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<table>
<thead>
<tr>
<th>Table of Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Grammatical Theory and Analysis</td>
</tr>
<tr>
<td>Akiba, Katsue</td>
</tr>
<tr>
<td>A non-relative analysis of so-called relative clauses</td>
</tr>
<tr>
<td>Allen, Barbara J. &amp; Donald G. Frantz</td>
</tr>
<tr>
<td>Verb agreement in Southern Tiwa</td>
</tr>
<tr>
<td>Andor, József</td>
</tr>
<tr>
<td>On primary topicalization</td>
</tr>
<tr>
<td>Chvany, Catherine V.</td>
</tr>
<tr>
<td>Denotative and connotative meaning of the 'preterite' and 'perfect' in Bulgarian and English</td>
</tr>
<tr>
<td>Cochrane, Nancy</td>
</tr>
<tr>
<td>The translation of the present perfect into Serbo-Croatian and implications for the analysis of the present perfect in English</td>
</tr>
<tr>
<td>Cook, Kenneth William</td>
</tr>
<tr>
<td>The mysterious Samoan transitive suffix</td>
</tr>
<tr>
<td>Dede, Müserref</td>
</tr>
<tr>
<td>Why should Turkish relativization distinguish between subject and non-subject head nouns?</td>
</tr>
<tr>
<td>Deuchar, Margaret</td>
</tr>
<tr>
<td>Doing without word order and inflections: the case of British Sign Language</td>
</tr>
<tr>
<td>Heath, Jeffrey</td>
</tr>
<tr>
<td>Functional universals</td>
</tr>
<tr>
<td>Justice, David</td>
</tr>
<tr>
<td>Taxonomy, description, definition, explanation: special case: pronouns</td>
</tr>
<tr>
<td>Li, Charles N. &amp; Sandra A. Thompson</td>
</tr>
<tr>
<td>Relativization strategies in Wappo</td>
</tr>
<tr>
<td>Author</td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>Nichols, Johanna</td>
</tr>
<tr>
<td>Noonan, Michael &amp; Edith Bavin Wook</td>
</tr>
<tr>
<td>Olson, Mike</td>
</tr>
<tr>
<td>Perlmutter, David M.</td>
</tr>
<tr>
<td>Rogers, Andy</td>
</tr>
<tr>
<td>Rude, Noel</td>
</tr>
<tr>
<td>Seiter, William J.</td>
</tr>
<tr>
<td>Silva-Corvalán, Carmen</td>
</tr>
<tr>
<td>Silverstein, Michael</td>
</tr>
<tr>
<td>Thurgood, Graham</td>
</tr>
<tr>
<td>Wanner, Dieter</td>
</tr>
</tbody>
</table>

II. **Phonetics and Phonology**

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escure, Genevieve</td>
<td>Vocalic change in the Belizean English/Creole continuum and markedness theory</td>
<td>283</td>
</tr>
<tr>
<td>Greenberg, Steven &amp; J. David Sapir</td>
<td>Acoustic correlates of 'big' and 'thin' in Kujamutay</td>
<td>293</td>
</tr>
</tbody>
</table>
Jaeger, Jeri J.
Speech aerodynamics and phonological universals

Javkin, Hector
Phonetic and grammatical explanations for an epenthesis and a non-epenthesis in English

Kaisse, Ellen
On the notion 'completely anaphoric' in phonology

Kaplan, Lawrence D.
Consonant assimilation in Inupiaq Eskimo

Maddieson, Ian
The frequency of tones

Ohala, John J.
Southern Bantu vs. the world: the case of palatalization of labials

Vago, Robert M.
On the hierarchy of boundaries

III. Diachronic Studies
Carroll, John M.
Creative neologism as a dynamic process in language evolution: a case study from English

Grundt, Alice Wyland
Monophthong and diphthong relations: internal evidence

Hamp, Eric
On Panoan Sibilants

Holland, Gary & Nancy Ickler
Some observations on relatives and demonstratives in Greek and Sanskrit
Kossuth, Karen C.
Icelandic word order: in support of drift as a diachronic principle specific to language families 446

Norman, William M.
Advancement rules and syntactic change: the loss of instrumental voice in Mayan 458

Watkins, Laurel J.
On *w and *y in Kiowa-Tanoan 477

IV. Psycholinguistics
Alford, Danny K. H.
The demise of the Whorf hypothesis 485

Divenyi, Pierre L.
Speech minus spectrum equals time - or what the left hemisphere is for 500

Fava, Elisabetta
Grammatical relations and word order in Italian child discourse 512

Hill, Clifford Alden
Linguistic representation of spatial and temporal orientation 524

Iannucci, David E.
The acquisition of quantifier dialects by children 539

Singer, Reanne Sue
Generalization of language behaviors in a language delayed child 545

V. Sociolinguistics and Discourse Analysis
Bennett, Adrian
Interruptions and the interpretation of conversation 557

Hansell, Mark & Cheryl Seabrook
Some conversational conventions of Black English 576
Heller, Monica S.
Bonjour, hello?: Negotiations of language choice in Montreal 588

Hinds, John
Levels of structure within the paragraph 598

Miller, Wick R.
Multilingualism in its social context in aboriginal North America 610

Platt, Martha
Language and speakers in the courtroom 617

Polanyi, Livia
False starts can be true 628

Tannen, Deborah
A cross-cultural study of oral narrative style 640

Yarnall, Emily
Appositive relatives in discourse 651

The following papers were presented at the Annual Meeting but are not included in the volume: Jean-Marie Hombert, "A study of vowel perception in 15 languages"; Alan Hyun-oak Kim, "Morphologization and semantic restriction: A diachronic account of causatives"; Mauricio J. Mixco, "Cochimi and Proto-Yuman"; Robert D. Van Valin, Jr., "Noun-oriented and verb-oriented grammatical systems".

The following authors did not present their papers at the Annual Meeting but are published in this volume: J. Andor, J.M. Carroll, N. Cochrane, M. Dede, E. Fava, A.W. Grundt, J. Heath, L.D. Kaplan, J. Nichols, M. Olson, M. Platt, M. Silverstein, E. P. Hamp, and R. M. Vago.

Due to time constraints and the delays in trans-Atlantic communication, papers by J. Andor, M. Dede, and N. Cochrane were retyped by the editors, who take responsibility for the format of the papers.
<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akiba, K.</td>
<td>1</td>
<td>Kaisse, E.</td>
<td>341</td>
</tr>
<tr>
<td>Alford, D. K. H.</td>
<td>485</td>
<td>Kaplan, L. D.</td>
<td>352</td>
</tr>
<tr>
<td>Allen, B. J.</td>
<td>11</td>
<td>Kossuth, K. C.</td>
<td>446</td>
</tr>
<tr>
<td>Andor, J.</td>
<td>18</td>
<td>Li, C. N.</td>
<td>106</td>
</tr>
<tr>
<td>Bennett, A.</td>
<td>557</td>
<td>Maddieson, I.</td>
<td>360</td>
</tr>
<tr>
<td>Carroll, J. M.</td>
<td>397</td>
<td>Miller, W. R.</td>
<td>610</td>
</tr>
<tr>
<td>Chvany, C. V.</td>
<td>30</td>
<td>Nichols, J.</td>
<td>114</td>
</tr>
<tr>
<td>Cochrane, N.</td>
<td>43</td>
<td>Noonan, M.</td>
<td>128</td>
</tr>
<tr>
<td>Cook, K. W.</td>
<td>53</td>
<td>Norman, W. M.</td>
<td>458</td>
</tr>
<tr>
<td>Dede, M.</td>
<td>67</td>
<td>Ohala, J. J.</td>
<td>370</td>
</tr>
<tr>
<td>Deuchar, M. 78</td>
<td>78</td>
<td>Olson, M.</td>
<td>140</td>
</tr>
<tr>
<td>Divenyi, P. L.</td>
<td>500</td>
<td>Perlmutter, D. M.</td>
<td>157</td>
</tr>
<tr>
<td>Escure, G.</td>
<td>283</td>
<td>Platt, M.</td>
<td>617</td>
</tr>
<tr>
<td>Fava, E.</td>
<td>512</td>
<td>Polanyi, L.</td>
<td>628</td>
</tr>
<tr>
<td>Frantz, D. G.</td>
<td>11</td>
<td>Rogers, A.</td>
<td>190</td>
</tr>
<tr>
<td>Greenberg, S.</td>
<td>293</td>
<td>Rude, N.</td>
<td>202</td>
</tr>
<tr>
<td>Grundt, A. W.</td>
<td>418</td>
<td>Sapir, J. D.</td>
<td>293</td>
</tr>
<tr>
<td>Hamp, E. P.</td>
<td>427</td>
<td>Seabrook, C.</td>
<td>576</td>
</tr>
<tr>
<td>Hansell, M.</td>
<td>576</td>
<td>Seiter, W. J.</td>
<td>211</td>
</tr>
<tr>
<td>Heath, J.</td>
<td>86</td>
<td>Silva-Corvalán, C.</td>
<td>223</td>
</tr>
<tr>
<td>Heller, M. S.</td>
<td>588</td>
<td>Silverstein, M.</td>
<td>238</td>
</tr>
<tr>
<td>Hill, C. A.</td>
<td>524</td>
<td>Singer, R. S.</td>
<td>545</td>
</tr>
<tr>
<td>Hinds, J.</td>
<td>598</td>
<td>Tannen, D.</td>
<td>640</td>
</tr>
<tr>
<td>Holland, G.</td>
<td>432</td>
<td>Thompson, S. A.</td>
<td>106</td>
</tr>
<tr>
<td>Iannucci, D. E.</td>
<td>539</td>
<td>Thurgood, G.</td>
<td>254</td>
</tr>
<tr>
<td>Ickler, N.</td>
<td>432</td>
<td>Vago, R. M.</td>
<td>387</td>
</tr>
<tr>
<td>Jaeger, J. J.</td>
<td>311</td>
<td>Wanner, D.</td>
<td>268</td>
</tr>
<tr>
<td>Javkin, H.</td>
<td>330</td>
<td>Watkins, L. J.</td>
<td>477</td>
</tr>
<tr>
<td>Justice, D.</td>
<td>96</td>
<td>Wock, E. B.</td>
<td>128</td>
</tr>
</tbody>
</table>
Language Index

European Languages

British Sign Language: Deuchar, 78.
Bulgarian: Chvany, 30.
English: Bennett, 557; Carroll, 397; Chvany, 30; Cochrane, 43; Escure, 283; Hansell and Seabrook, 576; Heller, 588; Iannucci, 539; Javkin, 330;
Finnish: Nichols, 114.
French: Heller, 588.
German: Grundt, 418; Justice, 96.
Greek: Holland and Ickler, 432; Kaisse, 341; Tannen, 640; Wanner, 268.
Hungarian: Andor, 18; Vago, 387.
Icelandic: Kossuth, 446.
Italian: Fava, 512.
Russian: Nichols, 114.
Serbo-Croatian: Cochrane, 43.
Turkish: Dede, 67; Perlmutter, 157.

Asian Languages

Burmese: Thurgood, 254.
Japanese: Akiba, 1; Hinds, 598.
Sanskrit: Holland and Ickler, 432.

Oceanic Languages

Barai (New Guinea): Olson, 140.
Ilokano (Phillipines): Silva-Corvalán, 223.
Niuean (Polynesia): Seiter, 211.
Samoan (Polynesia): Cook, 53.

cont.
Language Index, continued

African Languages

Kujamutay (Senegal): Greenberg and Sapir, 293.
Lango (Uganda): Noonan and Woock, 128.
Southern Bantu: Ohala, 370.

American Languages

North American Area: Miller, 610.
Chinook (Oregon): Silverstein, 238.
Eskimo: Kaplan, 352.
Wappo (Northern California): Li and Thompson, 106.
Panon: Hamp, 427.
Mayan: Norman, 458.
A Non-Relative Analysis of So-Called Relative Clauses
Katsue Akiba
U.C.L.A.

0. It seems to be a tacit assumption in the past studies of relative clauses that relativization is a universal phenomenon and thus every language has relative clauses. My purpose here is to demonstrate that languages do not necessarily have syntactically definable relative clauses and to make clear that, if relativization is universal, it is universal only in the sense that every language has translation equivalents of English relative clauses. More specifically, I will propose that relative clause equivalents ("relative clauses", hereafter) of Old Japanese (OJ, henceforth)\(^1\) are nominal clauses and the process involved in the formation of "relative clauses" is not relativization but nominalization. That is, such complex nominals as (1) are derived from such structures as (2) by nominalizing (i.e. attaching the nominalizing suffix to the predicate) the embedded S rather than from such structures as (3) by a process of deletion of NOM\(_i\) in the embedded S.

(1) musi med=uru himegimi
    insect love=URU princess
    'a princess who loves insects'
    (N.B. Refer ahead for the suffix URU.)

(2) \(\triangle\)

(3) \(\triangle\)

The symbol \(\triangle\) in the embedded S in (2) indicates an unspecified nominal which plays an important role in the semantic interpretation of nominal clauses. The nominal clause musi med=uru, for example, its subject being unspecified, is interpreted as a subject nominal which can be at best translated into English as 'insect lover' or 'one who loves insects', both of which fail to reflect what this OJ expression really is. The nominal construction (1) specifies in total the class whose members both love insects and are princesses. In order to justify this analysis, I will first show that "relative clauses" are formally identical with other clauses which are less controversially analyzable as nominalizations; then, I will demonstrate that, given this non-relative analysis, a complex nominal like (1) can be regarded as an associative construction [NOM - ASS - NOM] without an overt associative particle; and finally I will discuss some theoretical consequences of this analysis.

1. In OJ, several different suffixes appear in clause final position attached to the last element of the predicate. Although their functions are not well understood, there are significant correlat-
ions between such suffixes and the grammatical status of the clause. The final clause (i.e. the clause at the very end of a sentence) is always marked by $U^2$ except in interrogatives, imperatives and certain emphatic sentences. Among non-final clauses, we are presently concerned only with those marked by $URU$ ($URU$-clauses, hereafter).

First, consider the $URU$-clauses (which are set off by square brackets) in the following examples. (English translations are intended to be as direct as possible.)

(4) [reino kokoronasi no kakaru waza wo s=i- te sainam=a- usual inconsiderate+one ASS such act DO do=I-SS scold=A-r=uru] koso ito kokorozuki naker=e. (G, 187)
PASS=$URU$ EMPH very liking not+be=E

'It is indeed not likable that the usual inconsiderate one has done such an act and is scolded.'

(5) [Kaguyahime no yamome nar=u] wo nagekas=i-ker=e-ba...(T, 43-4)
Kaguyahime ASS unmarried COP=$URU$ DO lament=I-PAST=E-DS

(N.B. The hyphen '-' is used to indicate morpheme boundaries and the equal sign '=' to separate the stem part and the suffixal part of a verbal element, verb, auxiliary, adjective. SS and DS represent the same subject marking conjunctive particle and a different subject marking conjunctive particle, respectively. The plus sign '+' in the English gloss shows either that the two English morphemes correspond to a single OJ morpheme or that the corresponding OJ morphemes are inseparable because of phonetic fusion.)

Notice that the $URU$-clause is in the subject position in (4) and in object position (being marked by the direct object marker $wo$) in (5). Such $URU$-clauses we will call nominal clauses, by which we simply mean subordinate clauses that occur as nominal arguments of other clauses. Nominal clauses are different from independent (i.e. final) clauses not only in the clause final suffix but also in the way in which the subject is marked; the subject, if present, is generally marked by the associative particle $no/ga^3$ in nominal clauses while it is left unmarked in independent clauses.

Now, compare the nominal clauses above with the "relative clauses" in the following examples.

(6) [wa ga motom=uru] yama ...
     I ASS look+for=$URU$ mountain
    'the mountain that I am looking for...'

(7) [otoko no ki- tar=i- ker=ur] kari ginu ...
     man ASS wear=I-PERF=I-PAST=$URU$ hunt robe
    'the hunting robe that the man was wearing...'

Notice that "relative clauses" are like nominal clauses in that their predicates are marked by $URU$ and their subject by $no/ga$. One might, however, consider "relative clauses" to be visibly different from nominal clauses because one argument is missing. For example, the subject and the object are missing from the "relative clause" in (1).
and (6-7), respectively. However, since presence of a nominal is not obligatory in OJ surface clauses, this difference is only apparent. "Relative clauses" and nominal clauses differ only in their syntactic contexts: the former occurs in construction with another nominal forming a larger nominal unit while the latter occurs in construction with the predicate.

The question that arises at this point will be: Why is there such complete formal agreement between the "relative clauses" and the nominal clauses? The answer can be either diachronic, claiming that both clauses have a common origin: or it can be synchronic, in which case both "relative clauses" and nominal clauses have the same grammatical status. We take the latter position, keeping in mind that a sharp distinction between synchronic and diachronic is in most cases unrealistic, and propose that all URU-clauses are nominal clauses which may be formally represented as [S]NP. We further make the following assumptions about the URU-clauses for reasons that will become clear in the following section.

(8) i. A nominal clause may contain an unspecified nominal.
   ii. A nominal clause with an unspecified nominal is interpreted according to the grammatical function of the unspecified nominal within that clause.

2. Along with nominal clauses like (4)-(5), OJ has nominal clauses such as the following.

(9) [iyasiki otoko motar=u] sihasu no tugomori ni
    low+classy man have+be=URU December ASS last+day OBL
    uhe no kinu wo arah=i-te...
    upper ASS robe DO wash=I-SS

    'the one who had a low class man washed his upper robe, and...'

As seen from the English translation, the URU-clause in such examples is interpreted as a subject nominal. The URU-clause in the following example is still different in its interpretation.

(10) [mukasi kasikoki tenziku no hiziri kono kuni ni
    long+ago holy India ASS priest this country OBL
    mot=e=watar=i-ker=u] nish no yama dera ni ar=i. (T, 12)
    bring=I-PAST=URU west ASS mountain temple OBL be=U

    '(the one) that a holy Indian priest had brought to this
    country is in a mountain temple in the west.'

The semantic head of this nominal is the direct object of the predicate 'to have brought'. Why are these URU-clauses understood differently from those in (4)-(5)? One thing we note is that the subject and the object are missing from the URU clauses in (9) and (10), respectively, and these missing nominals seem to have bearings on the interpretation of these URU-clauses. However, the missing argument in an URU-clause does not ensure a subject or object interpretation of that clause. An URU-clause may get a sentential nominal interpretation even when its subject or object is missing as in the following example.
(11) [tada kaher=a-mu] mo sauzausi. (Tsu, 383)
    just return=AFUT=URU also unsatisfactory
    'That (I) just will return is also unsatisfactory.'

Also, an URU-clause may miss both the subject and the object and
yet it may be interpreted as a subject nominal rather than as an
object nominal or vice versa.

(12) [omoh=u] wo ba omoh=i, ...
    love=URU DO EMPH love=i
    '(people) love those who love them, and ...'

What seems to be crucial for the interpretation of an URU-clause
with missing arguments is how the missing arguments are interpreted.

As previously mentioned, nominals are not obligatory in OJ clauses.
Clauses consisting of predicates alone are commonly found in the
literature. Semantically, however, every predicate is associated
with one or more arguments, and, if such arguments are not present
on the surface, they are construed as "anaphoric", "generic" or
"unspecified" nominals. Consider the following.

(13) mi-so wo tor=i-id=e-te ki- s=e- mu to s=u. (T, 65)
    HON-dress DO take+out=I-SS wear=I-CAUS=AFUT=U COMP do=U
    '(They=people from the MoonLand) took out the dress, and
    tried to make (her=Kaguyahime) wear (it=the dress).'

(14) soko wo Yatuhasi to ih=i- ker=u ha ...
    that+place DO Yatuhasi COMP call=I-PAST=URU TOP
    'that (they=people in general) called that place Yatuhasi is...'

(15) sore ni ha iro=iro=no tama no hasi wataser=i. (T, 38)
    that OBL TOP various jewel ASS bridge build+over+PERF=U
    'There was a bridge of various kinds of jewels over that.'
    (Lit: (Someone) has built a bridge of various jewels over that.)

As indicated in the English translation, in (13) the subject of the
first clause and the indirect object (i.e. causee) and the direct
object of the second clause are unambiguously recoverable from the
context. The subject of the predicate 'to call' in (14) is not identifi-
ced with any previously mentioned nominal but it is understood as
'people in general'. Example (15) is difficult to translate into
English. It is an active transitive sentence and the subject (i.e agent
of the action of building a bridge over the river is intuitively ex-
pected. But the speaker is focusing on the situation resulting from
the action and considers the person(s) who brought that situation about
irrelevant or redundant.

An examination of nominal clauses with missing arguments shows
that an URU-clause is interpreted as a subject or object nominal
if an argument is missing from it and if the missing argument is
unspecified as in (9) and (10). The reason why the URU-clause in
(11), in which the subject is missing, is not interpreted as a subject
nominal will then be because the missing subject is readily inter-
preted as anaphoric. The URU-clause in (12) is understood as a
subject nominal because its missing subject is interpreted as un-
specified while its missing object is inferred as coreferential to
the generic subject of the clause to which this URU-clause is embedded through an extremely complex process of inference.

In the following section, I would like to show that such complex nominals as (1), (6) and (7) (i.e. "relative clause constructions") will be conveniently treated as associative constructions together with simpler [Noun - Noun] constructions, if this interpretive process of nominal clauses is applied for "relative clauses".

3. OJ has two types of associative constructions, those with the associative particle as in (16) and those without as in (17). The latter, being historically older than the former, is somewhat limited in use.

(16) a. wo no waraha: male ASS child 'boy'
b. ani no Dainagon: big+brother ASS Chief+Councillor 'the Chief Councillor, who is (her) big brother'
c. saubu no kami: iris ASS paper 'paper dyed with juice extracted from iris flowers'
d. Yukihiro no musume no hara: Yukihiro ASS daughter ASS abdomen 'Yukihiro's daughter's own child'

(17) a. onna harakara: woman sibling 'sister'
b. Udaizin Abe=no=Mimuradi: Right+Minister Abe=no=Mimuradi 'Abe=no=Mimuradi, who is the Right Minister'
c. humi hako: letter box 'box in which letters are kept'
d. morokosi bune: China boat 'boat from China'

Notice that the relationship between the two nouns is not the same from one example to another. In an attempt to capture various readings of Akan associative constructions by interpretive rules, Boadi (1975) had to introduce such a semantic feature as [+Base] as an inherent feature of the first noun in associative constructions such as nkate knwan 'groundnut soup'. It seems to be simply impossible to account for all possible meanings of associative constructions with a limited number of interpretive rules. We consider that associative constructions themselves are not signaling anything more than that the first noun is "modifying" the second and that their exact meanings are inferred based on the speaker and hearer's pragmatic knowledge about the two associated nouns and the way the nouns are distributed in the speaker and hearer's concept of the world. Kirsner and Thompson (1973), following García (1975), have distinguished the meaning of a linguistic signal and the message communicated with that meaning. They say, "the message is totality of what is inferred from the use of the meanings in a given utterance in a particular context" and "typically, the message communicated is richer than the meaning signaled". The associative construction under consideration seems to be one of the areas in the grammar of OJ (perhaps in any grammar) where pragmatic inference plays a crucial role in the semantic interpretation. The lexical meanings of the two associated nouns provide only clues to more exact interpretations of associative constructions. The semantic relationship between the two nouns in the associative construction is basically of three types: the first noun intersects the second (e.g. (16)a and (17)a), the two nouns are disjoint (e.g. c and d in (16) and (17)), or the second noun is contained in the
first noun (e.g. (16)b and (17)b). In the first two types, the first noun modifies the second by restricting the class of the second noun to its smaller subclass. In the third type, on the other hand, the first noun does not have such a restrictive function. Of the two restrictive types, the first type is more straightforward in the interpretation than the second one. It specifies the intersection of the two nouns. The interpretation of the second type varies from case to case. The relationship between the two nouns will be genitive, locational, resultative or some idiosyncratic one which is difficult to name.

Considering "relative clause" constructions as associative constructions, it will not be too difficult to see why URU-clauses in (1), (6) and (7) are translated into English relative clauses. Complex nominal (1), for example, consisting of two nominals, the set of people who love insects and the set of princesses, specifies in total the intersection of the two sets. Thus, in effect, it is the same as the English relative clause construction a princess who loves insects except that, since OJ nouns are not marked for definiteness or number, the OJ complex nominal is ambiguous as to whether it refers to any member(s), some particular member(s) or all of the members of such a class.

Nonrestrictive "relative clauses" such as the following will also be understood in parallel to simpler associative constructions.

(18) [ake kure mi- nar=e- tar=u] Kaguyahime (T, 61) morning evening see=I-accostome=I-PERR=URU Kaguyahime 'Kaguyahime, whom (they) have been accostomed to see every morning and evening...' It is not the structure but the fact that Kaguyahime is the name of a person that leads one to the nonrestrictive interpretation.

Now, consider the meanings of the complex nominals in the following examples.

(19) [nig=e- te ir=u] sode wo torah=e-tamah=e-ba... (T, 58) run=away=I-SS enter=URU sleeve DO catch=I-HON=E- DS '(he) caught the sleeve (of the kimono of Kaguyahime) who was running away (from him) and entering (the house), and...'

(20) [kami nar=u] sahagi ni e- kik=a- zar=i- ... (Ise, 114) thunder roll=URU noise OBL can-hear=A-not+be=I '(he) could not hear (her cry) because of the noise which (was made at the time when) the thunder rolled...'

(21) [Sikibu=kyoo no himegimi ni asagaho tatematur=i-si ] Sikibu=kyoo ASS princess OBL morning+glory present=I- PAST=URU uta ... (G, 90) poem 'the poem which (Genzi composed and sent to her together with it at the time when) (he) presented a morning glory to the princess of Sikibu=kyoo...'

Confronted with Modern Japanese examples similar to these, McCawley (1972) has suggested that they may be analyzed as relative clause constructions in which the S (=our URU-clause) is not the relative
clause but merely a constituent of it. That is the complex nominal in (19) is derived from a structure as in (22) by deleting intermediate relative clauses.

(22)  
\[ S \rightarrow NP \rightarrow NP_i \rightarrow \text{DRESS}_i \rightarrow \text{HAS} \rightarrow \text{SLEEVE}_i \rightarrow \text{SLEEVE} \rightarrow \text{SHE}_k \rightarrow \text{WEAR} \rightarrow \text{DRESS}_j \rightarrow \text{SHE}_k \rightarrow \text{RUN AWAY}... \]

However, the possibility of stating the condition on such a radical deletion is extremely tenuous. It seems that what must be postulated as intermediate clauses is something that hearers can infer based on their pragmatic knowledge about what is linguistically expressed. In our analysis, such complex nominals as these will be regarded as associative constructions of the third type we discussed above, namely, associative constructions in which the semantic domains specified by the two nominals do not intersect. For example, the complex nominal in (19) consists of an URU-clause specifying 'ones who run away and enter (the house)' and a noun specifying the set of sleeves, which cannot intersect. Therefore, the way in which the first nominal restricts the second must be inferred based on such assumptions as "a sleeve is part of a kimono", "the one who runs away and enters (the house) is wearing a kimono", and so on. The interpretation of (21) is much more culture-oriented. A sentence like this would be simply puzzling to the hearer who does not know that composing a poem and sending it together with a flower to a girl was a very sophisticated but commonly practiced means of courtship in OJ society.

We have not discussed "relative clauses" on oblique nominals such as nominals of Time, Place, etc. There are complex nominals consisting of an URU-clause and a noun referring to Time (e.g. yo'ru 'night', su'nahati 'moment', to'ki 'time' and to'si 'year'), Place (e.g. to'koro 'place', ihe 'house', ta 'rice field'), etc., which will be translated into English oblique relatives. Such constructions are also analyzed as associative constructions together with simpler associative constructions such as maturi no yo'ru (festival ASS night) 'the night when there is/was a festival' although we will not go into details, here.

Finally consider the following example.

(23) [kiku no hana no uturoher=升高] wo or=i ..(Ise, 22) chrysanthemum ASS flower ASS fade+PERF=URU DO pick=I '(she) picked a chrysanthemum flower which had faded, and ...'

Kuroda (1974) has analyzed complex nominals as these as headless ("pivot-independent" in his term) relatives in which the subject kiku no hana functions as the semantic head (i.e. the "pivot"). Then, examples like this seem to counter to our hypothesis that it is the URU-clauses with an unspecified subject or object that are
interpreted as subject or object nominals. Recalling that the basic function of no is to connect two nominals rather than to mark the subject, however, the bracketed portion in this example is quite reasonably analyzed as an associative construction with the associative particle no. The meaning of this nominal will then be the intersection of the set of all chrysanthemum flowers and the set of all objects that have faded. 4

In summary, we have shown that the particular kind of modifying-modified relationship between a "relative clause" and the head nominal need not be ascribed to the existence in the "relative clause" of a nominal coreferential to the head. If our analysis of OJ "relative clauses" is correct, then, OJ does not have relative clauses in such a syntactic sense as Anderson and Avery (1972) define: "...if a subordinate clause modifies (a crucially undefined term) an NP, and does so by virtue of the fact that it contains in deep structure an NP coreferential to the modified NP, the clause is a relative clause." (37)

5. Having noted that the nominalizing morpheme is used in other subordinate clauses including relative clauses in many languages, Matisoff (1972) raised the question: Why are nominalizers used also as subordinators? This question will be automatically answered, if the non-relative analysis as proposed above is applied for such languages. That is, subordinate clauses marked by a nominalizing marker are in fact nominalized clauses. Matisoff has further pointed to the fact that the genitive (perhaps "associative" is a better term for the reason stated in footnote 3) marker assumes a form which is either the same as or similar to the relative and/or nominal marker. Consider the following examples from Lahu.

(24) a. ŝiʔ-cė ve ó-qō: tree VE top 'the top of the tree'
    b. [v̥-ši t̥o la] ve thā n̥ mà ʔa m̥ lar
       blood-was-coming-out VE DO you-see-not Q 
       'Didn't you see that blood was coming out?'
    c. [v̥aʔ=ó-qō thā c̥ t̥a] ve ʔa-m̥=ma l̥ q̥aʔ-śa=ma y̥or 
       pig's-head-DO -boiled VE woman head-man's-wife SP 
       'The woman who boiled the pig's head is the head-man's wife'

Chinese particle de exhibits exactly the same pattern.

(25) a. feiji de chyan tour: airplane DE front 'the front of the airplane'
    b. [dai yanjing de]
       wear glasses DE 
       'the one(s) wearing glasses'
    c. [dai yanjing de haizi]
       wear glasses DE child 
       'the child wearing glasses/the child who wears glasses'

(I owe Chinese examples b and c to Prof. Sandra Thompson, UCLA.)

If "relative clause constructions" in these languages are actually associative constructions, the appearance of the associative particle (ve in Lahu and de in Chinese) after the "relative clause" would not
be surprising at all, and associative markers marking nominal clauses will be explained as the result of the deletion of the second nominals of associative constructions. Since nominal clauses are not morphologically distinct from independent clauses in these languages, the associative marker in this position (after nominal clauses) is subject to the reanalysis as a nominalizer. The relationship between the genitive "ai" and the nominalizer/relativizer "ai" in Jighpaw must be already historical. The OJ suffix URU has no genetic relationship with the synchronic associative particle no/ga, but it is contended (e.g. Oono, 1952) that it is historically related to ra and re, which are still found in OJ as associative particles although much fewer in number than synchronic associative particles no and ga.

The non-relative analysis seems to apply also for languages such as Mojave and Turkish, in which subject relativization and oblique relativization resemble subject(or agentive) nominalization and non-subject relativization, respectively.

In conclusion, it is important in universal or comparative studies of relative clauses to be clear whether we are handling special grammatical devices which are used exclusively for such meanings as are expressed by English relative clauses or some other grammatical constructions, such as associative constructions, which are exploited for the purpose of communicating such meanings. Our universal studies of relativization will be more fruitful when such a distinction is explicitly made.

FOOTNOTES

* I am grateful to Prof. Sandra A. Thompson (UCLA) for all her suggestions and assistance.

1. By Old Japanese I mean the language used in the early Heian Period (approx. 9th and 10th centuries). The examples used in this study are mainly from Taketori Monogatari (T) 'Tale of a Bamboo-Collector', Ise Monogatari (Ise)'Tale of Ise', Genji Monogatari (G) 'Tale of Genji', and Tsutsumi-Chuunagon Monogatari (Tsu) 'Tale of Tsutsumi-Chuunagon'. The page number indicated in the parentheses at the end of each example is based on the texts of the Iwanami Koten Bungaku Taikei 'The Iwanami Series of Japanese Classics'.

2. The surface form of a verb (stem=suffix) is determined by the syntactic context and the verb class to which the verb belongs. The symbols U, URU, etc. represent morphophonemic variants of the suffixes used in sentence final position, in clause final position of what we consider nominal clauses, etc.

3. The particle no/ga are usually referred to as genitive. However, since the two nominals connected by them are not necessarily in a genitive relationship as will be seen from later examples, we will call them "associative particles" following Welmers (1963) and Boadi (1975).

4. We are obliged to account for the use of no that marks the subject of such URU-clauses as (4) and (5), which are difficult to analyze as associative constructions. One explanation that comes to my mind is that this is a case of analogical extension of the associative no on the basis of the similarity of the position in which the two nominals occur. That is, both the subject of an URU-
clause and the associative nominal are the first nominal element of a larger nominal construction.

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VERB AGREEMENT IN SOUTHERN TIWA

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INTRODUCTION

The purpose of this paper is to demonstrate, as straightforwardly as possible, given the complexity of certain details of morphology, that verb prefixes of Southern Tiwa reflect features of the initial direct object (DO) as well as the final DO and subject (SU). Before demonstrating this, however, we must present the clearest facts about agreement in intransitive and transitive clauses so that these facts can enter into the arguments put forward in defense of our major claim.

BACKGROUND FACTS

Intransitive verb agreement reflects person and number of SU, including a distinction between dual and plural in all persons (this latter fact is a useful test for final SU), as illustrated in (1)-(3):

(1) te-'aru-we
    lsg-cry-pres

   'I'm crying'

(2) in-'aru-we
    ldu-

   'We (2) are crying'

(3) i-'aru-we
    lpl-

   'We (>2) are crying'

The following chart shows the full paradigm of prefixes:

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<td>2nd</td>
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Transitive verb agreement reflects person and number of both SU and DO; in addition, noun class of third person DO is indicated. There are three noun classes which we will designate as i, ii, and iii; the first includes all and only animate nouns. Examples (4)-(13) illustrate these facts:

(4) bey-mu-ban
    2sg:1sg-see-pst

   'You saw me'

(5) a-mu-ban
    2sg:3isg-

   'You saw him'

(6) i-mu-ban
    1sg:2sg-

   'I saw you'

(7) ti-mu-ban
    1sg:3isg-

   'I saw him'

(8) ti-seuan-mu-ban
    1sg:3isg-man-

   'I saw the man'

(9) men-seuan-mu-ban
    2du:3isg-

   'You (2) saw the man'
(10) ma-seuan-mu-ban
    2pl:3iisg-

(11) ti-shut-pe-ban
    1sg:3iisg-shirt-make-

(12) te-shut-pe-ban
    1sg:3iipl-

(13) bi-mukhin-tuwi-ban
    1sg:3iisg-hat-buy-

'You (>2) saw the man'
'I made a shirt'
'I made shirts'
'I bought a hat'

As stated earlier, the dual vs plural distinction is reflected in verb agreement for SU only. The lone exception to this is that with first person SU and second person DO, there is a three way contrast for number of the DO rather than for the SU.²

There is a good deal of homophony and/or overlap in use of prefixes between and within paradigms³, but comparison of full paradigms leads to the statements we have made above.

As illustrated in (8)-(13), the noun head of a DO is usually incorporated into the verb. Details of the constraints on this incorporation are beyond the scope of this paper. See Allen and Gardiner 1977 for a preliminary treatment.

Passive, i.e. advancement of DO to SU, is possible if and only if the initial SU is third person, and necessary if the DO is higher than the SU on something like a "chain of being" hierarchy in which first and second person outrank animate third person which in turn outranks inanimate third person (Allen and Frantz, 1977). (14) and (15) illustrate necessary passive. (17) illustrates possible passive; compare (16). And (18) and (19) violate the constraint that the initial SU of a passive must be third person.

(14) seuanide-ba
    man-instr

(15) seuanide-ba
    man-instr

(16) seuanide
    3:3iisg-lady-see-pst

(17) liorade
    3-see-past-pass

(18)* te-mu-che-ban
    1st-see-pass-pst

(19)* a-mu-che-ban
    2sg-see-pass-pst

'The man saw me'
'I was seen by the man'
'The man saw you'
'(You were seen by the man)
'The man saw the lady'
'The lady was seen by the man'
'I was seen by you'
'You were seen by me'

As evidence that a sentence such as (14) is truly passive as defined within relational grammar (Perlmutter and Postal, 1977), observe that the verb prefix is from the intransitive paradigm given earlier and agrees only with the putative final SU (initial DO). Further evidence that first person is final SU of (14) is seen in (20) and (21), for as stated earlier the dual vs plural distinction is extant only for (final)subjects:

(20) seuanide-ba
    in-mu-che-ban
    ldu-

(21) seuanide-ba
    2sg-see-pass-pst

'Vere seen by you'
'The man saw us (>2)'
'(We were seen by the man)
(21) seuanide-ban i-mu-che-ban 'The man saw us (>2)'
lpl-

Observe also that the initial SU of the putative passives is marked with the same post-position which otherwise marks instrument and means; this in itself is so extremely common with passives in languages around the world that it constitutes strong circumstantial evidence for the passive analysis of these sentences.

IO ADVANCEMENT

We now have presented sufficient background to enable us to demonstrate that indirect objects (IO) in Southern Tiwa may be advanced to DO, after which we will demonstrate the main thesis of this paper: that verbs in such clauses agree with the initial DO as well as the final DO and final SU.

Compare (23) with (22), (25) with (24), and (27) with (26):

(22) ti-khwien-wia-ban 'I gave the dog to you'
    lsg:3isg-dog-give-pst  2-to

(23) ka-khwien-wia-ban 'I gave you the dog'
    lsg:2sg:3isg-

(24) ti-khwien-wia-ban 'I gave the dog to the man'
    lsg:3isg-
    seuanide-'ay

(25) ta-khwien-wia-ban 'I gave the man the dog'
    lsg:3isg:3isg-
    seuanide

(26) a-khwien-wia-ban 'You gave the dog to me'
    2sg:3isg-
    na-'ay

(27) ben-khwien-wia-ban 'You gave me the dog'
    2sg:1sg:3isg-

Observe first of all that the verbs of (22), (24), and (26) have the prefix which is a function of the first person SU and third person animate DO ('dog'), as seen earlier in (8) and (5). These even-numbered examples have a final SU, DO, and IO, the latter marked by post-position '-'ay. Compare now the odd-numbered examples which follow each of (22), (24), and (26); these differ in at least two ways: the IO's of the even numbered examples are not post-positional phrases in the corresponding odd numbered examples, and the verb prefixes are different. Both of these differences are accounted for by an analysis involving advancement of IO to DO, and hence enter into arguments for this analysis:

1. If the initial IO is final DO, it should not be marked by the post-position which marks final IO's (because pronouns in Southern Tiwa do not appear unless emphatic or supporting post-positions, (23) and (27) display no pronouns). This we have seen to be true in the odd numbered examples.

2. As we showed above, verb prefixes are a function of both SU and DO. If the initial IO is final DO, varying this putative DO should vary the prefix. Comparing (23) with (25) and (28) we see that the prefix shape is a function of the putative final DO. (The prefixes are not from the same set seen earlier on transitive verbs; more on this below, when we will
explain the glosses given under these prefixes.)

