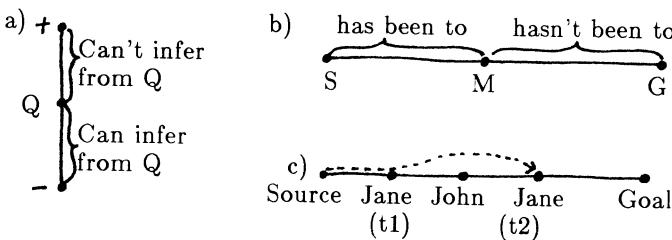
Why should the relationship between Bodic postpositions and subordinators be treated metaphorically, rather than saying (for instance) that there is some neutral abstract concept of source or goal which happens to apply equally to spatial motion and to temporal and causal/purposive structure? That is, why should I postulate that my abstract schema is abstracted *from* the spatial domain and mapped onto the others, rather than that it exists independently in some relationship to all the domains in question? One important fact explained by a metaphorical analysis is the unidirectionality of the shift: allatives and datives give rise to purpose-conjunctions, and not the other way around, which is explained by the assumption that a more abstract domain is being metaphorically structured in terms of a more concrete one (cf. Lakoff and Johnson 1980). The opposite direction of metaphorical mapping (not evidenced in Bodic) is not evidenced in English metaphorical examples either. Thus a unidirectional metaphorical mapping explains both (1) the direction of meaning-shifts and (2) the coherence between that directionality and the direction of mappings in lively metaphors for which we have independent evidence at least in English.

The Bodic example is not, strictly speaking, an instance of grammaticalization, in that the postpositions were presumably highly grammaticalized entities before they developed a new semantic and syntactic role as subordinators. But this shift leads from a more concrete source domain of spatial relations to a more abstract and schematic target domain. And the example makes a further point which I consider crucial to any study of grammaticalization: namely, grammatical morphemes are not meaningless structural markers (cf. Bybee 1988, Traugott 1988). If the dative were simply a marker of some grammatical function not covered by nominative or accusative - a semantics-free marker left to do as syntactic whims or

opposition with other cases might dictate - then we would have no explanation for the regular development of dative markers into subordinators expressing purpose, rather than (for example) cause. We can only explain this regularity by attributing to datives a meaning connected with goals - and thus attributing to them that "*sens propre*" or independent meaning of their own which Meillet would claim they have forever lost.

A second case which I would like to examine involves two different semantic sources for comparative markers. One of these developments is the use of a verb meaning "pass, go past;" it is common in many African languages (Greenberg 1983 and Childs, p.c.) to say "Mary is taller than Susan" by saying the equivalent of "Mary passes Susan in height." The Swahili verb root *-pita-* (meaning both "pass" and "surpass") is an example of such usage. (Note English examples like *surpass* as well.) The mappings of image schemata are a little more complex than in the case of the *go-future*, but still quite straightforward. In diagram 3, the schema (a) is that of a linear scale; this schema is shared by all words with so-called scalar semantics, including expressions of quantity and degree.

Diagram 3. "Pass" > Comparative



The topology of the scale defines certain inferential patterns: if you have four eggs, then you have three eggs, but you don't necessarily have five. A lower point on the scale is inferable from a higher one, but not vice versa (cf. Fauconnier 1975, Fillmore, Kay and O'Connor 1988). A scalar quality or property, such as height, works the same way:

A: I want to be on a basketball team.

B: Well, are you six and a half feet tall?

A: Hell yes, I'm six nine!

*Hell yes, I'm six one!

The topology of such a scale is mappable (cf. Lakoff 1987, p. 458) onto that of a linear path, and the same inferential patterns are observable for linear paths. If I started at point S on diagram (3b), and am now at M, then I have necessarily been to all the points to the left of M on the path, but not necessarily passed through any points to the right of M.

The semantics of passing belong in the domain of linear paths, and the semantics of the comparative belong in that of scalar predicates. But as we have just seen, the two are topologically equivalent. Mapping a

scale of tallness onto a path (see diagram 3c), we see that in order for Jane to be "far taller" than John, she must be *a significant distance further along* the path from zero height to infinity than he is. This means that in gaining height, Jane (or her measurements, to be exact) at some point "passed through" the position on the scale currently corresponding to John's height.⁶

The question arises whether at least some ablative of comparison can be explained in the same way. If the primary sense of an ablative case is movement away from some location, a major secondary sense is the resulting location at a distance from the source location. Ablatives thus not infrequently express both concepts like "She went away *from New York*," but also ones like "Her house is three miles *from campus*." Ablativity thus involves movement away from, and/or (possibly consequent) location at a distance from, some landmark. The landmark and the thing located relative to it are distant because the path traversed between them has length. Mapping this path once more onto the semantics of scalar predicates, it might be possible to see an ablative used for the standard of comparison (as in "Jane is taller John-abl.") as an expression of separation of Jane and John's locations on a path, and hence their difference on a scale of height mapped onto the path.

Modality and the shift towards epistemic senses.

The gradual development of the English modal verbs from various non-modal senses to root modal senses, and from those to added epistemic senses has been accompanied by a grammaticalization process: the modals are syntactically restricted, morphologically "defective," and in general are clearly no longer completely independent lexical items. Their meaning and their syntax alike have become dependent on the meaning and the syntactic presence of a main verb and a clause to modify. The following is a suggested force-dynamic analysis of the development of an epistemic possibility sense of *may* from a root possibility sense. (Note that this is not supposed to diagram the shift away from the original sense of OE *magan* in the non-modal realm.)

Diagram 4. "May"



As suggested in Talmy (1988) and Sweetser (1982, 1984), I take modality to be analyzable as the extension (to an abstract domain) of basic understanding of force-dynamic concepts of forces and barriers. In such a theory, *may* would be viewable as a potential barrier which is *not* actually barring some potential path. This assumes that actions and events can be metaphorically seen as paths: we have seen that this is a common metaphorical mapping, examples being displayed in the last couple of sections of this paper. The result of an unbarred metaphorical path

is that the participant (ego) is not restricted from some course of action towards some future goal; or that events are not restricted from progressing towards some future result.

How is this root modal sense of possibility extended to a further sense of epistemic possibility, and (later still) to a sense of permission? Let us first note the partial correlation between the inferences to be drawn from root and epistemic possibility. Assume that epistemic *may* means that the speaker neither believes the proposition to be certain nor discounts the possibility of finding out that it is true. Then if something is possible in the root sense (if nothing prevents it from happening), and if a speaker *knows* that nothing prevents it, the speaker might reasonably treat a statement about this possible event as epistemically possible (i.e., neither espouse it as a certainty nor discount it as certainly false). But of course, as with the other cases we have examined, the mapping of inferences is a partial one: it is not the case in the real world that anything which is *not barred* from happening is epistemically possible. For example, I could know that nothing prevents you from doing something, but I could also know that you in fact are not doing it. So an epistemic certainty can exist regarding a course of events which (in the root modal sense) is possible.

Similarly, in examining the permission sense of *may*, we can see that if nothing but the speaker's authority was likely to prevent some course of action, then a statement that the action was *possible* would be appropriate, and would constitute giving permission. The speaker's authority may well *not* be the sole factor involved: many things which are impossible in fact are not impermissible. Likewise, plenty of things which are not permitted or permissible turn out to be possible anyway; people just do them without permission. Comparing epistemic possibility with permission, there are even more obvious differences: for example, permission has an interpersonal dimension lacking in either of the other senses of *may*, a relationship of authority between a permission-giver and a permission-recipient. So the mapping of inferences is once again only a partial one.

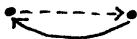
What does appear once again to be preserved in these mappings between domains is the topology of the image schematic structure. The inferences which *must* be preserved to maintain consistency with this topological structure are the inferences which are preserved. Thus, the fact that giving permission neither prevents the action permitted nor requires it means that the person to whom permission is given is (within the social-constraint world of the permission) not constrained to act or to refrain from action. Although in a given situation, social and other factors may be at variance, root *may* signals a topologically equivalent situation in the root modal world: whatever factors make an action or event possible mean that the action or event is neither prevented nor forced to occur. And finally, in the epistemic world, epistemic *may* indicates that the speaker's reasoning processes are neither forced to some conclusion nor definitively barred from eventually reaching that conclusion.

Why should we not assume that some more general sense of possibility has been extended to cover all three of the senses mentioned above, rather than assuming mappings between the three senses? First, because the senses are still distinct: that is to say, epistemic *may* does not in fact subsume the root sense of *may*, nor does the later permission sense subsume the others (or become subsumed by them). As we have seen, the different senses may even have different truth values for a given proposition in a given context. Claims that the epistemic sense is more general than the others reduce, I think, to the claim (cited above) that the epistemic sense is more abstract and applies to the utterance as a whole: it has higher scope than the other uses.⁷

However, the higher scope of the epistemic modals follows from the domain-shift involved in mapping a root modal sense onto a meaning in the domain of the speaker's reasoning processes. Root modality often expresses some relationship between the described event or action and one of the described participants. Epistemic modality, on the other hand, obligatorily involves expression of the speaker's attitude towards the whole expressed proposition about some event or situation. General principles of predication and modification suggest that epistemic modality should thus have higher scope.⁸ The question of difference in generality between the root and epistemic modals remains a separate issue, and one which depends on having a set definition of generality.

Finally, I would like to discuss Traugott's (1982) example of the semantic development of *again* in English. *Again* is related to *against*, and once meant "facing, opposite to." It subsequently took on a meaning of "in response to" (as in *King Mark seyd but lytyll agayne*, meaning "King Mark said little in reply"); then it developed a sense of return of an object to a previous possessor (*Give me my horse again*); and finally the current sense of repetition (*Sing it again!* - i.e. repeat the action a second time). I would like to suggest that an image-schematic treatment can readily bring out regularities in this development. Suppose that the sense of "opposite, facing" involves the placement of some entity so that it "faces" (i.e., it is physically aligned towards) some previously aligned object which is aligned in the opposite direction (i.e. towards the entity "facing" it). Speech exchange involves directed activity from each of two participants towards the other, so there may at least be some parallel in image-schematic structure between these two senses. But now, let us suppose that the relevant image-schematic structure of a *reply* is traversal of a path between Speaker and Hearer, with the presupposition of previous traversal of a path from H to S. (Reddy 1979 gives strong evidence, independent of the present argument, for the metaphorical structuring of speech exchange as objects traversing spatial paths between S and H.) That is to say, *reply* carries with it the understanding (shown in diagram 5 as a dotted line) that a previous utterance has gone the opposite direction in the speech world. The reply (the solid line) is aligned *relative to* that previous utterance.