(28) mim-kwien-wia-ban seunin 'I gave the men the dog' 
1sg:3ipl:3isg-men

3. We saw earlier that Southern Tiwa sanctions advancement of DO to SU. If the initial IO is final DO in sentences such as (23), (25), (27), and (28), then we should expect advancement of the DO to SU under the same conditions outlined for advancement of initial DO's. These conditions were as follows:

a) Passive is possible only if the initial SU is third person; thus the passive counterparts to (23) and (27) should be bad, and they are:

(29) *ka-khwien-wia-che-ban na-ba 'You were given the dog' 
2sg:3isg-dog-give-pass-pst 1-instr by me'

(30) *in-khwien-wia-che-ban 'I was given the dog by you' 
1sg:3isg-

b) Passive is necessary if the DO outranks the SU; thus if an initial IO is first or second person, and the initial SU is third person, advancement of the initial IO to DO would require its further advancement to SU. This we see in (32) and (34); compare (31) and (33) which involve no advancement:

(31) liorade  φ-khwien-wia-ban na-'ay 'The lady gave a 
lady 3isg:3isg- 1-to dog to me'

(32) liorade-ba in-khwien-wia-che-ban 'The lady gave me 
lady-instr 1sg:3isg-dog-give-pass-pst  a dog' 
(I was given a dog by the lady)

(33) liorade  φ-khwien-wia-ban 2-ay 'The lady gave a 
2-to dog to you'

(34) liorade-ba ka-khwien-wia-che-ban 'The lady gave you 
2sg:3isg-

a dog' 
(you were given...)

c) If the DO does not outrank a third person SU, then passive is possible but not necessary. Thus we would expect a sentence such as (35) to have two paraphrases, one in which the initial IO is final DO, and another in which the initial IO advances to DO and then to SU. But we find only the latter, as illustrated in (36):

(35) liorade  φ-khwien-wia-ban 'u'de-'ay 'The lady gave 
child-to the dog to the child'

(36) liorade-ba a-khwien-wia-che-ban 'u'de 
3sgi:3sgi- child 'The child was given the dog by 
child' the lady'

This state of affairs can be accounted for in conjunction with the IO to DO advancement hypothesis by adding the
additional constraint that if an IO advances, it must advance as high as possible on the term hierarchy. We will call this the 'all-the-way' constraint. And since DO to SU advancement is possible only when the initial SU is third person, it is just in these 3c) cases that this all-the-way constraint comes into play. Such a constraint is certainly a natural one, given IO to DO advancement is (evidently) triggered by semantic or "discourse" factors that can broadly be classified as 'prominence'; these same factors might be expected to call for advancement as high as possible.

**AGREEMENT WITH INITIAL DO**

In (22) - (36) we were concerned with demonstrating advancement of IO to DO, and therefore held the initial DO constant. But now we are ready to demonstrate that verb agreement must make reference to features of the initial DO in such cases, as well as to features of the final SU and final DO. The verb prefixes used, as already mentioned, are from sets which apparently have in common that they are attached to verbs which have an initial absolutive which is not the final absolutive, but this is merely an initial characterization in need of further testing. The point we are about to make is that these affixes are a function of three variables in the transitive cases, and of two variables in the passive cases. We now look again at cases where an IO has advanced to DO (and no higher), but this time we will hold the final DO constant and vary the initial DO as in (37) - (42). Prefixes are glossed 'final SU:final DO: initial DO-'.

(37) ka-'u'u-wia-ban
     1sg:2sg:3isg-baby-give-pst
     'I gave you the baby'

(38) kam-'u'u-wia-ban
     1sg:2sg:3ipl-
     'I gave you the babies'

(39) ka-shut-wia-ban
     1sg:2sg:3isg-shirt-
     'I gave you the shirt'

(40) kow-shut-wia-ban
     1sg:2sg:3ipl-
     'I gave you the shirts'

(41) kam-keuap-wia-ban
     1sg:2sg:3isg-shoe-
     'I gave you the shoe'

(42) kow-keuap-wia-ban
     1sg:2sg:3ipl-
     'I gave you the shoes'

It is clear that the verb prefix shape is a function of the class and number of the initial DO.

Perhaps even more impressive are the cases with third person initial SU. Recall that in these cases an advanced IO must be final SU, and so the clause has no final DO. Yet even these passive verbs are marked for number and class of the initial DO as well as the final SU. To make this clear, we will hold the final SU (initial IO) constant and vary only the initial DO in (43) - (45). The prefixes will be glossed 'final SU:initial DO-'.


(43) 'u'ude a-shut-wia-che-ban seuanide-ba
child 3sg:3iisg-shirt-give-pass-pst man-instr
'The child was given the shirt by the man'

(44) 'u'ude ow-shut-wia-che-ban seuanide-ba
     3sg:3iipl-
'The child was given the shirts by the man'

(45) 'u'ude am-keuap-wia-che-ban seuanide-ba
     3sg:3iisg-
'The child was given the shoe by the man'

In these examples, observe that the verb prefix varied as the class and number of the initial DO varied. Note the obvious relationship to the affixes in (37) - (42). This relationship is not so obvious with first person as final SU, but the verb prefix shape is still a function of the initial DO, as (46) - (48) show:

(46) in-'u'u-wia-che-ban seuanide-ba
     lsg:3isg-child-
'I was given the child by the man'

(47) im-'u'u-wia-che-ban seuanide-ba
     lsg:3ipl-
'I was given the children by the man'

(48) iw-shut-wia-che-ban seuanide-ba
     lsg:3iipl-shirt-
'I was given the shirts by the man'

CONCLUSION

Southern Tiwa rules of verb agreement must make reference to person, number, and class of final SU, final DO, and where it is distinct from either of those, the initial DO: in just this latter case, the prefixes will be drawn from a different set. Such a state of affairs is quite naturally stateable within uninit network relational grammar, for though networks may involve multiple strata of relations, no information can be "lost" in a network as it can, and is expected to be, in a transformational derivation. At any rate, it is clear that Southern Tiwa agreement rules must make reference to more than one stratum in a relational grammar, and to more than one derivational stage in a transformational grammar (though of course the latter theory allows addition of some ad hoc device to prevent information from being lost in the course of the derivation).

NOTES

1. Southern Tiwa is a Tanoan language spoken in Isleta and Sandia pueblos in New Mexico. Data are exclusively from the Isleta pueblo, and were gathered by Barbara Allen and Donna Gardiner in conjunction with their assignment with SIL from October 1973 to the present. We are greatly indebted to David Perlmutter for his encouragement and insights during latter stages of the analysis and for comments on an earlier draft of this paper.

Abbreviations used in this paper include: 1 = first person;
2 = second person; 3i = third person, animate class; 3i and 3ii are the other two noun classes; sg = singular; du = dual; pl = plural; pst = past; pass = passive; instr = instrument. Colons in glosses separate sets of features of terms reflected in verb prefixes; e.g. '1sg:2sg' means that the verb prefix indicates SU is 1sg and the DO is 2sg.

2. These cases are definitely not passive, however, for the following reasons: 1. the verb does not have passive morphology; 2. if present for emphasis, the first person pronoun cannot be marked with -ba as a subject chomeur (see below).

3. The most notorious of the latter follows a pattern referred to as "number reversal" by Tanoan scholars: iiisg = ipl; iiipl = iiipl while isg = iisg.

4. We would like to present ungrammatical sentences in which the necessary passive constraint is violated, but it is not possible to do this for there are no verb prefixes for the impossible person combinations.

5. It certainly is incorrect as it stands, for there are initial DO complements which are not final DO, yet do not trigger these sets.

6. See note 3 re. the appearance of the same prefix in more than one of these examples. Also, some analysis of these prefixes is possible. In the set appearing in (37) - (42) it is possible to segment off a k- as indicating that final SU and DO are first and second person, respectively, while the remainder of each prefix indicates class and number of the initial DO. Such segmentation has no real bearing on the claims of this paper, however.

7. As mentioned earlier, this statement will probably have to make reference to the initial absolutive rather than initial DO. This is seen to be necessary when cases of ascension of a possessor from initial subject are taken into account. Research is in progress on this, as well as many other fronts in Southern Tiwa.

REFERENCES
Workpapers of the Summer Institute of Linguistics, University of North Dakota Session.


ON PRIMARY TOPICALIZATION

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0. There is a generally accepted view among linguists that, in sentences, the position in front of the verb (subject position in a number of languages) and the position immediately behind the verb (direct object position) are engaged by nouns that are primarily or secondarily topicalized, respectively. It was pointed out by case grammarians along the lines of Fillmore (1968: 33-48) that the treatment of the category 'subject' at the level of deep structure results in an incorrect understanding of the basic relations of the grammar of natural languages, since subjects are manifested on the surface due to the process of subjectivization. Along the lines of Fillmore, however, case grammarians have treated subject-raising as a kind of universal rule of grammar, and thus the derivational process of primary topicalization has gained a crucial status in the analysis of surface strings, and the appearance of subjects was considered to be a universal property of surface forms. It was proposed by Fillmore (1968: 33), Lambert (1969: 36, 38, 148), Anderson (1971: 160-165), Stockwell et al. (1973: 59-63), and a number of other case grammarians, that the eligibility of the various deep cases to function as surface subjects is hierarchically ordered in such a way that whenever there is an Agent in a sentence, that Agent must appear in subject position in active sentences. The respective order of the rest of the case categories for subject choice is the following: Experiencer, Instrumental, Objective, and finally Locative, Temporal, etc. Although most of these grammarians used this respective hierarchy in determining the constraints on their rule of subjectivization, it was Nilsen who attempted to give arguments for such an ordering of case notions for the first time. He suggested (Nilsen, 1973: 140) that the activity quotient of a particular case, as determined by its semantic features, had a decisive role in providing a definite position of the case in question in the subject-choice hierarchy. Cases with a high activity quotient were most likely to be chosen as subjects.
in the surface structure of sentences

The purpose of the present paper is to point out that the status of the subject as a basic category of surface structure is significantly weakened based on an analysis of the manifestation of subjecthood in languages having a relatively free word order, such as Hungarian. It will be pointed out that Hungarian provides convincing arguments against the universal nature of the subject-choice hierarchy, and it will also be shown that primary topicalization loses its position to be considered as a primary rule of the transformational component of the grammar of this language, since the subject position is often left empty as a result of the operation of deletion rules.

1. Let us first have a look at some examples which would seem to support the view that constraints on subject selection are valid for Hungarian surface structures, as well.

(1)(i) Péter eltörte a tányért a konyhában. ('Peter broke the plate in the kitchen.')
(ii) A tányér eltörött a konyhában. ('The plate broke in the kitchen.')
(iii) A tányért törte el Péter a konyhában. ('It was the plate that John broke in the kitchen.')
(iv) A konyhában törte el Péter a tányért. ('It was the kitchen where Peter broke the plate')
(v) A konyhában törölt el a tányér. ('It was the kitchen where the plate broke.')

Since Hungarian has a rich system of surface case morphemes, it is unnecessary in this language for categories of surface syntax to be positionally bound. Morphological markedness of surface case relations results in a relatively free word order, giving place to a relatively free topic selection. Thus it can be seen that whereas a coincidence of subject and topic is manifested in (l1) and (l1ii), this is not the case in (l1iii), (l1iv) and (l1v). In (l1iii) it is the deep Objective that is chosen as topic, whereas in both (l1iv) and (l1v) it is the Locative. Since subjects are marked with a Ø morpheme in Hungarian surface structure while
a typical ending for objects is -t and a typical ending of the locative relation is -ban/-ben, it can be seen that these notions are easy to recognize in sentences due to their morphological markedness. It is the Agent which is the subject in (li), (liii), and (liv), whereas in (lii) and (lv) the Objective is chosen for this function.

Returning now to our main topic, the dependence of the subject choice hierarchy of deep cases on their activity quotient, it can be seen that all the examples in (1) supported this idea, since in sentences (li), (liii) and (liv), where an Agent appeared on the surface, this was chosen as subject of the sentence, whereas in (lii) and (lv), in which only an Objective and Locative occurred, the Objective functioned as subject. Curiously, however, it was not the higher activity quotient of the Objective case that was decisive in the choice of this category for position of subject in (lii) and (lv), but the compulsory nature of this case in the frame of the verb "eltör -- eltörlik", whereas the Locative was optional in (li-iii), and it was only due to the choice of this category for the function of the topic that its surface occurrence was compulsory in (liv-v).

Let us now have a look at the following example.

(2) Az a cikk Jánosé.

The above sentence has two interpretations in Hungarian. It either translates as "That paper belongs to John," or, and this is more important for our purposes, as "That paper was written by John." If the first interpretation is taken, there is no problem with the subject-choice hierarchy, since it is the lack of an Agent that makes it possible for the Objective NP "az a cikk" ('that paper') to appear as the surface subject of the sentence. The second interpretation, however, contradicts the subject-choice hierarchy, since the NP "Jánosé" translates as "by John", that is, it functions as an Agent and not as a Goal in the sentence. It should be mentioned, however, that there are no passives in present-day Hungarian, and thus (2), being an active sentence, ought to be ruled out by the subject-choice hierarchy, since it is the NP that represents the Objective deep category that functions as a subject here, in
spite of the surface appearance of the Agent within the boundaries of the simple sentence. (2), however, is a fully grammatical sentence, and similar examples are easy to find in Hungarian. Given that the Objective is a lower case than the Agent as regards the activity potential, it seems that the constraint is not valid for Hungarian. Similar examples are the following:

(3) **Az a meleg leves nem tett jót neki.**  
Obj.  
Exp.  
('That hot soup was harmful to him.')  

(4) **A lövtér tele volt katonákkal.**  
Loc.  
Obj.  
('The rifle-range was filled with soldiers.')  

(5) **A zár csak hatos kulccsal nyílott.**  
Obj.  
Instr.  
('The lock (could be) opened with a No. 6 key only.')  

In (3) it is the Objective case that is the subject in spite of the appearance of the more "active" Experiencer in the same sentence. In (4) this position is filled by the Locative although an Objective is also present, and in (5) it is the Objective, again, that is subject-ivalized, although there is a more active Instrumental in the same sentence. It should be remarked that although we gave a passive sentence as a translation of (5) above, the Hungarian sentence is a fully understood active sentence. There exist, however, some constructions in which an effect of the passive can be felt, but the occurrence of such structures was a result of the effect of structures of German on Hungarian. (Even today, German is the most frequently spoken foreign language in Hungary, as a result of the historical past of the nation.) Thus (6) would sound strange for native speakers of Hungarian generally, and is accepted only by those who have at least some knowledge of a Germanic language.

(6) **Az a zár csak hatos kulccsal volt nyítható.**  
('That lock could be opened with a No. 6 key only.')  

In spite of the predicate structure that is considered to be a Germanism in (6) above, the sentence is, again,
an active construction in which the Objective functions as subject.

It seems reasonable, then, on the basis of examples (2) - (6), that in Hungarian, and most probably in a great number of other free word order languages as well, the idea of considering the condition of the activity quotient of cases to be of decisive power in the determination of subject choice hierarchy should be rejected, and together with this, as evidenced by the above sentences, the hypothesis of the subject choice hierarchy, which has gained wide acceptance by case grammarians, has to be dispensed with in a universal grammar. Before an attempt is made toward an explanation of the above phenomena, it has to be remarked that the role and effect of topic selection and of the process of thematization on the subject selection of sentences has not yet been examined by case grammarians in detail. Strangely enough, they have neglected to investigate the relation of the pairs: topic vs. comment and theme vs. rheme, and have only used the notion of topic in the analysis of the processes of topicalization. It was Ferenc Kiefer who pointed out the relevance of differentiating between the role of these pairs in grammatical analysis (Kiefer, 1976: 157-161). On the basis of this difference, the following hypothesis for subject selection in sentences can be put forward.

Whenever a particular deep case undergoes topic selection and also functions as the theme of the utterance at the same time, that deep case compulsorily fills the position of subject in the sentence.

It follows from the above hypothesis that there exist cases where the positions of theme and topic of the sentence are filled by two different NPs, and this can be seen in examples (liii-i-v) above. The hypothesis, however, works as an explanation of why the particular cases in sentences (2) - (6) were chosen as subjects in spite of the fact that potentially more active cases also occurred in these examples. For the sake of gaining further support, let us take sentence (4) and see what happens when the item "katonákkal" ("with soldiers") is chosen as topic and becomes the theme of the sentence.
Katonák tölötték meg a lőteret.

It can be seen that simultaneous topicalization and thematization of the Objective case resulted in the selection of this case as subject, followed by a change in word order and the morphological marking of the items (surface subject marked Ø, and object typically marked -t). (4') is a grammatical sentence in Hungarian that translates into English as "Soldiers filled the rifle-range."

In fact, as was pointed out by Nilsen (1973: 130-2), there are no semantic constraints as to the subject-fronting of deep cases in sentences, since virtually any deep case can appear in this position. Nilsen, however, used sentences with the surface appearance of only one compulsory case throughout his analysis and at that point did not investigate the validity of the hierarchy of cases eligible for subjects. As it was pointed out above, two processes that have an important role in subject selection are topic selection and thematization. It remains for us to determine the relative rank of these processes as regards their effect on subjectivalization. Since Hungarian is a language in which virtually any of the NPs in the sentence can be topicalized, and raising into topic position does not necessarily bring along subject-fronting of the particular case, and since, as it will be pointed out below, theme selection goes well beyond the boundaries of the sentence, and the coincidence of themes and subjects is typical in this language, the following hierarchy is reasonable:

I. theme-selection
   :
II. topic-selection
   :
III. subject-selection

Having pointed out the erroneous nature of the determination of subject choice hierarchy of cases, it
is the purpose of the following section to point out that the relevance of subjecthood itself loses its primary importance in the categorical breakdown of surface sentences, if languages with a relatively or completely free word order are examined, since it is a very common phenomenon of surface strings in such languages that the subject position is left empty in the sentence. Examples from Hungarian are the following:

(7) (i) Hova ment?
     ('Where did he go?')
(ii) Elment a barátiához.
     ('He went to see his friend.')
(iii) Akarok venni egy ernyőt.
     ('I want to buy an umbrella.')
(iv) Mire célzol?
     ('What are you hinting at?')

It can be seen that while the subject NPs were deleted from the surface in the above Hungarian sentences, their English counterparts are grammatically correct only in the case when these NPs appear in their surface forms. It is not the case, however, that deep cases eligible for subject selection do not appear in deeper layers of the derivational history of the above Hungarian sentences. The argument for the presence of such cases in deeper layers is strengthened by the fact that native speakers are fully aware on intuitive grounds which category is understood to be capable of filling the function if it were the case that their surface appearance were required by the well-formedness conditions of sentences. Although subject NPs do not appear in any of the examples in (7) above, the intuitive recognition of their deep status is supported by the morphological process of verbal suffixation. Viewed diachronically, the rich suffixation of verb conjugation in Hungarian developed as a result of reduction in deeper layer pronominalization sets; thus it can be assumed that the surface deletion of subjects is affected by previous pronoun deletion based on coreference phenomena. This is the reason why it is easy for native speakers to identify the deep case eligible but left unexpressed as a subject, on intuitive grounds.

If we try to give an explanation of the process of subject deletion in Hungarian surface structure, the
following three categories should be examined in relation to one another. What is the role, if any, of theme selection and topic raising in subject selection and subsequent subject deletion? The role of topics and themes in subject selection was pointed out in the previous section. If Hungarian surface strings are examined from the point of view of topic and subject selection, it can be observed that it is the topic that dominates within the limits of the sentence. If the two functions are filled by one item, that item is moved to the front of the sentence, but whenever these functions are filled by two different items (as in (liii-v)), it is the topic that keeps its front position. It can thus be observed that Hungarian is a topic-prominent language, where it is the surface appearance of the topic that is of primary importance. Going back to our examples in (7), it can be observed that in (7i) and (7iv) the topic is expressed and the subject remains unexpressed. In (7ii) and (7iii), however, even the topic has undergone deletion on the surface. There are parallel strings, however, where the topic keeps its front position.

(7) (ii') A barátjához ment el.
       (iii') Egy érnyőt akarok venni.

One thing that remains to be taken into consideration here is the role of theme-selection in the above phenomena. As it was pointed out in the previous section, the process of thematization is of primary importance in the formation of sentence structures in Hungarian, and this process goes well beyond the boundaries of the sentence, once a set of sentences is related to form part of a higher unit, that of discourse. If the sentences in (7) are examined from the point of view of theme-selection, it is striking that the theme is not represented by an NP on the surface in Hungarian, whereas its appearance is compulsory in the corresponding English sentences. The Hungarian examples of (7), however, are accepted as well formed only if they are inserted into the flow of conversation, whereas the corresponding English sentences seem to be fully understood by themselves, as well. Thus it becomes clear that in Hungarian, at least, and most certainly in the majority of languages having a free word order, as well,
it is the theme of the unit of discourse that is responsible for topic- and subject-deletion in particular sentences. Themes are basic elements of discourse units, and if they are once expressed in Hungarian, they dominate the structural relations of the corresponding sentences forming part of that given discourse unit. The theme of the discourse unit has to be expressed only once within the boundaries of that particular discourse unit. Whenever there is a new theme-selection, however, the newly chosen theme must appear in the discourse compulsorily, and that theme governs the surface relations and morphological processes in the sentences of that unit of discourse. Thus themes have an absolute control over subject-choice in the particular sentences. This is not the case as regards their role in topic selection, however. As it has been pointed out above, topic selection is an important feature of Hungarian sentence structure, and virtually any NP filling the function of a deep case notion can be topic-fronted on the surface in this language. When there is a coincidence of the theme and the topic, however, and the topic has already been expressed in the discourse unit, as it is not required that it be expressed again and again in the sentences of that discourse unit, this condition results in topic deletion. When the topic and the theme are expressed by two different NPs, the topic cannot be deleted on the surface, since Hungarian is a topic-prominent language. As Hungarian is not a subject-prominent language, it follows that since it is the theme that has primary control in the subject-choice of sentences, subject NPs can be deleted from the surface within the boundaries of the particular discourse unit once the theme (and together with this the subject) was expressed in that discourse. If the theme in the discourse unit is the speaker or the hearer, the subject is not expressed by a surface NP. Its presence is understood intuitively, however, and the recognition of this is further supported by the morphological marking of the verb that functions as a predicate in sentences belonging to the given discourse. This is evidenced by examples (7iii) and (7iv) above.

As a conclusion to the above, then, the rule of subject- and theme-deletion in Hungarian can be the following:
Within the boundaries of a discourse unit the theme has to be determined compulsorily, but it is required to appear only once in that discourse. Whenever the theme and the topic of the discourse unit are expressed by the same NP, that item can be deleted from following sentences forming part of that unit of discourse. If there is a coincidence of theme, topic, and subject of the sentence, the surface appearance of the item that represents these is required only once in the given discourse unit; in subsequent strings the subject is deletable. If the theme and the topic are expressed by two separate items, subject selection is controlled by the theme only, and once the theme is expressed in the discourse unit and the subject is dominated by that item, the subjects are deletable from the subsequent sentences in that particular discourse.

Let us now take some examples and see how the operation of the rule is realized in speech. Let us assume that two girls, Helen (H) and Anne (A) are talking.

(8)(i) A: Elmentél Péterhez?
     ('Did you go to see Peter?')

     ('Yes, I did. Peter, however, was not at home.')

(iii) A: Mit gondolsz, miért nem volt otthon?
      ('Why do you think he was not at home?')

(iv) H: Biztosan meglátogatta a nagymamáját.
      ('He must have visited his granny.')

(v) A: A nagymamája is ebben a városban lakik?
     ('Does she live in this city, too?')

     ('I have no idea. Peter has never mentioned where she lives.')

As it is Anne who addresses Helen by putting her questions throughout the conversation, Anne becomes the primary theme of the conversation. As it was mentioned earlier, the surface appearance of this NP is unnecessary
in such cases; its deletion is optional, however, as shown by (8i').

(8)(i') Elmentél Péterhez, Anna?

In all the sentences following (i) in (8), "Anna" does not gain surface expression, as she functions as the primary theme of the conversation. In (8ii), however, a new, secondary theme is chosen, the person "Peter", whose surface appearance is compulsory in (8ii). From that on, however, until the theme changes again in (8v), the NP "Peter" remains unexpressed on the surface except for the morphological marking via the verbal suffixes in the sentences. The same rule operates for the new theme, Peter's granny, introduced in (8v).

3. It can be concluded, then, that the status of the rule of subject raising as considered to be a kind of universal transformational process in a semantically based grammar is significantly weakened if data based on an analysis of Hungarian sentence structure, and probably of other free word order languages too, are taken into account. Subject-fronting is a language-specific rule of grammar, and its constraints are determined by parallel powerful rules of the grammar. Thus the generally accepted idea that subject-fronting is in close relation with case ranks on semantic grounds is to be rejected altogether. Subject-fronting is preceded by the more powerful process of theme selection, and is also controlled to some extent by topic selection, and the conditions on the latter rule are also to be considered language-specific in a number of natural languages.
References


DENOTATIVE AND CONNOTATIVE MEANING OF THE 'PRETERITE' AND 'PERFECT'

IN BULGARIAN AND ENGLISH

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This paper is part of a larger study whose goal is to refine and constrain the 'syntactic feature' of transformational-generative grammar with the help of the Prague School concept of hierarchies and oppositions among grammatical signs. I assume a generative framework in which syntactic features are spelled out as inflectional and other grammatical morphemes. From the Prague School I adopt (and adapt) the concept of 'grammatical sign' and the assumption that a 'marked' (here, plus-valued) grammatical sign has a single constant (denotative) meaning, as well as contextually determined (connotative) meanings. The primary focus will be on the Bulgarian data, with some contrastive material from English.

In practice, even 'autonomous syntax' has used semantic labels borrowed from traditional grammar—'plural' and 'past', for instance, rather than '+S' or '+D', to specify the respective English morphemes. So far, however, such approximate translations of the meanings of the features (or of the morphemes that spell them) have been no more than mnemonics, multiplying ad hoc with scant attention to accurate and economical accounts of their semantic properties. At the same time, Prague school oriented studies of 'markedness' or of 'grammatical oppositions' have too often taken an atomistic or isolationist approach to morphology and have suffered from inexplicitness about the several kinds of oppositions that may coexist within a language system.

I will show that an 'autonomous syntax' account of Bulgarian verb forms requires four sets of features. Three of them specify the presence vs. the absence of suffixes, and will be represented as '+E', '+H', '+L', in an approximation of their phonological forms, or signantia; the last set of features is represented as '+Ø', specifying the absence vs. the presence of the third person copula-auxiliary with forms in -L-. The constant general meanings or signata of the plus-valued features are those of aspectual, temporal and modal categories found in most other Indo-European languages. The many, often contradictory or overlapping meanings reported in the literature on the Bulgarian tenses and moods can be accounted for in terms of these meanings and the contextual connotations of the minus-valued features. There is no need to resort to the homonymous categories of traditional Bulgarian grammar, nor is there need to invent for Bulgarian a set of syntactic features such as 'reported' or 'evidential', or 'twitnessed', to name a few that have been proposed. These meanings are not constant properties of the Bulgarian verb forms but are derivable from their far more ordinary properties. But, before presenting the reader with the entire inventory of Bulgarian forms and their traditional names, I must outline what is unusual about the Bulgarian system.
<table>
<thead>
<tr>
<th>VISUALIZING PLANE (plan na naglednostta)</th>
<th>REMINISCING PLANE (plan na spomena)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probably unnecessary 'archicategory', '± Evidential':</td>
<td>([-\text{Evidential}]^2) 'DIRECT'</td>
</tr>
<tr>
<td>Plot-advancing events:</td>
<td>([\text{NA}]PISA^*) 'aorist'</td>
</tr>
<tr>
<td>Descriptions, states, concurrent processes:</td>
<td>(\text{PIŠEŠE}) 'imperfect'</td>
</tr>
<tr>
<td>Flashbacks:</td>
<td>((\text{NA})\text{PISAL E}) 'perfect, indefinite past'</td>
</tr>
</tbody>
</table>

*The perfective stem is \(\text{NAPISA}\), the imperfective is \(\text{PISA}\). Both aspects may combine with any of the suffixes, though the imperfective is far more compatible with the forms with the suffix \(-E\), which denotes 'continuative with respect to an orientation point'. The aorist, without that aspect feature, is far more compatible with the perfective aspect than the imperfective. On the reminiscing plane, most plot-advancing events would be in the perfective aorist, though imperfective aorists also occur; digressions are normally in the imperfective imperfect; perfective imperfects are used (rarely) for repeated completions coordinated with another event, e.g., 'the dog would bark once (P-imfct) every time something else happened'. ** \(\text{NAPISVA}\) is the present of the secondary derived imperfective.

Fig. (1)
While most Indo-European languages have two narrative positions—they can tell a story in the past or in the so-called historical present—Bulgarian has three. A story may be told in two possible 'planes', the 'visualizing plane' (plan na naglednostta), or the 'reminiscing plane' (plan na spomena); within the latter, the story may be told as a first-hand account, using the 'direct' or 'witnessed' mode, or else it can be told in the 'reported' mode. This is illustrated in Fig. (1), where I give substitution lists illustrated with forms of the verbs napisa+/pisat 'write' in 3rd person. Notice that the forms (na)pisal e and pisel e, which are used on the 'visualizing plane' for anterior events, differ from the 'reported' forms in the third column only in having the 3rd person auxiliary while the 'reported' forms have Ø. This maximal contrast is found only in 3rd person; as shown in Fig. (2) below, there is no contrast in first and second person, where the auxiliary is obligatory. In spite of this, traditional Bulgarian grammars insist on separate, partly homonymous, paradigms, which they claim differ in both tense and mood. In general, the interrelations between the 'perfect' forms (with 3rd person auxiliary) and the 'reported' forms (without 3rd person auxiliary) have not been explored in detail, nor has the occurrence (and cooccurrence) of the H and L morphemes in the conditional forms, see Fig. (2) below. Discussions of Bulgarian verbal categories have concentrated more on the contrasts illustrated in Fig. (1), where a Bulgarian speaker is forced to choose one of the options in the same or similar contextual frames.

In an 'autonomous syntax' account, however, the forms may be specified in terms of the four above-mentioned features, and the choices are between the + and - values of [±E, ±H, ±L, ±Ø], cf. below:

<table>
<thead>
<tr>
<th>INDICATIVE</th>
<th>OCCURRING FORMS &amp; 'traditional names'</th>
<th>AUX 3rd</th>
<th>ORDER OF</th>
<th>SUFFIXES</th>
<th>1 E</th>
<th>2 H/L</th>
<th>3 PvN GaN</th>
</tr>
</thead>
<tbody>
<tr>
<td>V STEM(S): (NA)PISA+</td>
<td>-PIŠE,-PIŠA 1,3 'present'</td>
<td>+ - - + -</td>
<td></td>
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<tr>
<td></td>
<td>-PIŠEH, PISEŠE 1,2-3 'imperfect'</td>
<td>+ + - + -</td>
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<tr>
<td></td>
<td>-PIŠAH,-PIŠA 1,2-3 'aorist'</td>
<td>- - + + -</td>
<td></td>
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<tr>
<td></td>
<td>-PIŠAL sâm/si/e 1,2,3 'perf. indef.'</td>
<td>-Ø</td>
<td>- - + + +</td>
<td></td>
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<tr>
<td></td>
<td>-PIŠEL sâm/si/e 1,2,3 'impf. indef.'</td>
<td>-Ø</td>
<td>+ - + + +</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>-PIŠAL bjah/beš'e 1,2-3 'plupfct'</td>
<td>be+ (5)</td>
<td>+ + + +</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-PIŠAL bih/bi 1,2-3 'conditional'</td>
<td>bi+</td>
<td>- + + + +</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-PIŠAL sâm/si/Ø 'reported aorist'</td>
<td>+Ø</td>
<td>- - + (+) +</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-PIŠEL sâm/si/Ø 'reptd pres. impf't</td>
<td>+Ø</td>
<td>+ - + (+) +</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-PIŠAL bil-sâm/si/Ø 'reptd plupfct'</td>
<td>+Ø</td>
<td>- - + (+) +</td>
<td></td>
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</table>

(+)= 'no PvN in 3rd, since no AUX'
In Fig. (2) I have included all singular forms, in order to show the suffixes more overtly than they appear in some of the 3rd person forms in Fig. (1). I have somewhat simplified the phonological forms of the suffixes, based on Scatton (1976). I omit from discussion some other periphrastic modals, including the future of both perfective and imperfective stems, in which the forms in Fig. (2) appear as complements of the modal auxiliary št+ 'want'.

As you can see in Fig. (2), the verb stem may be joined to suffixes of three order classes. The first one, which I will describe only briefly here, is E, which is common to all forms made from the so-called 'present-imperfect stem', i.e., the 'present' PIŠE, the 'imperfect' PIŠEH, PIŠEŠE, and the PIŠEL forms with and without 3rd person copula-auxiliary. The meaning of this suffix (and of the feature [+E]), is an aspectual one, denoting 'CR' or 'continuative with respect to a reference point'. Forms without E (with the feature [-E]) merely connote 'non-continuative' or 'punctual' as well as independence from a reference point, as the aorist usually does, but these are non-constant meanings of forms without E, which may disappear in context: the 'perfect' PIŠAL E can be contextually related to the present or to another event, for instance; and forms without E can be used for continuous processes, as in Toj dālgo pisa. [aorist] 'He wrote a long time.' (Vs. Toj dālgo pišeše [imperfect] 'He was writing a long time (while...')

It is important to distinguish two kinds of binary opposition: the features [+E] are in privative opposition, as are the forms with and without the suffix E, but that is only on the level of signans. On the semantic (or signatum) level, the oppositions are of a different kind. To borrow Jakobson's definition, the marked form 'makes a statement of A' while the unmarked form 'makes no statement of A', is non-committal as to the meaning 'A', rather than have the meaning 'non-A'(1957, [1971]). When contrasted, the meanings may be 'A' vs. 'non-A', but the 'non-A' meaning of the unmarked member of the opposition can be amended or removed by a context incompatible with 'non-A'. The marked form, on the other hand, with the denotative meaning 'A', will be grammatically and/or semantically incompatible with contexts that denote 'non-A'. Janakiev (1962b) used the term subordinative for the semantic oppositions that co-exist with the privative oppositions in grammatical signs.

The distinction between privative and subordinative oppositions and between denotative and connotative meaning is particularly important in the discussion of the interplay of the suffixes of the second order class, H and L. The suffixes H and L are mutually exclusive, but they are not incompatible: in the pluperfect BJAH (NA)PIŠAL, L appears on the verb stem while H is carried by the copula-auxiliary. There are two privative oppositions, [+H] and [+L] —while [+H] and [+L] are in equipollent opposition. I'll return to these matters after mentioning the terminal suffixes.

The third order class of suffixes carry the subject-verb agreement features of person and/or number (PvN) on the 'present', 'imperfect' and 'aorist'; the L-forms exhibit a different set of
agreement features: gender or number, but not both (GAn). In the L-forms, the PvN suffixes are carried by the auxiliary, except in the 3rd person 'indirect' forms, which have 0 auxiliary.

The suffix H expresses marked tense, a 'shifter' in Jakobson's (and Jespersen's) term, a strongly deictic sign which relates the process denoted by the verb stem to the moment of speech. The opposition [±H] corresponds to the English [±D], traditionally the 'nunc-tunc' 'now-then' opposition. While the most frequent use of the marked preterites is to express an event anterior to the speech event (or 'past'), that cannot be the constant general meaning of H, for the H-preterite can be used in contrary-to-fact conditions and may even refer to future events, as will be shown below. Moreover, H also appears on the auxiliary of the conditional mood. The denotative meaning of the Bulgarian (and English) preterite forms might be generalized as 'distanced in time or reality from the speech event' or 'not (real) now'. But, along with this common denotative meaning, the forms of the two languages have widely divergent connotations: the English preterite has been described as 'remote' (Joos 1964, among others) and, unlike the Bulgarian H, cannot be used to refer to imminent events. The Bulgarian H-forms, on the other hand, are often said to refer to 'close', 'witnessed', 'vouched-for', 'real', 'definite' events. How is that to be reconciled with 'distancing in time or reality'?

The answer lies in the oppositions available in the respective systems: the English preterite is often (but not always) felt to present events as 'remote' because it is chosen over the 'present perfect,' which relates an anterior event to a reference point at the moment of speech (Reichenbach 1947:297). The Bulgarian form, on the other hand, is opposed not only to the 'present', but also to the doubly remote so-called 'reported' or 'indirect' forms shown in Fig. (1), the L-forms with 0 in 3rd person. The H-forms thus connote nearness in those contexts where a choice exists. The concept of connotations due to membership in oppositions explains why it is the H-form that is used expressively for imminent (future) events: Umrjahl! lit: 'I died' (rather than the perfect Umrjalsam!), but it is the English perfect that glosses them, as in 'I've had it!' or 'I'm done for!'

Klagstadt (1963), following some early grammars, attempted to set up a 'definite'- 'non-definite' opposition in the H vs. L forms. But this opposition cannot be the basic one involved, since H and L co-occur in the 'pluperfect' and 'conditional', which would then be both 'definite' and 'non-definite'. The 'perfect' (na)pisalsam/si/e is traditionally the 'indefinite past', yet a contrastive grammar points out that it is 'far more definite than the English present perfect', since it allows time adverbials to pinpoint the past event (Atanasova et al., 1963:125). 'Indefiniteness' is a contextually removable connotation of the 'perfect', which may also be explained in terms of the opposition of the L-forms with the deictic H-forms. Deictic forms are often referred to as 'definite' because, like the definite article, they elicit questions if used inappropriately. Just as a sentence The student was here elicits What student? in the
absence of identifying context, a sentence *Hodi u Cveta 'I went to Cveta's' or Pišeh 'I was writing' elicit questions like *Koga? *When?* (In the last example, this property is strengthened by the addition of 'orientation to a reference point' common to E, the 'continuative' aspect, and to the English progressive.) Both definiteness and indefiniteness are derivable, the first from the deictic nature of the tense forms with H (and the English D), and indefiniteness from opposition with deictic-definite forms.

If the forms with H denote 'distancing' from the moment of speech (usually 'past', less often 'irreal'), then the forms without H would be expected to connote 'non-distanced', 'present' or 'real'. This is true of the 'present' tense forms, but not of the L-forms without H, since the meaning of [+L] removes some of the expected connotations of [-H]. And H, in turn, affects the expected connotations of the forms without L.

The opposition [+L] is very similar to the opposition [+H], but L does not point to the moment of speech; it is not a shifter. The meaning of L is 'tactic', indicating a relation to another event, not necessarily the speech event. It is what is sometimes called a 'relative tense'. The L-form is used in modals, and does not always denote anteriority; here too, the constant meaning is one of 'distancing', but the reference point of L does not shift from one speech act to another (as with the more strongly deictic [+H]), hence a 'perfect' does not elicit a When-question, though it does not preclude it either. It is this property that accounts for the 'indefinite' connotation of the 'perfect' in contrast with the 'definite' deictic H-preterites. It is perhaps this lack of pointing to the speech context that led Aronson (1967) to call the 'perfect' the 'unmarked past'. Lack of focus on the time of the event is accompanied sometimes by stronger focus on its result, particularly in combination with the present tense copula-auxiliary.

I have mentioned the connotation of closeness of the H-forms which allow expressive reference to imminent disasters. This is due to the opposition of H-forms to doubly distanced forms, marked both [+L] and [+Ø]. The nature of this modal 'distancing' has been one of the more controversial areas of Bulgarian grammar.