Diagram 5. "Again"



In the physical world, the same basic structure is evident in the "give me my horse again" example. An object is described as traversing a path from person A to person B; and that object is assumed to have previously traversed the path in the opposite direction from B to A. In contrast with the "against" sense, this meaning involves transfer (whether physical motion from one location to another, or abstract transfer from one "domain" of possession to another) rather than just relative location or alignment. In contrast with the "reply" sense, this sense involves an object rather than an utterance being "transferred." So "transformations", or regular relationships linking related image-schematic structures (cf. Lakoff and Brugman 1988) are involved, as well as metaphorical mappings, in linking the senses of *again*.

Finally, in "sing it again," we see another instance of action being treated as traversal of a path towards a goal; and an image-schematic structure involving *retraversal* of an already-travelled action or event path is marked by *again*. Although surely not identical in image-schematic structure, the different senses of *again* can be seen as sharing important aspects of structure at this level: path-retraversal is present in all but the original sense, and bidirectionality was present in that sense as well. We may note that there are few obvious inferential connections between opposition and replies or iteration: there may be correlations, however, such as the fact that people talking to each other canonically (though not necessarily) face each other. Also when an object is returned to a previous possessor, the possessor then has a second period of possessing that object. But a reply is not a second instance of the same speech act (i.e., it is not a repetition). Mappings of image-schematic structure allow these very different types of event-structure to be seen as parallel despite lack of surface inferences in common.

Let us note that other linguistic structures in English support a path-retraversal understanding of repetition and replying. For instance, one "gets back" an answer in English, just as one "gets back" a physical object which is retransferred to one's physical neighborhood or possession (cf. Sweetser 1987). Someone repeating a goal-oriented series of actions can be said to be "covering the same old ground;" or a request for repetition can be phrased as "would you run through that from the start, one more time?" This independent evidence for a metaphorical model of replies in terms of path-retraversal gives added weight to an explanation of the semantics of *again* in terms of such a metaphorical model.

Conclusions.

In the test-cases we have examined, we have seen that certain kinds of inferential structures are preserved across meaning-shifts. My claim has been that it is precisely the (metaphorically structured) image-schematic inferential structure which is preserved, rather than any other aspects of inferential structure which happen to be present. That is, given the assumption that metaphorical mapping of image-schemas structures meaning-transfer, there is motivation for the apparently whimsical mapping of some inferences and not others into the new semantic field.

I have also suggested that there is a sense in which grammaticalization involves loss of meaning, and another sense in which it does not. Whenever abstraction occurs - for example, when an image-schematic structure is abstracted from a lexical meaning - there is potential loss of meaning. The image schema does not have the richness of the lexical meaning in the source domain. Thus *go*, for example, has a much richer meaning than simply the schema presented in Diagram 1. But if the abstracted schema is transferred from the source domain to some particular target domain, then the meaning of the target domain is *added* to the meaning of the word: thus an instance of *go* which has lost the sense of physical motion has gained the sense of futurity, intention, or prediction.

There is nothing unique about the semantics of grammaticalization, from the point of view of semantic change. Semantic change from one lexical meaning to another may also involve abstraction of a reduced, topological meaning-structure, and metaphorical mapping of that structure onto a new (target) domain of meaning. The target domain of a metaphorical mapping may be quite concrete, or very abstract. It is perfectly possible for the same pair of domains to be in reversed source-target relationships for different metaphors. For example, taking two fairly concrete domains, it is possible to metaphorically talk about a machine as a human, or a human as a machine. ("My car was complaining all the way up that hill," "The computer was lying in wait to mess up that file," as opposed to "My memory banks are scrambled this morning," "I'm going into high gear on that project at last.") Different mappings are involved in the different metaphors - in particular, human *emotions* and *intentions* are mapped onto machines, while machine properties such as mechanical efficiency or data-structures are mapped onto humans. In neither of these cases would we want to say that meaning is (overall) "lost" in the metaphorical transfer. Mapping human emotions onto a computer does not mean that we map even a full human emotional structure, let alone our knowledge of human physiology, onto the machine. But we do use our general understanding of machines to fill in whatever is not mapped from the source domain.

Returning to the question of grammaticalization, my claim is that the meaning shifts involved in grammaticalization are necessarily shifts towards a relatively abstract and topological domain of meaning, since

those are the meanings that we use in grammatical systems. This being the case, there will be less "fleshing out" of the transferred image-schematic topology when the transfer is into a domain which centrally refers to the topological aspects of meaning, rather than to some of the other aspects of rich lexical meaning.

The advantage of such an analysis is that we need not necessarily posit different mechanisms for lexical semantic change and "grammaticalizing" semantic change. The same sorts of meaning-transfers would automatically produce different results, given the different natures of the semantic domains involved.