As shown in Fig. (1), a Bulgarian must choose between telling a story in the 'present', in the 'direct' preterites, or in the 'indirect' mood. In traditional grammar the latter is called *preizkazno naklonenie* 'renarrated mood'; the feature [+Ø] is a shifter, a sign referring to the speaker, who speaks 'as a distant person' (*kato dalečno lice* Trifonov 1905), withdrawing from responsibility for the statement. The 'indirect' forms do not necessarily express doubt about the truth of the statement; the term 'dubitative' has sometimes been suggested, but it is clearly wrong. If the source is presented as reliable, then the use of the 'indirect' form may signal commendable objectivity, perhaps a touch of pedantry. Balan (1958) called it *Modus commentativus*, but its actual meaning is closer to 'no comment'. For pragmatic reasons, 'no comment' is often interpreted as a pejorative comment, but linguistically, one can be quite neutral in 'passing something on without comment'. 
The basic denotative meaning of the feature \([+\emptyset]\), which specifies the absence of the 3rd person auxiliary \(e\) (3rd sg) and \(sa\) (3rd pl) is also one of distancing, this time of the speaker from the event. The forms of the 'reported' group are thus doubly distanced, for [L+] expresses distancing with respect to another event (usually, but not always 'anteriority'), and the modal distancing expressed by \([+\emptyset]\) is superposed on it. It is in contrast with these doubly distanced forms that the narrative H-forms of 'direct narration' acquire their connotations of real, close, witnessed events. That these meanings are mere connotations of H is clear from the fact that H appears also in the conditional, and that even the narrative H-forms are used in contrary-to-fact conditions, in historical accounts of fairly recent but clearly unwitnessed events, etc. There is no need for a syntactic feature pair \([\text{twitnissed}]\).

As for such features as [reported] or [tevidentia], they too are unnecessary. The 'reported' forms are not limited to reported speech, though that is their most frequent use (their Hauptbedeutung, not the constant general meaning or Grundbedeutung). The meaning is 'distancing of the speaker from the narrated event' not necessarily from 'the narrated speech event' as Jakobson suggested (1971:135)—though a frequent way of accomplishing this distancing is by reporting the event through another speaker. For example, the modal 'indirect' (néé 'reported') forms can be used for witnessed events that are regarded as surprising. This is the so-called 'admirative' use. For example, the sentence (3a) in Fig. (3) is ambiguous between the senses (3b) and (3c):

Fig. (3)

<table>
<thead>
<tr>
<th>(3a)</th>
<th>Tja bila hubavica (Examples from Romanski 1926:145)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>she is/was reported pres/impfct)(a) beauty</td>
</tr>
<tr>
<td></td>
<td>is ambiguous between (3b) and (3c)</td>
</tr>
<tr>
<td>(3b)</td>
<td>Kazvat, čuvam, če e hubavica</td>
</tr>
<tr>
<td></td>
<td>they-say, I-hear, that (she) is (a) beauty</td>
</tr>
<tr>
<td>(3c)</td>
<td>Neocakvah, očudvam se, kato uznavam, če e hubavica</td>
</tr>
<tr>
<td></td>
<td>I-not-expect, marvel, as I-learn, that (she) is a beauty</td>
</tr>
<tr>
<td></td>
<td>'They say/ I hear, she's a beauty.'</td>
</tr>
<tr>
<td></td>
<td>'I didn't expect it/I marvel as I learn that she's a beauty.'</td>
</tr>
</tbody>
</table>

Other examples cited in the literature include Āh, to valjalo! 'Hey, it's raining!' clearly referring to witnessed, unreported processes. The Bulgarian speaker can use the modal form that allows him to distance himself from the event, not only to disclaim responsibility, but to express the equivalent of English 'Don't tell me!' or 'I can't believe my eyes!' The meaning of the \([+\emptyset]\) feature is a simple marked mood, whose extension to reported speech is similar to the use of the subjunctive in French and German in the same contexts. But Bulgarian differs in allowing it to be used freely in main clauses, and in having a full set of forms so that an entire narrative can be laid in this mode.
I have claimed that the \( \emptyset \)-form is marked, while the actual segment is found in the unmarked form. One argument for this is that affirmation, one of the meanings of the copular verb, is normal (unmarked) for declarative sentences—there is no logical difference between a statement and affirmation of the statement. Weakened affirmation (expressed by the absence of the copula) is more unusual, perhaps not found in all languages as an obligatory category, hence more marked. A second argument involves neutralization. We have seen that the contrast \([\pm \emptyset]\) is suppressed in the (marked) 1st and 2nd persons, appearing only in the unmarked 3rd. This is analogous to the suppression of gender markings in the (marked) plural. The neutralization is in favor of the form with auxiliary, by analogy with phonology (e.g., the unvoicing of final consonants in Bulgarian and Russian), in favor of the unmarked member. The distribution of contrasts is not accidental. A third possible argument for the unmarked status of \(\text{pisal e} \) and \(\text{pišel e} \) comes from the historical development of the new forms. Here we have another analogy with phonology, this time the 'filling of a gap' with an unmarked form. This is seen in Fig. (4). The 'perfect' with and without 3rd person auxiliary is descended from Common Slavic; the \(\text{pišel} \) forms (with the continuative aspect morpheme E) appeared in Modern Bulgarian in the order shown as 1., 2.

<table>
<thead>
<tr>
<th>Fig. (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unmarked 'perfect'</td>
</tr>
<tr>
<td>Marked, now 'modal'</td>
</tr>
</tbody>
</table>

Compare with the analogous situation in phonology (after Andersen 1966):

<table>
<thead>
<tr>
<th>Fig. (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russian</td>
</tr>
<tr>
<td>(\tilde{S})</td>
</tr>
<tr>
<td>(\tilde{Z})</td>
</tr>
</tbody>
</table>

Gap in marked series stays. Unmarked unvoiced \(C\) remains unpaired. 
Gap in unmarked series filled: marked unpaired consonant does not remain unpaired.

The four sets of syntactic features needed to generate the Bulgarian verb forms represent quite ordinary categories found in many other languages: a continuative aspect, a shifter-tense and a relative tense, and a distanced mood. There is no need to add to the inventory of substantive universals such oppositions as \([\text{twitnessed}]\) or \([\text{reported}]\). What is unusual about Bulgarian is the distribution of the features and their interrelations.
The narrative positions in Fig. (1) are reproduced below in terms of their features. As you can see in Fig. (6), the narration in the present (the 'visualizing' plane) makes no statement of distancing. Only the relative tense is available for flashbacks. The 'reminiscing' plane allows a wider choice of aspect and tense features, permitting a far greater differentiating of events and variety in the narrative tempo. The 'direct' and 'indirect' narrative positions may be viewed as a substitution of one kind and degree of distancing for another.

<table>
<thead>
<tr>
<th>STORY</th>
<th>'Visualizing'</th>
<th>'Reminiscing'</th>
</tr>
</thead>
<tbody>
<tr>
<td>aspect: ±P</td>
<td>-Perfective</td>
<td>±Perfective</td>
</tr>
<tr>
<td>±E</td>
<td>+Continuative</td>
<td>±Continuative</td>
</tr>
<tr>
<td>tense: ±H +shifter</td>
<td>-Distanced</td>
<td>+Distanced</td>
</tr>
<tr>
<td>±L -shifter</td>
<td>-Distanced</td>
<td>-Distanced</td>
</tr>
<tr>
<td>mood: ±Ø +shifter</td>
<td>-Distanced</td>
<td>-Distanced +Distanced</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FLASHBACKS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>aspects:</td>
<td>±P ±E</td>
<td>±P</td>
</tr>
<tr>
<td>tenses:</td>
<td>-H +L</td>
<td>-H +L+L</td>
</tr>
<tr>
<td>mood:</td>
<td>±Ø</td>
<td>+Ø</td>
</tr>
</tbody>
</table>

Notes

1 The classifications and terms are taken from Andrejčin (1944) and its several successors, e.g., Andrejčin et al. (1957), (1962). The English terms are from Lord (1962), a textbook based on the Andrejčin descriptions. Lord uses the more accurate terms 'direct' and 'indirect' for the contrast that is often called 'witnessed' vs. 'reported'.

2 The term 'evidential' was introduced by Jakobson (1957[1971: 135]) for a category that relates a narrated event, a speech event, and a narrated speech event. Jakobson's tentative suggestion was accompanied by a pair of examples: "To our question, what happened to the steamer Evdokija, a Bulgarian first answered Zaminala 'It is claimed to have sailed', and then added, Zamina 'I bear witness, it sailed.' Since these terms were used in the context of a discussion of marked-unmarked oppositions, it has been widely assumed that the Bulgarian 'reported' and 'witnessed' ('indirect' and 'direct') forms were in privative/subordinative opposition. The term 'evidential' has passed into the oral tradition in informal allusions to the Bulgarian 'reported' mood, and so has 'non-evidential'. Mutafčiev (1964) has pointed out that the 'visualizing plane' is outside the opposition; it might thus seem that a category [±Evidential] should be distributed as shown in Fig. (2), with the 'visualizing plane' making "no statement of 'Evidential". However, such a feature is not needed for specifying the morphology, nor
is it necessary for accounting for the meaning. Moreover, it will be shown that the 'indirect' forms do not always refer to narrated speech events, hence they do not really illustrate the 'Evidential' as Jakobson tentatively described it.

3 The existence of the relatively new form pišel e has been a matter of controversy. The older grammars (Mladenov and Vasilev 1939:305-6) list two kinds of 'perfect': pisal (e) and pišel (e). But though the newer official grammars list separate paradigms for pisal sæm/si/e/sme/ste/sa 'indefinite past (perfect) indicative', and pisal sæm/si/ø/sme/ste/ø 'aorist tense, reported mood', pišel e is mentioned only in passing as a variant of the 'reported present-imperfect' used for 'personal assertions (Andrejčin 1944:278; Målv 1959:250); it is not mentioned at all in the 1957 and 1962 grammars for pedagogical institutes. (There may be understandable reluctance to set up yet another paradigm with homonymous forms.) The existence of pišel e as a form that bears the same relation to the 'perfect' as the imperfect bears to the aorist has been fully documented by Kâńčev (1960), also by Janakiev (1962a) and Aronson (1977), who calls it the 'non-witnessed, non-reported imperfect'—these authors give examples where the auxiliary could not have been omitted, for instance in the complements of factives (e.g., after Znam polozitelno, če ... 'I know positively that ...', in cases where a speaker draws a conclusion on the basis of circumstantial evidence, etc.).

4 See the examples in Note 3 above. Andrejčin (1944) defends his classification, saying that the difference is obvious from the context, i.e., he recognizes that the distinction in 1st and 2nd persons is purely contextual. But his later grammars for teachers do not mention this and simply give the separate paradigms. In a polemical article, Popželjazkov says that this system represents "torture, terrible violence to the spirit of students, not only in the schools, but in higher education as well, and even for the teachers who, as in the story of 'The Emperor's New Clothes' are forced to insist on distinctions they themselves cannot perceive, for they could not back them up with clear specific examples... which is true of the 1st and 2nd persons of the 'reported' mood as well as other homonymous forms that are assigned to different tenses (1962:90, translation mine)."

An alternative classification is given in Aronson (1967:94), the one systematic attempt I know of to relate the L-forms to each other in a Prague framework. The H-forms are called 'non-confirmative', and the 'reported-non-reported' distinction within this category appears only in the 3rd person. This analysis is closer to the actual facts of Bulgarian, but it assumes a privative opposition between H-forms and L-forms. It also fails to account for other forms with H or L or both.

5 The question mark in Fig. (2) indicates uncertainty about the status of E in the auxiliary. It may be carried by the forms bjah be(še), historically the imperfect of the copula. It is also possible that E is part of the lexical meaning of the copular stem. There is a very large class of verbs (such as the derived imper-
fectives like napisvam 'write (down), be writing down'), which have only one L-form napisval (e), which is semantically closer to the imperfect series than to the aorist-perfect series but does not have the suffix E. It may be that E is part of the lexical meaning of these verbs, or that E has fallen together in this class with the imperfectivizing morpheme AJ.

Janakiev (1962b) isolated a continuable aspect in the 'present' (or 'non-past') of both aspects (perfective non-pasts can be used expressively for 'generic-iterative statements') Janakiev argues convincing that this marked 'continuable' feature is what prevents the Bulgarian perfective non-past from being used as a punctual future (as the corresponding form is in Russian). A similar aspectual feature was isolated in the imperfect, distinguishing it from the aorist, by Maslov (1959:256) and by Aronson (1967:86). Dejanova (1970) and Stankov (1969) emphasize the 'orientation to a moment (=reference point)' in E-forms.

Aronson (1977) suggests a terminological reform, in which the definitions of 'mood' and 'status' are interchanged. He argues convincingly that the Bulgarian 'reported' (our 'indirect') forms express 'status'. Since the definition of his 'status' is the same as our 'mood', I keep the latter term here because it translates the traditional Bulgarian term.

The 19th century writer Ljuben Karavelov used the 'indirect' forms to tell the most fantastic stories as if they were accurate historical reports, with comical effect. Andrejčin (1949/50:128 writes: 'Karavelov cherche à suggerer à ses lecteurs qu'il relate des faits authentiques; et c'est pourquoi, probablement, il use de la narration d'autrui.'

'Admirative' is the name of a category in Albanian (an inverted perfect) that is translated into Bulgarian with the 'indirect' forms. Demina (1959) insists on yet another set of homonymous paradigms for the 'admirative' in Bulgarian as distinct from the 'reported'—since the events are clearly witnessed, not reported. Maslov (1959), reluctant to accept fully homonymous paradigms (in addition to the partly homonymous ones he does accept), settles for 'grammatical polysemy'. Darden (1977) points out that the admiralative use is a normal expressive extension of the 'reported' ('indirect') forms. Friedman (1977) gives translation data from Albanian and several other languages, pointing out that the admiralative use of the indirect forms is essentially limited in Bulgarian to stative verbs like 'be', 'have', and weather verbs. The similarity of this use of the Bulgarian verb forms to certain uses of the imperfect of the same verbs in Ancient Greek was noted by Beševliev (1928). There is clearly no need for such a category (or set of features) in Bulgarian.

The interplay of the 'visualizing' and 'reminiscing' narrative positions in the structure of a literary text is discussed in Chvany (to appear). An application of an analysis of Old Russian in the same framework to the poetics of the Igor Tale is Chvany (1977).
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The Translation of the Present Perfect into Serbo-Croatian and Implications for the Analysis of the Present Perfect in English

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The tense system of English is generally treated as an interaction among the speech time, the reference time, and the event time (following Reichenbach 1969). Using these three parameters, one can explain the differences between the present perfect and the simple past or between the simple past and the past perfect. However, the tense system of Serbo-Croatian (and many other Indo-European languages which lack a system of perfect tenses) appears to be simply a relationship between speech time and event time. Reference time in Serbo-Croatian plays no role in the choice of tense; rather it plays an important role in the choice of aspect. However, a somewhat different concept of reference time is used in analyses of Slavic aspect than is used in the analysis of the English perfect. It is the goal of this paper to reconcile these two concepts of reference time and provide a single concept of reference time which can be used in both languages. Our second goal, once we have established such a unified concept of reference time, is to provide a system of correspondences between the present perfect in English and the present and past tenses of Serbo-Croatian.

1. In English, given a three parameter scheme of event time, speech time and reference time, tense is taken to be the relationship between the speech time and the reference time. The simple past in such a scheme represents a situation in which the reference time equals the event time and both precede the speech time. In contrast, the present perfect represents a situation in which the reference time equals the speech time and the event time is prior to speech time. The difference between these two tenses can be illustrated as follows:

```
<table>
<thead>
<tr>
<th>R,E</th>
</tr>
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<tbody>
<tr>
<td>S</td>
</tr>
</tbody>
</table>
```

simple past

```
<table>
<thead>
<tr>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>S,R</td>
</tr>
</tbody>
</table>
```

present perfect

Figure 1.

Serbo-Croatian, however, lacks a present perfect tense and only has a past, present and future. The present perfect in English is translated into Serbo-Croatian sometimes by a present imperfective and sometimes by a past (usually perfective). For example, a sentence such as *he has just left* is translated as (1):  

1. Upravo je otišao.  
(He) just left (past pf)

while a sentence such as *they have lived here for years* translates as (2):  

2. Već godinama tu stanju.  
For years here (they) stay (pres)
Anyone familiar with the literature on the present perfect will immediately recognize (1) as an example of the "perfect of result" (Comrie's term) and (2) as an example of the "perfect of persistent situation". The present is used in (2) because the event continues all the way to the moment of speech; the past is used in (1) because the entire event took place during some interval prior to the moment of speech. Such a situation suggests that in Serbo-Croatian the reference time is irrelevant in the choice of tense. Only the relationship between the event time and the speech time seems to be relevant.

The reference time is, however, relevant in the choice of aspect in Serbo-Croatian. Aspect is usually considered to be the relationship between the reference time and the event time. There are two ways in which this relationship can be viewed. One, which is best represented in Išačenko (1960), is the view that the perfective is used if the reference point is outside the interval during which the event takes place, while the imperfective is used if the reference point is inside that interval. However, such a view fails to account for sentences such as the following:

3a. Otišao je u dva sata.
   He left (pf) at two o'clock.

b. Došao sam u Petak.
   I came (pf) on Friday.

In (3a) the reference point is two o'clock, which is identical to the event time (in this case an instant), and in (3b) the reference time is Friday, which does not seem to be a point at all, but is an interval which surrounds the event time. Thus it seems preferable to follow the analysis of Garey for French (1957) or Allan for English (1966) and assume a reference period or interval. We can then let the perfective represent a situation in which the event takes place entirely within the bounds of the reference period and the imperfective represent a situation in which the event period extends beyond the bounds of the reference period.

2. The question which now arises is how to reconcile the idea of reference time used by Reichenbach and the idea of reference period we have decided to adopt for Serbo-Croatian. Our first task then is to establish a concept of reference time that can be used in a contrastive analysis of the tense systems of the two languages.

Let us first consider the different uses of the present perfect in English. The following four uses are listed by Comrie and repeated in Woisetschlaeger's analysis of the perfect tenses of English (1976):

I. Perfect of persistent situation. Examples are:

4a. Max has lived here since 1960.
   b. I have waited for years.

Such sentences imply that the situation being described persists all the way up to the present moment. This uses is referred to by Dubravčić (1970) as the continuative perfect, and this is the term I will use throughout this paper.

II. Experiential perfect. An example given by Woisetschlaeger (p. 79) is:

5. Max has won money at the dog track exactly twice in his life. Woisetschlaeger points out that this sentence can be uttered felicitously only if
Max is still alive, if the dog track still exists and if Max is still betting (or has the potential of betting some more) at the track. Such conditions are referred to by Comrie as a "requirement of present relevance". Woisetschlaeger suggests that this be replaced with the expression "maintenance of the status quo" (p. 82): that is "whatever state arises automatically from the narrated situation".

III. Perfect of result. Examples are:

6a. John has left.
   b. John has given his bike to Bill.
   c. Max has closed the door.

All these imply that the result of the action being described is still in force: that is John is still gone, Bill still has John's bike, and the door is still closed. This according to Woisetschlaeger is a special case of the requirement for the "maintenance of the status quo".

IV. Perfect of recent past. Examples are sentences such as Bill has been killed in an auto wreck. This is a rather vaguely defined category, which Woisetschlaeger also claims can be subsumed under the requirement for the "maintenance of the status quo".

All four of these uses of the present perfect Woisetschlaeger claims can be represented by the following diagram (p. 78):

![Diagram]

Figure 2.

In all four uses of the present perfect the event is asserted to take place during the interval labelled narrated situation. The content of the reference situation is not specified, but must in some way be "relevant" to the narrated situation. According to Woisetschlaeger, the perfect of persistent situation is a special case of the above in which the reference situation is assumed to be identical to the narrated situation.

Using such a schema, Woisetschlaeger explains why only certain time adverbials such as since, lately, recently, now, etc. co-occur freely with, and in some cases require, the present perfect, while adverbials such as on Monday, last year, in 1960 and yesterday are incompatible with the present perfect. He then gives the following requirement for the use of a given adverbial with the present perfect (pp. 85-6):

... the time adverbial may not specify a past time interval whose right bound is such that there must exist another time interval between it and $t_0$. 

That is the adverbial must not name an interval such as:

\[ t_0 \]

interval named
by adverbial

Figure 3.

An admissible adverbial must name an interval such as

\[ t_0 - n \quad t_0 \]

Figure 4.

But what does this interval represent? Surely in sentences such as (7):

7a. Harry has recently been mugged.

b. Uncle Charley has written three times since he left town.

this interval cannot be said to represent the event time. The event time in (7a) is some interval whose right bound precedes \( t_0 \), since the mugging is completely over, and in (7b) the event time consists of three disjoint intervals all of which precede \( t_0 \). If the interval \((t_0 - n, t_0)\) is not the event time, then what is it?

Let us propose a slightly different interpretation of the present perfect. Let us refer to the interval \((t_0 - n, t_0)\) and not \( t_0 \) as the reference time (now a reference period), and let us then state that the present perfect is used when the reference interval is of the form \((t_0 - n, t_0)\) for some \( n \neq 0 \). Under such an interpretation of the present perfect, the event period can fill up the entire reference period, in which case we have the continuative perfect, or it can be shorter than the reference period, in which case we have one of the other three types, where which one of the three it is depends in part on the semantics of the verb and in part on the context of the utterance. We can still explain the ungrammaticality of *John has left yesterday*; the reference period is yesterday, which does not extend up to \( t_0 \). Since, as we have noted above, only the event time seems to be relevant in the choice of tense in Serbo-Croatian, we can now explain why the Serbo-Croatian translations of the sentences in (7) must use the past perfective. In (7a), for example, the interval implied by *recently* extends up to the moment of speech. The mugging, however, took place entirely within that interval; hence the past perfective is used.

3. However, when we turn to the Serbo-Croatian equivalents of the continuative perfect, we find that our analysis is in need on some revision. According to Woisetschlaeger, the continuative present perfect asserts that the event fills up the entire interval designated as the *narrated situation* in Figure 2, but does not actually assert that the event period includes the moment of speech. What the continuative perfect actually asserts is thus represented by Figure 2. The reference situation is normally assumed to be identical to the narrated situation, but this is
not necessarily the case. Woisetschlaeger points out that the middle clause of the following sentence may seem pedantic, but is not redundant (p. 78):

8. Certain approaches to politics have always been wrong, they are wrong now, and they always will be.

Without the middle clause the sentence would still suggest, but it would not assert, that certain approaches are still wrong at the moment of speech.

Such ambivalence in the status of the reference situation in such sentences seems confirmed by facts in Serbo-Croatian. In many cases we find that the present perfect in English can be translated into Serbo-Croatian equally by the present or the past:

9a. Oduvijek želim putovati na talijanska jezera.
   Always (I) want (pres) to travel ...
   I have always wanted to travel to the Italian lakes.

b. Oduvijek sam želila putovati na talijanska jezera.
   Always (I) wanted (past imp) to travel ...

c. Dva dana ne spavam.
   Two days (I) not sleep (pres)
   I haven't slept for two days.

d. Dva dana nisam spavala.
   Two days (I) not slept (past imp)

When questioned, speakers say that the difference between (9a) and (9b) or between (9c) and (9d) is a difference in focus. When the present tense is used, the emphasis is on the fact that the situation being described is still going on at the moment of speech. (9a) implies that I am still longing to go to the Italian lakes and haven't much hope of going in the near future. (9b) suggests that perhaps I now finally have a chance to go: that is, my longing is a thing of the past. This feeling is even stronger in (10) (taken from Dubravčić 1970):

10. Oduvijek sam želila doći na talijanska jezera, i sad evo kako je to.
   I have always wanted (past imp) to come to the Italian lakes and now here is how they are.

Since I have now arrived at the lakes and am looking at them, my longing is definitely a thing of the past. Thus in this sentence the past is preferred to the present. Similarly, (9c) is felt to be more emotionally colored than (9d) - more self-pitying, said one speaker. In (9c) the emphasis is on my present condition; in (9d) the emphasis is on the length of time I have been without sleep.

However, the choice of tense in such sentences is not always free. In the following sentences the choice of tense is more or less prescribed (these are also from Dubravčić):

11a. Sad radim ovaj posao već dugo vremena.
   Now (I) work (pres)
   Now I have worked a long time on this task.

b. Mislila sam na tebe zadnja dva dana.
   I thought (past imp)
   I have thought of you for the last two days.

Sentence (11a) would be ungrammatical in the past tense, although without sad
"now" the past tense would be acceptable. In sentence (11b) the past is greatly preferred. Other examples in which the present is required, or at least preferred, are given in (12), and examples requiring the past in (13) (12 a, c, and e are from Dubravčić):

12a. Netko mi kradu knjige.
   Someone steals (pres) my books
   Someone has been stealing my books.

b. Netko mi je kralo knjige.
   steal (past imp)
   Someone was stealing my books.

c. Da li pravi budalu od sebe u posljednje vrijeme?
   Does he make (pres) a fool of himself ... 
   Has he been making a fool of himself lately?

d. ?Da li je pravio budalu od sebe u posljednje vrijeme?
   made (past imp)

e. Ti mi nanosiš bol čitavo vrijeme otkako smo u braku.
   You me bring (pres) pain ... since we are married.
   You have been causing me pain ever since we have been married.

f. ?Ti si mi nanosio bol čitavo vrijeme otkako smo u braku.
   You brought (past imp) me pain ...

g. Mislim na tebe već od juče.
   I think (pres) of you since yesterday
   I have thought of you since yesterday.

h. ?Mislila sam na tebe već od juče.
   I thought (past imp)

13a. Uvijek sam čitao mnogo.
   Always I read (past imp) a lot
   I have always read a lot.

b. Uvijek čitam mnogo.
   read (pres)
   I always read a lot.

c. Nedavno sam mnogo čitao
   Recently much I read (past imp)
   I have read a lot recently.

d. ?Nedavno čitam mnogo.
   read (pres)

e. Još se ništa nije dogodilo.
   Yet nothing happened (past pf)
   Nothing has happened yet.

f. Još se ništa ne dogada.
   happen (pres)
   Still nothing is happening.

It appears that some adverbs necessarily include the present moment, others necessarily exclude the present moment, and still others allow either interpretation. The following table shows a list of such adverbials and which tenses they take (that is, when used in sentences equivalent to the English present perfect):
Present only
  otkad "since"
  od juče "since yesterday"
  u posljednje vrijeme "lately"
  sad "now"

Past only
  nedavno "recently"
  zadnjih nekoliko dana "in the last few days"
  još "yet"
  uvijek "always"

Both present and past
  oduvijek "since always"
  već godinama "for years"
  dva dana "for two days"
  cijeli dan "the whole day"

The most reasonable proposal to make on the basis of such facts is that there are two cases in which the present perfect is used: first if the reference period extends up to but does not include the moment of speech, and second if the reference period includes the moment of speech. In the first case the Serbo-Croatian equivalent of the present perfect is the past tense, and in the second case it is the present tense. Which is the case is sometimes indicated by the context of the utterance and sometimes by an accompanying time adverbial. Certain adverbials, such as since, now, etc. name a reference period which includes the moment of speech, others such as recently and yet name an interval which excludes the moment of speech, and others can name either type of interval.

One requirement then for the use of the present perfect is that the reference period either extend up to or extend up to and include t₀. This can be stated formally as follows:

\[ X \text{ has } V-ed \text{ is true at } t₀ \iff \]

(i) for some \( t₁ < t₀ \), there exists a subinterval \( I \) of the interval \((t₁, t₀)\) such that \( X \)’s is true at \( I \); or

(ii) for some \( t₁ < t₀ \), there exists a subinterval \( I \) of \((t₁, t₀)\) such that \( X \)’s is true at \( I \).

Of course, this condition, although necessary, is not sufficient. We need in addition a condition requiring the "maintenance of the status quo". For the continuative perfect, this status quo is the protraction of the event itself. For the other types of present perfect, the status quo is some state of affairs \( \psi \) which is brought about by the completion of the action named by the verb (the exact content of \( \psi \) must remain unspecified, as it is often determined not by the semantics of the verb, but by the context). Whichever the case, this status quo must, in case (i) described above, remain true until \( t₀ \), and in case (ii) it must continue to be true at \( t₀ \).

4. In order to show how this interpretation of the present perfect can be used as a basis for the comparison of the tense systems of English and Serbo-Croatian, we need to appeal to the telic – atelic distinction introduced by Garey (1957) and discussed under a different name by Bennett and Partee (ms.). Briefly, telic VP's include those such as build a house, walk to the park and write a letter. These represent actions which are directed towards a goal, and one cannot truthfully utter
the sentence *He has V-ed* until that goal is reached. Atelic VPs include push a cart, run, sit, etc. These denote actions which are not directed towards a goal, and one can truthfully say *He has V-ed* at any moment of the interval at which he is V-ing. In Bennett and Fartee's terms, if a sentence containing an atelic VP is true at some interval \( I \), then it is true at any subinterval of \( I \). When a sentence containing a telic VP is true at \( I \), it is not the case that the sentence is true at any proper subinterval of \( I \).

Present perfects (non-progressive) of telic VPs will always be translated into Serbo-Croatian using the past perfective. There can be no interval \( I \) such as the following:

```
  \[ \begin{array}{c}
  t_1 \\
  \hline
  t_0 \\
  \hline
  t_2 \\
  \end{array} \]
```

Figure 5.

such that \( X V's \) is true at \( I \) and \( X \ has \ V-ed \) is true at \( t_0 \), where \( V \) represents a telic VP. According to the definition of telicity, if \( X V's \) is true at \( I = (t_1, t_2) \), then \( X V's \) cannot be true at \( (t_1, t_0) \), since this is a proper subinterval of \( (t_1, t_2) \). The sentence \( X \ has \ V-ed \), however, asserts that \( X V's \) is true either at \( (t_1, t_0) \) or at some subinterval of \( (t_1, t_0) \). Thus the event time must be entirely within the bounds of the reference period; consequently, the past perfective is used in Serbo-Croatian.

Present perfects of atelic VP's are translated into Serbo-Croatian as a present tense if the reference period includes the moment of speech (see 14a), and the past tense if the reference period excludes the present moment (see 14b):

14a. Na ovo čekam već godinama.
   For this I wait (pres)
   I have waited for years for this.
   b. Na ovo sam čekala već godinama, a sad evo ga.
   l waited (past imp)
   I have waited for years for this, and now here it is.

Sentence (14a) represents a situation such as the following:

```
  \[ \begin{array}{c}
  .t_1 \\
  \hline
  .t_0 \\
  \hline
  .t_2 \\
  \end{array} \]
```

Figure 6.

The waiting extends from \( t_1 \) to \( t_0 \), is still going on at \( t_0 \), and continues possibly beyond \( t_0 \). The sentence states nothing about the state of affairs after \( t_0 \); even if the waiting extends all the way to \( t_2 \), one can still truthfully utter (14a) at \( t_0 \). According to the definition of atelic, na ovo čekam "I wait for this" is true at any subinterval of \( (t_1, t_2) \), including \( (t_1, t_0) \). Sentence (14b) asserts only that the waiting goes on at \( (t_1, t_0) \). However, the sentence would not be contradicted if the waiting was still going on at \( t_0 \). It should be stressed, though, that where the event is only asserted to be going on throughout the interval \( (t_1, t_0) \), the past tense must
be used, regardless of the state of affairs at $t_0$.

There are also cases such as the following of atelic present perfects which definitely refer to a state of affairs which has now ceased:

15. Ja sam stanovala u Nju Jorku.
I have lived in New York.

In such cases the present perfect is translated by the past imperfective, which asserts that the state persisted throughout some proper subinterval of the reference period.\(^3\)

The translation of the present perfect progressive follows the same rules as atelics. Present perfect progressives are most often translated by the present tense as in (16) (taken from Dubravčić):

16a. Netko mi krada knjige.
Someone has been stealing my books.

b. Otkad sam prestala pušiti, stalno dobivam na težini.
Since I stopped smoking, I have constantly been gaining weight.

However, in cases such as the following (also taken from Dubravčić) we tend to find the past tense imperfective:

17a. Iscrpljen sam. Čitav dan sam radio.
I am exhausted. I have been working all day.

b. Kad se Tommy vratio te večeri kući, majka ugleda izgrebeno lice i natečeni nos is reče puna nade: "Jesi se tukao?"
When Tommy returned home that evening, his mother saw the scratches on his face and his swollen nose and said hopefully: "Have you been fighting?"

In (17a) if I am sitting down exhausted, I am clearly no longer working, and in (17b) since Tommy is now home, he is obviously no longer fighting. Thus the past imperfective is used in both sentences.

5. In this paper I have argued for a new concept of reference time which can account both for the use of the present perfect in English and the perfective aspect in Serbo-Croatian. With this concept of reference time, we are now able to show the relationship between the perfect tenses of English and the aspect system of Slavic languages - we also see that the perfect in English is not at all equivalent to the perfective aspect in Slavic. We should be able to extend this analysis to show correspondences between the tense system of English and those in other Indo-European languages, possibly even in non-Indo-European languages. This last, however, is a subject for future work.

Footnotes

1. This paper is a product of research I am presently carrying out for the Zagreb English – Serbo-Croatian Contrastive Project at the Institute of Linguistics in Zagreb. This project is aimed at helping English speaking learners of Serbo-Croatian; the volume I am now working on is devoted to problems of verbal tense. I will be using the scheme developed in this paper to predict errors in verbal tense that will be made by English speaking learners, predictions which are already partially confirmed by error analysis carried out by other members of the Project.
I owe gratitude to Dr. Filipović, director of the Institute, and other members of the Project for their cooperation in this undertaking. I especially want to acknowledge the work of Maja Dubravčić in the present perfect in English, which has been a major source of inspiration for this work.

2. It is not clear to me whether or not a telic present perfect can be used if the event fills up the entire interval \( (t_1, t_0) \). It is unclear whether a sentence such as *he has just eaten his porridge* implies that the action fills up this entire interval or not. However, it is clear that the event must be over at \( t_0 \).

3. Garey’s analysis of aspect in French would predict that an atelic of this sort would be translated by the periphrastic, since such sentences are translated by the passé composé in French. However, while Serbo-Croatian contains a limited number of atelic perfectives, these are not at all productive, and in most cases the imperfective will be used. For further discussion of this problem see Cochrane 1978.

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THE MYSTERIOUS SAMOAN TRANSITIVE SUFFIX 1
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The function of the Samoan verbal suffix -Cia (which marks passive in some other Polynesian languages) has remained a mystery for over a hundred years. In this paper I will attempt to solve this mystery by considering in separate sections the following questions:
I. What is the synchronic function of -Cia in Samoan?
II. Why does -Cia, which marks passive in Eastern Polynesian languages, have this function in Samoan?
III. Why is there variation from speaker to speaker and context to context concerning the presence of -Cia in certain sentences?
IV. Does Samoan have a rule of passive and if so, does -Cia mark passive in Samoan?

I. The neutral word order in Samoan is VSO. The subject of an intransitive verb is unmarked. 2

1) 'Ua sau / le tama. (intransitive)
   perfect come / the boy
   The boy has come.

   There are two case marking rules for transitive verbs. Canonical transitive verbs govern ergative case marking. The subject (henceforth ergative subject) is marked e and the direct object (henceforth ergative object) is unmarked. I will refer to this type of sentence as an ergative sentence.

2) Na fasi / e le tama / le teine. (ergative)
   past hit / by the boy / the girl
   The boy hit the girl.

   Middle verbs (verbs of emotion and perception) govern accusative case marking. The subject (henceforth accusative subject) is unmarked and the object (henceforth accusative object) is marked i. I will refer to this type of sentence as an accusative sentence. 3

3) Na va'ai / le tama / i le teine. (accusative)
   past see / the boy / to the girl
   The boy saw the girl.

   As "subject" in the above examples I am referring to that NP in a given sentence which responds to the major cyclic rules of Equi and Raising. E.g., Equi: 4

4) E mana'o le tama e fasi le teine.
   unmarked want the boy unmarked hit the girl
The boy wants to hit the girl.

5) E mana'o le tama e va'ai i le teine.
    umm, want the boy umm. see to the girl
    The boy wants to see the girl.

Notice, however, that the ergative subject of (2) "looks" like an oblique NP in that it is preceded by a marker. The direct object, on the other hand, looks more like the unmarked subjects of (1) and (2).\footnote{5}

The so-called transitive suffix -Cia ((consonant)(i)a or its alternate form -ina) tends to appear in ergative sentences whose subjects have undergone the fronting rules of Question Formation, Clefting, Relativization and Clitic Placement.\footnote{6}

6) 'O ai na fasi-ina le teine?  
   (Question Formation)
   predicate who hit-Cia the girl
   Who hit the girl? / lit: Who is it that hit the girl.
7) 'O le tama na fasi-ina le teine.  
   (Clefting)
   pred. the boy past hit-Cia the girl
   It is the boy who hit the girl.
8) 'O fea le tama na fasi-ina le teine?  
   (Relativization)
   pred. where the boy past hit-Cia the girl
   where is the boy who hit the girl?
9) Na ia fasi-ina le teine.  
   (Clitic Placement)
   past 3rd hit-Cia the girl
   He hit the girl.

-Cia in sentences (6-9) has the synchronic function of signaling that an ergative subject (and not some other type of NP) has been fronted.\footnote{7} I will illustrate with Clitic Placement. First we pronominalize the subject of (2).

10) Na fasi e ia le teine.  
   (Pronominalization)
   past hit by 3rd the girl
   He hit the girl.

Clitic Placement moves the subject pronoun into second position and if the subject is an ergative subject,-Cia appears suffixed to the verb (9=11).

11) Na ia fasi-ina le teine.  
    (Clitic Placement)
    past 3rd hit-Cia the girl
    He hit the girl.

Note that when the ergative subject of (10) was fronted to second position, it lost its case marker e.\footnote{8} -Cia therefore must have been inserted in (11) to compensate in some way for the loss of this case marker — or more specifically to function as the case marker did by identifying the fronted NP as an ergative subject.
NPs in general lose their case markers when they are fronted. Consider Clefting applied to the NPs of (2) and (3).9

12) 'O le tama na fasi-ina le teine. (ergative subject) 
   pred. the boy past hit-Cia the girl 
   It is the boy who hit the girl.
13) 'O le teine na fasi e le tama. (ergative object) 
   pred. the girl past hit by the boy 
   It is the girl who the boy hit.
14) 'O le tama na va'ai i le teine. (accusative subject) 
   pred. the boy past see to the girl 
   It is the boy who saw the girl.
15) 'O le teine na va'ai ai le tama. (accusative object) 
   pred. the girl past see pronoun the boy 
   It is the girl who the boy saw.

The unmarked ergative object of (2) and the unmarked accusative subject of (3) have nothing to lose when they are fronted in (13) and (14). But when the marked accusative object of (3) is fronted in (15) it leaves behind a pronominal copy (ai). It seems reasonable then that when the marked ergative subject of (2) is fronted, it too should leave behind a marker (-Cia) to signal what type of NP has been fronted. This means, however, that for superficial syntactic rules ergative subjects act more like what we would expect of oblique cases than subjects in that they leave behind some kind of signaling device. 10,11

II. Why does -Cia, which marks Passive in the Eastern Polynesian languages, serve as a flag for fronted ergative subjects in Samoan?

Chung (1976) has argued convincingly in favor of the hypothesis that Proto-Polynesian was accusative and that it had a productive rule of Passive.12 This rule survived in the Eastern Polynesian languages. In the Tongic and Samoic-Outlier languages, however, passive sentences were reanalyzed as active transitive. In Samoan the ergative case marking of sentences such as (2) is the result of this reanalysis.

As for sentence morphology, Proto-Polynesian was accusative (cf.(3)).

16) Verb Subject i Direct Object

Proto-Polynesian also had a productive rule of Passive which removed the subject to an agentive oblique case (marked e) and promoted the direct object to subject. The verb was suffixed with -Cia.13

17) Verb-Cia Subject 
    (= underlying object) e Agent 
    (= underlying subject)
Passive sentences were very common in Proto-Polynesian. In the Tongic and Samoic-Outlier languages passive sentences were reanalyzed as active transitive. This resulted in the reinterpretation of the passive agentive phrase of (17) as an ergative subject.

18) Verb-Cia e Subject Direct Object

-Cia was eventually deleted from sentences in which it had no function. It was probably deleted first from the most syntactically simple sentences. -Cia deletion spread through the grammar from one sentence type to another and in this way the ergative morphology of (2) became the norm for canonical transitive sentences. However, this change (the deletion of -Cia) has not been effected in sentences with fronted ergative subjects (6-9). I propose that -Cia was retained in this context because the loss of the case marker e was interpreted as potentially damaging to the surface syntax. -Cia was already associated with the marker e since together they had marked sentences as passive. I suggest then that the grammar "took advantage" of the presence of -Cia in reanalyzed passive sentences (18) and retained it as a flag for fronted ergative subjects.

Notice also that Passive and the fronting rules of (6-9) are related in that they both extract subjects. Passive typically removes the active subject to an oblique case. The fronting rules of (6-9) also extract subjects. These rules are different in that Passive changes grammatical relations and the fronting rules do not. Note, however, that the addition of the passive-to-ergative reanalysis nullified the relation-changing effect of Passive. -Cia today in sentences like (6-9) no longer marks a change in grammatical relations. And yet the same suffix which marked one type of subject-extracting rule (Passive in Proto-Polynesian) has survived to mark another (fronting rules in Samoan).

On the basis of the passive-to-ergative hypothesis we can explain that the subject of a Samoan ergative sentence looks and acts like an oblique NP on the surface because it developed out of a passive agentive phrase. I interpret the fact that the ergative subject is "backed up" by -Cia when it loses its case marker as evidence that it hasn't yet achieved full acceptance as a subject. In the next section I will present synchronic evidence in support of this claim.

III. Up to this point I have ignored the fact that -Cia does not always appear in sentences such as (6-9) and I have dealt with sentences in isolation. I will now describe the conditions under which -Cia tends not to appear in such sentences, but in order to understand these conditions we must look at sentences in context. We will see that the acceptability of (6-9) without the suffix varies from speaker to speaker and from context to context — but it varies systematically.
For the historical reasons given above, I will consider the tendency to retain -Cia an indication of a more conservative grammar and I will consider those who have this tendency as more conservative speakers. On a conservative-to-liberal continuum I will refer to four groups: the most conservative, liberal, and the most liberal (see chart below).

The most conservative speakers always insert -Cia in sentences such as (6-9), the most liberal never insist on it, although they do not find its presence ungrammatical. The vast majority of speakers fall between the two extremes. These speakers will not insist on -Cia insertion in sentences such as (6-9) if they can interpret the fronted NP as a subject. This itself depends on what subject-like properties the NP has already acquired in previous discourse.

For example, if we overheard a conversation about a certain boy, we might break into the conversation by asking (19), (20) or (21). We could expect an answer such as (9)(copied here as (22)).

19) 'O le ā lau tala e uiga i le tama?
pred. the what your statement um. concern to the boy what did you say about the boy?
20) 'O le ā le mea na fai e le tama?
pred. the what the thing past do by the boy what did the boy do?
21) 'O le ā le mea a le tama na fai?
pred. the what the thing of the boy past do what did the boy do?
22) Na ia fasi(-ina) le teine.
past 3rd hit-Cia the girl He hit the girl.

In (19) attention is drawn to the boy as a topic to be discussed. Liberal speakers will accept (22) without -Cia as an answer to (19); conservative speakers will not. Conservative speakers will insist on -Cia in (22) if it is the answer to (19). Both liberal and conservative speakers, however, will accept (22) without -Cia if it is the answer to (20) or the more idiomatic (21). Le tama in (20) is overtly marked as an ergative subject. In (21) it is marked as an agentive possessor. We see then that if an animate NP is introduced as a topic in a given question, for liberal speakers it qualifies in the answer as a subject without being backed up by -Cia. Conservative speakers, however, require that the NP be established as at least an agent (21). I interpret this as evidence that ergative subjects in Samoan are still in the process of being accepted as full subjects.

Note also that (at least for Samoan canonical transitive verbs) an NP is more likely to qualify as a subject if it is an agent than if it is a topic.

What would happen if there were no previous discourse con-
cerning the boy? Suppose we saw the girl badly bruised. We could ask (6) and expect an answer like (7)(copied here as (23) and
(24)).

23) 'O ai na fasi-inä le teine?
pred. who past hit-Cia the girl
who hit the girl?
24) 'O le tama na fasi-inä le teine.
pred. the boy past hit -Cia the girl
The boy hit the girl.

Under these conditions both liberal and conservative speakers would insert -Cia in both the question and the answer. This makes sense in that it is precisely with these sentences that the identity of the subject is established. It seems that until the referent of the subject is identified, no NP can be assumed to be a subject.

<table>
<thead>
<tr>
<th>-Cia Insertion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NP role in previous discourse</strong></td>
</tr>
<tr>
<td>none</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>✓</td>
</tr>
</tbody>
</table>

most conservative

conservative

liberal

most liberal

Ignoring variation from speaker to speaker, we can also make generalizations about Samoan relative clauses and situations involving presupposition. Restrictive relative clauses are typically used to identify the referent of an NP. The relative clause in (8) is restrictive with -Cia (=25); it is unrestrictive without -Cia (=26). Returning to our conversation about the boy who hit the girl, if I first asked you who hit the girl (23) and you answered that the boy did (24), I could then ask you (8) without -Cia (=26) because in (24) you had established the boy as subject. The restrictive clause in (25) would be used under different circumstances.

25) 'O fea le tama na fasi-inä le teine?
(pred. where the boy past hit-Cia the girl
(I am asking you) where is the boy who hit the girl?
26) 'O fea le tama na fasi le teine?  (unrestrictive)
(pred. where the boy past hit the girl
(I am asking you) where is the boy (about whom you have asserted that) he hit the girl?

-Cia deletion also involves presupposition. If we find the
boy who we are assuming hit the girl, we can approach him and ask:

27) 'Aiseā na 'e fasi ai le teine?
   why past you hit pron. the girl
   why did you hit the girl?
   Presupposition: You hit the girl for a reason.
   Question: What was that reason?

Even though we had no previous conversation with the boy himself in which we might have established him as subject, -Cia is not likely to appear in (27) because we are assuming that the boy did in fact hit the girl.

The same is generally true of three-place predications in which the subject-object relationship is assumed and an assertion is made about an oblique object.

28) 'O le tama na 'ave le tusi i le teine.
   pred. the boy past give the book to the girl
   The boy gave the book to the girl.
   Presupposition: The boy gave the book to someone.
   Assertion: It was the girl (that he gave the book to).

In short, -Cia serves to identify an unmarked fronted NP as an ergative subject. Speakers, however, may choose not to insert -Cia when they can interpret a fronted NP as a subject because it has acquired subject-like properties in previous discourse or because it is the assumed subject of a presupposition.

IV. No discussion of the Samoan transitive suffix would be complete without considering the century-old controversy as to whether or not Samoan has a passive voice and in particular whether or not -Cia marks passive in Samoan. Passive as a major cyclic rule which changes grammatical relations and feeds other major cyclic rules does not exist in Samoan. Such a rule, as proposed above for Proto-Polynesian, must have existed at some earlier stage since what we have today are the remnants of a once productive rule.

What do we expect a rule of Passive to do and how are these functions carried out today in Samoan? Passive typically demotes the active subject to an oblique case and promotes the direct object to subject. This, along with certain side effects (coding devices, semantic effects, etc.), comprises a definition for a given language (Perlmutter and Postal 1974). To begin with, we expect Passive to have a syntactic function. We have seen above that -Cia, which marks Passive in Eastern Polynesian languages, does have a syntactic function in Samoan in that it serves as a flag for fronted ergative subjects. But we expect a rule of Passive to change grammatical relations. -Cia does not mark a change
in grammatical relations (for the historical reasons given above). This does not mean, however, that we cannot promote a direct object to a type of psychological subject at least on a superficial level even though this direct object does not acquire the subject-like property of responding to the subject-referring rules such as Equi and Raising. To say it simply, we can "talk about" direct objects. To give an example, sentence (2) is in the neutral word order. It could be the answer to "What happened?" or "What did the boy do?" (20-21). If, however, we asked "What happened to the girl?" (29), we could expect (30) as an answer. In Samoan the NP which is "talked about" (le teine of (30)) is likely to move left, be pronominalized or even deleted (as suggested by the parenthesis of (31)).

29) 'O le ā le mea 'ua tupu i le teine?
   pred. the what the thing perf. happen to the girl
   What happened to the girl?
30) Na fasi le teine e le tama.
   past hit the girl by the boy
   The boy hit the girl. / The girl was hit by the boy.
31) Na fasi ('o ia) e le tama.
   past hit 3rd by the boy
   The boy hit her. / She was hit by the boy.

We see then that for pragmatic purposes the direct object can acquire the subject-like property of being "talked about" even though this type of promotion only has a clause-internal effect. What is of importance is to note that -Cia does not appear in (30) which is the closest thing in Samoan to the corresponding English passive sentence.

We would also expect a rule of passive to derive some type of agentless construction. In Samoan, if a process is described which we know must involve an agent and yet that agent is of no importance, the simple form of the verb is used and the agent fails to appear in the sentence.

32) 'Ua 'eli le lua e tamu ai atigi 'apa.
   perf. dig the hole urn. bury pro. empty tin
   A hole was dug to bury the empty tins. (Milner 1966:41)

If, however, an action is described in which the agent plays a significant role, even though the agent is unknown, his presence can be implied by inserting -Cia. 24

33) 'Ua gacia o'u 'ofu.
   perf. steal -Cia my clothes
   My clothes are (have been) stolen. (Milner 1966:76)

We see then that although -Cia can imply the presence of an agent (33), it is not inserted in "impersonal passives" such as (32).
Up to this point we have only considered the syntactic function of -Cia in Samoan. The truth is -Cia has also survived to mark semantic aspects typically associated with Passive. Notable among these is what Milner (1962, 1966, 1973) calls the perfective aspect. The suffix -Cia can emphasize the results or completion of the action.

34) Na fuia le togālā'au e le tama.
    past water-Cia the garden by the boy
    The boy has watered the garden. (Milner 1966:72)

It can also make the agent or action seem remote (Chung 1976:73).

35) 'Ua mana'omia oe e le ali'i.
    perf. want -Cia you by the chief
    The chief wants you. (Milner 1966:128)

-Cia can also stress the duration or generality of the action (Chung 1976:72).

36) 'Ua alofagia 'itātou e le nu'u.
    perf. love -Cia we by the village
    we are well-treated by the village. (Milner 1966:17)

The action expressed by the suffixed form is often more intense or complicated or involves more people than that expressed by the simple form (compare fasi: "hit" in (2) with fasia: "beat up" in (37)).

37) 'Ua fasia le taliga a tama.
    perf. hit-Cia the elopement-party of boy
    The boys' elopement party was beaten up. (Milner 1966:237)

It is easy to see why it has been claimed that -Cia in Samoan marks Passive. Many of the above examples show an orientation towards the direct object. However, as we saw in (30-32), -Cia does not have to be present in order to "talk about" the direct object.

Another reason why it might be claimed that Samoan has a rule of Passive is that it is possible to find pairs of sentences, one of which is active and the other "looks" passive.

38) Sā manatu le tama i le teine.
    past think the boy about the girl
    The boy thought about the girl.

39) Sā manatua le teine e le tama.
    past remember the girl by the boy
    The boy remembered the girl.
    The girl was remembered by the boy.
But if we apply a subject-referring rule such as Clitic Placement to (39), we see in (40) that it is the semantic subject which responds and not the object. In other words, -Cia in (39) does not mark a change in grammatical relations.

(40) Sa ia manatua le teine.
    past 3rd remember the girl
    He remembered the girl.

Manatua in (39) can be considered a derived transitive verb since it governs ergative case marking (as does fasi in (2), for example). Also, this derivation should be lexical since there is an obvious change in meaning (manatu: think, manatua: remember).

We see then that -Cia is also employed to derive canonical transitive verbs (manatua) from middle verbs (manatu). The morphology of (39), therefore, is not the result of a syntactic rule of Passive but of a lexical rule of derivation.

I will summarize by answering the four questions outlined in the introduction:

I. -Cia has several synchronic functions in Samoan. On a syntactic level it serves as a flag for fronted ergative subjects. On a semantic level it marks the aspects typically associated with Passive. -Cia is also a part of a lexical process by which one type of verb is derived from another.

II. The fact that -Cia has more than one function can be explained historically. Proto-Polynesian had a rule of Passive. In the Tongic and Samoic-Outlier languages passive sentences were reanalyzed as active transitive. -Cia, which had marked Passive in Proto-Polynesian, survived with different functions on several levels of grammar.

III. There is variation from speaker to speaker and from context to context concerning the presence of -Cia in sentences with fronted ergative subjects because ergative subjects are still in the process of being accepted as full subjects without being backed up by -Cia.

IV. Passive is no longer a productive syntactic rule in Samoan. Direct objects may be promoted to a type of psychological subject for pragmatic purposes. There are sentences in Samoan which look passive and yet their direct objects do not respond to subject-referring rules.

The passive-to-ergative reanalysis nullified the relation-changing effect of the formerly passive morphology. Therefore -Cia, the "mysterious Samoan transitive suffix", no longer marks a change in grammatical relations.
NOTES

1. I credit the term "mysterious transitive suffix" to Chung (1976).
2. A note on phonology: ' represents a glottal stop, g is a velar nasal.
3. I consider sentences such as (3) transitive because their objects respond to direct-object-referring rules such as Object Incorporation (Chung 1976:198). Churchward (1951:25) considers middle verbs "semi-transitive".

Generally middle verbs govern accusative case marking and canonical transitive verbs govern ergative. There is evidence, however, that verbs of contact (e.g. fasi in (2)) permitted both (now they allow only ergative) and ergative case marking is now being extended to verbs of perception (Chung 1976:146). In short, the semantic class of the verb cannot always be trusted for decoding the case marking.

4. I have defined "subject" in this way for the reasons given in Anderson (1976).

Actually there are two types of Raising in Samoan. One type governed by verbs such as mafai ("be able") raises only subjects. The other type governed by verbs such as māsani ("be accustomed") raises all types of NPs (Chung 1976:149).

5. The subject properties (Keenan 1976) do not converge on either NP of this type of sentence.

6. Chung (1976:61) and I independently reached the same conclusions concerning the types of sentences in which -Cia tends to appear.

The 'o of sentences (6-8) and below is not a case marker. It marks nominal predications and occasionally serves as a dummy verb since Samoan does not tolerate noun-initial sentences.

7. I am only considering the syntactic function of -Cia at this point. In section IV I will consider its semantic and lexical functions. For the time being I will also ignore the fact that -Cia does not always appear in these environments. This will be discussed in section III.

8. It is not fronting a subject per se which conditions the insertion of -Cia. When we apply Clitic Placement to the accusative subject of (3), -Cia does not appear:

Na ia va'ai i le teine.
past 3rd see to the girl
He saw the girl.

9. (12-15) represent the most common phrasing of such sentences. Both ergative and accusative subjects, however, can also leave behind pronouns. Note that this violates the Keenan-Comrie (1977) claim that a strategy must apply to a continuous segment of the Accessibility Hierarchy. Pronominalization in Samoan "skips" ergative direct objects. Keenan and Comrie (1977:86) have offered a historical explanation for this phenomenon in Tongan which is
essentially the same as that offered below for Samoan.

10. Note that the verb is marked under conditions essentially opposite to those of the English passive. In Samoan fronting the subject marks the verb, in English fronting the direct object. This causes problems for Samoans when they speak English:

i "Can you fixed my T.V.?'
ii "You won't mind if your room is change.(?)"

11. Churchward (1951:72) claims that -Cia incorporates the meaning of an object pronoun:

i=11) Na ia fasi-ina le teine.
     past 3rd hit-Cia the girl
     He hit (her) the girl.

That -Cia in (i) is conditioned by the presence of an un-marked fronted ergative subject can be easily shown simply by deleting the pronoun:

ii) Na fasi le teine.
     (He) hit the girl.


13. I propose this word order because the NP which is "talked about" in Polynesian languages in general immediately follows the verb and because in older Samoan texts "relic" sentences which have "passive" morphology tend to have this word order.

11. There is comparative evidence which supports this claim. In Pukapukan (another Samoic-Outlier language) which apparently is now undergoing the passive-to-ergative reanalysis, Passive is still a productive rule which feeds other rules. eNPs can undergo Clitic Placement and Question Formation only if the verb is marked with the passive suffix -Cia (Chung 1976:92,167).

15. I am assuming that fronting rules operated then as they do now in that NPs lose their case markers when they are fronted.


17. This was essentially what Pratt (1911:25) had noticed when he claimed that verbs suffixed with -Cia were deponent (passive in form, active in meaning) when they appeared with clitic pronouns.

18. See Chung(1973) for a related discussion concerning ergative subjects and nominalizations in Samoan.

19. My informants were: Falana'i Ala, Leitū Teofilo, Louā Lili'o, Vao Lepolo, Henry Mitchell, Willie Uili, Reupena and Sina Samuelu, Lila Lokeni, Ta'itasi Ta'itasi, Noela Hymas, Joe 'Auva'a, Gogo and Veve Vaimili, 'Ese Lemusu, Iose and Seteuati Aula'i, Olo Leifi, Sila Kupu and the members of the family of 'Aumua Pa'ala — in particular Lemalie, Otaota, Lafodina, Suluf'aga and Enele'i.

20. Samoan has two ways of marking possession: a marks domi-
nant possession and 0 marks subordinate. Possessors of activities are marked a (Chung 1973:6413).

21. Of course the elliptical answer "0 le tama." would also be acceptable.

22. In terms of operators the difference is that a restrictive relative clause (25) is under the sentential qualifier (QUESTION) of the main clause; an unrestrictive relative clause (26) has its own sentential qualifier (ASSERTION) (Seuren 1969:190).

23. For the sake of exposition I am ignoring stress. "Talked about" NPs also tend to be unstressed. Contrastive stress can reverse effects.

24. This use of -Cia is obviously related to the flag function described in section 17.

25. Clitic Placement is available to subjects only. I credit this argument to Milner (1962). Clitic Placement is a superficial movement rule, but the same results are obtained when major cyclic rules such as Equi and Raising apply.

26. What is interesting to note is that, along the lines of Fillmore (1977), when the object is preceded by a preposition (i), it is interpreted as indirectly affected by the action (3, 38), but when the object has no preposition, it is interpreted as more directly affected (2, 39, etc.). Fillmore points out that there is a similar lexical process in Hungarian which also involves a perfectivizing affix (fn. p.77).

27. This is probably why Churchward (1951) claims that -Cia marks a verb as formally transitive. In particular a transitive verb can be derived from an intransitive verb by means of this suffix (tatalo: pray, talosia: pray for).

The word order of (39) can be attributed to the type of promotion to psychological subject described above for (30). In other words, if we were talking about the boy specifically, e le tama would more naturally precede le teine.

28. There are also minor functions which are grammatically predictable. See Chung (1973) for -Cia in nominalizations.

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----. 1973. It is aspect (not voice) which is marked in Samoan. Oceanic Linguistics 12:621-639.
WHY SHOULD TURKISH RELATIVIZATION DISTINGUISH BETWEEN SUBJECT AND NON-SUBJECT HEAD NOUNS?

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In his 1972 article 'Turkish Particles' Underhill analyzed the Turkish Relative Clause construction and classified them into two types, which were exemplified as in (1) and (2) (1972:87).

(1) mektab-e gid-en oğlan
   school-DAT go-part boy
   'the boy who goes to school'

(2) oğlan-in git-tiğ-i mektab
   boy-GEN go-part-3s school
   'the school which the boy goes to'

He generalized from these examples that "when the head noun is the subject of the underlying sentence, a construction of the -En type appears, while if the head noun is not the subject, a construction of the -DiG type appears." (1972:88) Thus (1) and (2) are both derived from (3).

(3) oğlan mektab-e gid-er.
   boy school-DAT go-pres
   'The boy goes to school.'

In (1) the head noun oğlan 'boy' is derived from the subject of the underlying sentence, while in (2) the head noun mektab is derived from the noun which has a dative relation to the verb.

In a recent article, Hankamer and Knecht have also come to the same conclusion. "The SP appears when the target of relativization is the subject of the RC and the OP appears when the target is a non-subject."¹ (1976:198-199)

However, the authors of both articles are aware of the fact that this statement is not entirely adequate and the suffix -(y)En sometimes appears even when a non-subject is relativized as exhibited by them in the following examples.

(4) alt-in-dan su ak-an kapı
    bottom-3s-ABL water flow-SP door
    'the door that water is flowing out from under'

which is derived from

(5) Kapı'nın alt-in-dan su ak-iyor.
    door-GEN under-3s-ABL water flow-pres
    'Water is flowing out from under the door.'
(Underhill 1972:90-91)

(6) yılan-ı kabağ-ı yi-yen adam
    snake-poss squash-ACC eat-SP man
    'The man whose snake ate the squash.'

which is derived from

(7) Adam-in yılan-ı kabağ-ı ye-di.
    man-GEN snake-poss squash-ACC eat-past
    'The man's snake ate the squash.'

(Hankamer and Knecht 1976:199)

Hankamer and Knecht find Underhill's explanation of the pre-
ceeding phenomenon inadequate and they make an attempt to present a
more adequate analysis of the problem. Although they draw atten-
tion to some significant points in the choice of the suffixes
-Dİk and -(y)En in Turkish relativization, their analysis conceals
the essence of the mechanism. Following the same strategy as
Underhill, they begin their analysis with the assumption that SP
is used when the subject of the underlying sentence is relativized
and so their task is to account for the usage of SP with a non-
subject head noun. The analysis of the problem from this perspec-
tive might only result in the description of cases in which -(y)En
is used with non-subject head nouns but it is inadequate to reveal
the reasons why -(y)En is used when -Dİk is expected by the prin-
ciple stated previously. This view obscures what is really hap-
pening during the process of relativization. It raises the ques-
tion "Why should Turkish relativization distinguish between a sub-
ject and non-subject head noun?" Since there is no explicit or
implicit agreement between the participial verb and the subject
head noun, it follows that there is no point in distinguishing be-
tween the head nouns which are derived from a subject and non-
subject member of the underlying sentence.

Therefore, I will approach the problem from a different per-
spective in the light of the syntactic and semantic characteris-
tics of Turkish sentence structure such as word order, the func-
tion of case suffixes, definiteness and indefiniteness. Only from
this perspective can we see that the main purpose of choosing
-(y)En or -Dİk is not to distinguish between the subject and non-
subject head nouns. Instead, -Dİk is obligatorily chosen whenever
the subject which remains in the Relative Clause (RC) takes the
genitive suffix (GEN-S). As a natural result of this principle,
when there is no subject in the underlying sentence at the time of
relativization or when the subject is deleted due to the subject
relativization, the PS -Dİk is not needed and so the PS -(y)En
takes its place.

The rules involved in the RC formation are as follows:

I. Coreferential NP Deletion (CNPĐ): Delete the NP which
    is coreferential with the head noun.
II. Genitive Suffix Attachment Rule (GSAR): If the deleted NP is not the subject, add the GEN-S to the subject of the clause. The conditions for the application of this rule will be given later.

III. Participle Suffix Attachment Rule (PSAR): If the GSAR applies, then obligatorily choose the PS -DIk; otherwise, choose the PS -(y)En.

IV. Possessive Suffix Attachment Rule (Poss-SAR): If the PSAR chooses -DIk, then obligatorily add a Poss-S to the participle verb which agrees in number and person with the subject of the RC.

The only problem to be solved lies in the question "When does the GSAR apply?" Since the choice of appropriate PS depends on whether or not this rule applies, an answer to the above question will be sufficient to account for the choice of -(y)En or -DIk. However, before making an attempt to answer this question, I will first present a brief summary of case endings and their function and the role of word order in determining the functions and definiteness or indefiniteness of NP's in Turkish sentences.

In Turkish sentences the relationship between NP's and the verb is basically denoted by certain case endings.

Accusative (ACC): -(y)I
Dative (DAT): -(y)E
Locative (LOC): -DE
Ablative (ABL): -DEn
Genitive (GEN): -(n)In
Nominative (NOM): Ø (zero case ending)

A case ending is attached only to the final element of a nominal group. All the oblique objects in a sentence are marked with one of the three case endings: DAT, LOC, or ABL. The subject is always in nominative case regardless of its definite or indefinite feature (with zero case ending). The indirect object takes the DAT case ending -(y)E and the direct object (DO) takes the ACC case ending -(y)I if it is definite. When the DO is indefinite and immediately precedes the predicate, which is its unmarked position, it appears in the nominative case. This means that a sentence may have two NP's without a case ending. In such a sentence, if one of the NP's is definite, it will be understood as the subject. If it were the DO, it would have the ACC case ending.

(8) Pınar bir köpek kovalı-yor.
    a dog chase-pres
    'Pınar is chasing a dog.'

However, the occurrence of an indefinite subject and an indefinite DO would certainly suggest the necessity of some kind of strict word order since case markings fail to indicate the functions of these two NP's in the sentence. For example, consider (9)
(9) Bir köpek bir çocuk kovalı-yor.
   a dog   a child chase-pres
   'A dog is chasing a child.'

In (9) both the subject and the DO are indefinite. So both of them are in the nominative case. There is no morphological marker to indicate the difference in the relationship of the NP's to the verb. In such a case, the order of the NP's becomes crucial.

(10) Bir çocuk bir köpek kovalı-yor.
   a child   a dog   chase-pres
   'A child is chasing a dog.'

As seen in (10), a change in the order affects the function of the NP's. Thus when the DO has to be removed from the preverbal position, it has to be marked with the ACC case ending.

(11) Bir çocuğ-u bir köpek kovalı-yor.
   a child-ACC a dog   chase-pres
   'A dog is chasing a child.'

It follows that the unmarked order of the constituents in a Turkish sentence is: SUBJECT, INDIRECT OBJECT, DIRECT OBJECT, VERB as indicated in (12).

(12) Aytül Pınar-a kalem-i ver-di.
   -DAT pencil-ACC give-past
   'Aytül gave the pencil to Pınar.'

In a transitive sentence the preverbal position is the unmarked position for the indefinite DO and in an intransitive sentence the preverbal position is the unmarked position for an indefinite subject. This means that the indefinite DO of a transitive clause and the indefinite subject of an intransitive clause do not have to be marked for their functions as long as they appear in preverbal position. This is a very important fact which plays a significant role in the choice of -DIk or -(y)En in relativization.

One of the functions of the GEN-S is to mark the subject of an embedded clause. It has two important functions in relativization: to distinguish the subject which remains in the RC from the subject of the sentence in which the RC appears; to prevent any change in the function and definite and indefinite feature which might be caused by the deletion of the coreferential NP in the process of relativization. In order to fulfill these two functions the GSAR applies obligatorily

A. to the subject of a transitive verb regardless of the definite or indefinite feature of the subject
B. to the definite subject of an intransitive verb and to the indefinite subject when it does not occupy the preverbal position.
Now I will discuss each application of GSAR and explain the reason why the rule is necessary under such conditions.

A. The GSAR is obligatory for the subject of a transitive participial verb as indicated in the examples below.

(13) a. Çocuk bir köpek kovala-yor.
    boy a dog chase-pres
    'The child is chasing a dog.'

b. çocuk-un ø kovala-diğ-ı köpek
    child-GEN chase-PS-POSS dog
    'the dog which the child is chasing.'

c. *çocuk ø kovala-yan köpek (in the intended
    child chase-PS dog meaning)
    'the dog which is chasing a child'

(14) a. Bir çocuk bir köpek kovala-yor.
    a child a dog chase-pres
    'A child is chasing a dog.'

b. Bir çocuk-un ø kovala-diğ-ı köpek
    a child-GEN chase-PS-POSS dog
    'The dog which a child is chasing'

c. *Bir çocuk ø kovala-yan köpek (in the intended
    a child chase-PS dog meaning)
    'the dog which is chasing a child'

As previously pointed out, the linear order of the NP's in a Turkish sentence is very important in some cases as an indication of the grammatical relationship of the NP's involved. (See examples in 9-10) For example, in a sentence like (14a) in which both the subject and the DO are indefinite, the unmarked order is S DO V and this order cannot be changed without causing change in the grammatical relationship of the NP's. It follows that the NP in the preverbal position will be understood as the DO of the sentence. In both (13c) and (14c) the deletion of the DO bir köpek 'a dog' causes the subject to appear in the preverbal position of the participial verb and so it will be identified as the DO. In order to prevent this change, the effect of the preverbal position must be nullified. This can be done by adding the GEN-S which fulfills the function of marking the subject of an embedded sentence as seen in (13b) and (14b).

When the subject is relativized, the deletion of the subject çocuk 'child', which is in the initial position, will not cause any change in the word order and so the NP's will retain their grammatical relationship. Therefore, the relativization of the subject does not require the GSAR. Following the rules of relativization the PS -(y)En will be chosen.

(15) Bir köpek kovala-yan çocuk
    a dog chase-PS child
    'The child who is chasing a dog'
The principle stated in (A) is based on the unmarked word order in Turkish sentences. In the marked order, the application of the GSAR depends on the semantic properties of the members in the clause and/or on the process of noun-incorporation, which is very common and productive in Turkish. For example, in (16) and (17), which are structurally parallel, the indefinite subject köpek 'dog' is moved to the preverbal position.

(16) Kız-ı köpek ısr-ı
    girl-ACC dog bite-past
    'A dog bit the girl.'
(17) Kız-ı köpek kovala-ı
    girl-ACC dog chase-past
    'A dog chased the girl.'

Relativization of the DO kız-ı 'the girl' without the application of the GSAR is possible for (16) while it is not for (17) because the grammatical relation of the NP's is destroyed by the process as will be seen in (19).

(18) ∅ köpek ısr-an kız
    dog bite-PS girl
    'The girl that a dog bit'
(19) ∅ köpek kovala-yan kız
    dog chase-PS girl
    'the girl who chased a dog'

It is obvious that the semantic properties of the members in the sentence and the extra-linguistic knowledge of the speaker play a role in the identification of the grammatical relations in (18). However, in (19) since it is also possible that a girl might chase a dog too and since there is no morphological marker left in the clause to indicate that the deleted NP was the DO, the grammatical relations in the RC are determined on the basis of the unmarked order of Turkish sentences which is S DO V, and kız is understood as the subject.

Now consider the following examples.

(20) Kız-ı-nı köpek kovala-yan adam
    daughter-POSS-ACC dog chase-PS man
    'The man whose daughter a dog is chasing'

which comes from

(21) adam-in kız-ı-nı köpek kovala-yor.
    man-GEN daughter-POSS-ACC dog chase-pres
    'A dog is chasing the man's daughter.'
and (22) Kız-1 köpek kovala-yan adam
daughter-POSS dog
'the man whose daughter is chasing a dog'

which comes from

(23) adam-ın kız-1 köpek kovalı-yor.
man-GEN daughter-POSS
'The man's daughter is chasing a dog.'

In (20) the DO kız-1-nı is marked with the ACC case ending so köpek 'dog' can be understood only as the subject. In (22) kız-1 is marked as a subject by the absence of a case ending. If it were the DO it would obligatorily take the ACC case ending following the rule that the possessive NP's are always considered definite and so they appear in the ACC case. It follows that the process of relativization and the assignment of the GEN case are based on whether or not it is possible to identify the subject and the DO. In other words, the GSAR operates whenever the relations of the subject and the DO are not indicated by means such as other case suffixes, word order, semantic properties of the members in the sentence etc. Of the six case suffixes previously presented, five of them operate both in the embedded sentence and in the matrix sentence. The GEN-S operates only in the embedded sentence. Thus the GEN-S is employed when all the other means fail to indicate the relations of the NP's in the embedded sentence. Therefore, Hankamer and Knecht's claim that "no matter what is relativized out of a clause with an indefinite subject, the RC is constructed with the SP," (1976:217) is too general a conclusion. It is only true for the intransitive clauses as will be discussed later by the principle (B).

I will now discuss another example from Hankamer and Knecht to support the claim that the GSAR does not apply unless it is needed to indicate the grammatical relation of the subject in the embedded sentence.

(24) a. ø kabağ-ı ye-diğ-i şüpheli ol-an yılan
squad-ACC eat-part-POSS doubtful be-SP snake
'The snake which it is doubtful ate the squash'
b. * OP (1976:208)

The subject of this sentence is a sentential NP.

(25) Yılan-ın kabağ-ı ye-diğ-i
snake-GEN squad-ACC eat-part-POSS
'That the snake ate the squash'

If the GSAR applied during the relativization of an NP in this sentential subject, the final element of the nominal group, that is the nominalized predicate ye-diğ-i would take the GEN-S.
However, as we see in (24), the GSAR is not needed because the deletion of an NP in the sentential subject does not cause any change in the grammatical relation of the sentential subject to the main verb süpheli 'doubtful' and its relation is indicated by the absence of a case suffix. That is, a sentential NP which is in the nominative case can only function as the subject. A sentential DO always takes the ACC-S and sentential OO's take one of the three case suffixes: DAT, LOC, or ABL. Therefore, there is no need to mark the sentential subject with the genitive suffix during the process of relativization.

However, when the sentential NP appears as a DO as in

(26) Hasan yılan-ın kabağ-ı ye-diğ-i-ni san-iyor
    snake-GEN squash-ACC eat-part-POSS-ACC believe-pres
    'Hasan believes that the snake ate the squash.'

(Hankamer and Knecht 1976:210) the relativization of any NP in the sentential object will require the PS -DIk because following the principle (A) the GSAR has to apply to the subject Hasan.

(27) a. Hasan-ın yılan-ın ye-diğ-i-ni
    -GEN snake-GEN eat-part-POSS-ACC
    san-diğ-ı kabak
    believe-OP-POSS squash
    'the squash that Hasan believes the snake ate'
    b. *SP (1976:210)

Hankamer and Knecht propose The Mother Node Principle (MNP) to account for the examples in (24) and (26).

If a subconstituent of a major constituent of the RC is relativized, the participle is chosen which would be appropriate for relativization of the major constituent itself. [That is, for the simple cases, if the mother node dominating the target is the subject of the RC, the SP is chosen; otherwise, the OP is chosen.] (1976:205)

Although the principle seems to work within the framework of transformational grammar, it is not necessary to include such a principle in the grammar of Turkish since the application of the GSAR will account for the choice of -(y)En or -DIk in relativization. In fact, the GSAR operates in complementization too, as seen in examples (28) and (29).

(28) a. Çocuk oda-da uyu-yor.
    child room-LOC sleep-pres
    'The child is sleeping in the room.'
b. Çocuğun oda-da uyú-duğ-u-nu gör-dü-m.
child-GEN room-LOC sleep-NS-POSS-ACC see-past-1sg
'I saw that the child was sleeping in the room.'
room-LOC child sleep-pres
'In the room a child/children is/are sleeping.'
b. Oda-da çocuğun uyuyor- u-nu gör-dü-m.
room-LOC child sleep-NS-POSS-ACC see-past-1sg
'I saw that a child/children was/were sleeping in the room.'

Examples in (28) and (29) indicate that the definite subject of a complement sentence takes the GEN-S while the indefinite subject in the preverbal position does not.

I will now use the sentences in (28a) and (29a) to show that the GSAR applies the same way in relativization.

B. The GSAR is obligatory for the definite subject of an intransitive verb because the unmarked order for an intransitive sentence when the subject is definite is S_00_V.

(30) a. Çocuk oda-da uyuyor.
child room-LOC sleep-pres
'The child is sleeping in the room'
b. Çocuğun o oda uyuyor- u
child-GEN sleep-PS-POSS room
'the room in which the child is sleeping'

room-LOC child sleep-pres
'In the room a child/children is/are sleeping.'
b. O oda uyuyor- yan oda
child sleep-PS room
'the room in which a child/children is/are sleeping'

While relativizing the 00 oda-da in the RC (30b), the deletion of this NP brings the subject çocuk to the preverbal position. Although this change in the position does not cause any change in the relation of the subject, it affects the properties of the subject. Namely, it changes the subject from a definite NP to an indefinite NP. Therefore, the GSAR is needed to retain the properties of the subject.

However, in (31) since çocuk has already been moved to the preverbal position prior to relativization, the deletion of the 00 will not have any effect on its properties or grammatical relation. Therefore, there is no need for the application of the GSAR when the subject of an intransitive verb is indefinite and it is in the preverbal position.

We see that the conditions for the application of the GSAR accounts for the choice of -(y)En in Underhill's example, which will be repeated here for convenience.
(32) Alt-in-dan su ak-an kapı
bottom-3s-ABL water flow-PS door
'the door that water is flowing out from under'

Since su 'water' is an indefinite subject occupying the preverbal position of an intransitive participial verb, by the principle (B) the GSAR is not needed.

The examples given in (28) and (29) suggest that the GSAR should be stated in the Turkish language even if we assume that the principles proposed by Hankamer and Knecht account for the choice of -(y)En and -DIk in relative clause formation. Throughout this brief study I have been trying to show that the choice of -(y)En or -DIk depends on the application of the GSAR, which can be generalized to cover all the embedded sentences as follows.

The GSAR applies obligatorily

I. to the definite subject of an embedded sentence

II. to the indefinite subject which is not occupying the preverbal position in the embedded sentence.

The examples presented in this study clearly show that the necessity for the GSAR arises from the fact that relativization and nominalization are the rules which do not alter the relations of the NP's to the verb. Thus the function to be filled during these processes is to retain the relations and properties of the NP's in the underlying clause. Since this is accomplished by the GSAR adequately, none of the principles proposed by Hankamer and Knecht to account for the choice of -(y)En or DIk are necessary.

The analysis here supports the claim that grammatical relations play a central role in the syntax of natural languages (Johnson 1976). It leads to the conclusion that if languages are analyzed from this perspective, a number of linguistic phenomena can be accounted for just in terms of grammatical relations without adding unnecessary rules to the grammar.
Footnotes

1. Hankamer and Knecht also analyze two types of the relative clause construction and they call the relative clauses which are formed on the subject with the participial suffix (PS) -(y)En subject participle (SP) relative clause and the relative clauses which are formed on the object with the PS -DIk the object participle (OP) construction.

2. The term Oblique Object (OO) is used in Relational Grammar to refer to NP's which obtain relations other than subject of, direct object of, and indirect object of.

3. A great number of nouns form a tightly knit unit with verbs. Such nouns appear in the embedded sentence without the GEN-S. See Tura (1973:120-23) for details on noun incorporation in Turkish.

4. It is necessary to retain the semantic properties of NP's to obey the generally accepted rule that transformations should not decrease or change meaning.

References


DOING WITHOUT WORD ORDER AND INFLECTIONS: THE CASE OF
BRITISH SIGN LANGUAGE
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One of the functions of language is to communicate about events, states and changes of state in the external environment. A speaker's perception of extralinguistic relationships is expressed in the relations between elements of language such as nouns and verbs. According to Fillmore (1968:21), nouns are in case relationships with verbs, and these can be captured by assigning case roles to the nouns in a sentence. Such roles have been given various labels, including e.g. agent, patient, source and goal (cf. e.g. Langendoen 1970).