Finally, it is interesting to note that this volume shows a good deal of consensus in rejecting the viewpoint that grammatical morphemes lack meaning, or are unrelated in meaning to their lexical sources. It is certainly true that grammaticalization may result in semantic (and phonological) shifts which completely separate the grammatical morpheme from its lexical source (e.g., the French future endings whose lexical source is "have" are no longer linked in any way to the verb *avoir* in speakers' minds). But this is to a lesser degree true of any meaning-change: speakers certainly do not carry in their heads the semantic history of lexical morphemes, any more than they do so for grammatical ones. The phonological erosion which is often involved in grammaticalization⁹ may speed the process of dissociation between lexical and grammatical uses of a morpheme; but it is perfectly possible for lexical senses of a morpheme to become dissociated from each other as well. This possibility does not vitiate the claim that there are motivated connections between adjacent stages of any semantic history, or the claim that grammatical meaning is real meaning.

Meillet's view of a "dégradation" or deterioration of meaning (with its rather pejorative connotation) seems to have been replaced by an understanding of grammatical meaning as distinct from, but related to, its lexical sources. Grammaticalization thus becomes a rich mine of data about structures of the meanings of lexical source domains: that is, if *go* is a likely source-domain for futurity, that says something about the meaning-structure of *go*, as well as about the semantics of futurity or intention. Grammaticalization may be seen as laying bare the deeper structural characteristics of earlier lexical meanings of morphemes.

Footnotes

0 I am grateful to many of the scholars cited herein for past discussions which have helped shape my understanding of grammaticalization. This volume in itself should make it clear to what an extent this paper depends on recent work in the areas of both grammaticalization and metaphorical structures in word meaning. Particularly helpful comments and reactions to the paper have come from Claudia Brugman, Joan Bybee, George Lakoff, Vassiliki Nikiforidou, Dan Slobin, Len Talmy, and Elizabeth

Traugott. Tucker Childs kindly provided information on Bantu comparative structures.

1 Horn argues convincingly that the difference between content and metalinguistic negation is not the meaning of the negation, but its interpretation as being applied to the utterance, rather than to the content.

2 More detailed discussions of image-schematic structure and image-schematic transformations are to be found in Lakoff (1987) and Lakoff and Brugman (1988). Related work on the relationship between lexical and grammatical meaning is to be found in the work of Ronald Langacker (e.g. Langacker (1987)).

3 Fillmore demonstrates that in fact English (like many other languages) has two distinct metaphorical spatial models of time. One involves a stationary ego, towards whom events are moving in linear sequence: this is evidenced by usages like *the days to come*, *bygone days*, *the following weeks*. The other involves a moving ego going forward into the future along a timeline: this is the one I take to motivate *go*-futures, and which is exemplified in usages like *the weeks ahead*. As Fleischman (1982) points out, *come*-futures as well as *go*-futures are attested, presumably motivated by the other possible spatialization of time.

4 *Go* is a superordinate-level verb of motion, by Rosch's criteria (1977 and elsewhere); unlike basic-level verbs such as *walk*, we have no image or motor program particularly associated with *going*, for instance. Van Oosten (1986) has argued that *sit*, *stand* and *lie* are basic-level verbs of physical position, and hence become grammaticalized in expressions of location. The generalization seems to be that lexical items naming *subordinate*-level categories are not the ones likely to be grammaticalized; and a cursory examination of the semantically commonest auxiliary verbs (*have*, *be*, *take*, *give*, *make*, *come*, *go*) certainly includes no subordinate-level items.

5 This is the difference between generalization of meaning and metaphorical meaning-shift. In the first case, a morpheme broadens its class of referents to cover some class which subsumes its old meanings; this may occur (perhaps in the imperfect/progressive case cited above) by abstracting out "central" aspects of the morpheme's meaning, and applying the morpheme to cover all referents involving those central aspects, whether or not the referents also fit the other specifications involved in the older sense. In the second case, the schema abstracted from the morpheme's meaning is mapped onto some other domain of meaning which need not be "adjacent" to the original one (in the sense of both being subclasses of some higher category); there might well be closer semantic applications of the image schema for "go" than futurity, but futurity is the domain onto which it is mapped.

6 The coherent structure of this metaphorical mapping in English can be seen from many examples mapping scalar properties onto paths. For example, "I have *far more* than John" is coherent with cases like "living

beyond my means" or "*nearly* as much as John."

7 I have elsewhere discussed the methodological question of abstractionist vs. metaphorically structured analyses, for the modals in particular - cf. Sweetser (1986).

8 Morphologically (cf. Bybee 1985), the scope difference between root and epistemic modality is often iconically reflected in their position in the clause: epistemic markers tend more often than root modal markers to be either sentential modifiers or verbal morphology, while root modals tend to occur more often than epistemic ones as auxiliary verbs. Assuming that the verb is the element whose modifiers and morphology are most likely to be semantically interpreted as applying to the sentence as a whole, the syntax and the semantics map onto each other fairly tidily here: higher semantic scope is represented by higher syntactic scope.

9 Langacker (1987) would argue that semantic and phonological dependency structures are parallel because the form is an icon for the meaning; reduced (cliticized, etc.) phonological form represents semantic dependency.

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Pragmatic strengthening and grammaticalization

Elizabeth Closs Traugott

Stanford University

1. Introduction.

"Grammaticalization", as used in this paper, refers to the dynamic, unidirectional historical process whereby lexical items in the course of time acquire a new status as grammatical, morphosyntactic forms. The study of grammaticalization takes as central the concept of a continuum of bondedness from independent units occurring in syntactically relatively free constructions at one end of the continuum to less dependent units such as clitics, particles, or auxiliaries, to fused agglutinative constructions, inflections and lexical fusion (for example the lexicalization of inchoative in realize as against know), and finally to zero (cf. Bybee 1985:11-12, Lehmann 1985:304).