It is well known that in spoken languages, inflections or prepositions and word order are the main alternative ways of indicating case roles. Some languages, such as Hungarian, have relatively free word order but an extensive system of inflections while others, such as English, rely more on word order and less on inflections to indicate case. The two systems are usually in balance so that, as Osgood points out, "Inflection seems to compensate with word order as an alternative means of keeping the syntactic house in order" (Osgood 1966:305). Fischer (1974) points out that this has been considered so fundamental a linguistic universal that it is not usually explicitly listed as such. However, as she shows, its status as a universal becomes open to question when we examine data from a manual-visual language, American Sign Language (ASL).

Fischer asserts that ASL has a basic SVO order, but relies on it only when the verb is transitive and the subject and object would otherwise be semantically and syntactically interchangeable. However, order is free (1) if the verb is intransitive; (2) if the subject and object could not be interchanged without creating a semantic anomaly; or (3) if the verb used belongs to a limited set allowing for case-marking. In other words, inflection and order are only two of the possible ways of assigning case roles in ASL.

Friedman (1976) claims that there is no basic word order in ASL, but agrees with Fischer on the other ways that case can be identified at the sentence level. In addition, Friedman goes beyond the sentence to the level of discourse and suggests that when a verb appears without a surface subject, the subject will be the last mentioned, or if there is none, then a first person subject will be assumed. She also suggests that "heavy reliance on context" (Friedman 1976:140) is another way of distinguishing the arguments of
a verb, and Edge and Herrmann (1977) show how context is sometimes important to indicate who is doing what in ASL.

Word order and inflections are syntactic characteristics of the sentence, but the work on ASL shows that the syntax and semantics of discourse as well as of the sentence are important for case role assignment in at least one sign language. In this paper I will show how the same generalization applies to another manual-visual language, British Sign Language (BSL). My analysis of data from BSL will investigate syntactic and semantic factors at both the sentence and discourse level. At the sentence level I shall discuss the syntactic factor of spatial modification and the factor of semantic plausibility; and at the discourse level I shall discuss Friedman's condition for subject assignment and the semantics or pragmatics of context. I aim to show that the assignment of case roles in BSL can only be captured by appealing to two areas of grammar, syntax and semantics, and by using two different units of analysis, the sentence and the discourse. This may have implications for both the methodology of grammatical analysis and the theory of language universals.

BSL is the native language of an estimated 40,000 deaf people in Britain. The signing community can be considered diglossic (cf. Ferguson 1959) in that an 'H' variety, which is close to English in syntax, is used in formal settings, while an 'L' variety with its own characteristic syntax is used in informal conversation and is the variety learned by deaf people as a native language. This variety fulfils functions comparable to those of Ameslan in the U.S. deaf community, while H has functions more comparable to those of signed English in the U.S. (For information on diglossia in BSL see Deuchar 1977.) In this paper the term 'BSL' should be understood to refer only to the 'L' variety, and I shall not be concerned with the 'H' variety. The data on which my analysis is based were collected during nine months of participant observation in a deaf club in Reading, England. Sign sequences were recorded in notes, on video-tape, and a thirty minute film was made.

As I have pointed out, there is disagreement as to whether ASL has a basic order. In BSL there is no basic order as far as I can determine, and the following are examples of orders found in the data:-

SVO:  I KNOW SHE ('I know her')
SOV:  HE YOU LOVE ('He loves you')
VOS:  LOVE YOU SHE ('She loves you')
VSO(V): FORGET I TICKET FORGET ('I forgot about the ticket')
VS: RIGHT I (I'm right)
OSV: ONE I PUT-IN ('I put one in')
OVS: HOW-MUCH KNOW(Neg.) I ('I don't know how much')

This apparent freedom of order is such that order does not seem to be a factor in the assignment of case roles.

Spoken languages which do not rely on word order for the assignment of case roles often have inflections which indicate case roles in the syntax of the sentence. If we look at the syntax of sentences in BSL we find that the nearest approximation to inflection for case is spatial modification, which marks the roles associated with a limited set of verbs. This set includes verbs such as GIVE, EXPLAIN, ASK, SAY, SEE, BEAT and MOCK. These verbs have in common the semantic notion of 'transference' (cf. Edge and Herrmann 1977:144), either in the sense of something transferred from source to goal, as in GIVE and EXPLAIN something to someone, ASK (posing a question to someone), SAY something to someone, and SEE (involving movement of the eyes towards a goal); or else in the sense of action transferred from agent to patient, as in BEAT and MOCK. A class of verbs with similar semantic and formational properties is also found in ASL where, as Friedman (1975:956) states: "The choice of movement and orientation for these verbs is dependent on the location in space of both (a) the AGENT, EXPERIENCER or SOURCE, and (b) the PATIENT, BENEFICIARY or GOAL". This description fits BSL also, for as in ASL, direction of movement and orientation of the hands are from the agent or source towards the patient or goal. The system is egocentric in that the signer is the location for the first person, whether agent or patient, source or goal; and direction of movement and orientation in relation to the signer mark case roles. For a first person agent or source, movement is away from the signer towards a second or third person agent or goal, while for a first person patient or goal, movement and orientation are towards the signer. If there is no first person argument, then the signer will 'represent' a second or third person, usually in the agent or source role, with direction and orientation being away from the signer.

Spatial modification involves 'directionality' and may also involve 'reversibility'. Directionality refers to the possibility for case roles of a verb to be indicated by the direction of its movement, while reversibility refers to the possibility for case roles to be indicated by the orientation of the hands in the verb. (Cf. definitions in Fischer and Gough, to appear.) In BSL, GIVE and EXPLAIN are directional, while ASK, SAY, SEE,
MOCK and BEAT are both directional and reversible. The alternative realizations of these verbs according to direction of movement and orientation are as follows:

GIVE: $\Phi B_A^+ B_A^- \ (\text{direction away from signer}) \ \text{as in 'I give to you'} \ \text{versus} \ \Phi B_B^+ B_A^- \ (\text{direction towards signer}) \ \text{as in 'You give to me'}$;

EXPLAIN: $\Phi S_5 S_5^- \ (\text{direction away from signer}) \ \text{as in 'I explain to you'} \ \text{versus} \ \Phi S_5 S_5^- \ (\text{direction towards signer}) \ \text{as in 'You explain to me'}$;

ASK: $\Psi E^{F_\Lambda} \ (\text{direction and orientation away from signer}) \ \text{as in 'I ask you'} \ \text{versus} \ \Psi E^{F_\Lambda} \ (\text{direction and orientation towards signer}) \ \text{as in 'You ask me'}$;

SAY: $\Psi C^{X_L} \ (\text{direction and orientation away from signer}) \ \text{as in 'I say to you'} \ \text{versus} \ \Psi C^{X_L} \ (\text{direction and orientation towards signer}) \ \text{as in 'You say to me'}$;

SEE: $\Delta C^{X_L} \ (\text{direction and orientation away from signer}) \ \text{as in 'I see you'} \ \text{versus} \ \Delta C^{X_L} \ (\text{direction and orientation towards signer}) \ \text{as in 'You see me'}$;

MOCK: $\Xi F_5 F_5^- \ (\text{direction and orientation away from signer}) \ \text{as in 'I mock you'} \ \text{versus} \ \Xi F_5 F_5^- \ (\text{direction and orientation towards signer}) \ \text{as in 'You mock me'}$;

BEAT: $\Xi G_5^+ G_5^- \ (\text{direction and orientation away from signer}) \ \text{as in 'I beat you'} \ \text{versus} \ \Xi G_5^+ G_5^- \ (\text{direction and orientation towards signer}) \ \text{as in 'You beat me'}$.

In GIVE and EXPLAIN a change in case roles is reflected by a change in direction of movement; in the other verbs it is reflected by a change in direction and orientation. Direction, and orientation where applicable, are away from the signer as source or agent, towards the signer as patient or goal.

The following are examples from filmed conversations, using GIVE:-

HOSPITAL LETTER GIVE \ ('We gave the letter to the hospital').

Here the movement of the verb is away from the signer who represents the understood first person 'we', towards the third person goal, 'the hospital'. However, in the sentence

I-f CAN FORM GIVE SEND b-d-a \ ('If we can we'll receive a form and send it to the British Deaf Association')

the movement is towards the signer, representing an understood first person goal, from an understood third person source.

The following are examples using SEE:-

SEE PAPER \ ('I saw it in the paper').

Here the direction and orientation of the verb are away from the signer representing first person source, towards an understood third person goal, 'it'.

SEE I t-h \ ('He or she will see me on Thursday').

In this sentence the direction and orientation are towards
the signer representing the goal, away from the third person source.

So in a limited class of BSL verbs the direction of movement, and in some verbs the orientation also, indicate the case roles associated with those verbs. This may be compared to inflection in spoken languages, except that it is more restricted.

In addition to this formal or syntactic means of assigning case at the sentence level there is a semantic means, which we can term semantic plausibility. This factor operates to disambiguate case roles in sentences where an alternative assignment would lead to semantic anomaly. It is similar to Fischer's "second condition" in which word order is free in ASL, which I referred to earlier. (See Fischer 1974:198.) For example, the BSL sentence

I TEN PINT LAGER DRINK

receives the interpretation 'I drank ten pints of lager' rather than 'Ten pints of lager drank me', because we know that DRINK must have an animate subject or agent. The following are two further examples from the data where only one interpretation is possible to ensure semantic plausibility:

HAVE WORK YOU ('Do you have work?') (The question is indicated by raised eyebrows.)

MY s-o-n BORROW PAPER ('My son borrowed a paper').

So we see that the factor of semantic plausibility can operate at the sentence level in BSL. While it is not a characteristic of syntactic structure like spatial modification, it relies on shared knowledge of lexical features or the rules of semantic interpretation of sentences.

But spatial modification and semantic plausibility alone are not adequate to account for the assignment of all case roles in BSL. For example, there are sentences where the arguments to which case roles would be assigned do not appear in surface syntax. When the subject or agent of the verb is missing, it can usually be determined by a syntactic condition which operates beyond the sentence at the level of discourse. This condition, which was found by Friedman (1976) to hold for ASL, also seems to hold for BSL, and can be stated as follows: the agent or source or equivalent role for a subjectless verb is assigned to the last mentioned subject if there is one, otherwise to the first person. For example, SHE must be the subject of MOCK in the following segment of discourse, even though it does not occur in the same sentence:
WIFE TALK SIGN f-n-y GOOD SHE MOCK POWELL
('My wife talks and signs in a funny way. She's good. She mocks Powell.')
In the following sequence FARE must be the subject of EXPENSIVE and UP as it is the last appearing subject:
FARE GO COME TEN p EXPENSIVE UP EXPENSIVE
('The fare there and back is ten pence. It's expensive, it's gone up, it's expensive.')
In the following sentences there is no previous subject that could be assigned to the subjectless verbs, so first person reference is assumed:-
SUGAR PUT-IN FINISH ('I've put in the sugar')
CLEAN ALL ('I cleaned everything')
TEN p PUT-IN ('I put in ten pence')
This condition of subject assignment will also apply to verbs which can be spatially modified, but where the subject is not explicitly stated, as in the examples quoted earlier, HOSPITAL LETTER GIVE ('We gave the letter to the hospital') and SEE PAPER ('I saw it in the paper')
Where it is not the subject which is missing, but another argument, case roles can be assigned on a semantic or pragmatic basis, with reference to the context of the discourse. While the rule governing subject assignment in discourse is syntactic, and depends on the structure of the discourse, the semantics of context relies rather on shared knowledge at the sentence level. The semantics of context is important to assign roles in a sentence such as
FIND I GARDEN ('I found (the disc) in the garden').
Here we know that the disc is the patient because it is the topic of conversation, and is being displayed in the hand of the person who found it. Or in the sentence
HEAR SHE ('She heard that')
where SHE is not formally marked for case, we can only tell that SHE is the subject or experiencer and an understood 'that' the object or patient, on the basis of our contextual knowledge that the topic or 'given' information in the conversation is something which might be heard by her. Otherwise we might assume SHE to be the object or the patient of the verb, with a deleted first person subject.
The semantics and pragmatics of context can be useful not only for the assignment of case roles to deleted or missing arguments, but also for the disambiguation of case roles in sentences where all arguments appear, but reference to sentence syntax or semantics is not enough. This will be the situation in sentences where the verb does not allow spatial modification and there is more than one semantically plausible way of assigning case. The sentence
LOVE YOU SHE ('She loves you')
is an example: we can only assign the role of subject or
experiencer to SHE on the basis of contextual knowledge that the sentence is a comment on why the person referred to by SHE had shown concern for the man referred to by YOU.

To summarize, word order does not seem to be a factor in the assignment of case roles in BSL, and inflection, its alternative in spoken languages, is only relevant for a small class of verbs. So to account for case role assignment in BSL we have to appeal to additional factors beyond sentence syntax, i.e. the semantics of the sentence and the syntax and semantics of the discourse. Syntactic factors at both the sentence and discourse level seem to operate in conjunction with one another to assign case roles clearly and unambiguously.

What are the implications of these findings for linguistic theory? Support has been found for Fischer's (1974) contention that we must distinguish between universals which apply only to spoken languages, and those which apply to language in general. The assignment of case roles by either word order or inflections seems only to apply to spoken languages since to identify roles in British as well as American Sign Language, we have found it necessary to go beyond sentence syntax. While sentence syntax continues to be the focus of attention for some linguists working on spoken languages, others argue that this approach is too limited. The case of sign language, where the limitations of sentence syntax are particularly obvious, provides further evidence for the importance of discourse in grammatical analysis. The evidence from sign language also suggests that analysis beyond sentence syntax must be recognized in the theory of language universals if its scope is to include all languages, regardless of medium.

NOTES
1. In the transcription of examples, English glosses in upper case letters represent individual signs; lower case letters separated by hyphens represent fingerspelled words. A verb gloss followed by (Neg.) as in KNOW(Neg.) indicates that negation is incorporated in the verb sign.
2. Notation is based on the system used for ASL in Stokoe et al. 1976.

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The question addressed here is not whether the search for universals deserves a prominent role in linguistics, but what kind of universals we should look for. Our point of departure is Postal's statement of principle at the beginning of his study of antipassives; that study...is to be understood as embedded in a framework which takes it as a major goal of grammatical theory to make available a restricted set of universal rules which, in different combinations and with inevitable variations in environmental detail, play a role in the grammars of individual languages. This is the opposite of the position represented by the slogan 'describe each language in its own terms'. The latter is generally associated with an apparently now largely vanished structural linguistics but it flourishes as well in a surprising amount of (even the most prestigious) transformational work. (1977:273)

Relational grammar thus attempts to probe beneath the level of overt grammatical operations in search of an inner dynamic, conceived here as a set of inner relational operations (promotion, etc.) based on a universal ranking of elementary relations. Proponents of this theory believe that it permits the formulation of universals and other general laws which cannot be captured in the standard transformational format, which focuses on overt formal operations (deletion, reordering, etc.).

As is characteristic of the various heretical movements which have been formed by erstwhile transformationalists who have split off from orthodox transformational theory, there has been a tendency for relational grammar to overemphasize its revolutionary features and thus to overlook the many basic conceptual and methodological features which it continues to share with the orthodox theory. The conception of "universal grammar" as a catalogue of required or optional formal units (including transformational rules or the equivalent) is common to relational and transformational grammar and many related approaches, and distinguishes them as a class from many "functionalist" approaches such as that sketched in this paper. Moreover, whereas relational grammar appears to shift its focus from overt transformational operations (relegated to the status of "side effects") to more abstract, inner relational operations (promotion, demotion), there is still a rather close connection between the two. Although "passive" may be realized by different "side effects" in different languages, there is only a restricted set of side effects (or combinations thereof) which can qualify as manifestations of this universal rule, and many of these show a simple iconic relationship between function (promotion or demotion) and form (shift in case-marking and/or word order to a higher or lower category).

Relational and transformational grammarians customarily use the following theoretical and heuristic concepts:
la. Universal grammar consists of a large set of isolated potential formal units (e.g., the passive rule). Each such unit may be formulated (like an archiphoneme) in an incomplete form allowing for some language-specific variation. Each human language is constructed by "selecting" a subset of these potential formal units; some of the universal units can occur more than once (in slightly distinct forms) in the same language.

lb. Emphasis is placed on discovering constraints on individual units, for example constraints on transformations. To the extent that broader generalizations about systems (combinations) of units are looked for, they are often restricted to the following:

i. Observations about the gross formal structure of the grammar and the interrelationship among formal components (e.g., the distinction between PS rules and transformations, or the equivalent).

ii. Observations about rule ordering.

iii. Observations on implicational relations among elements within a well-defined formal component or subcomponent. For example, the claims by relational grammar that certain types of promotion rules imply the coexistence of certain other types of promotion rules.

c. The essential task in cross-linguistic research is to identify comparable units (e.g., the passive rule) in their different specific manifestations in different languages; once these are identified, we look for interesting generalizations which may emerge for each such formal unit. The most important question is whether the unit in question occurs in all languages, whether it can occur twice in the same language etc. Language-specific idiosyncracies are attributed to "environmental detail" or the like and are not considered theoretically central.

d. In the interpretation of the empirically validated universals arrived at by these techniques, functional reductionism is generally downplayed. Rather, the basic universal laws about human language are typically attributed in some fashion to the genetically transmitted structure of the brain, of which "universal grammar" is an aspect. A measure of functional reductionism often occurs in discussions of broad constraints on transformations (outer limits which may not be exceeded), especially where it is clear that these constraints can be closely correlated with potential recoverability/ambiguity problems. However, the basic grammatical operations themselves are typically not interpreted as deriving from causal factors of a functional nature; the functional considerations are generally restricted to observations about limiting conditions on grammars rather than those about the basic structure of the grammars.

I will not dispute that linguists working within this framework have achieved a great deal over the years. However, I wish to outline an alternative functionally oriented heuristics which not only can produce important generalizations which the approach in (la-d) cannot capture, but which is also capable of motivating its empirical results.
in an intellectually more satisfying fashion. At the very least, this research program can serve as a useful supplement to that of (la-d); basically it goes like this:

2a. In principle, the analysis concentrates on the set of surface formal oppositions at the utterance level, and the relationship of these oppositions to differences in semantic/pragmatic meaning. The formal mechanics by which one level is "converted" into the other (i.e., the set of transformations and other paraphernalia in relational and transformational grammar) is downplayed. Of course, utterance-level oppositions can usually be broken down into more local oppositions each involving choice of morpheme in a morphemic slot (e.g., present vs. past tense), or choice among one of a few possible syntactic arrangements (e.g., active vs. passive clause form); however, it is not assumed a priori that utterance-level oppositions always reduce to combinations of such atomic oppositions, and we are always on the lookout for systemic interactions among such local oppositions.

2b. The notion of "human language" is approached by looking for positive (as well as negative) generalizations at the systemic level. Atomistic constraints within one formal (sub)component (for example, universals about pronominal oppositions) are considered to derive from broader systemic constraints; if a certain type of pronominal system never occurs, this is because no larger grammatical system containing thus subsystem would be viable. Many systemic constraints involve interactions (such as implicational relations) cutting across formal components and are thus not reducible to atomistic constraints limited to individual formal components.

2c. The study of systemic generalizations is based on careful analysis of the function(s) of each formal unit, in the context of its functional interaction with other units (including those in different formal components). We refrain from hasty, oversimplified functional interpretations for given units, recognizing that a given unit i) may simultaneously have more than one function (i.e., may be multifunctional), and/or ii) may have a different function or functions from one syntactic or semantic context to another. It goes without saying that we must recognize the possibility that similar or identical formal units from one language to another may differ sharply in their function. Having studied the various functions carried out by the formal units of a language, we can then regroup the units into functional components which frequently do not coincide with the familiar formal components. In many cases a given formal unit will thus belong simultaneously or contextually to two or more distinct functional components. Cross-linguistic comparison involves generalizations about these functional components, and about the formal realizations of various universal functions. Ideally, formal universals can be logically derived from functional considerations, provided our theory is suitably sophisticated.

2d. Wherever possible we attempt to motivate empirical generalizations rather than shoving them under the carpet as innate features.
As a play on Postal's statement of principle, we may formulate our own as follows: our framework takes it as a major goal of grammatical theory to describe a set of functions which, by means of different combinations of formal units and with inevitable variations in (sociocultural) environmental detail, play fundamental roles in shaping the formal grammars of individual languages. This approach presupposes painstaking synchronic formal/functional analysis of particular languages (whereby each formal unit is analysed in the light of its functional interaction with other units in the same system) and is thus the opposite of the position represented by the slogan, 'describe each language in universal terms'. The latter is generally associated with an apparently now largely vanished transformational linguistics but it flourishes as well in a surprising amount of (even the most prestigious) neo-transformational work.

This proposal is not new; it is essentially the framework which has been eloquently advocated for many years by Hymes, Halliday, and others. Moreover, many slightly rebellious neotransformationalists actually occupy theoretical positions midway between (1a-d) and (2a-d), in particular inasmuch as much attention is now being devoted to the importance of surface utterance-level oppositions (e.g., in much "interpretivist" work), and we have already noted the emergence of functional considerations in some work on constraints on transformations. However, the research done in the context of principles (2a-d) has tended to be concentrated in sociolinguistics and linguistic anthropology and has been slow in penetrating into the mainstream of linguistic theory (which is oriented more toward logic than toward anthropology or sociology). This has led to a kind of tacit division of labor between (sociolinguistic) functionalists and mainstream linguistic universalists which has, in my view, impeded the development of a sophisticated functional syntax. Much of the "functional syntax" which has appeared so far is oriented toward low-level processing matters, and hence toward word-order problems. This is certainly a useful ingredient in a more complete functionalism, but there are many other ingredients which are equally necessary if our functionalism is to flexible and productive, rather than narrow and parochial. In the remainder of this article I consider the problem of referential ambiguity (especially across clause sequences) and show that the concept of functional components leads to important cross-linguistic generalizations; I also comment on the relationship between this problem and the rules of passive and antipassive (which, of course, are central to relational grammar).

In a sense, both functionalism and relational grammar are similar, in that they try to probe beneath the surface stuff of language, looking for inner essences which provide both synchronic insight and a viable comparative framework. However, relational grammar focuses on a small set of grammatical operations (promotions and demotions) within a single formal subcomponent, and interprets all of them in terms of a rigid analytical framework. In the Postal/Perlmutter version all passive rules reflect an identical inner operation (represented by
the formula 2→1), and likewise all antipasses reflect a single inner shift (1→2). Even though passives characteristically involve two overt changes (2→1, with original 1 becoming chômeur), the relational grammarians insist that a choice must be made between these as the basic, inner operation (here 2→1), with the other then treated as a secondary readjustment. (See Perlmutter and Postal 1977:410.) Kirsner (1976) takes Dutch passive-type rules to be basically demolitional; despite an enlightening description he succumbs to the temptation of adopting a rigid, unitary basic analysis. In Comrie's version (1977) a slight degree of functional relativism is introduced inasmuch as passives are interpreted as sometimes promotional, sometimes demolitional (and perhaps sometimes a little of both). Although this variability is still restricted to the promotion/demotion axis which relational grammar itself operates in terms of, it has been hotly contested by orthodox relational grammarians who seem unable to accept even the faintest hint of functional variability. To the extent that the inner relational operations can be interpreted functionally at all, there can only be a one-to-one iconic relationship between form and function.

From a functional viewpoint, of course Comrie is correct in asserting that passives can function either to demote the agent or to promote the patient in some sense, and it is not necessary to hunt for exotic languages which show formal demotion without simultaneous formal promotion. However, even Comrie's notion of the functional relativity of passives is too narrowly confined to help us much with antipasses. These rules have an astounding range of distinct functions, many of which are unrelated to the simple intraclause promotion/demotion axis, which admittedly works pretty well for passives. In my view, the antipassive is going to be the Achilles' heel for relational grammar, even in Comrie's reformulation, since by no stretch of the imagination can we assert a universal iconic relationship between its form and its function(s). Postal's contribution to the analysis of this problem (1977) was to guess that the basic inner operation is 1→2 (subject demoted to direct object), whereupon the original 2 is bumped out to chômeur status as 2, and then the original 1 (the new 2) reverts to 1 status in order to fill the void created by the original 1→2 shift: It must be apparent even to those sympathetic to relational grammar in general that this proposal is highly gratuitous and that even within this general framework other possible interpretations are available (but without any nonarbitrary criterion for selecting among them). Even if relational grammarians agree on how to "handle" the antipassive in their notation, they are unlikely to contribute much to the understanding of this rule unless and until they accept a more relativistic form-function relationship even than Comrie does for passives. Just to take the most famous antipassive language, Dyirbal (Dixon 1972), we have to face the fact that there are two formally distinct antipassive constructions (the -gay form, and the "false reflexive"), each of which has several distinct functions (i.e., is triggered by any of several quite distinct structural descriptions) and which differ from each other systematically. Basically, the false reflexive is the clause-internal object-demotion rule (and in this use does not permit a surface chômeur), while the -gay rule is usually triggered by cross-clause coreferential relationships and usually retains the underlying object as surface chômeur, though there are many
additional complexities which we cannot go into here (see Heath 1976-ms for an exegesis of Dyirbal syntax on functional lines, based on analysis of Dixon's texts).

Since a preliminary inventory of distinct functional types of antipassives was published (Heath 1976), a number of others have come to light, particularly in a number of studies (some not yet published, to my knowledge) on Mayan languages. For example, a Jacaltec antipassive rule which Craig (1977:214ff.) accords an explicitly functional label "the disambiguating mechanism") instead of the formal label "antipassive," does not fit neatly into the original taxonomy and thus constitutes (along with parallels in other Mayan languages) another type or subtype. Whereas passive rules tend to show a rather monotonous functional uniformity across languages, antipassives show a remarkable functional diversity.

Now if all grammatical operations were like passives, and thus showed a more or less simple cross-linguistic correlation between form and function, there would be no vast practical difference between the research strategy (1a-d) followed by relational and transformational grammar and the strategy (2a-d) followed by fanatical functionalists. However, there are some processes like antipassive which, true to Saussure's semiotics, have a relatively arbitrary and thus variable relationship to inner functions. In this light, functional analysis proceeds not merely by assigning functional interpretations to already established formal units (and components of such units), but by breaking the formal components into bits and then regrouping them into functional components (I use this term in a somewhat more general sense than Halliday 1973:35, who applies it to social functions of language such as requests; I wish to apply it also to instrumental or coding functions such as disambiguation of references). In some instances a functional component may coincide with a formal one, but more often it will cut across the formal divisions of grammar. For example, as Hymes and other sociolinguists have never ceased to point out, social-status indexing (of speaker and/or hearer) involves selected phonological, morphological, lexical, and syntactic variables. But even sticking within the reassuring confines of mainstream linguistics (which may be thought of as "straight linguistics" or "crooked linguistics," depending on your political party) it is easy to see that the functional component concerned with keeping nominal reference straight in clause sequences involves certain lexical pronominal oppositions (but not all of them), certain deletion rules (e.g., English Equi, but only marginally English Gapping), and so forth. In Basque, for example, the masculine/feminine opposition in certain 2sg pronominal affixes has no referential value (except in the rather recherché case where two potential interlocutors are present, one male and the other female, and it is not otherwise clear which is the addressee); this is an almost pure sociolinguistic index. On the other hand, such gender oppositions in third person pronounals in various languages regularly function to disambiguate reference. The relationship between formal and functional components is highly problematic.

Concentrating on this disambiguating functional component, let us
see what kinds of universal generalizations we might look for; our concern here is illustrating the heuristics of cross-linguistic functional analysis rather than documenting specific assertions. The obvious universal hypothesis would be this: Every language must have some mechanism (other than constant repetition of full NPs) to keep references clear in lengthy clause sequences. That is, we take as starting point the observation that all languages need to use sequences of elementary clauses (each typically consisting of a nucleus such as a verb along with one or more referential arguments), and we guess that all languages must have mechanisms for connecting specific referents to specific argument-roles (and ultimately semantic role functions) in each clause.

This is hardly a startling suggestion. However, one searches the literature on transformational and relational grammar in vain for concrete instances of such functionally oriented positive universal hypotheses; by contrast, sociolinguists like Hymes have been trying for years to determine cross-cultural parallels in the much more demanding area of the social uses of language.

Although in this framework we take function as prior to form, we must nevertheless patiently analyze the range of formal implementation of each obligatory function. For certain functions there may be a tremendous range of such devices, but for others there may be only a small set of possibilities, and in the latter case we can extend our initial hypothesis ("There must be some device which carries out function F_n") as a corollary (if X and Y are the two possibilities, then "Each language must have formal unit X and/or Y").

In the case of cross-clause referential disambiguation, the two basic formal strategies which seem to be available are these: a) an elaborate set of lexical oppositions (e.g., masculine/feminine, singular/plural) in obligatory third person pronouns; and b) use of transformations (i.e., of systematic formal oppositions) which are triggered by (and thus signal) particular cross-clause coreferential and/or noncoreferential relationships. Note that, in traditional transformational terms, (b) is based more closely on the nature of the structural description (i.e., the triggering factors) than on the type of overt operation found in the structural change (deletion, raising, etc.). Pronominal forms based on anaphoric or anti-anaphoric qualities (e.g., "the same one" or "as for him") belong to strategy (b) rather than (a). The kind of universal hypothesis we might look for now would be of this form: each language must make use of an elaborate set of lexical oppositions in the obligatory third person pronoun system, or must make extensive use of cross-clause disambiguating transformations, or must have at least moderate elaboration in both areas.

More detailed investigation shows that all languages have at least a rudimentary transformational apparatus of the type (b), though sometimes reduced to the occasional use of anaphoric and anti-anaphoric pronouns. This is expectable since strategy (a), relying on inherent pronominal discriminations, works fine when each contextually possible referent belongs to a distinct pronominal category, but results in ambiguities when two or more referents have the same category (so that "He went" is contextually clear when we have been talking about a man and a woman,
but not if we have been talking about two men). Hence no matter how elaborate the lexical discriminations in the third person pronoun system, there is always going to be a need for cross-clause anaphoric or anti-anaphoric operations for ambiguous cases. On the other hand, there are languages (like Choctaw) whose third person pronouns show no gender opposition, and only a sporadic and indirect number opposition (not in the pronouns, but in the form of number suppletion for some verb stems, and occasional use of number-marked preverbs and postverbs).

However these details work out, the point is that our research strategy has pointed us toward a kind of universal hypothesis which seems hardly ever to have even occurred to linguists working within the framework (la-d). Here we have an implicational claim involving bits and pieces which in the usual formal description are scattered all over the formal components of morphology and syntax; neither relational grammar nor standard transformational grammar point us toward suspecting a close relationship between certain pronoun categories and certain kinds of transformations.

As an additional type of corollary to the functionally oriented hypotheses we have been making, let us consider the implications of the proverbial "principle of least effort" on the disambiguating component we are concerned with here. We mentioned two strategies, (a) and (b), and suggested that each language either emphasizes (a), emphasizes (b), or puts equal emphasis on both (with various intermediate values on a continuous scale). It occurs to us that there may be an inverse relationship between the use of the two strategies, since it is unnecessary (and hence wasteful) to fully develop both strategies. The suggestion would be that although both strategies seem to be present in all languages at least in rudimentary form, there is an inverse relationship between their degree of elaboration (productivity). This is somewhat different from the first corollary discussed above, which in essence specified the minimal (rather than maximal) implementation of the obligatory functional component; here the principle of least effort leads us to suspect a limitation on the maximal development of the formal units in question. As it turns out, at least in the languages I am familiar with there is a basically inverse relationship between the elaboration of obligatory lexical third-person pronoun discriminations and the productivity of disambiguating transformations (Heath 1975).

So we can, in favorable cases, propose series of universal hypotheses of the following types:

3. an **elementary functional universal**: Every language must have some formal unit, or set of units, which carry out function \( F_n \).

4. corollary I, a **universal of minimal implementation**: Every language must have at least one of the following units, or sets of units: A, B, C and D, E, or F. (Sometimes only two possibilities occur; in the limiting case there is only one possibility and we thus end up with an obligatory formal universal.)
5. corollary II, a universal of maximal implementation (in this case, specifically a universal of inverse implication): If a language has A (or an elaborate development of A), it will lack B (or will have an inversely elaborate development of B). This presupposes that A and B are the only two possible implementations of some function.

I wish to stress that this is offered as a heuristic approach and not as an analytical straightjacket. The most important problem with taking (3-5) as the general form of functional hypotheses is that they tend to artificially segregate the functional components from each other. In some cases, it may be that modified (implicational) versions of the type (3) are needed; for example, if the language has some nonuniversal functional component F_p or some formal unit A, it may be that some additional functional component F_q is required by some implicational rule. Moreover, corollaries of type (4) may have to take into consideration the corresponding choices for implementation of some other functional component; instead of five possibilities as suggested in (4) there may only be one or two viable possibilities in the broader context of the organization of a particular language. It is essential to stress that not only are there a great many functions (many universal, others variable) which languages fulfil, but also that some of the functions are hierarchically prior to others. In order to keep most of this paper within the confines of more-or-less mainstream linguistics, we have here concentrated on simple coding (instrumental) functions of morphosyntax, assuming the prior existence of basic clause structure and discourse organization. Of course, in a fully functional theory we have to begin by showing how universals of social interaction (beginning in infancy) are ultimately responsible for shaping basic clause and (eventually) discourse structure (see, for example, Halliday 1973 and elsewhere). So the very notion of "function" must be recognized as covering a vast range of concepts, involving complex lines of causal implication (sometimes unidirectional, sometimes mutually implicating). Anyone who thinks that a functional theory of language can be legitimately based on one or two simple functional notions is in for a rude awakening.

A particular problem with hypotheses of the form (5) is entailed by the fact that formal units (in this case, A and B) may be capable of occurring in any of two or more distinct functional components. What (5) really says is that the particular functional component in question will not produce both A and B, since only one of these is necessary for its own purposes. However, if this component is implemented by formal unit A, it could be that some other component is implemented by B. So unless the formal units in question are inherently limited to the same functional component, claims of the type (5) must be advanced with great humility and caution.

Despite these caveats, I feel that the research strategy outlined here has great promise both in terms of the discovery of previously unnoticed universals, and in terms of explanation of these regularities. I must confess that I do not see how even the most solidly established empirical claims which have come out of transformational or relational
grammar can be said to have been motivated by those theories. What we get, in general, are empirical regularities and a notational framework for representing them. In the main, the theories provide little insight into the regularities, except to the extent that a set of apparently diverse phenomena are often shown to be reducible to a single principle (which, however, is itself not explained). In practice, linguists working within the framework (1a-d) feel that the discovery of regularities is the final stage in analysis; universals are thought to derive directly from innate mental structures.

Obviously, functionalists are not satisfied with such arbitrary and untestable explanatory devices; we look for insight into the regularities which have been established, and even into language-specific oddities. It must be conceded that languages are not perfectly efficient and that many of these reveal unnecessary morphological regularities and the like; the lines of function-form causality are in some cases attenuated. And there is the recurrent functionalist dilemma of evaluating "explanations" which have been adduced retroactively to account for previously determined regularities; if our functionalism is insufficiently disciplined we can generate an "explanation" for almost any conceivable linguistic feature. But while admitting that there are important difficulties in the logic of functional analysis, it is certainly an improvement over theories which attempt no explanations at all.

References:
Heath, Jeffrey (1975) Some Functional Relationships in Grammar. Lg. 51:89-104.
Taxonomy, Description, Definition, Explanation:  
Special Case: Pronouns [excerpt]  

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The question of general interest behind the specific discussion that follows, which unfortunately cannot be here answered in a general way, is what is the point of labels and categories in the study of language. [..] At the simplest level, getting clear on the status of our labels will permit us to avoid writing such passages as the following (from a standard history of French): "The important role played by prepositions in Modern French as compared with Classical Latin is largely the result of the general analytical trend of the language." 'The general analytic trend of the language' is in fact not defined independently of, precisely, such phenomena as the replacing of Latin synthetic forms by prepositional phrases.  

The analysis of pronoun systems has been attractive not only to linguists but to anthropologists, whom one would expect to have particular concern for avoiding sterile hypostasizing and for cashing their constructs in reality. Yet the feature-analyses offered may be given with only the most abstract motivation.  

One criterion that some analysts (of phonemic and kinship systems as well as of pronoun systems) have favored for a satisfying analysis is high, preferably exhaustive occupancy of the cubby-holes established by intersection of the features one chooses. That is, given features $\pm F_1, \ldots, \pm F_n$, one would ideally like to see all combinations realized by some linguistic form. If not, the system is 'asymmetrical', or has gaps.  

Harold Conklin, in a well-known article ('Lexicographic treatment of folk taxonomies', IJAL, 1962), considers Hanunoo pronouns dah "they"; kuh "I"; mih "we (exclusive)"; muh "you (sg.)"; tah "we two (inclusive)"; tam "we-all (inclusive)"; yah "he, she"; yuh "you-all" and rejects the traditional labels "1, 2, 3 person". That is, he rejects them as formal labels to serve as axes for the analysis. One can still talk of "3rd person" in a purely semantic, referential, signifie sense, "neither speaker nor addressee", and use "first person" as, prototypically, a synonym for "speaker"--though notoriously one runs into paradox with "first person plural", since with that, one has abandoned the purely semantic and is making a grammatical claim--what claim is unclear. But as classificatory features they come with the analysis:  

<table>
<thead>
<tr>
<th>kuh: 1 sg</th>
<th>mih: 1 pl exclusive</th>
</tr>
</thead>
<tbody>
<tr>
<td>--</td>
<td>tam: 1 pl inclusive</td>
</tr>
<tr>
<td>huh: 2 sg</td>
<td>yuh: 2 pl</td>
</tr>
<tr>
<td>--</td>
<td>dah: 3 pl</td>
</tr>
</tbody>
</table>

This analysis he finds "hardly elegant, economical, or convincing". He adduces no concrete objections; I assume that the three adjectives all point to the same fact: lacunae. The analysis he proposes
is "more satisfactory, economical, and semantically verifiable" and relies on a different set of features: +Speaker included in the reference, ± Hearer included, ± Minimal membership. This idea of 'semantic verifiability' is unclear: as simple definitions by extension, none of the labels "first person" (+ iff included speaker) etc. need verification; they're simply there, for better or worse. For Conklin, both verification and satisfactoriness seem to stem from a notion of economy. The analysis, then: dah -M, -S, -H; yuh -M, -S, +H, etc. A diagram makes clear that all the campers are in their bunks:

```
+M
/   \
|     |
kuh   tah
\   /
\   \
-m   yuh

          +H
           \
              -H
               \
            tam
```

No reason is given for the excellence of this analysis beyond the fact that every combination is realized and the features are independent. And quite possibly this is the best analysis; but I suggest that one has as yet only one, very abstract and untested formal criterion to believe it. It may further actually mislead by suggesting that the addition or loss of a pronoun would be a disruption of a perfectly balanced system, comparable to the shattering of a crystal, the defacement of a work of art; whereas the asymmetrical array suggests that either tah may become lost or the language might want to forge another dual or so. Indeed, Germanic seems to have done just that, cf. OE wit, jít, only to discard them again. And in fact, overhauls of pronoun 'systems' are extremely common. Further, since pronouns are extremely frequent items of the vocabulary and tend to be short and pronounceable, we cannot plead the sort of erosion and non-systemic variation found in [æk-/ık-ənamIks], haplogy, metathesis, [æpocwp], anapatictic, etc. Where there is System, there is Systemzwang: yet this one would almost seem to be self-sublating.

Conklin's formalism is embraced with a vengeance by Buchler and Freeze in an article in Anthropological Linguistics (Nov. 1966). They plead: "Although our approach may seem excessively formal and devoid of sociological relevance, it should be made clear at the outset that our goal is to analyze (through a uniform 'scoring procedure') a relatively large number of pronominal systems in order to isolate a set of components that will form an 'etic core' for future accounts which stress functional unity rather than dimensional range within a specific domain." This goal will appeal to all who feel that linguistics isn't a science until it's stored on a computer at Stanford, but the statement illustrates a sort of fallacy of composition: as though a piling-up of undermotivated and stillborn analyses would yield a sensuous total picture. An 'emic' study, we are informed, is one which is immanent to the language under investigation, while an 'etic' one is objective and
universal. But while a machine can be programmed to discover recurrent energy-distributions corresponding to (humanly pre-selected) features like "Voiced" or "Grave", no machine yields Buchler and Freeze's would-be objective (transcendent, ahistorical) features as the relevant axes for formal analysis, such as ±Min, ±Solidarity. Aware of the problem, the authors say that "the distinction between emics, on the one hand, and etics, on the other, should be formulated in terms of different levels of structural validity, rather than in terms of a contrast between psychologically 'real' and structurally 'real' descriptions." This looks promising, but no hint is given of the content of any of these notions, particularly when the analysis concerns an exotic language which they are not otherwise describing for us. I shall try to give some content to the notion 'structural validity' as regards pronoun features, and will suggest that little content accrues to it if we restrict our view to a set of half a dozen or so pronouns together with their glosses.

To see that this is no niggling criticism, consider their analysis of Totonac person morphemes: acquit "I"; aquin "we"; ama "he, she, they"; huix "you (sg.)"; huixin "you (2)". [Space prevents inclusion of discussion of their analysis in terms of secondary features Min, Max, Spkr. The upshot is: it is a mere parlor trick.] One would have to look at more of the language to know whether this analysis had any advantage over any other analysis. Nothing has been added by the labels; such meat as there is lies in the raw glosses, which represent not analysis but reportage. Thus, Totonac suppresses the sg/pl distinction in the third person--to use the traditional labels--English in the second, so for both one could propose this kind of analysis: in English you, in Totonac ama receive the lone + value for Max. Now we know that this would be off-the-wall for English (our intuition on this score is composed of our knowledge of the facts of verb agreement, etc.), so why should it be appropriate for Totonac? It might be; we simply have seen no evidence. Moreover, what little we glimpse here of the morphology suggests that first person (aqui-) and second person (huix-) are not without expression in Totonac, as is plural (-in).

A caution about 'etic' analysis! I doubt that as an absolute type there is any such thing: a (necessarily partial) reproduction of the data is more or less detailed, more or less influenced by considerations of contrast, more or less reshuffled. I’d be willing for sake or argument to admit the list of glosses for the pronouns as fairly 'etic', fairly 'given on a platter by the facts', but not the controversial further features. And, of course, even the glosses are idealized, 'emicized' almost, since no doubt every language allows its pronouns to stray in ways the analyst cannot account for a priori. Thus he but not she is used for anaphora of one in American English (but usually one again in British English) or as anaphor of distributively understood everyone, anyone; there is capricious variance between it and he referring to animals (further: cat, she; dog, he), etc. All that we toss out, because
we have identified the core of these pronouns—not an etic notion, this core—on a broad consideration of pattern. Similarly, even the 'most narrowly' phonetic of transcriptions (i.e., not "the narrowest conceivable", which is an undefinable notion, but "the narrowest we in practice come across") picks and chooses among the data it is to relate ...

What of our two abstract conditions for the satisfactoriness of analyses—binary and independent distinctive features? It is hard to see what justification they have other than operational: striving towards such an analysis at least keeps one from lazy ones such as, in a limiting case, having as many features as elements, say "Egoism" for ich, all the other pronouns being -Egoism; "Dutztem" for du, etc., in which case one's n elements are at equi-
distant corners of a very slimly filled n-dimenional tesseract; or at the other extreme, a single n-ary feature "Ubu", with values U_1 a.k.a. Egoism at ich, U_2 at du ... in which case we are back to a set with no structure. One could be convinced of, say, the validity of the binary principle in phonology, but as the result of grueling empirical study packed with all sorts of surprises, mostly peculiar to phonology. Cf. Whorf: "We do well to be skeptical of a gram-
marien's systematization when it is full of ENANTIOMORPHISM, the pairing with every category of an opposite which is merely the lack of it." Martinet suggests (Ling. Synch., p. 88) that 'binarisme' is simply the result of the practical necessity of comparing ele-
ments pairwise.

We must, then, look at more of the language than the tiny sub-
set Y to determine whether our componential analysis of Y has even a claim to being valid. It is no defense to claim that you are merely doing an etic analysis, if the sense of this term is not to fall to the level of "random selection from the kaleidoscopic set of combinatorial possibilities." (For a census of this set, see R. Burling, American Anthropologist, 1964.)

Take English. Our gloss for you (apart from cases where it doesn't refer at all, the 'impersonal' you) indicates that it may refer to any number of people; and because you (sg) comes from you (pl) historically and has kept the verbal concord of the latter, the Sg/Pl distinction (or status of the feature ±Pl) isn't so neat. So far as this goes, we might say that the second person is unmarked for number and talk rather of 'contextual determination' à la Buch-
ler and Freeze. But if we look at the reflexive forms, our dis-
tinction reappears: myself:ourselves::yourself:yourselves. This is evidence for the relevance of our feature ±Pl for pronouns, even if the distinction is occasionally suppressed in some of them. This is especially true as the sg:pl in -self:-selves is evidently the same as the sg:pl in the homonymous independent nouns. The occu-
rence of the feature in the class of Nouns is our main justifica-
tion for using the same label for a like distinction in the class of Pronouns; or better, its relatively regular expression in the open class of Nouns is the foundation of its (relatively defective) application in the paltry class of Pronouns.

The case of German may reveal some of the sinews and arteries
concealed beneath the integument of the distinctive-feature cube. To start with, we have only unordered items with glosses: ix "I"; vir "we"; er "he"; es "it"; du "you; spoken to a single referent with whom the speaker is, roughly, intimate"; ir "you plural, intimate"; zi "she; they; you singular/plural nonintimate." At this point our atomist can sort things out in terms of, say, Minimality (+ if the expression can never refer to more than one), Intimacy (+ if someone in the referent is intimate with the speaker, who is of course intimate with himself), and 'Virility' (necessarily refers to masculine if speaker is feminine and all addressees male):

```
    +
   /|
  / \
vir ----------- ir
  \  |
MIN -
   | +
ix ---
   |+
du ----
      |
   +
   +
```

If the speakers belong to an exotic tribe (say the Alemanni), one can get away with such things, and even--having arrived at the 'analysis' via aprioristic linguistics--relate the analysis to social facts ("The males mark Virility by means of distinctive clothing variables."). We know this won't do here, because we know German. But how much German do we have to know, to know this? And is even German enough? That is, in general, how widely must we cast our net, to catch a given fish? [Omitted: discussion of Chomsky's position that, while other levels may be there to be described, if reference to them is not necessary then you are breaking the rules of the game.] In roaming far afield for justification of one's analysis of a small subset, one always risks missing a key closer to home. But surely it is quite as common for formalists not exactly to miss, but to decline to use a common-sense (because functional) key, circumventing it with elaborate contortions, out of respect for the separation of levels. Z. Harris, a heroically consistent researcher in this line, is aware that his analyses tend to be "laboriously distributional", but counters that "since there is no independently known structure of meanings which exactly parallels linguistic structure, we cannot mix distributional investigations with occasional assists from meaning whenever the going is hard". As a result, watching Harris do a discourse analysis of a text of English as though it were Linear A, referring only to morpheme boundaries, is like attending an improvisation for children, in which the actor pretends not to notice the rabbit (or pirate) in full view behind his back, and persists in his elaborately ineffectual peregrinations, despite howls and gesticulations from the audience.

Let us try to arrange the German data in accordance with our already existing intuitions, as reflected in (or possibly merely engendered by) the traditional labeling, and see what kind of facts one must adduce in support.
The first scission may be made on the basis of the Pronoun set itself, if we include oblique forms: for /zi/ "she" becomes /ir/ in the dative, while /zi/ "you, they" becomes /inën/. But this is not overwhelming evidence; it does not force us to conclude that sie and Sie (orthographic forms respectively for "she" and "you"); "they" again awkwardly sie; I shall write SIE for the union, which we have yet to split other than referentially and orthographically, of Sie and sie (pl) are as separate as ich + du any more than we are forced to conclude that there are two unrelated lexemes /vört/ ("word"), one with plural /vörter/ "paroles", one with /vört/ "mots". After all, sie and SIE share accusative, genitive, and even the dative, which suggests the same base morpheme: zi (nom. sg. fem.) ir (dat. sg.): zi (nom. pl.): inën (dat. pl.) is close to the deictic/ definite article: di (nom. sg. fem.): der (dat. sg.): di (nom. pl.): denën (dat. pl.), allowance made for the fuzzier morphology one generally finds in Pronouns. No, to decide the case we must go outside the roster of Pronouns proper. Let us take the smallest step, to syntactic constructions involving Pronouns. Relief in the "sie/SIE" confusion is immediate: sie takes ist, Ihuft, etc.; SIE takes sind, laufen. This provides a formal method of distinguishing the two pronouns ("two" because SIE at this point must still be considered a single Pronoun, albeit with a curiously broad gloss). But what sort of distinction is this—what, beyond saying that A ≠ B? We cannot say without looking at still more of the language. So we consider constructions that do not even contain pronouns, like "Die Frau ist alt/Die Frauen sind alt", and discover that the Pronoun – Verb concord parallels what for nouns, on overwhelming evidence, we would want to call a Singular vs. Plural distinction.

This is, of course, the reason for calling (traditionally) wir "first person plural", despite the semantic nonsense of the label (WE are not simply a bunch of ME's). Thus, although we have started from a notional category (first person = the one who is speaking), we have implicitly yielded to the primacy of the formal (surface concord, morphology) in establishing our technical labels.

A primary justification for the use of features in phonology, or of word-classes in syntax, is that segments sharing these features are treated in the same way by various rules (and since the domain of these rules is unlimited, this has predictive value), a fact sometimes expressed by saying that the rules mention the features, thus emphasizing the status of these features as (among other things) labels. Let us see how the time-tested features of first, second, third person, singular and plural for German Pronouns stand up under this criterion. We have already seen that Singular: Plural holds up well in third person. The rest will not come so easily.

Almost none of the rules I shall mention distinguish er, es, sie (sg.), so I shall lump these for the time being as ER: they will have to be distinguished later by another feature, Gender. This distinction, like that of Number, is based on the close analogy with a feature so labeled and much more easily established (adjectival paradigms) for Nouns. Our rules also fail to distinguish, save
marginally, between Sie (singular, plural) and sie (plural), which we have therefore lumped as SIE; the unpacking of this one will be more complicated. For now, call it third person. In what follows, we circle those terms which are treated identically by a given rule.

First, our third person is treated uniformly by a few rules--rules logically independent of one another, which strengthens our sense of the reality of the category; e.g.

(1) reflexive Pronoun = sich
(2) lack of obligatory Pronoun copy in relative clause: e.g., Du, der du noch ein Kind bist; Max, der (*er)...; and even, anticipating a bit, Jesu [Voc], der du meine Seele hast durch deinen bittern Tod...

Next, Singular is distinguished:

ich wir (A)  
(1) e, ü, ö → i, ie in certain Verbs (sprechen...)

du ihr (B)  
(2) a, o, au → ü, ö, ü in certain Verbs (laufen...)

The change has been said to occur by 'analogy'.

But this is awkward. For if ich, du, ER share a feature which ich, wir, ihr, SIE do not, in this case Singular, and if the converse does not hold, then we have here not analogical leveling but, seemingly, capricious terracing:

We may attempt to buttress the Number distinction by the facts of sein concord, in the Present:

ich wir (C)  
--- apparently shared bi- base

du ihr (D)  
--- apparently shared sV- base

But this, like that adduced previously, is weak and idiosyncratic evidence for the overall structural validity of the traditional distinctions (and is even historically ill-founded in the IE *es- appears in ER as well as wir, ihr, SIE verb-forms). Vastly more widespread, comprising an indefinite number of Verbs, is the following curious pattern, observed by rules of which I list a handful:

(1) Past concord with most weak verbs, of various subclasses--loben, reden

(2) Konjunktiv I, II of various strong and weak verbs (dürfen, laufen, brachen, binden...
(3) sein concord in Past Konjunktiv I, II. (4) modals; various strong preterites.

Viewed one way, this is strong and distressing evidence against the linguistic reality of the traditional Pronoun categories of either Number or Person. Viewed another, it is grudging confirmation of these categories. And our eticist brethren have no basis on which to choose: they have no basis on which to proceed past the original unstructured list of glosses.

The view I have in mind would not take (ε) at 'face value' (i.e. would not consider that it established categories ich + ER, wir + SIE) but would consider the apparent pattern to be a superposition of second person marking upon a straight singular vs. plural distinction. But how are we to justify this sleight of hand?

Since the point of this paper is not to establish this or that particular analysis of pronouns, but to examine the sort of evidence that must be brought to bear in evaluating the appropriateness of grammatical labels and categories (this in turn being relevant to the characterization of their ontological status), I'll not attempt to adduce every shred of support that one might scrounge, but simply point out that to decide or even examine the matter we must open our court to yet another class of witness. To set up (ε), we had to look at a lot of the language beyond the roster of pronouns, but we did it in a way that was both surfacey and local: a computer, suitably instructed about morphology, could have drawn it on the basis of distributional facts, without holding the entire language in its regard at one time. But now it is suggested that (ε) is in 'fact' a superposition of two other patterns, neither of which perhaps overtly occurs! One recalls disputes as to the correct Deep Structure for a sentence, all candidates equally and elusively in the nether world.

One can make a general plausibility-argument for why the second person is strongly enough marked that it could cut into a conjugational pattern to the extent of disrupting a sharp Singular/Plural distinction. The argument is subjective because it is not clear what weight to assign the various sorts of evidence. (1) The second person alone is deemed worthy by the language of an Intimate-Nonintimate distinction—even if the nonintimate semantically second person forms were pilfered from the formally third person. Thus, in a completely different sphere, the second person is sharply characterized. [Rest of discussion omitted.] Whatever one decides with regard to (ε), there is another pattern of open application for which no principled interpretation exists: Present concord with weak Verbs of several subclasses and non-umlauting strong Verbs (loben; betrügen):

\[\begin{align*}
&\text{ich} & \text{wir} \\
&\text{du} & \text{ihr} \\
&\text{ER} & \text{SIE}
\end{align*}\]

Or again, present of umlauting strong Verbs and most modals:

\[\begin{align*}
&\text{ich} & \text{wir} \\
&\text{du} & \text{ihr} \\
&\text{ER} & \text{SIE}
\end{align*}\]

It is such jigsaw pieces, and not any pristine system of uniform
oppositions, that determines the topography of the personal pronouns. We've had to do a fair amount of empirical mucking-about just to establish the roster of personal pronouns, let alone their relative interdistances.

What are we to make of our uncomfortable result-so-far that Sie "you" is not distinguished from its third person homophone? Discussion omitted. Upshot: There is indeed little formal distinction—"Es bleibt ein Fleck im Gewand der deutschen Sprache, den wir nicht mehr auswaschen können." (Grimm) If we do, as speakers, feel the two plural-concord Sie's to be quite distinct, then the formal is here bowing before the social.) We illustrate the rule that does separate Sie "usted" from its two semantically-plural homophones, for the record:

\[
\begin{array}{c|c}
\text{ich} & \text{wir} \\
\text{du} & \text{ihr} \\
\text{Sie} & \text{Sie} \\
\text{ER} & \text{sie (pl)} \\
\end{array}
\]

Collocable with einander.

It is, as we remarked, cryptosemantic.

We next note a little structure in the ER group:

\[
\begin{array}{c|c|c}
\text{ich} & \text{wir} & --- \text{ih}-possessive, \text{sie} \text{nominative accusative} \\
\text{du} & \text{--- ihr} & --- \text{sein}-possessive, \text{ihm} \text{dative} \\
\text{ER} & \text{--- sie} & \text{The distinction we want is much like the well-founded distinction of gender in nouns, so we may use the same labels for the Pronouns.} \\
\text{ES} & \text{--- sie} & \text{Current usage presents a blurred picture—or rather a moiré, owing to the competition between two systems of pronominal reference, formal and semantic (grammatical and natural). In thus admitting Gender (Masculine, Feminine, Neuter) as a dimension of Pronoun classification, we have, however, beyond offending the binarophiles, offended the partisans of symmetry, who note massive syncretism in the resultant three-dimensional (so far: Number, Person, Gender) entabulation, and correctly point out that, if we restrict our gaze to the Pronoun set, our establishing a dimension to handle just one of our six major pronoun-bundles looks like a case of special pleading. And indeed, to justify our metaphor of 'Gender' for Pronouns we must look, not just at the Pronoun set, nor even just at German, but at languages generally: our widest scope so far. We decide, after looking at lots of languages (or, as a short-course, reading J. Greenberg "Language Universals") that Plural is a marked category, that first and second person are marked with respect to third, and that distinctions made in unmarked categories tend to be felt as an overload in marked ones: hence the particular syncretisms we have to confront here are not a refutation of the system. That is, there are gaps and there are gaps, and these are lawful. That there are gaps is, however, not without significance, and perhaps suggests a rather low functional load to Gender in modern German (a suggestion that would not arise if we tried a priori to stuff all 'systems' into relative economy): thus we might not be surprised to learn that it has further retreated in other Germanic
languages: marginal in English Nouns and often semantically non-minimal (steward, stewardess), and reduced to two in Scandinavian, except in Old Icelandic, where, however, all three genders were marked in the plural as well.

One thing we might like from a description of a system, something akin to explanation, is an insight into the historical development of that system, in cases where the material under description is empirically unstable. Does our net of linguistic features tell us anything about the changing constitution of the German Pronoun 'system' over the past few centuries? Unfortunately I cannot see that it does. The motivating force behind the extensive upheavals in the Pronoun system seems to have been the jockeying for position among the castes and classes, rather than any inherent linguistic tension in the MHG system or inherent advantage of the present system: if anything, a previously well-balanced system has been battered repeatedly, and what we have left is a sort of rubble, full of ambiguities and asymmetries. There have been deletions, additions, and rearrangements in the roster of the Pronouns themselves, including periods when there really wasn't any nominative second person Pronoun for certain addressees, and one had to make delicate choices among various more or less conventional NPs used quasi-vocatively. The hinge to all this self-abolition and renewal finds only the palest one-dimensional reflection in what is linguistically, in fact, the least well-grounded of our features, ±Polite. The _sprachliches Feld_ of German Pronouns is stained with the bile of spurned courtiers, with the tears of children chastized for addressing the grandfather with the form that the father is wont to receive, with the blood of students who, away from home and patois, took affront at Er from a townsman (Mainz and Göttingen, 18th century). In sum: pattern-maximizing treatment of an abstractly delimited subset is otiose; subjective, grammatically wide-ranging considerations are necessary for even a modest taxonomy, though in so doing one has come up with an interesting description; and explanation of anything genuinely interesting requires non-linguistic supplement. In general, to all abstract or purely synchronic linguistics, I would oppose the slogan: You can't take the class struggle out of language.
Relativization Strategies in Wappo*

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Wappo is a language with no morphology or syntax identifying a "head noun" in sentences conveying relative clause messages. The purpose of this paper is to show how clause-marking strategies are used instead of grammatical head-plus-relative constructions for relativization in Wappo.

I. Preliminaries.

Wappo is an SOV language with a rich case system of which we will only be concerned with the nominative, accusative, and dative. For nouns, the nominative is morphologically signalled by the suffix (-i), the accusative is morphologically zero, and the dative is the suffix -thu:

(1)    'man'
Nominative: kéw-i
Accusative: kéw-∅
Dative: kéw-thu

However, for pronouns, there are different forms for the nominative and accusative:

(2)  1sg  2sg  3sg anim.  3sg \{demonstr.\}

| Nom: | ?aḥ | mi? | cephī/hephi | cephī/hephi |
| ?i  | mi  | te  | ce/he       |
| ?i-thu | mi-thu | te-thu | ce-thu/he-thu |

To make our examples easier to follow, we will gloss these pronouns with their English equivalents, and add the information about their case where necessary. The difference between ce/he is their deictic meaning. Ce is equivalent to "that", whereas he is equivalent to "this".

One other important point to note before we look at relative clauses is that subordinate clauses of all kinds are characterized by the fact that their subjects appear in the accusative form. Thus, to take an object complement example, look at (3):

(3) ?aḥ [ce kéw-∅ ?i hakšel] ḥatiskhīʔ
I the man-acc. me like know
I know that the man likes me

Observe that in (3), the object complement of the verb ḥatiskhīʔ 'know' has its subject kéw 'man' in the accusative form rather than in the nominative, which would be kéwi, as shown in (1)?
note also in passing that the form of the verb, hak'xe, in (3), is characteristic of non-infinitival subordinate clauses. In some instances, the verb in a non-infinitival subordinate clause takes a special form, but in the great majority of cases it involves only the dropping of the word-final glottal stop from the verb in a main clause.

With these preliminary remarks having been made, then, let us turn to a discussion of relativization itself.

II. Relativization strategies.

There are essentially three ways in which relative clause messages are signalled:

IIa. "Internal Head" constructions.

These constructions simply involve a clause in subject, object, or oblique position. We illustrate one of each type.

(4) Subject:
\[
\begin{align*}
?i & \text{ chuya-} \phi \text{ tumt} - i \text{ soyikhi?} \\
me & \text{ house-acc. bought - nom. burned down}
\end{align*}
\]
The house that I bought burned down

(5) Object:
\[
\begin{align*}
?ah & \begin{cases} ?i \text{ kew-} \phi \text{ nawta} \end{cases} \text{ hak'xe?} \\
I & \text{ man-acc. saw - like}
\end{align*}
\]
I like the man I saw

(6) Oblique (here: dative):
\[
\begin{align*}
?ah & \begin{cases} ce \text{ kew-} \phi \text{ ?ew-} \phi \text{ tohta} \end{cases} - thu \text{ taka-} \phi \\
I & \text{ the man-acc. fish-acc caught dat basket-acc.}
\end{align*}
mahesta?
\]
gave

(i) I gave the basket to the man who caught the fish

There are several things to notice about this "internal head" strategy. First, the clauses enclosed in brackets are in the position in which a simple noun with the function would occur, initial for the subject, pre-verbal for the object, and pre-object for the dative. Second, these clauses are each marked with the appropriate case marker, -i for the subject, ø for the object, and -thu for the dative, and these case markers are clearly attached to the entire clause, since they follow the subordinate verb. Third, as with all "internal head" relative clause strategies, which have been described for a number of other American Indian languages (see Gorbet (1977) and references cited there), there is no head noun; the noun which is to be interpreted as the head is strictly a matter of inference. What this means, of course, is that such sentences may be ambiguous. Thus, to go back to (6), since there is no marking to signal which of the nouns in the embedded clause is to be interpreted as the head, there is nothing to prevent us from taking the head to be ?ew 'fish'. Then the sentence would mean:

(7)(ii) I gave the basket to the fish that the man caught

It seems reasonable to suppose that both knowledge of the world
and discourse context help to render this type of potential ambiguity relatively innocuous. Still, it is true that this internal head strategy for relativization is remarkably non-transparent in the sense that the syntactic structure, which involves an internally embedded clause, gives relatively few clues to elucidate the semantic structure, in which some noun is being characterized by one presupposed proposition (the relative clause) and one new, or information-bearing, proposition (the main clause). The internal head strategy, then, is as opaque a relativization strategy as languages ever seem to have. For this reason, languages with internal head strategies also tend to display alternative strategies which are less opaque. In Wappo, these alternative strategies are essentially discourse strategies involving simple juxtaposition of two clauses. As we will see, there is still no head noun, but anaphoric pronouns are used to aid in identifying the noun which is to be interpreted as the head. In what follows we will have to refer to this noun which is to be interpreted as the head, but which is not a head in any syntactic sense. For convenience, let us call it (after Kuroda 1976) the pivotal noun. Now we propose to illustrate these two alternative relativization strategies first and then discuss them both together.

IIb. "Preposing" strategy.

Since in this construction the presupposed clause, which ends with a pronoun, is presented first, followed by the "main", or informative, clause, we have:

(8) Subject:
"?i chuya-ϕ tumta] cephî "şoyikhi?
me house-acc. bought it(nom.) burned down
The house I bought, that one burned down
(=The house I bought burned down)

(9) Object:
"?i kew-ϕ nawta] ce ?ah hakše?
me man-acc. saw it(acc) I like
The man I saw, I like that one
(=I like the man I saw)

IIc. "Postposing" strategy.

With this construction the informative, or main, clause is given first, followed by the presupposed clause, which again ends with a pronoun:

(10) Subject:
"şoyikhi? "?i tumta] cephî
calu
house-nom. burned down me bought it(nom)
The house burned down, that one I bought
(=The house I bought burned down)
(11) Object:

\[\text{?ah kew-\(\phi\) hakše? [?i nawta] ce}\]

\[\text{I man-acc. like me saw it(acc)}\]

I like the man, that one I saw

(=I like the man I saw)

We have presented these two alternative relativization strategies together so that we can highlight their similarities. First, note that the presupposed clauses, enclosed in brackets in these examples, are simply juxtaposed to the main clauses, before them in the "preposing" strategy and after them in the "postposing" strategy. That is, they are not in any obvious way syntactically subordinate to the main clause. Yet they are marked as subordinate, both by the accusative case marking of their subjects and by their subordinate verb forms mentioned above in Section I. This suggests that they are functioning as subordinate clauses even though they are not syntactically headed by any noun or verb in the main clause.

Second, note that the clause which comes first, whether presupposed or main, must contain an occurrence of the pivotal noun, while the clause which comes second does not contain any instance of this noun, and is thus only partially specified. This fact suggests that the precedence relation normally found in discourse between an antecedent and a pro-element is operating here: the antecedent must precede the anaphoric pronoun element, whether the main or presupposed clause comes first.

Third, notice the pronouns themselves, which we have underlined and translated as 'that one'. These pronouns are syntactically attached to the presupposed clause, but they are related to the main clause in an interesting way. To show that they are syntactically attached to the presupposed clause, we observe that they are always positioned at the end of the presupposed clause, whether it is sentence-initial, as in (8) and (9) or sentence-final, as in (10) and (11). But there is further evidence that these pronouns are attached to the presupposed clause. This evidence can be found in question-answer pairs in which the presupposed clause itself is the answer:

(12) Q: \(\text{ih kew-\(\phi\) mi? hakše??}\)

which man-acc. you(nom) like?

Which man do you like?

A: \(\text{?i nawta ce me saw it(acc)}\)

That one I saw

A final piece of evidence that the pronouns are indeed attached to the presupposed clause is the fact that nowhere else in the language could an object pronoun occur before the subject, as it does in (9), and nowhere else could pronouns occur sentence-finally, as they do in (10) and (11). The SOV order effectively prohibits occurrence of pronouns in these positions. They are clearly, then, attached to the presupposed clause and are playing
no syntactic role in the main clause.

However, a glance at (8) and (10) versus (9) and (11) will show that the pronouns are related to the main clause in that they are case-marked for the case role of the pivotal noun in the main clause. Thus in (8) and (10), where the pivotal noun is the subject of the main verb, šoyikhi? 'burned down', we find the nominative form of the pronoun, cephí; conversely where the pivotal noun is the object of the main verb hakšē? 'like', in (9) and (11), we find the accusative form of the pronoun, ce.

Our question, then, is what these pronouns are doing positioned at the end of the presupposed clause but case-marked according to the role of the pivotal noun in the main clause.

To answer this question, we note first that the pronouns ce and cephí are optional at the end of the presupposed clause when it is internal. Thus, variants of (4), (5), and (6) above are:

(4') [?i čhuya-š ʔumta] cephí šoyikhi?
      me house-acc. bought it(nom) burned down
The house that I bought burned down (happens to be indistinguishable from (8))

(5') ?ah [ʔi kew-š nawta] ce hakšē?
      I me man-acc. saw it(acc) like
I like the man I saw

(6') ?ah [ce kew-š ʔew-š ʔohta] ce-thu taka - š
      I the man-acc. fish-acc. bought it-dat basket-acc.
gave
I gave the basket to the man who bought the fish

Sentences (4'), (5'), and (6') differ from (4), (5), and (6) only in the appearance of the optional pronoun at the end of the embedded presupposed clause. Note that, just as with the preposing and postposing strategies, the pronouns here are playing no syntactic role in the main clause and are case-marked according to the role of the pivotal noun in the main clause. The pronouns are obligatory, however, when the clause has been "dislocated", as it were, to the left or to the right.

What these pronouns seem to be doing, then, is functioning as something like pronominal case suffixes on the presupposed clause, marking that clause according to the role that the pivotal noun has in the main clause. In the preposing strategy, that noun appears only in the presupposed clause, whereas in the postposing strategy, it appears only in the main clause. With these two strategies, then, the dislocated clauses themselves play no role in the main clause, but the pronouns signal how the pivotal noun is understood to function in that main clause.

Evidence that these pronouns are functioning as case markers on the presupposed clause can be found in the fact that they alternate with the case suffixes themselves in the internal head strategy, as seen by comparing (4), (5), and (6) with (4'), (5'), and (6').
III. Conclusions.

What we have seen, then, is that in addition to the "internal head" strategy (IIa) for relativization, Wappo has two juxtaposition strategies (IIb-c) which are essentially recognizable discourse strategies. The one in which the presupposed clause comes first is often labeled a "left-dislocation" structure, while the one with the presupposed clause second has been referred to as a "right-dislocation" type of construction. The crucial difference, then, between the internal head embedded construction and the two juxtaposition constructions is that in the juxtaposition strategies the presupposed clause has been 'dislocated' out of the positional slot which it occupies in the main clause in the embedded strategy, and that slot, of course, is precisely the slot which the pivotal noun is understood to fill. What this means is that in the internal head strategy, the function, or role, of the pivotal noun is signalled by the position and the case-marking of the presupposed clause containing that pivotal noun. Once that clause has been "dislocated", however, it can neither be case-marked nor does it occupy any positional slot in the main clause, and hence, there is nothing to signal the functional role of the pivotal noun in the main clause. The obligatory appearance of the pronouns can now be explained: they serve in the presupposed clause to indicate the function or role that the pivotal noun has in the main clause.

What we have tried to show in this paper are (1) how a language with no syntactic means of signalling what noun is the "head" of a relative clause sentence manages to indicate what noun is to be so understood, and (2) how it avoids some of the difficulties in identifying this noun which are inherent in an internal head strategy by making use of discourse devices to create more transparent structures.

FOOTNOTES

* It is a pleasure for us to take this opportunity to express our gratitude to our Wappo teacher, Mrs. Laura Somersal, who has been a steadfast inspiration and a paragon of patience as we have struggled to learn her language.

1. In the interest of making the data in this paper easier to follow as it was orally presented we have refrained from giving a morphemic analysis of the words in the examples. For such details, as well as further information on the syntax of Wappo, the interested reader is referred to Li, Thompson, and Sawyer (1977) and Li and Thompson (1977).

2. Talmy Givón points out that the fact that the mark for inalienable possession in Wappo is also zero suggests that these clauses may be profitably analyzed as a type of nominalization whose unmarked subject may actually be in the genitive case.
3. Note that in both reading (i) and (ii), whether kew 'man' or ʔew 'fish' is taken to be the head noun, the agent-patient relation remains unchanged: it is the man who caught the fish in both cases. This is due to the fact the SOV word order rigidly signals grammatical relations in subordinate clauses (see Li, Thompson, and Sawyer (1977) for more discussion).

4. For the sake of completeness, we note that a variation of the postposed strategy allows an optional abstract noun ka 'person' at the beginning of the presupposed clause when the pivotal noun is human. Thus, a variant of (11) would be:
(i) ?ah kew-ʔ hakše [ka ?i nawta] ce
    I man-acc.like person me saw it(acc)
    I like the man, the one I saw

5. We are grateful to Len Talmy for helping us to think of our data in these terms.

6. As sentence (6) shows, ce (but not cephi) also functions as a demonstrative or definite article. Crucially, however, in this function it is always pre-nominal. Both the alternation between ce and cephi and the positions of these forms argue against any claim that they are demonstratives on the presupposed clauses.

7. This comparison of the functional and structural properties of the "embedded" strategy and the "dislocated" strategies immediately raises the important question of their relative frequency in discourse. Unfortunately, none of these relativization constructions occur with sufficient frequency in the texts available to us (including those we have obtained from Mrs. Somersal and those found in Radin (1924-26)) for us to draw any conclusions with respect to this question. In the elicitation data (comprising about 150 sentences with relative clause constructions) on which this study is based, examples of all three strategies occur with roughly equal frequency, there being no obvious preference for any of them over the others.

REFERENCES


Secondary Predicates*

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Relational grammar has brought about a new interest in the exploration and description of particular syntactic relations. We can by now identify and talk about, if not completely define, the relations of subject, chômeur, and first object or first complement (second term). The present paper extends relational analysis to a class of nominals that has not been systematically examined. It departs from the bulk of relational-grammar inquiry in two respects. First, it is concerned with identifying the nominals in question, rather than deriving, explaining, or even substantively characterizing them. Second, its method is avowedly structuralist. To identify some syntactic relation is to determine its identity or non-identity to some other; thus the basic theoretical tools for the study are contrast, co-occurrence, and complementary distribution. These are tested through commutation in classic fashion. Once the syntactic relation has been circumscribed and subclassified, substantive characteristics — primarily semantic and pragmatic properties — are explored. This approach may be described as paradigmatic, rather than syntagmatic, in its orientation (the distinction is from Pettit 1975, ultimately from Saussure). That is, it is concerned with giving a contrastive analysis, enumerating types as nearly completely as possible, and delimiting them vis-à-vis other construction types. The syntagmatic analysis of the same constructions (Nichols 1978) emphasizes their surface connections with other elements of the texts in which they occur, and their generative derivations, but not their full range.

The constructions in question will be generically termed secondary predicates (they have also been labeled adjuncts, adverbials of various types, attributes, predicate nominals, predicate modifiers, postnominal and postverbal adjectives, copredicates, and types of nexus). 1) Most of the examples below are from Russian and English. In spite of the considerable typological divergence between these two languages, secondary predicates are identical syntactically, semantically, and pragmatically. The same claim can be made for Georgian and Finnish. Secondary predicates in all these languages differ only in morphological treatment and restrictions on the formation of one or another type.

Examples of secondary predicates, from English and Russian: 2)

1 (1) he works as an engineer
(2) rocks serve them as support
(3) adjective functions as subject
(4) he played goalkeeper
(5) they elected him president
(6) this herb they use as medicine
(7) we interpret this text as a forgery

2 (8) he walked along happy
(9) he came back drunk

on rabotaet inženerom
kamni im služat oporoj
prilagatel’noe vystupaet
podležaščim
on igral vratarem
gogo vybrali prezidentom
ètu travu upotreblja jut kak
lekarstvo
ètot tekst interpretiruem kak
poddelku
on šel veselyj
on vernulsja p’janyj
he sat there sad  on sidell grustnj
the police brought him home on milicija privela ego domoj
  drunk  pjanogo
he returned a hero on vermulija geroem
he was born blind on rodilsja slyem
he died young on svernutom omer molodym

the trilobite fossilized  trilobit okamenel
  curled up  svernutym
first they weigh the snačala masinu
  truck empty  v svernutom sostojani
he drank the tea cold on vypil čaj xolodnym
  present your pass unfolded predjavljajte propusk v raz-

as a child he lived in Paris  svernutom vide
I knew him young  rebenkom on žil v Parižе
even dead I won't forget ja znal ego molodym
this tea isn't good cold ja i mertvijj ne zabudu
I can't work hungry sladkij etot čaj nevkusnij

gołodnyj, ja ne mogu rabotat'

I will argue for the unity of the generic relation of secondary predic- cate, and for the reality of the numbered subtypes above. Note the variety of morphological devices used: in English, nouns with or without the conjunction as, and adjectives without conjunction; in Russian, nouns and adjectives agreeing in case with the controller, nouns and adjectives in the instrumental case, nouns with the conjunction kak 'as', and various prepositional phrases. These morphological devices are for the most part in complementary distribution, determined e.g. by the main verb and/or by the part of speech or lexical content of the secondary predicate. Especially in Russian, the choice of morphological device may have subtle semantic consequences (much has been written on the question of instrumental vs. agreement). But nowhere is the choice of morphological device itself syntactically contrastive. The syntactic relations will be identified in what follows on purely syntactic grounds. 3)

Contrastive properties. The four groups of constructions above reflect the distinction of term and non-term. The underlined nouns in group 1 are terms, specifically first or second objects; in traditional terminology they are governed by the main verbs. The English verbs work, serve, function, play, elect, use, and interpret all govern an object of this type, and all but play and elect require as. Russian rabotat' 'work', služit' 'serve', vystupat' 'appear, function', igrat' 'play', vybirat' 'elect' require instrumental complements; upotrebljat' 'use', interpretirovat' 'interpret' govern complements with the conjunction kak.

Group 2 includes predicate nouns and adjectives which, while not governed by the main verbs, nonetheless form with them fixed constructions or construction types. The first several examples represent a productive construction type: verbs of motion or position, including corresponding transitives, with adjectives of quality (ordinarily the quality is a perceptible, especially visible, one; or it is a physiological or psychological state). The last examples show fixed expression types whose lexical means are more limited; they are restricted to particular verbs and a smaller class of nouns or adjectives (thus
return plus nouns such as hero, victor; die plus rich, young, happy, and a few others; be born plus adjectives such as rich, blind or nouns such as genius. This difference in lexical fixedness is one of degree only, and of little theoretical importance. The force of the entire group of constructions is to tell what condition (state, etc.) the controller was in when the verbal action took place.

Constructions of group 3 likewise tell what condition the controller was in when the action took place. They differ from group 2 only in not representing stable construction types. Virtually any verb designating an action or event, and virtually any adjective designating a concrete, real-world state or condition may enter into such constructions.

Group 4 is distinctive. As with group 3, there is no verbal government and there are no stable construction types. The class of main verbs is virtually without limit: even stative verbs (know) and adjectives (good, cold) are eligible. Constructions of type 4 do not tell what condition the controller is in when the action takes place; rather, they state that the action takes place when, if, or although the controller is in such-and-such a state. This distinction emerges more clearly in their paraphrases. Constructions of type 3 have paraphrases with subordinate clauses of time, in which the original secondary predicate appears as predicate of the main clause. Thus (17)

(17) he drank the tea cold
has the paraphrase
(17') the tea was cold (had gotten cold) when he drank it

Constructions of type 2 have the same paraphrase pattern:
(14) he died young
(14') he was young when he died

Construction type 4, in contrast, has a paraphrase with the original secondary predicate as predicate of the subordinate clause:

(23) I can't work hungry
(23') I can't work when I'm hungry; when I'm hungry I can't work

Constructions of type 1 have no paraphrases of this kind. However, most of them have near-synonyms in which the original secondary predicate appears as predicate of the main clause:
(4) he played goalkeeper
(4') he was goalkeeper for that game
(1) he works as an engineer
(1') he is an engineer by profession

In summary, type 4 is distinctive in permitting a paraphrase in which the original secondary predicate appears in a subordinate clause. All other types have paraphrases or, in the case of type 1, synonyms or near-synonyms, in which the original secondary predicate appears as predicate of the main clause. For each group the paraphrase of the other type is inappropriate. Thus, corresponding to the above (the asterisk marks a non-paraphrase rather than ungrammaticality): 4)
(17") *he drank the tea when it was cold;
    *when the tea was cold, he drank it
(14") *he died when he was young;
    *when he was young, he died
(23") *when I can't work, I'm hungry;
    *I'm hungry when I can't work

This contrast in paraphrases will be restated as one of entailment below. For now, suffice it to note that it is a contrastive property setting type 4 apart from the others. 5) Group 4 is further distinctive in subdividing into three groups corresponding to traditional circumstantial types: temporal ((19), (20)), concessive ((21)), conditional ((22), (23)). Types 1-3 lack these specific circumstantial meanings.