There has recently been much interest in the semantic-pragmatic processes involved in early stages of grammaticalization. A large body of literature refers to processes of metaphorization. Another body refers to pragmatic inferencing. These two approaches are, of course, not in conflict, provided metaphor is considered to be a pragmatic rather than semantic phenomenon, and hence a kind of inferencing (cf. Levinson 1983). My purpose is to report on work I have been doing with Ekkehard König (Traugott and König 1988), to show that two different kinds of inferencing are at work in the process of many well-known types of grammaticalization, depending on the semantic function of the resulting units. One type of inferencing is metaphor; it is dominant in the development of, for example, spatial markers of temporality (e.g. before, after). However, in other domains such as the development of connectives (e.g. temporal to causal since), and scalar particles (e.g. mere, just), or evidentials (e.g. I heard that he left > I hear he left), a different process is involved, specifically a strengthening of informativeness, which can be analyzed as a kind of metonymy. Whatever names these pragmatic processes are given, what is important is that they involve solving different kinds of cognitive and communicative problems.

It is important for understanding the argument put forward here that the definition of grammaticalization given above says nothing about a process often included in characterizations of grammaticalization: bleaching, or semantic weakening, also called desemanticization. Heine and Reh, for example, define grammaticalization as:

an evolution whereby linguistic units lose in semantic complexity, pragmatic significance, syntactic freedom, and phonetic substance, respectively (1984:15).

From this point of view, grammaticalization is a kind of impoverishment, or deficit--as Lehmann puts it, a process whereby

signs lose their integrity (1985:307). Certainly, bleaching does occur, but only in the later stages of grammaticalization, for example in the development of the main verb do into a dummy auxiliary in Standard English.

Bleaching and grammaticalization must be uncoupled if we are to understand the semantic-pragmatic processes of early stages of grammaticalization. Indeed, as my title suggests, I will be focusing on the opposite of bleaching: strengthening, most especially strengthening of the expression of speaker involvement. My paradigm example is the development of the adverb hwilum 'at times' into the temporal connective while (here the textual meaning is strengthened) and later into the concessive while in the sense 'although', which construes a world that has no reference in the described situation, but only in the speaker's world of belief about coherence among propositions (here the speaker's attitude is strengthened).

Although the transition from strengthening to bleaching may occur at different rates for different classes of markers, and possibly even for different markers within the same class, in general one can say that strengthening occurs in early stages of grammaticalization, and bleaching in later stages. Loss of morphological boundaries, significant phonological attrition, and freezing of syntactic position are usually correlated with bleaching; syntactic-semantic shifts from adverb to connective or particle are less likely to be subject to bleaching.

2. Metaphoric processes.

Metaphoric processes have recently been considered to be major, indeed the major, factors in semantic change. Although definitions of metaphor vary, most share certain concepts in common, especially understanding and experiencing one kind of thing in terms of another, and directionality of transfer from a basic, usually concrete, meaning to one more abstract (Sapir 1977, Lakoff and Johnson 1980, Claudi and Heine 1986).

Metaphorization has traditionally been recognized primarily in lexical change. However, recently many arguments have been put forward that semantic change in the course of grammaticalization is also strongly motivated by metaphoric processes, cf. Sweetser (1984), Bybee and Pagliuca (1985), Claudi and Heine (1986), Heine and Claudi (1986), and Heine et al. (1988). For example, Claudi and Heine say:

...the vehicle of a metaphor and the lexeme undergoing desemanticization...are governed by an arrangement of conceptualization...which is unidirectional and proceeds from concrete to abstract, and from concepts which are close to human experience to those that are more difficult to define in terms of human cognition (1986:328).

They discuss the development of body part terms into locatives, of spatials into temporals, etc. in terms of conceptual metaphors such

as SPACE IS AN OBJECT, TIME IS SPACE.

Examples of spatio-temporal metaphors in the process of grammaticalization are widely known, and include the use of GO for future (I'm going to go), COME for perfect (Fr. je viens de le faire), BE AT/BE IN for progressive (cf. Traugott 1978, Fleischman 1982, Bybee 1987). Similarly, there is an extensive literature on the development of verbs of motion into case markers. An example from Nupe (cited Givon 1975:94) is:

(1) a) u bici lo dzuko
 he ran go market
 he ran (going) to the market
 b) u bici lo dzuko
 he ran to market

Other examples include the development of adverbs or prepositions into clause connectives, for example of Old English prepositional after "following behind, later" to the Middle English subordinating after.

In the passage cited above, Claudi and Heine speak in the same breath of metaphor and of desemanticization. Similarly, in discussing the Nupe data, Givon points out that in (1a)

'run' is an intransitive verb of the 'be at motion' type, while in [(1b)] the same verb--as a result of the depletion of to go--has become a more complex motion verb, semantically 'motion in relation to target' and syntactically requiring a locative object (1975:94).

There is unquestionably loss of meaning that references activity in the described situation. But there is increase in the extent to which the words encode the speaker's point of view on the situation. Furthermore, the development of abstract meaning surely does not in itself require or necessarily involve bleaching: if it did, we would be forced to treat as grammaticalization such a well-known shift from concrete to abstract as is evidenced by the development of the abstract mental state meanings of apprehend and grasp from the earlier concrete physical action verb meanings. Indeed, it is odd to identify metaphorization with bleaching: metaphors typically increase specificity (Sapir 1977:21; see, however, Sweetser 1988 for counterarguments).