We can now establish contrast and non-contrast among groups 1-4 on the basis of the structuralist principles mentioned above.

Types 1-3 are in complementary distribution: type 1 consists of the collocation of main verb and its governed complement; type 2, of main verb and secondary predicate in a stable construction type; type 3, of main verbs not lexically marked as entering into governed or other stable constructions, and adjectives of a broad class. The three groups, in other words, are determined by lexical properties of the main verbs. Since a given verb determines a given construction type, overlap and thus contrast is impossible.

However, type 4 contrasts with 1-3. This can be shown by commutation, in the minimal pair: 6)

(24) he worked in this town as a teacher  (type 1)
(25) he worked in this town as a young man  (type 4)

and by co-occurrence. As is well known, a clause may contain no more than one representative of a given syntactic relation type. 7) A single relation may be represented by conjoined NP's, but there can be no more than one non-conjoined NP of a given type per clause. The following examples show multiple secondary predicates, those of type 4 co-occurring with those of types 1-3.

(26) as a student [type 4] he worked as a waiter [1]
(27) as a student [4] he often came home from classes drunk [2]
(28) even as larvae [4], butterflies tend not to fossilize curled up [3]

Types 1-3 do not co-occur with each other. They have already been shown to be in complementary distribution, determined by lexical properties of the verb. In principle they cannot co-occur.

In summary, type 4 is again shown to contrast with types 1-3. Within type 4, however, the separate subtypes can co-occur.

(29) even rich [concessive], I'll work better hungry [conditional]
(30) as a child [temporal] I couldn't work hungry [conditional]
(31) as a student [temporal] she always helped her friends even tired [concessive]

These are awkward in English. In Russian, however, with its freer word order and unambiguous morphology, they are entirely acceptable:
(32) *daže medvežonkom on ranenýj stanovitsja opasnym
    'even as a cub it becomes dangerous (when) wounded'

(33) ešče studentkoj ona daže ustalaja pomogala druž'jam
    '(when) still a student she would help her friends even tired

(34) daže bogatym emu lučšë rabotalos' golodnym
    'even rich he worked better hungry'

In summary, the subtypes of group 4 co-occur and therefore contrast. In this respect they behave like the corresponding types of circum-
stantials, which easily co-occur both as clauses and as NP's. On the
other hand, they pattern as a group in contrasting with types 1-3.

We can now turn to respects in which all types function as a
group. First, all are initial predicates. All the examples given
would be derived by equi from structures in which the main verb and
the secondary predicate appeared in separate clauses, each as predi-
cate of its own clause. This structure is reflected more transparent-
ly in the paraphrases (17'), (14'), (23'). This amounts to saying,
in the terminology of a few years ago, that the controller is the
subject of the secondary predicate. In a structuralist sur-
face analysis this would be described as semantic dependency between
secondary predicate and controller (this analysis is explained in
Nichols 1978). It accounts for the contrast with manner adverbials,
shown in the minimal pair:

(8) he walked along happy [secondary predicate]
(35) he walked along happily [manner adverbial]

(8) entails that the individual was in fact happy; (35) does not.
Thus the acceptability of (36) vs. the contradiction of (37):

(36) he walked along happily, but he wasn't really happy
(37) *he walked along happy, but he wasn't really happy

The same facts hold for Russian:

(8') on šel veselyj (*no ne byl veselym)
    'he walked along happy (*but wasn't happy)'

(38) on šel veselo (no ne byl veselym)
    'he walked along happily (but wasn't happy)'

In summary, secondary predicates contrast with manner adverbials in
being semantically dependent on their controllers, while manner
adverbials are semantically related only to the main verb.

Secondary predicates contrast with nominals which depend only on
the controller and not on the verb. Such nominals include adnominal
modifiers such as reduced relatives. Compare the secondary predicate
of (39) with the reduced relative of (40).

(39) this trilobite died curled up
(40) here's a trilobite curled up
(The full version of (40) is (41):

(41) here's a trilobite which is curled up.)

In (39), curled up is dependent on the verb died; in (40) it is not
dependent on a verb. In (40) a trilobite curled up is a noun phrase,
while *trilobite curled up* of (39) is not a noun phrase. Compare the analogous relationship between the secondary predicate of (42) and the adnominal modifier of (43):

(42) the artist painted this portrait as a young man  
(43) portrait of the artist as a young man

In summary, secondary predicates contrast with adnominal modifiers in that the latter are dependent only on the controller, while secondary predicates are dependent on the verb. (The same fact distinguishes secondary predicates from appositives, which are also adnominal.) This dependency is strictly syntactic (see again Nichols 1978).

The preceding paragraphs have shown how secondary predicates contrast with some of the most closely related syntactic relations. We can now compare them to predicate nominals, i.e. complements of copulas and of the corresponding transitives.

(44) he is sick  
(45) he was a teacher  
(46) he became sad  
(47) he remained gloomy  
(48) he seemed young  
(49) his illness has made him pale  
(50) they consider him a genius  
(51) he turned out (to be) right  
(52) the parents named their son Sergei

Predicate nominals are in complementary distribution with secondary predicates, by the criterion used above: these verbs govern predicate nominals, which therefore cannot contrast with the nominals of types 1-4. Predicate nominals differ from secondary predicates of type 1 only in their syntactic derivation. Constructions of type 1 are derived by equi from separate clauses. Predicate nominals are not derived by equi. Most start out as complements of their main verbs in structures closely paralleled by the surface syntax. A few ((49)-(51)) are derived by raising. Predicate nominals are unusual among complements of verbs in being semantically (and, in Russian, morphologically) dependent on their controllers. In short, predicate nominals and secondary predicates are non-contrastive and share essential properties. They may be grouped under a single generic category which is probably best called predicate nominal, and which they exhaust.

There are at least three minor types of secondary predicates. One is the resultative construction of Germanic, Finnish, and Georgian:

(53) wash it clean  
(54) laugh yourself sick  
(55) eat yourself thin  
(56) sand it smooth  
(57) pound it flat

These are presumably of type 3, unless the verb class is sufficiently restricted to make them type 2. Another is equi-derived participial complementation with verbs of perception:

(58) I saw him running away
(59) we found him working
(60) we heard him singing
(61) the watchdogs smelled us coming

This is an identifiable type with a specific verb class, thus of type 2. A third type, formally but not syntactically identical to the second, is raising-derived participial complementation with verbs of perception and cognition. Old Russian and Greek used participles in an analog to the raising-derived accusative-infinitive construction. An Old Russian example (from Nichols, in press):

(62) Pečenězi že mněša knjazja prišeda
    Pechenegs particle thought prince (acc.) returned (ppl., acc.)
    'the Pechenegs thought the Prince had returned',
    lit. '...thought the Prince having returned'

This is another type 2 construction.

Secondary predicates, then, have a variety of syntactic sources. In fact any syntactic process which reduces structure and inserts an underlying predicate nominal (most examples are complements of be and become) into another clause will provide another source of secondary predicates.

**Substantive properties.** The preceding section has established the existence of secondary predicates as a distinct group and as a set of contrastive subtypes. In addition, several positive properties have been established in connection with the contrastive analysis. Secondary predicates are semantically and morphologically dependent on the controller, but syntactically dependent on the verb. 8) All are initial predicates; secondary predicate is a surface relation. They are derived by equi or perhaps, in the case of type 4, by other processes of clause reduction. The force of types 1-3 is to state what condition the controller is in when the verbal action takes place; the force of type 4 is to state that the verbal action takes place when, if, or although the controller is in some state. Type 4 is circumstantial in semantic force, and subdivides into temporal, conditional, and concessive types. Types 1-4 form a scale of decreasing lexical government.

The examples given throughout this paper display a universal property of secondary predicates: their possibilities of formation are restricted by the accessibility hierarchy, usually to subject and direct object. Among the languages I have investigated (in addition to those already mentioned, Lithuanian, Latvian, the remaining Slavic languages, Estonian and minor West Finnic languages), Finnish is apparently unique in regularly permitting controllers to be much lower on the hierarchy. Thus oblique or indirect objects in (63), possessors in (65), object of comparative conjunction in (66) (controllers are doubly underlined):

(63) hänelle maksettiin hyvin opettajana
    to him was paid well teacher
    'he was well paid as a teacher' (impersonal passive, lit.
    'him was well paid as a teacher')

(64) lahettimme hänelle rahaa lapsena
    we sent to him money child
    'we sent him money as a child (when he was a child)'
(65) vanhempani asuvat hänen naapurinaan lapsena
my parents lived his in neighborhood child
'my parents lived in his neighborhood as a child' (when he
was a child)'

(66) tänä puu oli suurempi kuin minä lapsena
this tree was bigger than I child
'this tree was bigger than me as a child'

This exhausts the relevant semantic and syntactic properties of secondary predicates. The following sections explore pragmatic and morphological properties.

Pragmatic factors. Types 3 and 4 illustrate a distinction in what may be called pragmatic dependency on the verb vs. independence from the verb. As has been stated, (17) states that the tea was cold when he drank it, rather than that he drank it when it was cold; and (67) asserts that it was when he (or I) was a child that I knew him, not that he was young when I knew him (see again note 4).

(17) he drank the tea cold
(67) I knew him as a child

In (17) the verb drank has its own, independent time reference and modal properties. The secondary predicate cold does not have independent time reference and modality. Thus the sentence cannot be taken as asserting that the tea was cold (although it certainly implies this); it asserts only that it was drunk. Negation of the sentence yields ambiguity as to whether the tea was actually cold; thus the two possible continuations of (68):

(68) he didn't drink the tea cold
(a) ...he drank it hot
(b) ...he left it there

The negated (68) does not necessarily entail that the tea was cold.

In contrast, in (67) it is the secondary predicate as a child that has independent time and modal properties. The sentence entails that there was a time when he (or I) was a child, and that was when I knew him; the time reference of knew is determined by that of as a child. This entailment is not affected by negation: (69) still entails that he (or I) was a child at the time in question.

(69) I didn't know him as a child

The secondary predicates of types 1 and 2 pattern like those of 3 in being pragmatically dependent on the verb. 9) In summary, for types 1-3 the pragmatic properties of the main verb determine those of the secondary predicate; for 4 it is just the reverse.

Although the distinction in pragmatic dependency parallels the distinction in paraphrase types given in section 1, note that the paraphrases themselves do not constitute statements of the entailment patterns. The paraphrase for type 4 puts what is entailed in a subordinate clause. That for type 3 puts the secondary predicate in the main clause, the usual position of assertion, although as secondary predicate it is not asserted.

Related to pragmatics is the role of secondary predicates as focus. For types 1-3 — for pragmatically dependent secondary
predicates — the neutral reading of the sentence out of context is one in which the secondary predicate is focus in a focus-presupposition construction. Thus (1) is preferably taken as an answer to (70) or (71), i.e., it newly communicates the content of engineer and presupposes the rest.

(1) he works as an engineer
(70) what does he work as?
(71) does he work as an engineer (or as a doctor)?

Similarly, (72) communicates cold as requested or new information, and presupposes the rest.

(72) he drank the tea cold

Constructions of type 4, however their pragmatic organization is to be described, are not obviously simple focus-presupposition structures. (73) could be taken to answer (74), i.e., as presupposing the secondary predicate.

(73) as a child he lived in Paris
(74) where did he live as a child?

It does not answer (75).

(75) when did he live in Paris?

When the secondary predicate is sentence-final

(76) he lived in Paris as a child

the sentence can be taken to answer (75), but this reading requires special context or intonation to indicate that the answer wished is not a date but a stage in the individual's life. In summary, pragmatically dependent secondary predicates (types 1-3) tend naturally to be focus; pragmatically independent types do not. Impressionistically speaking, the pragmatically independent type splits the focus, and thus the new information, between the verb (with or without its complements) and the secondary predicate.

Morphological factors. The English examples given so far do not exhibit morphological and lexical unity. The variety of simple noun or adjective, preposition, and conjunction could have been extended with more examples. In Russian, on the other hand, although again there is considerable morphological variety, still one device is conspicuous: the predicate instrumental, widespread in Baltic and Slavic. In this section I will give examples of secondary predicates in two more languages, with primary emphasis on morphological devices. For both languages the syntactic and semantic facts, and apparently also the pragmatic facts, are as described above for English and Russian.

Georgian uses the case variously called adverbal and transformative in secondary predicates of types 1-3 (type 4 is virtually non-existent in Georgian). The case ending is -ad.

(77) is mächavleblad mušaobs
    he teacher works
    'he works as a teacher'

(78) is gmirad mokvda
    he hero died
    'he died a hero'
(79) me sačukrad puli miva'y s
I got money got
'I got money as a gift'

Georgian also uses agreement, primarily in adjectives, and (less often) postpositions and conjunctions. 11)

Finnish makes conspicuous use of two cases, the essive and the transative, in secondary predicates. The transative (in -ksi) is used when there is implicit change of state associated with the secondary predicate (in syntactic derivations, when the lower clause contains become, turn into, or the like rather than be):

(80) lumi suli vedeksi
snow melted water
'snow melted into water'

(81) auto pestiin puhtaaksi
car washed clean
'the car was washed clean'

The essive (-na, -nä) is used where the implicit predicate is be:

(82) hän lähti hiljaisena huoneesta
he went quiet out of the room

(83) hän on siellä opettajana
he is there teacher
'he is a teacher there', 'he is there as a teacher'

(84) hän oli syntyvä sokeana
he was born blind
'he was born blind'

(85) tunsin hännet lapsena
I knew him child
'I knew him as a child'

The same cases also appear in predicate nominals, where they are governed by verbs. The transative is used with verbs of becoming, staying, seeming and considering, and naming; the essive is occasionally found in predicate nominals with be. 13) In addition, a group of verbs of seeming takes the ablative (see Eliseev 1959:92ff.).

The secondary predicates so far discussed have been nouns and adjectives for the most part. Verbs may also function as secondary predicates. Verbal secondary predicates are normally nonfinitive, usually participial forms. Agreeing participles were used in the Russian and Old Russian minor types ((58-9), (62)). More productively in types 2 and 3, English uses the -ing form, and Russian the verbal adverb or adverbal participle (in Russian, deepričastiie). Parallel to the adjectival secondary predicate of (86) we have the verbal form of (87).

(86) he slept dressed
on spal odetyj
(87) he slept sitting (up)
on spal sidja

The distribution of verbal secondary predicates will not be explored here. (58ff.) and (87) suffice to show that they exist, and that
their syntactic and semantic properties are identical to those of the corresponding nominal and adjectival secondary predicates. 14)

Finally, a variety of prepositional phrases can be classed as secondary predicates. Parallel to (86) we have

(87) he slept **in his boots** on spal **v sapogax**

That the prepositional phrase of (87) and the adjective of (86) can be coordinated is proof of their syntactic identity:

(88) he slept **dressed and in** **his boots** on spal odetyj **i v sapogax**

Parallel to (90) is the nearly synonymous (91):

(90) **sweet this tea isn't good** sladkij ètot çaj nevkusnyj
(91) **with sugar this tea isn't good** s saxarom ètot çaj nevkusnyj

(Cf. also Jespersen 1924:123–4.)

We may conclude that there is no one-to-one correlation between the syntactic relation of secondary predicate and any given morphological device. (A partial exception is provided by Russian, which reserves a special nonfinite form for verbal secondary predicates.) In some languages, though, there may be morphological devices whose use in secondary predicates is frequent and conspicuous. Examples are the predicate instrumental of Russian, the transformative of Georgian, the essive and translative of Finnish. Each of these languages has the option of using, in at least some constructions, agreement in case with the controller. The factors determining the choice of agreement vs. non-agreeing case are subtle and primarily semantic rather than syntactic. 15) For Russian they include the tense-aspect force of the verb; whether the passage is narrative or descriptive; whether the verb is negated; word order; gender; part of speech of secondary predicate; case of controller. For Georgian they include tense-aspect; part of speech of secondary predicate; lexical transitivity of main verb. For the most part these factors are language-specific. There are intriguing cross-linguistic consistencies, however: all languages investigated are sensitive to part of speech of secondary predicate, tense-aspect parameters (often covert), case of controller and/or lexical transitivity of main verb, and lexical class of main verb.

This excursus into morphology is intended only to distinguish morphological problems from the syntactic analysis of the construction. While morphology may be sensitive to syntactic factors, the question of morphological device is entirely independent of the description of secondary predicates as a syntactic relation. Again, this is very much Jespersen's position.

Conclusion. Secondary predicates may be grouped together, and predicate nominals with them, if initial relations are taken as the basis for determining syntactic relations. They may also be classed together on the evidence of their semantic and morphological, but not syntactic, dependency on the controller. They may be divided into syntactic subtypes according as they are terms or non-terms; into pragmatic subtypes according to dependency on vs. independence from the verb; and into semantic subtypes according to traditional circumstantial classes. They may also be subclassified by morphological
device, although that is not the purpose of this paper.
This analysis of secondary predicates has given us information about peripheral elements of sentences in general. It has presented methodological issues in the description of syntactic relations, and it has raised some theoretical questions. Are we, for instance, to consider secondary predicates a single grammatical relation, a generic class (Mel'čuk 1975b suggests the term *syntagma* for such a notion), or distinct relations? (Recall that their defining criteria mix syntactic, semantic, and morphological facts.) What is the primary basis for classifying surface syntactic relations? (If we were first to ask whether a nominal is a term or a non-term, we would regard type 1 as entirely different from 2-4. Essentially this position is taken in Mrázek 1964, Mel'čuk 1974, Mel'čuk & Percov 1975. If we ask whether the controller is subject or object, we will have subdivisions within all four types. This position is taken in Jespersen 1974, Mel'čuk 1974, Mel'čuk & Percov 1975. If we ask whether the lower verb is be or become we will have a classification recalling the morphological distinction between the Finnish essive and translative cases. This kind of approach characterizes the Slavic grammatical tradition; see Ivic 1954 and to a lesser extent Mrázek 1964, Fraenkel 1925.) What universal patterns can be detected in the morphological treatment of secondary predicates? What are universal predicate-like properties on the basis of which we could begin a functional study of secondary predicates? And finally, do peripheral and predicate-like relations have as much significance for linguistic typology as subjects and terms have?

Footnotes

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1 Space limitations make impossible a survey of the literature on these constructions. For partial surveys see Fraenkel 1925, Ivic 1954:147-58, Mrázek 1964:207-48. The best pre-generative typology of constructions is Jespersen 1924:122ff.

2 Here and below, English examples also translate corresponding Russian examples. These translations are syntactically literal (except occasionally for word order), although the morphology of secondary predicates may not coincide. The secondary predicate is underlined. Numbers in parentheses are reference numbers for examples; unparenthesized numbers refer to construction types.

3 This is analogous to regarding the nominative case as merely one of several subject-like properties, rather than using it as the defining property for subjects. It is an approach much like that of Jespersen (1924:122ff.).

4 Sentences like (17"), (14") are in fact often real-world implications of the original secondary predicate constructions. This is because the main and secondary predicates coincide or at
least overlap in real-time reference — a point made in most of the Slavic grammatical literature — and sentences such as (14"), (17") simply assert the temporal coincidence. The discussion here is limited to strictly grammatical paraphrases and (below) implications.

5 The use of paraphrases (or transformations in the early sense of the term) to establish contrast is not new. They were so used in the works of Z. S. Harris, an approach developed in Worth 1958, 1963.

6 The minimal contrast is the grammatical opposition of types 1 and 4; the lexical difference merely facilitates it. In fact, (25) is actually ambiguous: the more likely reading is that intended here, 'worked when a young man'; less likely is type 1, 'worked in the capacity of young man' (as though young man were a job title). The word order he worked as a teacher in this town is more natural for (24), in contrast to *he worked as a young man in this town for (25) (on the reading as type 4). This fact provides further evidence of contrast.

7 Fillmore 1968:22 (stated with reference to semantic relations), Mel'čuk 1975a:36ff.

8 The immediate syntactic dependency of type 4 is less evident. Impressionistically, type 4 NP's are immediately dependent not on the verb but on the entire S or (perhaps) the VP (or the verb plus its complements). I.e., the constituency of (i) is schematically as in (ii) (slashes represent equi and subsequent processes):

(i) he lived in Paris as a child
(ii) [he lived in Paris] \( \_ \_ \_ \_ \_ \) a child

This question will not be pursued here.

9 Although a distinction analogous to pragmatic dependency vs. independence distinguishes type 1 from predicate nominals proper. See Nichols, MS.

10 As Chomsky originally defined these terms (1969) they were applied to English cleft constructions. I am using them to refer also to the questioned element or the answer to it (focus) vs. the rest of the sentence (presupposition) in questions to parts of sentences (in Bally's terms (1932:41-2), partial modal and partial dictal questions).

11 For details see Nichols 1977 (with a slightly different syntactic classification).

12 The construction be + locative adjunct + noun of status or occupation, with the force 'be in (place) as (position, status)' is a stable type to be classed with group 2, if not indeed group 1. The verb is one of location and not a copula. Although in the languages examined here existential-locative be and the copula are homophonous, a case could be made for the lexical independence of the existential verb, and thus for the construction being governed by the verb.

13 This is the copula, not the existential verb. Examples:

(i) \( h\text{"a} \) on Suomenkielen opettajana
he is Finnish lg. teacher
'he is a teacher of Finnish'

(ii) \( \text{"i}\text{"a} \) on opettajana
my Fa is teacher
'my father is a teacher'

(ii) is unacceptable to speakers, although a similar sentence appears
14 The various Finnish infinitives merit investigation along these lines. A glance at any grammar reveals several infinitive types used as secondary predicates.
15 Again, see Nichols MS and 1977 for details on Russian and Georgian respectively.

References
Jespersen, 0. 1924. The philosophy of grammar. London.
A major concern of relational grammar has been a universal characterization of passives. Recent attempts to characterize passives have been of a formal nature involving the relation-changing processes of promotion and demotion. Keenan (1975), for example, in arguing for a relationally-based passive over a structurally-based one, discusses promotion and demotion as separate grammatical processes. Perlmutter and Postal (1977) argue that passives cannot be given a universal characterization in terms of word order, case or verbal morphology. They propose, instead, a language independent characterization of passive in terms of the grammatical relations within clause structures with the direct object of an active clause becoming the subject of the corresponding passive. However, these and other discussions of grammatical relations and relation-changing processes indicate that a clear notion of terms like 'subject' is necessary together with a clear idea of what a change in grammatical relations really means and how such changes are to be identified. Using data from Lango, a Nilotic language spoken in Uganda, we will attempt to show in this paper that properties associated with grammatical relations may be lost or gained only in part, indicating that the notions of 'promotion' and 'demotion' need to be examined. Secondly, we will claim that certain properties associated with subjects follow from other aspects of their syntax and semantics, not from the grammatical relations themselves.

Lango is an SVO language with no case markings and no morphological passive. However, it does have a construction created by a rule which we call NP-fronting. This construction contrasts both syntactically and semantically with clefting. It functions in certain respects like a passive in that the fronted NP may assume some, but not all, of the properties associated with subjects in Lango. We are using 'subject' intuitively here to refer to the NP which fills the first slot in a basic SVO word order sentence. The NP-fronting rule, illustrated in (1) and (2), advances an NP to sentence initial position. The (b) sentences represent the NP-fronted constructions. As illustrated in (3), an NP can also be fronted in a subordinate clause. If the NP is an object pronoun or the object of a preposition, a pronominal copy of the advanced NP is left in its original position as shown in sentence (4).

(1) a) dákó ə-jwát-ə lóćà woman 3-s+hit man The woman hit the man.

b) lóćà dákó ə-jwát-ə man woman 3-s+hit
(2) a) ṭà dàwàt-ó .break lwóti  what hit chief What hit the chief?
   b) lwóti ṭà dàwàt-ó chief what hit

(3) a) dákó ṭòamò ní ìñ tîn òjwàtò lócà woman thought comp. child hit man
   b) dákó ṭòamò ní lócà ìñ tîn òjwàtò woman thought c. man child hit

The woman thought the child hit the man.

(4) a) dákó òjwàtá woman hit+is The woman hit me.
   b) án dákó òjwàtá l-s woman hit+1-s

(5) a) lócà òmìò mòt böt ìtín man gave gift to child The man gave a
   gift to the child.
   b) ìtín lócà òmìò mòt bötè child man gave gift to 3-s the child.

Dative movement may apply to sentence (5a) giving (6a), in which case, a pronominal copy of the fronted NP will not appear in the corresponding NP-fronted construction (6b).

(6) a) lócà òmìò ìtín mòt man gave child gift The man gave the
   child a gift.
   b) ìtín lócà òmìò mòt child man gave gift

As can be seen from these examples, no special morphology is involved in the NP-fronted construction save for pronominal copies when the fronted NP originates as the object of a preposition or is itself pronominal. The subject is not demoted to chômeur status in an NP-fronted construction since it retains many of its basic properties. However, the fronted NP does take over some of the properties associated with subjects in Lango. These will now be examined.

I. Coreference with subordinate clauses: Coreference across clause boundaries is associated with the subject in a non-fronted construction. However this property can be taken over by a fronted NP. In sentence (7a), tè is a conjunction meaning 'and then'. Verbs following this conjunction are infinitives and therefore not inflected with subject prefixes. In (7a), dákó, the subject of the main verb, is also interpreted as the subject of the
subordinate clause.

(7)  a) dákó onénô lócà tè jwättô
woman saw man and+then hit (infin)

b) lócà dákó onénô tè jwättô
man woman saw and+then hit (infin)

a) The woman saw the man and then she hit him.
   b) The man was seen by the woman and then he hit her.

In sentence (7b), the fronted NP is interpreted as the subject of the subordinate clause. This is the preferred translation although, we should note, the reading for (7a) can also be obtained for (7b).

II. Coreference in succeeding sentences: A fronted NP can be interpreted as the subject of a following sentence in discourse as illustrated in (8). In (8b), the fronted NP lócà controls coreference in the succeeding sentence.

(8)  a) dákó onénô lócà, ódák ókó
woman saw man left already

The woman saw the man. She left.

b) lócà dákó onénô. ódák ókó
man woman saw left already

The man was seen by the woman. He left.

III. Switch reference: In sentence (9a), both predicates are inflected with the 3rd person singular subject affix. In this sentence, however, the 3rd person of the subordinate clause cannot be coreferential with dákó in the main clause.

(9)  a) dákó ọkóbô ní ọcámô rînô
woman, said that he/she,ate meat

The woman said that he/she would eat meat.

b) dákó ọkóbô ní ẹcámô rînô
woman, said comp. 3s,ate meat

The woman said that she,ate meat.

In (9b), a special 3rd person subject agreement affix, ẹ is used on the subordinate verb. This prefix can only be used when the subject of the main clause and subordinate ni clause are coreferential and it can only be used in subordinate clauses. It indicates non-switch reference (see Noonan and Bavin Wood, 1977). This special non-switch reference agreement is used in NP-fronted constructions also, indicating that fronted NP's can become
coreferential with subjects of complement clauses. Consider the sentences in (10).

(10) a) dákkọ́ òkóbbẹ̀ lóccà ní é'bínó dákkọ́
woman, 3-s told man comp. 3-s, go back

The woman told the man she will go back.

b) lóccà dákkọ́ òkóbbẹ̀ ní é'bínó dákkọ́
man, woman told comp. 3-s, go back

The man was told by the woman that he will go back.

In (10b), the fronted NP is coreferential with the special non-switch reference affix in the complement clause.

IV. Quantifier floating: Quantifier floating applies to subjects of intransitive verbs only in Lango, as illustrated in (11).

(11) a) àwóbé dúcú òcémọ̀ pí dákkọ́
boys all ate because woman

All the boys ate because of the woman.

b) àwóbé òcémọ̀ dúcú pí dákkọ́
boys ate all because woman

The boys all ate because of the woman.

c) àwóbé ònènò dúcú gwòggí
boys saw all dogs

*The boys all saw the dogs.

When an NP is fronted, any modifying quantifiers are normally fronted also. If the fronted NP leaves a pronominal copy, the quantifier may be left in its original position. As already stated, pronominal copies are necessary when fronted NP's are objects of prepositions or are pronominal. So, in (12b), the quantifier modifies the pronominal copy of the fronted NP. If the quantifier is floated to the post-verbal position as in (13), it is interpreted as modifying the fronted NP.

(12) a) món 'lóól kèdè gwòggí dúcú
women tired with dogs all

The women are tired of all the dogs.

b) gwòggí món 'lóól kèdgí dúcú
dogs women tired with them all

The women are tired of all the dogs.
(13) gwóggí món 'óól dúcú kédgí

The women are tired of all the dogs.

Floating of quantifiers is, then, a property taken over by fronted NPs.

V. Word order: The fronted NP usurps the left-most NP slot which is reserved for subject NP's in basic word order sentences. We have presented evidence to show that a fronted NP takes over some of the properties associated with subjects in Lango. Now we will examine those properties which are retained by the basic subject.

I. Verb Agreement: In Lango, a verb is inflected for person and number by means of a prefix vowel. In sentence (4a), the verb prefix o is the 3rd singular marker agreeing with dákó. In (4b), the verb still carries the 3rd person prefix, not the 1st person marker a. Verb agreement, then, is a property that continues to be controlled by the basic subject in NP-fronted constructions. This property is further illustrated in (14) where the basic subject is an inanimate agent and the fronted NP is animate.

(14) a) gwén ̀ócélá
    stone 3-s+hit+1-s The stone hit me.

    b) án gwén ̀ócélá
    1-s stone 3-s+hit+1-s I was hit by the stone.

The point is made clear in sentences where the basic subject only appears as an inflection on the verb. This happens with pronominal subjects which are optional in Lango, as illustrated in (15). (In the future tense the 3rd singular prefix is a and the plural is o.)

(15) a) élúnó céggó dógólá pól
    3s+fut close door many

    He will close many doors.

b) dógólá pól élúnó céggó
    door many 3s+fut close

    Many doors will be closed(by him/her). ¹

c) dógólá pól élúnó ceggé
    door many 3p+fut close+refl

When the object NP is fronted in (15), the verb prefix a cannot be interpreted as being coreferential with dógólá, which is plural in (15b) and would require an o prefix. The reflexive from of the verb is required for an interpretation with dógólá as subject, as shown in (15c) which is not an NP fronted construction.
II. Indispensability: Although pronominal subjects in Lango are dispensable, subject agreement on the verb is necessary for finite verb forms. In this sense, the subject is indispensible in Lango because overt reference is always made to a subject. It has been illustrated in (15) that the basic subject continues to control verb agreement in NP-fronted constructions and this applies even if the agent is unspecified as in (15b). Lango has no impersonal constructions.

III. Use of Activity-naming (AN) and Secondary-Orientation (SO) forms: In Lango, most verbs distinguish morphologically between a full transitive form and either an activity-naming form or a secondary orientation form, or both. The AN form directly references only the subject, while the object of the corresponding transitive must be non-distinct. On the other hand, the SO form directly references the object of the corresponding transitive making it the subject, while the subject of the corresponding transitive must be a non-distinct argument. These forms are illustrated in (16).

\[
(16) \begin{align*}
  a) \text{dákó } & \text{ \textsuperscript{1}bínó } nènnò \text{ lócà } \text{(transitive)} \\
 & \text{woman will see man} \\
 & \text{The woman will see the man.} \\
  b) \text{dákó } & \text{ \textsuperscript{1}bínó } nènò \text{ (AN)} \text{ The woman will see.} \\
  c) \text{lócà } & \text{ bínó } nèn \text{ (SO) The man will be visible.}
\end{align*}
\]

In (16), NP-fronting does not result in a change of verbal form; the transitive form continues to be used if the basic form was transitive to begin with, as we show in sentences (16').

\[
(16') \begin{align*}
  a) \text{lócà } & \text{ dákó } \text{ \textsuperscript{1}bínó } nènnò \text{ The man will} \\
  b) \text{*lócà } & \text{ dákó } \text{ \textsuperscript{1}bínó } nènò \text{ be seen by} \\
  c) \text{*lócà } & \text{ dákó } \text{ \textsuperscript{1}bínó } nèn \text{ the woman.}
\end{align*}
\]

The form of the verb, whether transitive, AN or SO is determined by the initial (basic) argument frame. It is not affected by NP-fronting in any way.

IV. Equi-Deletion: Only the basic subject can be equi-deleted. Sentence (17a), for example, can be transformed into (b) via equi-deletion, the subordinate verb surfacing as an infinitive.

\[
(17) \begin{align*}
  a) \text{dákó } & \text{ \textsuperscript{1}omféto } \text{(dákó } \text{ \textsuperscript{1}ojwátò } \text{lócà)} \\
  b) \text{dákó } & \text{ \textsuperscript{1}omféto } \text{jwàtò } \text{lócà} \text{ woman wanted hit(infin) man} \\
 & \text{The woman wanted to hit the man.}
\end{align*}
\]

But (c) cannot be transformed into (d) or any similar construction. Only (e), utilizing the subjunctive and with no equideletion, is possible.

\[
\begin{align*}
  c) \text{dákó } & \text{ \textsuperscript{1}omféto } \text{(dákó } \text{ \textsuperscript{1}lócà } \text{ \textsuperscript{1}ojwátò)} \\
  d) \text{* dákó } & \text{ \textsuperscript{1}omféto } \text{lócà } \text{jwàtò} \text{ The woman wanted to be hit by the man.}
\end{align*}
\]
e) dákó  ámbívó  ní  lóćâ  jwát
    woman  wanted  comp.  woman  man  hit (subj.)

The woman wanted to be hit by the man.

V. Word order: As noted earlier, the basic word order in Lango is SVO. All examples of the NP-fronted construction show that the basic subject retains its immediate pre-verbal position which is criterial for subjects.

VI. Reflexivization: Reflexivization in Lango is controlled by a subject NP. In an NP-fronted construction, the subject, not the fronted NP, continues to control reflexivization. In sentence (18b), lóćâ is coreferential with the reflexive pronoun e. The fronted NP, dákó cannot be coreferential with e.

(18) a) lóćâ  ókwaò  dákó  pîrê  këñè
      man  asked  woman  about + 3-s  self

      The man asked the woman about *herself/himself.

b) dákó  lóćâ  ókwaò  pîrê  këñè
      woman  man  asked  about + 3-s  self

      The man asked the woman about himself/*herself.

VII. Addressee of Imperatives: It has been claimed (Keenan 1976) that a subject has the property of expressing the addressee phrase of an imperative. In Lango, imperatives are formed using the basic verb stem. The assumed subject is always second person as in (19) and (20).

(19) a) kwán  l'búk
      read  book

      Read the book!

b) búk  kwán

      Read the book!

(20) a) jwátá  hit+1-s
      1-s  hit

      Hit me!

b) án  jwátá
      1-s  hit 1-s

      Hit me!

2 We have shown that certain properties are retained by the basic subject in an NP-fronted construction. However, other properties have been shown to be usurped by the fronted NP. Below is a list of the properties which are lost or retained by the subject:

- properties of 'basic subjects' usurped by fronted NP:
  1. coreference across sentences
  2. coreference with subordinate clauses
  3. control of switch reference
4. leftmost NP
5. ability to launch quantifiers

- properties retained by 'basic subjects':
  1. verb agreement
  2. control of verb type (i.e. transitive,
      activity-naming, secondary-orientation forms)
  3. immediate preverbal position
  4. control of reflexive
  5. addressee of imperative
  6. is an indispensable NP
  7. ability to be equi-deleted

Yet it cannot be claimed that the fronted NP has been promoted to
subject. We propose that NP-fronting in Lango functions as an
orientation-changing rule and that those properties taken over by
the fronted NP should be considered as properties of the leftmost
NP which, in basic word order sentences coincides with the
subject NP. The fronted NP construction does, in fact, serve to
change the clause orientation as does the passive in English.
However, unlike the English passive, the advanced element in Lango
does not take on all the subject coding properties. Noonan (1977)
argues that, in a language like English, sentence initial position
provides the sentence orientation, delimiting the frame within
which the rest of the sentence is interpreted, and, under ordinary
circumstances, functions as well as the highest-ranking syntactic
slot in the rolemarking system, i.e. functions as the subject. In
an English passive, the promoted NP takes in all subject proper-
ities, including those associated with the sentence orientation.

In support of our claims that Lango NP-fronting is an orienta-
tion-changing rule we note that of those properties usurped by
the fronted NP, properties 1-4 are all directly connected with the
sentence orientation. Leftmost position is the universally pre-
ferred orientation slot. Control of coreference across sentences
and with subordinate clauses and control of switch reference forms
are all predictable consequences of assuming the sentence orienta-
tion. The ability to launch quantifiers is also a consequence
of assuming the sentence orientation, as pointed out by Schachter
(1977). An NP quantified by a form like all has the property of
being necessarily referential (definite) or generic in inter-
pretation. Sentence orientation including fronted NP's are always
definite or generic, but in Lango an unqualified noun that is not
the sentence orientation may receive either a definite or inde-
finite interpretation. If a quantifier were allowed to float away
from any position other than the sentence orientation in Lango, the
noun would no longer obligatorily receive a definite interpretation
and hence a conflict could arise between this interpretation and
the obligatory definite interpretation associated with quantified
nouns. In the case of floating from fronted-NP position or subject
position in the absence of a fronted-NP, no such conflict arises.
If these were the only characteristic features of NP-fronting,
then it could justifiably be claimed that the construction was a straightforward example of topicalization like the Mandarin topic construction described by Li and Thompson (1976), since the Mandarin construction shares with NP-fronting control of coreference and leftmost position. In addition, the Lango fronted NP shares with the Mandarin topic the property of having an obligatory interpretation as definite or generic. But there are a number of important properties of the NP-fronting construction which serve to differentiate it from an ordinary topicalization construction. The first of these properties is the clause-boundedness of NP-fronting. Topicalization, clefting, and similar constructions are sentence-level, as opposed to clause-level, unbounded constructions and in this way contrast with passive which is a clause-level construction. NP-fronting resembles passive in this respect. To demonstrate this, we will contrast NP-fronting with the Lango cleft construction. Syntactically, a clefted NP, illustrated in (21b), differs from the fronted NP in (21a) in that the clefted NP is followed by an invariable pronoun en and the relative marker ám'lé.

(21) a) átín ₁dákó ṍm̀fò mót ṭó té
   child woman gave gift to 3s
   The child was given the gift by the woman.

   b) átín ₁én ám'lé dákó ṍm̀fò mót ṭó té
   It's the child that the woman gave the gift to.

NP-fronting cannot apply to front NP's in subordinate clauses, but cleft, which is unbounded, can front NP's from subordinate clauses, as we note in (22).

(22) a) dákó ṥd̀fò lócà ₁nf ₁kwál gwènò
   woman forced man comp. steal chicken
   The woman forced the man to steal the chicken.

   b) *gwènò dákó ṣd̀fò lócà ₁nf ₁kwál (NP-fron.)
   (cleft)

   c) gwènò ₁én ám'lé dákó ṣd̀fò lócà ₁nf ₁kwál
   It's the chicken that the woman forced the man to kill.