The examples of grammaticalization I have given have two things in common, neither of which is desemanticization. For one, more concrete concepts come to serve as models for more abstract ones; in other words, metaphor is at work. Secondly, the semantic change involves two of three tendencies that I have identified for semantic change in general, both lexical and grammatical, (Traugott 1987). For purposes of the present study, these two tendencies can be expressed as follows:

Semantic-pragmatic Tendency I:

Meanings situated in the external described situation > meanings situated in the internal (evaluative/perceptual/cognitive) situation

and

Semantic-pragmatic Tendency II:

Meanings situated in the described external or internal situation > meanings situated in the textual situation.

Thus, the extension of the originally spatial preposition after to the temporal preposition after in Old English is an example of Tendency I: a shift from reference to a concrete, physical situation to reference to a cognitive, perceptual situation; when after became a temporal connective, it underwent Tendency II and shifted to a marker of textual relations. When the spatial term is itself derived from a body part, which is often the case (cf. BEHIND), then Tendency I may operate twice, once from OBJECT > SPACE, and then again from SPACE > TIME. Such shifts, which are widely attested, suggest that temporality counts from the linguistic point of view as more 'internal' a percept than space.

3. Strengthening of informativeness and metonymy.

What, however, about other kinds of grammaticalization? Are they also instances of metaphorization? Some well-known domains include the development of:

- a) Epistemic will as in (Bill will be late again, I suppose), from volitional will,
- b) causal from temporal meanings (e.g. causal since from Old English sibban 'from the time that' > 'because').

Less widely-known are such developments as:

- c) concessives from temporals (e.g. while, Gm. dennoch), cooccurrence or concomitance (e.g. all/just the same, Gm. gleichwohl), negative expressions (e.g. notwithstanding, nonetheless, Gm. nichtdestweniger) (König 1986),
- d) conditionals, for example from topic markers and demonstratives (e.g. Romance si < *s 2nd person deictic + ei locative, and ME so as in Chaucer Than shol I clymbe will y-nough...so I my fot might set upon youre bak 'I will be able to climb well enough..if/provided that I can put my foot on your back'), and also from non-punctual temporals (so long as, Swahili ikiwa 'it being so') (Traugott 1985).

In yet another domain, that of scalar particles, we frequently find such particles arising out of terms for purity, similarity, and exactness. Thus mere meant 'pure, true, undiluted' as of wine and could be used as follows (cf. Traugott 1986):

(2a) 1559-60 That your Majestie...is, and in verie deed, and of most meere right ought to be...our most rightful...soveraigne

Later it came to mean 'not more than specified' (i.e. the scalar particle):

(2b) 1581 If I speeke rather lyke a meere Citizen than a Philosopher

Even meant 'equal, horizontal' and therefore exactly matchable as in:

(3a) c. 1,000 Beow 1571

lixte se leoma ... efne swa of hefene hadre
gleamed that light ... even as from heaven brightly

scined rodores candel
shines sky's candle

'the light [of the fire] gleamed...just like the sun
shines brightly from heaven'

and maintained this meaning for a long time, as exemplified by:

(3b) c. 1595 Shakespeare, Two Gentlemen of Verona II.iv.144

Pro. Was this the idol that you worship so?

Val. Even she; and is she not a heavenly saint?

(even she="precisely the person"). The scalar meaning, involving 'contrary to expectation' is quite late:

(3c) 1641 In Warre, even the conqueror is commonly a loser

Note that all these cases of grammaticalization involve the third tendency that I have identified in semantic change:

Semantic-pragmatic tendency III:

Meanings tend to become increasingly situated in the speaker's subjective belief-state/attitude toward the situation.

The epistemic auxiliaries are essentially expressions of speaker belief in the truth or probability of the proposition; so are concessives and conditionals, and so are the scalar particles, which express some surprise factor on the speaker's part.

We can gain some insight into how to account for the data by looking at the development of certain meanings that might be metaphorical but which appear to be more complex and to involve additional factors. For example, it is possible to say that the use of instead of as a connective is a metaphorical extension of a spatial term "in (the) place of" from the concrete environment of e.g. I planted roses in (the) stead of peonies to the more abstract

environment of action and state of affairs I played chess in stead of working. One analysis would be that the proposition is metaphorically treated as a space, but this alone does not account for the various conventional implicatures of instead of. Another alternative is to think of instead of as additionally coming to have as part of its conventional meaning what were prior conversational meanings, e.g. temporal priority (I planted roses where there were peonies before), norm (I played chess although I usually worked), or obligation (I played chess although I should have worked).

The process that best accounts for Tendency III is the shift from a conversational implicature to a conventional one. This process is in essence the historical result of the operation of Levinson's Principle of Informativeness: "Read as much into an utterance as is consistent with what you know about the world" (1983:146-47). It is also the historical result of the operation of Horn's R-principle, which, he has pointed out in connection with the development of temporal since to causal since, allows for the coding (i.e. "conventionalizing") of a salient or stereotypical conversational inference (Horn 1984:33). The inference to causal since exemplifies strengthening of a speaker attitude: that there is a causal not just temporal connection, and the basis for that connection has already been established in the discourse. In the case of the development of the epistemics from volitionals or deontics, there is strengthening of the subjective element, and of focus on belief and knowledge: if I say You had to go in the obligation sense, I invite the inference that I believe you did go. Therefore, in You had to have gone, derived from You had to go, the inference of the speaker's belief in the truth of the complement is strengthened.

Strengthening of informativeness has no well-established place in the taxonomy of semantic changes. One might think that it should be added to that taxonomy. However, to treat it as something separate from metaphor, metonymy, narrowing, broadening, and other well known changes is to miss some generalizations. Horn has already pointed out that R-principles are connected with the traditional processes of narrowing and broadening. I suggest that strengthening of informativeness is a type of metonymy.

Metonymy is usually cited along with metaphor as a factor in semantic change. However, it has not been assigned the overall significance that metaphor has (Dirven, for example, speaks of metaphor as a "major associative leap" but of metonymy as a "minor process" (1985:98). In the tradition deriving from Jakobson and Halle's (1956) classic distinction between metaphor as choice functioning on the paradigmatic axis versus metonymy as association and sequence functioning primarily on the syntagmatic axis, metaphor is thought to lead to homogeneity and coherence, metonymy to juxtaposition and potential incoherence (Sapir 1977:4). Another view of the difference between metaphor and metonymy that is more useful to us gives metonymy a more important role. This is Anttila's suggestion that metaphor concerns semantic transfer through a similarity of sense perceptions, and is therefore analogical and

iconic, while metonymy is semantic transfer though contiguity and is therefore indexical (1972:142). By "indexical", Anttila means that metonymy points to semantic relations in certain contexts.

Three types of context have been much discussed:

- a) contiguity in socio-physical or socio-cultural experience: e.g.
 - i) Lat. coxa 'hip' > Fr. cuisse 'thigh' (the parts of the body are spatially contiguous in the physical world) (Ullmann 1964:218); ii) Fr. Place de Grève (the name of a square, itself named after a person) > grève 'strike' (contiguity of physical space and social action in that space--laborers met to organize strikes in the Place de Grève) (ibid.); iii) boor 'farmer' > 'crude person' (association of behavior with a certain person or class of persons); iv) concern 'interest, solicitous regard' > 'matter that concerns' (association of a mental state with its object or cause (Stern 1931:376)); v) ampere, ohm (association of an invention or product with its inventor (Ullmann 1964:219, Anttila 1972:142)).
- b) contiguity in the utterance (that is, collocation), often ending in ellipsis (cf. Fr. Place de Grève > Grève above; also Fr. ne...pas > pas, painting by Picasso > a Picasso (Anttila 1972:142)).
- c) Synecdoche, or the part-whole relation, e.g. redbreast > 'robin' (Ullmann 1964:219), and most especially body part changes (cf. Wilkins (1980) on FINGERNAIL > FINGER > HAND). Wilkins sees no evidence for whole > part (e.g. HAND FINGERNAIL) in his data on body part changes, and suggests the following motivation: "part", by definition, entails some idea of 'whole', but a 'whole' entails no notion of 'part'" (1980:99).

As these examples suggest, the contiguities and associations usually cited with reference to metonymy tend to be concrete. The main exceptions have to do with behavioral-judgmental associations (cf. boor).

The notion of metonymy can usefully be extended from traditional concrete and overt contexts to cognitive and covert contexts, specifically the pragmatic contexts of conversational and conventional inference. With regard to the development of the causal meaning of sibban, the following hypothesis can be made: an originally conversational implicature arising in the context of communication of temporal sequence came to be associated with sibban 'from the time that' and then came to be a conventional implicature pointing to or indexing cause (somewhat as assumptions about the behavior of farmers came to be associated with boor). If this is an acceptable analogy, then it should be noted that the development of conventional implicatures is a case of synecdoche (part > whole only, not whole > part). Note that Wilkins' suggestion that whole > part is blocked by entailment patterns seems to be in keeping with the proposal here.

The germ of the idea I am putting forward is to be found in

Stern (1931). Stern views permutation (his term for metonymy) as resulting from "a word [being] used in a phrase where a notion in some way connected with its meaning is liable to form an element of the context" (1931:353). He rejects Leumann's idea that permutations result from "a difference between the meaning intended by the speaker and that comprehended by the hearer" on the grounds that the speaker must be assumed to know his native language (1931:360); in other words, he rejects the view that the change results from speaker's improper processing (or inadequate learning). Stern suggests instead that permutations result from "striving to fulfill as adequately as possible the symbolic and communicative functions of speech" (1931:359); in other words, speaker's communicative intent is central. He goes on to list under examples of permutation the development of the logical meanings of considering, supposing, of Gm. weil, and concessive while.

4. Conclusion.

Heine et al. (1988), in discussing the principle of exploiting old means for novel functions, and the recruitment of concrete for more abstract terms, suggest that:

grammaticalization can be interpreted as the result of a process which has problem-solving as its main goal, its primary function being conceptualization by expressing one thing in terms of another. This function is not confined to grammaticalization, it is the main characteristic of metaphor in general (1988:4)

In other words, semantic change in general, not just grammaticalization, can be interpreted as problem-solving. The authors identify only one problem: that of representing members of one semantic domain in terms of another, in other words, metaphor. But in semantic change (including the process of grammaticalization) there is a second problem: the search for ways to regulate communication and negotiate speaker-hearer interaction. I have suggested that this is a kind of metonymic change, indexing or pointing to meanings that might otherwise be only covert. The main direction of both types of problem-solving is toward specification. Metaphorical change involves specifying one, usually more complex, thing in terms of another not present in the context. Metonymic change involves specifying one meaning in terms of another that is present, even if only covertly, in the context. In the changes discussed in this paper, the metonymic change is from less to more informative, that is, in the direction of explicit coding of relevance and informativeness that earlier was only covertly implied; in other words, it is a case of pragmatic strengthening.

In summary, I have suggested two things. First, semantic change in the early stages of grammaticalization does not necessarily involve bleaching: on the contrary, it usually involves specification achieved through inferencing. Second, the inferencing

is of two kinds, metaphor and metonymy, which, as would be expected, are not totally inseparable, but which correlate with different tendencies. Metaphor is largely correlated with shifts from meanings situated in the external described situation to meanings situated in the internal evaluative, perceptual, cognitive situation, and in the textual situation. Metonymy is largely correlated with shifts to meanings situated in the subjective belief-state or attitude toward the situation, including the linguistic one. Another way of putting this is that metaphor is correlated with solving the problem of representation, metonymy (or conventionalizing of conversational meanings) is associated with solving the problem of being informative and relevant in communication.

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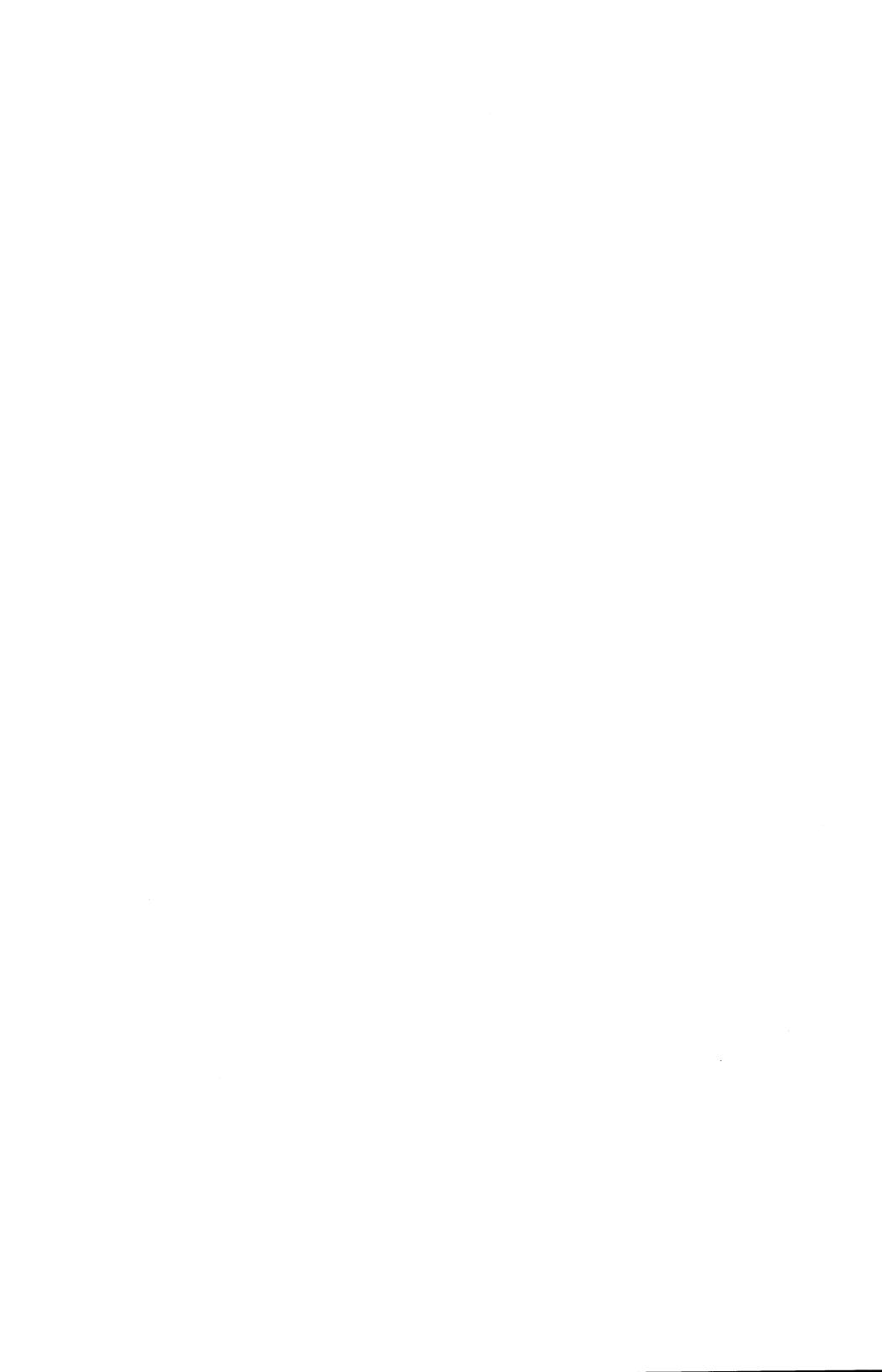
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