NP-fronting can apply to NP's in relative clauses, but cleft, as an unbounded sentence-level rule, cannot, as we note in (23)

(23) a) búk ál'mé dákó ṭm̀fò lócà dwònf
   book rel. woman gave man big
   The book that the woman gave the man is big.

   b) búk ál'mé lócà dákó ṭm̀fò dwònf (NP-fronting with RC)
   (clefting within RC)

   c) *búk ál'mé lócà ₁én ál'mé dákó ṭm̀fò dwònf
Since NP-fronting is basically a clause-level reorienting rule, it cannot apply to subjects, which are already the sentence orientation. Cleft, however, can apply to subjects.

(24) a) dákó əmíšó lócà bún
The woman gave the man the book.

b) bún èn á'mé dákó əmíšó lócà (cleft on DO)

c) *dákó 'bún èn á'mé əmíšó lócà(NP-fronting of Su)

d) lócà bún èn á'mé dákó əmíšó (NP-fronting of IO)

One further difference between NP-fronting and ordinary topicalization is that the topic NP needn't be an argument of the verb -- it may be an oblique or other dependant, or bear no syntactic relation to any element in the sentence as we note from the following Mandarin example (from Li and Thompson, 1976).

(25) nèi-chang húò xìngkui xīaofang-duí lái de kuài that-clas. fire fortunate fire-brigade come adv. quick

That fire (topic), fortunately the fire-brigade came quickly.

As noted above, NP-fronting cannot extract NP's from subordinate clauses, nor could a sentence analogous to (25) with a fronted NP be formed in Lango. Fronted NP's cannot be moved beyond their clause and must be an argument of the verb.3

3 We claimed in the last section that NP-fronting is not a topicalization construction. It now remains to decide what sort of construction NP-fronting is. NP-fronting is not straightforwardly a passive since the initial subject retains a large number of basic subject properties. Of those properties that are retained by the initial subject, control of verb agreement seems to be in large part a reflex of the retention of immediate preverbal position. Retention of this position in turn reflects the origin of NP-fronting in topicalization (see Noonan & Bavin-Woock forthcoming 1978a). Control of reflexive is certainly a role determined property (see Schachter 1977) as is the role of addressee in imperatives. Verb types (transitive, AN, and SO forms) are a response to deeper semantic properties of sentences and arguments and would not be expected to change with a simple change in orientation (see Noonan & Bavin-Woock, forthcoming 1978b, for discussion). The indispensibility of the initial subject and its monopoly on equideletibility just reflect the importance of the subject NP and serve to emphasize that we are not dealing here with a structural passive of any sort. The initial subject retains all the properties of the primary argument of the verb, and only loses those properties associated with the sentence orientation.
The NP-fronting construction then does not meet the criteria for a structural passive, but it does appear to meet the criterion for a functional passive. A functional passive can be defined as a clause-internal rule that changes orientation. This is what the English passive does and this is what NP-fronting does. We might suggest that any rule that did not meet the functional criterion for passive could not be considered as a structural passive, regardless of the syntactic effect of such a rule, but that the reverse is certainly possible, with Lango as a prime example.

In summary, NP-fronting is not a simple topicalization rule since it is clause-bounded and applies only to arguments of verbs. In addition, it can't apply to subjects. However, NP-fronting is not quite a passive either, since many basic subject properties are retained by the basic subject. NP-fronting performs the minimum functional requirements of a passive in that it is a clause-internal rule that changes orientation but a NP-fronted construction is not a structural passive in the relational sense since basic subjects are not demoted and fronted NP's are not obviously promoted. So, NP-fronting is an example of a construction that meets the requirements for a functional passive without meeting the requirements for a structural passive.

It is probably best to view the basic Lango sentences as including two slots -- one the orientation slot in sentence initial position, and the other, the subject slot in immediate preverbal position -- that are usually filled by the same entity. These properties we have claimed are usurped by the fronted NP are, in fact, just those associated with the sentence orientation, and those retained by the subject are just those properties that are 'real' subject properties, unaffected by change of orientation.  

NOTES

1This construction can be used for both unspecified agent and with agents with third person singular anaphora.
2This aspect of the Lango verb system will be discussed in our forthcoming paper Argument Orientation Systems of Verbs.
3NP's bearing a genitival relation to an argument of the verb may be fronted under certain circumstances as in
(a) lòcà dákò °jwàtò gwôgg'è
        man    woman hit    his+dog
        The man's dog was hit by the woman.
4Keenan's (1976) subject properties list (SPL) should be re-examined in light of these data from Lango. One reason for the viability of the SPL to make predictions about the behavior of subjects lies in the confusion of real subject properties with orientation properties. If these are properly distinguished, the SPL might prove more useful.
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Switch-reference in Barai
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Barai is a Papuan (non-Austronesian) language with some three thousand speakers in the Northern and Central Provinces of Papua New Guinea. It has a switch-reference mechanism that is of particular interest since the language also exhibits a complex of coding strategies for both a semantic role-oriented 'subject' and a pragmatic referentially-oriented 'subject'. These provide a prism for viewing the factors governing the variation of the switch-reference (S/R) markers against the backdrop of the traditional hypothesis that S/R monitors the coreferentiality of subjects in successive clauses. We will first introduce the syntactic reflexes of the role-oriented and referentially-oriented subjects as well as the S/R markers themselves and then demonstrate how neither subject candidate accounts for the S/R variations. The attempt, however, reveals that S/R is not only concerned with coreferentiality of certain primary participants, but with encoding whether the relation between the Actor and the activity of the verb is active/voluntary or inactive/involuntary. It is this fact, more than any other, that determines which participants will be monitored for coreferentiality by the S/R markers, although we will demonstrate how the referential factors of animacy and definiteness interfere as well.

Traditional characterizations of S/R presuppose a fairly transparent notion of subject. However, a number of recent studies (e.g., Schachter 1976 or Foley and Van Valin 1977) have shown the subject relation to be problematic in that subjects result from a variable convergence of semantic case relations with referential factors such as definiteness, givenness, and/or animacy. So the properties normally associated with subjects in languages where a traditional subject notion is transparent may well be distributed to more than one participant in other languages.

Barai is such a language in that there is a set of syntactic devices that is governed by what we will call a role prominent noun phrase (Role NP). They are invariably governed by the Actor for verbs that include an Actor in their case frame, or by the Patient in the absence of such an Actor. However, quite a distinct set of syntactic devices is governed by a referentially prominent noun phrase (Ref NP). Discourse-controlled factors like givenness and definiteness and factors of inherent referentiality such as animacy, interact with the role prominence of Actors and Patients to yield the Ref NP. The salient fact for our consideration of S/R is that the two sets of syntactic devices need not conflate on a single participant in a particular clause.

We will consider three syntactic reflexes governed by the Ref NP: the word order constraint, the distribution of pronominal copy, and the distribution of the aspectual particles.

There is a basic dichotomy among all Barai verbs entailing an Actor and a Patient such that the relative ordering of these two
constituents is constrained not only by their semantic roles but also by the referential status of the particular participants functioning in these roles. Thus, with one set of verbs, when there is a difference in the referential status of the Actor and Patient, the more referentially prominent NP precedes. With the other set of verbs, the constraint is reversed so that the more referentially prominent NP follows.

Roughly, participants which are definite, given, and/or animate have greater accessibility to the position of referential prominence than those that are indefinite, new, and/or inanimate. We will follow Chafe (1976) in our definitions of given and new. A given noun phrase is one whose referent the speaker assumes has already been activated in the hearer's consciousness, i.e., the selective attention of the hearer is assumed to still be focussed on the referent in question, as opposed to new information where the speaker assumes he is activating the referent in the hearer's consciousness at the time of the utterance. Pronominalization and the cross-referencing of noun phrases with a pronominal copy are two syntactic means by which referents with the status given can be identified in Barai. Definite new information may also be overtly coded with one of a set of case markers that is inflected for semantic role, role prominence (discussed below), and number. Indefinite new information may be overtly coded as well.

A definite referent is the one the speaker assumes the hearer can identify whether or not he is thinking about it at the time of the utterance. For common nouns, definiteness is coded with the definite determiner ije. So there are several overt markers which encode information about the referential status of the particular participant.

We will distinguish between the two types of transitive verbs as follows: those verbs that require the more referentially prominent of Actor or Patient to precede will be called Actor-oriented verbs (A-verbs) and those which require it to follow we will call Patient-oriented verbs (P-verbs). For A-verbs, the Actor will precede the Patient when the referential status of the two participants are comparable, but when the two vary in terms of referential status, the more highly referential NP will precede. The verb kan- "strike" is then an A-verb with Actor preceding Patient in the unmarked instance, as when both are pronominalized.

(1) \text{fu na kan-ie}^{1} \\
3sg lsg strike- lsg 'He struck me.'

If, however, the Actor participant is marked indefinite and the Patient is definite, the Patient, being the more highly referential, will precede.

(2)a. \text{na e-be kan-ie} \\
lsg person-indef strike-lsg

b. \text{*e-be na kan-ie} 'Someone struck me.'
With a P-verb such as ised- "be displeased", the Actor still precedes the Patient in the unmarked instance when the referential status of the two are comparable. However, a difference in the referential status of the two is marked by the more referential participant following rather than preceding the less referential.

(3) a. **ije bu ised-ia**  
   3sg 3pl displease-3pl

b. *bu **ije** ised-ia

c. *bu **fu** ised-ia  'It displeased them.'

(4) a. e **ijene fu ised-ia**  
   person def-new 3sg displease-3pl

b. *fu e **ijene** ised-ia

c. *e **ijene ije** ised-ia  'It displeased the people.'

In (3) both Actor and Patient are definite and given and the Actor must precede the Patient. But in (4), the Patient is coded for new information and precedes the Actor which is still definite and given. With P-verbs the more referentially prominent participant follows. Note also how the pronominalization strategy endorses the same principle. For inanimate referents, third singular participants are pronominalized with ije when they are not in the position reserved for the more referentially prominent referent for that verb type. Thus (3)b and (4)c are unacceptable because the inanimate third singular pronoun in the referentially prominent position must be fu and not ije. Similarly, (3)c and (4)b are not acceptable because this third singular pronoun outside the position of referential prominence must be ije rather than fu. (10)a, (28), and (31) further illustrate this point.

A second syntactic device that is governed by the Ref NP is the distribution of the pronominal copy. Only one NP per clause will ever be cross-referenced by an immediately subsequent pronominal copy and it is invariably the same participant that is in the referentially prominent position due to the word order constraint. This pronominal copy seems to function in coding given information for nonpronominalized participants in the referentially prominent position. For A-verbs, when a pronominal copy occurs, it will accompany the Ref NP and precede the less referential of the Actor and Patient participants.

(5) a. e **ije bu i me-jo**  
   person def 3pl work do-pres/hab

b. *e **ije i fu** me-jo  'The people are doing work.'
(6) a. are ije fu ame sikuru iji-be sa-vo
    house def 3sg child school def-new(pl) build-pres/hab

b. *are ije ame sikuru iji-be bu savo
    3pl

'The school children are building the house.'

In (5), the pronominal copy bu agrees in person and number with
the Actor e ije which is in the initial position of referential pro-
minence, and is restricted from occurring with the Patient. But in
(6), also an A-verb, fu copies the third singular Patient are since
the Actor which is marked for new information has been demoted to
the position of lesser referentiality where a pronominal copy is
not possible.

And the same principle applies to P-verbs with the pronominal
copy immediately following the Ref NP.

(7) a. adame ije e none bu visinam-ia
    poison 3sg person my 3pl make.sick-3pl

b. *adame ije fu e none visinam-ia

'The poison sickened them.'

Still another syntactic reflex controlled by the Ref NP is the
distribution of a set of aspecual particles. These aspecual
particles occur phonologically bound to a pronoun, be it a pro-
nominal copy or a fully pronominalized participant, but they are
further constrained so that they only occur with pronouns in the
referentially prominent position.

Thus with the A-verb kan- "strike" the aspecual particle
occurs only with the participant in the prior position.

(8) a. Vito fu-ka na kan-ie
    Vito 3sg-intens lsg strike-lsg

b. *Vito fu na-ka kan-ie

'The sun is really striking me.'

(9) a. na-ka maza kan-ie
    lsg-intens sun strike-lsg

b. *na maza (fu)-ka kan-ie

'(The) sun is really striking me.'

Vito is the Ref NP in (8) as is evident by its position as
well as the pronominal copy. As such, it governs the bonding of
the aspecual -ka as well, which is restricted from occurring with
any participant other than the Ref NP. In (9), however, the Actor
is both inanimate and not marked for definiteness, a referential
status outranked by a definite animate Patient which consequently
governs the bonding of the aspectual particle. In neither case
can the aspecltal occur with the primary participant of lesser
referential status. P-verbs follow the same principle, the Ref NP
controlling the distribution of the aspectual from its subsequent
position.

(10)a. ije na-ka ised-ie-mo
       3sg lsg-intens displease-lsg-pres/hab

b. *ije-ka na ised-ie-mo 'It really displeases me.'

So the word order, the distribution of pronominal copy, and
the distribution of the aspectual particles are all controlled by
the Ref NP which is determined by the referential status of the
primary participants, not solely by semantic role.

We turn now to a consideration of the reflexes of the Role NP.
Semantic roles are hierarchically ordered such that the Actor will
always govern this set of reflexes when there is one. However, in
the absence of an Actor, a Patient will govern, but in no case will
a participant in any other semantic role govern them.

Role Prominence: Actor > Patient > Other

It should be noted that our term Actor is defined in a language
specific sense. The Barai Actor encompasses a range of semantic role
relationships, if viewed in a universal sense, that include Agent,
Experiencer, and Source (as non-Actor cause). But it is clear
that the language specific realization of these semantic roles em-
phasizes the unity in the above distinctions, as there is only one
such participant per clause and each one governs the same set of
syntactic reflexes (which we will discuss below). It is only in
the absence of any of the above that a Patient will control the
reflexes of the Role NP. The Patient is clearly distinct, of course,
cooccurring with all the semantic options for Actor in addition to
exclusively governing other syntactic devices such as the variation
in suppletive verb stems and the cross-referencing of animate par-
ticipants by verbal affixes. Its language specific definition
closely parallels the universal one if taken roughly as the entity
affected by the event or state identified by the verb.

We will consider three reflexes governed by the Role NP: the
distribution of the independent mood markers, the control of tense/
aspect verb agreement, and the distribution of the new information
markers.

Consider first the distribution of the mood markers. The mood
markers are phonologically independent but linearly follow the NP
which is the Role NP for that clause. This is in spite of the fact
that the Role NP may not be congruent with the Ref NP. For example,
the A-verb sak- "bite" will place the mood marker following the
Actor irrespective of its referential status and hence its resulting
linear position.
(11)a. fu be na sak-ie
     3sg interv lsg bite-lsg

b. *fu na be sak-ie 'Will he bite me?'

(12)a. na miane be sak-ie
     lsg firestick interv bite-lsg

b. *na be miane sak-ie 'Did a firestick bite (burn) me?'

And P-verbs follow suit with the mood marker following the Patient only by default when no Actor occurs.

(13)a. ije be na ised-ie
     3sg interv lsg displease-lsg

b. *ije na be ised-ie 'Will it displease me?'

(14) fu be barone
     3sg interv die 'Did he die?'

The same hierarchy obtains in the control of tense/aspect verb agreement. By tense/aspect verb agreement we are referring to several tense/aspect particles that have suppletive variants that cross-reference the Role NP. So, for example, the present/habitual morpheme is -mo (or -no, the variant being phonologically determined) if the governing NP is second or third person singular, but -vo (or -jo) if it is first person singular or any plural. Repeating (8) here as (15) with the addition of tense/aspect, the Actor is both the Role NP controlling tense/aspect agreement and the Ref NP as well.

(15)a. Vito fu-ka na kan-ie-mo
     Vito 3sg-intens lsg strike-lsg-pres/hab

b. *Vito fu-ka na kan-ie-vo

 'Vito is really hitting me.'

-mo must be governed by a second or third person singular referent so the controlling NP has to be the third person singular proper noun Vito and cannot be the first person singular na which would be cross-referenced as -vo.

However, in (6) and (9), repeated here as (16) and (17), the Actors are not the Ref NP's due to their low referential status, but they are still the Role NP's and hence control tense/aspect agreement.

(16)a. are fu ame sikuru ij-ibe sa-vo
     house 3sg child school def-new build-pres/hab
(16)b. *are fu ame sikuru ij-iebe sa-mo
    'The school children are building the house.'

(17)a. na-ka maza kan-ie-mo
    lsg-intens sun strike-lsg-pres/hab

    b. *na-ka maza kan-ie-vo
    '(The) sun is really striking me.'

Again the same principle applies to P-verbs as to the above A-verbs. The Actor retains control of tense/aspect verb agreement whenever it occurs, regardless of its referential status.

(18)a. ije na ised-ie-mo
    3sg lsg displease-lsg-pres/hab

    b. *ije na ised-ie-vo
    'It is really displeasing me.'

A third reflex of the Role NP governs the case endings that encode definite new information. -iebe encodes definite new information when the participant is the Role NP and plural, -are when it is the Role NP and singular, and -ene for singular or plural Patients that are not the Role NP. Thus, in accordance with the role prominence hierarchy, an Actor that encodes definite new information will be marked with -iebe or -are while a Patient may be marked with either of these or with -ene depending on whether or not it is the Role NP of the clause.

(19) e Fafua ij-iebe boro re
    people Papua def-new(pl) ball do
    'The Papuan people play ball.'

(20) bu-ka miane kuoke ij-ene ulemadi
    3pl-intens firestick coals def-new blow
    'They really blew on the firestick coals.'

In (19) and (20) -iebe applies to Actors and -ene to Patients, but in (21) - (23) it becomes obvious that -iebe encodes the Role NP and not simply the semantic role of Actor.

(21) bara inokiro ij-iebe na-ka ised-ie
    woman two def-new lsg-intens displease-lsg
    'The two women really displease me.'
(22)a. bara inokiro ij-iebe ised-ia
    woman two def-new displease-3pl

b. *bara inokiro ij-ene ised-ia

'The two women were displeased.'

(23) bara inokiro ij-ene fu ised-ia
    woman two def-new 3sg displease-3pl

'He displeased the two women.'

In (21) and (22)a, -iebe encodes the role NP, an Actor in the first instance and a Patient in the second, due to the absence of an Actor. The Patient in (23) encodes definite new information with -ene, as an Actor, fu, occurs and is hence the Role NP of the clause.

So the Role NP governs the coding of new information just as it does the distribution of the mood markers and tense/aspect supplementation. The crucial fact is that in each instance the Role NP may function independently from the Ref NP, demonstrating that there is no necessary congruence between the two.

We mentioned earlier that the traditional hypothesis regarding S/R, in many Papuan languages at least, was that it monitors the coreferentiality of subjects in succeeding clauses. For example, Robert Longacre (1972) discusses reference switching in his introduction to the typological features of Papuan languages, noting that "a preceding clause has some device for marking whether the oncoming clause will have the same or different subject". Similarly, Phyllis Healey discusses the subject preview suffixes of Telefol (Healey 1966) in terms of "whether the subject of the next following clause is homopersonal - the same as that of the preceding clause, or heteropersonal - different from that of the present clause". In order to interpret this S/R principle for Barai where a subject notion is not immediately transparent, we must determine whether this subject control derives from the Role NP or the Ref NP.

We will restrict our discussion of S/R to the two particles, -na and -ga, which we will loosely gloss as "same" and "different" respectively. When the Role NP and the Ref NP are simultaneously the same referent, there is usually no question but that the S/R device is concerned solely with the coreferentiality of this primary participant in the two clauses.

(24)a. na juae me-na fae kira
    lsg garden do-same fence tie

'I made a garden and tied a fence.'
(24) b. na juae me-ga fu fae kira
diff
'I made a garden and he tied a fence.'

(25) a. no i me-na aem-uo
lp1 work do-same be.tired-lp1
'We are doing work and are tired.'

b. no i me-ga bu aem-ia
diff
'We are doing work and they are tired.'

In the a. versions of (24) and (25), -na is used where the participant in the prior clause that is both the Role NP and the Ref NP, is accounted for by zero anaphora in the subsequent clause due to its coreferentiality. And in the b. versions, the Role/Ref NP in each of the two clauses is not coreferential, so that -ga occurs.

But in (26) and (27), the Ref NP and the Role NP are not the same participants. From these examples it would appear that the Ref NP's are being monitored by the S/R device.

(26) na i me-na ine bij-ie
lsg work do-same stick poke-lsg
'I was working and a stick poked me.'

(27) fu miane saki-na barone
3sg firestick bite-same die
'A firestick bit (burned) him and he died.'

In (26), zero anaphora marks the Patient participant in the subsequent clause coreferential with the Actor in the initial clause. And, in fact, animate definite Patents outrank inanimate Actors not marked for definiteness (as we noted above) so that it is the Ref NP's that are the coreferential participants. Again in (27), it is the more highly referential Patient in the initial position with the A-verb sak- "bite" whose identity with the single participant in the subsequent clause is coded with -na. The case is even more convincing when we consider a sequence of P-verbs with coreferential participants in their subsequent position that marked the Ref NP.

(28) ije na ninaek-ie-na ame none na-ka
3sg lsg make.sleepy-lsg-same child my lsg-intens
tot-ie escape, memory-lsg
'It makes-sleepy me and my children
really escape-memory me (i.e., it makes me sleepy and my children
really escape my memory.)'
It is the Patient participants that are coreferential. And in each clause, it is the Patient that is marked with the syntactic reflexes of the Ref NP. Consequently, it appears that the S/R device is keyed to the same constraints that determine Ref NP within the clause. That is, it is governed by the verb class in the unmarked instance but by the more referential participant when the primary participants differ in referential status. The interaction of the discourse bound referential factors of definiteness and givenness with the inherent referentiality of the referent in terms of animacy appears to be crucial both to the internal structure of the clause as well as to interclausal relations.

However, equally frequent are other instances where the Role NP and the Ref NP are distinct participants and it appears that just the opposite is the case, i.e., that S/R is coding the identity of Role NP's.

(29) ije no-ka ised-uo-ga no e ije kan-iA strike-3pl displease-lpl-diff 1pl person 3sg 'It really displeased us and we struck the people.'

(30) ijare bu vasiaor-ia-ga bu va-e this 3pl make,hungry-3pl-diff 3pl go-past 'This made them hungry and they went.'

Thus, in both (29) and (30), the Patients in the initial clauses outrank the Actors in terms of animacy and assume the positions that encode the Ref NP for P-verbs. But despite the fact that they are coreferential with the animate Actors that are the Ref NP's for the following A-verbs, the S/R indicator reads -ga for different. It would appear in these instances, then, that the Role NP's were being monitored by S/R since they are not coreferential and the S/R marker is -ga.

The apparent anomaly stems from the attempt to force a 'subject' interpretation of the S/R principle. Clearly Barai does have a well marked semantic based 'subject' notion in its Role NP. And cross-linguistically it is not uncommon for such a role based subject to control S/R, as it does in Choctaw (see Heath 1977). But Barai also has a clearly marked referentially based subject in its Ref NP and, again, it is quite common for such a discourse-oriented subject or topic to be crucial to interclausal junctures as it does in Dyirbal for example (Dixon 1972). However, despite the attention Barai gives to both its Role NP and its Ref NP, neither of them captures the basic fundamental operative in its S/R device.

Consider again the A-verbs, P-verbs distinction. We noted that the word order constraint, the distribution of the pronominal copy, and the bonding of the aspectuals are all consistently associated with the more referentially prominent of the Actor and Patient participants. However, the fact remains that in the unmarked instances,
all of these devices are not associated with the same participant. Rather, the verb class dictates whether the governing participant is Actor or Patient, Actor for some verbs and Patient for others. So the verb class is predictable even in those instances where the participants themselves swap due to referential factors, simply by virtue of the position they are associated with, i.e., the prior position for A-verbs and the subsequent position for P-verbs. The A-verb, P-verb distinction is obviously fundamental to clause level syntax.

We will argue that the reflexes of the A-verb, P-verb distinction encode a difference in the nature of the relation between the Actor and the activity of the verb, one I will refer to as either active/voluntary or inactive/involuntary. We will further argue that this same distinction is the crux of the S/R principle although there is substantial but secondary interest in encoding referential aspects of the primary participants. To facilitate our discussion, we will refer to this orientation of A-verbs to their Actors and P-verbs to their Patients as the perspective of the verb.

Consider the following:

(31) \text{bu ije fie-na fu oesorad-ia} \\
\text{3pl 3sg hear-same 3sg surprise-3pl}

'They heard it and it surprised them.'

(32) \text{kusare ije na tot-ie-ga fu saere} \\
\text{plant def 1sg escape-memory 1sg-diff 3sg wither}

'The plant escaped-memory me (escaped my memory) and it withered.'

In (31), the Actor that is the perspective of the initial A-verb fie- is coreferential with the Patient that is the perspective of the P-verb oesorad- and the resulting S/R indicator reads same. It is just these participants that govern the syntactic processes that distinguish the verb classes. In (32), the Patient of the initial P-verb is not coreferential with the sole participant in the subsequent clause and the S/R marker is -ga for different, despite the fact that the Actor of tot- is coreferential with that sole participant of saere. However, it is worth noting that the Actors in both (31) and (32) that do not control the S/R mechanism are inanimate. This is the case in (26) and (27) as well, so it is tempting to surmise that S/R is role-oriented but bypasses Actors of low referential status. This is, in fact, the case for A-verbs. The referential status of the Actor interferes with the control of S/R just as it does with the word order constraint within the clause. The Actor, which is the NP in perspective for A-verbs, is the unmarked choice, but an Actor of low referentiality will be outranked by a highly referential Patient which will then become the participant monitored by S/R.

However, the critical fact is that the Actor by-pass on referential grounds does not apply to P-verbs as well. There is no case where the Actor of a P-verb participates in S/R, regardless of its
referential status. Thus in (28), the animate definite Actor of the P-verb to-t- "escape memory" is ignored by the S/R device. This is because the fundamental criterion for S/R is the perspective of the verb rather than either role or referential factors. If the Actor by-pass on referential grounds that applies to A-verbs were relevant to P-verbs, the S/R marker for (28) would have to be -ga, the animate Patient in the initial clause not being coreferential with the animate Actor in the subsequent clause. Rather, for this sequence of P-verbs, since the perspective is the fundamental criterion and both Patients are highly referential, they hold the highest possible rank for monitoring by S/R. The two patients are coreferential and the S/R indicator reads same.

Again, as with the word order constraint, the S/R mechanism is not only concerned with inherent referentiality but also with discourse governed referentiality. Compare (27) repeated here as (33)a, with (33)b:

(33)a. fu miane saki-na barone
       3sg firestick bite-same die

    'A firestick bit him and he died.'

b. miane ije fu saki-ga fu barone
       firestick def 3sg bite-diff 3sg die

    'The firestick bit him and he died.'

The Actor is the NP in perspective for the A-verb saki- and hence the unmarked choice for the status being monitored by S/R. However, in (33)a, since it is both inanimate and not marked for definiteness, it is outranked by the highly referential Patient which is then monitored against the sole participant in the subsequent clause. Being coreferential, S/R marks them as same. But when an inanimate Actor is marked for definiteness, it retains its status for being monitored by S/R as well as its initial position of referential prominence for A-verbs. So in (33)b the inanimate Actor of the A-verb sak- retains its accessibility to the control of S/R because of its definiteness. The referential factors of animacy and definiteness alter word order as well as determine accessibility to the control of S/R.

There is still further evidence that S/R is fundamentally preoccupied with the A-verb/P-verb distinction stemming from a constraint on their linear sequencing. A sequence of A-verbs, a sequence of P-verbs, and a sequence of a P-verb following an A-verb, all follow the principles we have just outlined. Here S/R reflects the coreferentiality of key participants, determined by the perspective of the verb and certain referential factors related to role prominent participants (i.e., Actor and Patient). However, a sequence of a P-verb followed by an A-verb will be marked with -ga regardless of referential criteria of any kind. In these instances S/R is not encoding a switch of referents at all, but a switch to an active/
voluntary relation between Actor and activity from an inactive/involuntary one. Where this relation is constant or shifts to an inactive/involuntary activity, referential considerations are crucial to S/R. But where an active/voluntary relation is introduced following an inactive/involuntary one, S/R is entirely preoccupied with encoding this change and ignores the referential factors altogether. This explains the use of -ga in (29) and (30), where the animate Patient of a P-verb in the initial clause is coreferential with the animate Actor of the subsequent clause and yet the S/R indicator is -ga.

The significance of this distinction in Barai is further attested among a few verbs that can attach the syntactic reflexes that encode perspective to either Actor or Patient. Thus the verb oefiad- "sadden" or mad- "please" can be interpreted with or without any active voluntary participation of the Actor. It is the grammatical reflexes associated with the primary participants that determines whether the verb is active/voluntary or not.

(34a) a bu-ka oefiad-ia
2sg 3pl-intens sadden-3pl

'You really saddened them (unintentionally).'

b. a-ka bu oefiad-ia

'You really saddened them (deliberately).'

(35a) a bu-ka mad-ia
2sg 3pl-intens please-3pl

'You really pleased them (unintentionally).'

b. a-ka bu mad-ia

'You really pleased them (deliberately).'

The b. versions of (34) and (35) encode an active/voluntary interpretation of the relation between Actor and activity where the a. versions impose an inactive/involuntary interpretation.

In addition, an 'activization' construction7 can convert a number of process P-verbs to A-verbs.

(36a) sea ije na-re tuase
chair def lsg-contr break

"I broke the chair (unintentionally)."

b. na-re sea ije dabe tuase

'I broke the chair (deliberately)."
(37)a. do na-re usiae \\
    water lsg-contr spill

'I spilled (the) water (unintentionally).'

b. na-re do dabe usiae

'I spilled (the) water (deliberately).'

tuase and usiae are P-verbs that encode their perspective by placing the more referentially prominent of Actor and Patient in the subsequent position. Animate Actors outrank definite but inanimate Patients for P-verbs so that the a. versions of (36) and (37) give the Patient perspective of tuase and usiae. The b. versions are the consequence of the activation construction which introduces an auxiliary and shifts the syntactic reflexes associated with the perspective of the activity from the subsequent P-verb position to the prior A-verb position. Again, the critical semantic variable is the active/voluntary vs. inactive/involuntary distinction.

Cross-linguistically, such a distinction is fairly common. Choctaw reflects it in its bound case system that applies to pro-nominal affixes in the verb. Certain intransitive verbs describing active or voluntary activity take what Heath (1977) calls the agentive series while the other intransitive verbs describing inactive or involuntary activity will take another series called the patiitive series. There are a handful of stative intransitives that take a third dative series as well, but it is the active/voluntary vs. inactive/involuntary nature of the activity that determines whether the agentive series is used. In Tagalog, a special stative form of the verb is used along with a further constraint that Patient be 'topic' if the action of the verb is involuntary or accidental (Foley 1976).

Carol Slater (1977) documents a similar distinction in Kwtsaan. (38) is one of her examples of a switch reference device where an inadvertent action triggers -m, the marker for switch of reference, despite the coreferentiality of 'subjects'.

(38)a. tamah-k adaw-ta \\
    3.raise.up-same 3/3.get-tns

'He raised it up (the cook pot lid) and got him.'

b. taman-m adaw-ta \\
    3.raise.up-diff 3/3.get-tns

'He raised it up by accident and got him.'

Kwtsaan switch-reference differs in many respects from Barai, but the relevant fact is that it too encodes a deliberate vs. inadvertent distinction in its S/R mechanism.
In Barai, this clear delineation of active/voluntary and inactive/involuntary activities is an important typological feature of the language. It is at the heart of a basic dichotomy throughout the verbs that governs several syntactic features of the clause. It is also the basis of an activization construction for process verbs. And it is the crux of an important S/R device across clause junctures. Certainly it is also the case that the role prominence hierarchy and the referential criteria that determine the Ref NP are also relevant. Role prominence is significant in that it is only Actors and Patients at the top of the hierarchy that have access to S/R in the first place. And the referential criteria of definiteness and animacy heavily interfere with the accessibility to S/R for the primary participants of A-verbs. But, while role prominence discriminates clearly between Actor and Patient within the clause, it has a much lesser function in S/R. And even the referential factors, while significant, are only relevant to the Actors of A-verbs.

On the other hand, the perspective of the verb as we have defined it, is fundamental to every aspect of S/R. It is the perspective of the verb that provides the unmarked choice for accessibility to the control of S/R for A-verbs as well as the only possible participant for P-verbs. And it is also the semantics of perspective that account for the use of -ga in the special P-verb, A-verb sequences.

Footnotes.

1. Tense is not obligatory. Animate Patients are normally cross-referenced on the verb.

2. See Olson (in progress) for a discussion of strategies that encode given information and Chafe (1976) for a discussion of nonpronominalized given information functioning to prevent ambiguities.

3. We basically follow Foley (1976) in his universal definitions for Agent, Experiencer, and Source.
   Actor (Agent): the typically animate entity to whom the action is attributed.
   Experiencer: the typically animate experiencer of a mental state or psychological event.
   Source: the non-Actor cause of the action or state.

4. Healey does give account of some exceptions to the same subject principle. The main one is the use of the same subject marker with impersonal verbs whose Patient is coreferential with the Actor of the preceding clauses, a situation very similar to certain P-verbs following A-verbs in Barai, as (31) below.

5. -na and -ga are only one of several means of encoding switch-reference in Barai. They further encode specific types of clause juncture.

6. These terms are borrowed from Heath (1977) where there is a similar distinction that governs quite different syntactic reflexes. I have included the terms active/inactive to
account for certain inanimate Actors of A-verbs that function in an active though hardly volitional sense. That is, they encode an active interaction between man and his environment that contrasts with an inadvertent cause-effect relation. For example, "the sun struck me", "the stick poked me", or "the firestick burned me" are all viewed as active in contrast to "she attracted me", "he escaped my memory", or "it made me sneeze".

7. This process could qualify as an antipassive construction in that there is a shift of control over the reflexes associated with perspective from the Patient to the Actor. However, I have not used the term here as the variation is semantically based on the active/voluntary vs. inactive/involuntary nature of the activity.

8. Role prominence also appears to have a part in the constraints on word order (other than the unmarked preference for Actors to precede Patients). It surfaces in those instances where the participant that defines the perspective for a particular verb has marginal referential status. So a definite but inanimate Actor with an A-verb will not be outranked by an animate Patient and will assume the position of referential prominence. But a definite inanimate Patient with a P-verb will be outranked by an animate Actor (as in 36a), the difference being a reflex of the greater salience of Actors on the role prominence hierarchy.

References.


Impersonal Passives and the Unaccusative Hypothesis

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1. The Phenomenon
A number of languages have impersonal passives, a phenomenon illustrated by the following sentences of Dutch:

(1) Er wordt door de kinderen op het ijs geschaatst.
'It is skated by the children on the ice.'

(2) a. Door de kinderen wordt (er) op het ijs geschaatst.
'By the children it is skated on the ice.'

b. Op het ijs wordt (er) door de kinderen geschaatst.
'On the ice it is skated by the children'

These sentences have passive morphology—that is, the verb is in the past participial form, accompanied by the auxiliary verb worden, and the initial l is marked with the preposition door, which marks Passive chomeurs in Dutch. (1) also features the dummy er, where it shields the verb from clause-initial position. Different varieties of Dutch differ with respect to whether or not er appears in sentences such as those in (2), where some other element of the clause shields the verb from initial position. The distribution of er in such sentences has been studied for two varieties of Dutch by Maling and Zaenen (to appear).

Although the universal characterization of impersonal passives in §3 is claimed to be valid for all kinds of impersonal passives, this paper will be concerned exclusively with impersonal passives of intransitive clauses, ignoring the impersonal passives of transitive clauses that exist in many languages.

2. The Theoretical Issues
Some linguists have recently based some rather far-reaching claims about syntax on impersonal passives. For example, Keenan (1975), Comrie (1977), and Jain (1977), reacting to the universal characterization of Passive as advancement of 2 to l given in Perlmutter and Postal (1974) and made explicit in Perlmutter and Postal (1977), claim that impersonal passives show that Passive cannot be characterized as an advancement, but must be treated as a demotion of a l, with advancement of a 2 to l as a language-particular option. Since they propose that Passive is an example of "spontaneous chomage," they also deny the validity of the Motivated Chomage Law [Perlmutter and Postal (1977, to appear a)].

At issue are the answers to the following questions:

(3) a. Are passives and impersonal passives the same phenomenon?

b. Is Passive the advancement of a 2 to l?

c. Is the Motivated Chomage Law valid?

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(3a) is formulated rather vaguely, but it implicitly plays a role in the controversy that has arisen over impersonal passives. If one were to deny that impersonal passives are passives,\(^1\) then they would have no bearing on (3b).

The answers to the questions in (3) that are given by Keenan, Comrie, and Jain contrast with those to be defended in this paper, in accordance with the proposal for impersonal passives in Perlmutter and Postal (to appear b):

\[
\begin{array}{ccc}
 a. & K, C, & J & P & P \\
 b. & No & Yes &  \\
 c. & No & Yes & \\
\end{array}
\]

\((4b-c)\) thus sum up the basic points at issue. The major goal of this paper is to provide an argument in favor of the affirmative answers to \((4b-c)\).

Impersonal passives also raise another issue of concern to general linguistic theory – that of the validity of the Final 1 Law [Perlmutter and Postal (to appear a)]. Many languages have impersonal passives which lack a surface 1. This is the case in Dutch in those dialects in which \(\text{er}\) does not appear in (2), in German in examples such as

(5) Hier wurde den ganzen Abend getanzt.

'It was danced here all evening.'

and in many languages, such as Turkish, in which a dummy never appears in the surface realizations of impersonal passives:

(6) Burada \(\text{çalışılır}.\)

'Here it is worked.'

A second purpose of this paper is to provide evidence that all such examples have a final 1, in conformity with the Final 1 Law, although they lack a surface 1.

3. A Universal Characterization of Impersonal Passives

According to the proposal in Perlmutter and Postal (to appear b), which is defended here, impersonal passives universally involve a dummy which advances from 2 to 1. Under this analysis of impersonal passives, the relational network associated with (1) can be represented as the following simplified stratal diagram:\(^2\)

\[
\begin{align*}
\text{P} & \rightarrow \text{Loc} \\
\text{P} & \rightarrow \text{Loc} \\
\text{P} & \rightarrow \text{Loc} \\
\text{P} & \rightarrow \text{Loc} \\
\text{P} & \rightarrow \text{Loc} \\
\end{align*}
\]

\[
\begin{align*}
\text{schuaten} & \rightarrow \text{de kinderen} & \text{het ijs} & \rightarrow D \\
\end{align*}
\]
'D' represents a dummy, which in some Dutch impersonal passives is realized as er. (7) represents the fact that the dummy bears the 2-relation in the second stratum and the 1-relation in the third stratum, putting the initial l en chomage. Compare (1) and (7) with the so-called 'personal' passive

(8) a. De kaas werd door de kinderen gegeten. 'The cheese was eaten by the children.'

b. 

Both (7) and (8b) involve an advancement from 2 to 1, where the stratum in which the advancee heads a 2-arc also includes a 1-arc. Thus, both (7) and (8b) fall under the universal characterization of Passive proposed in Perlmutter and Postal (1977). Internal to Dutch, these factors determine the passive morphology of worden + past participle for the verb and marking with door for the chomeur. Since it involves an advancement from 2 to 1, I will refer to the analysis of impersonal passives in (7) as the advancement analysis of impersonal passives.3

The advancement analysis can be contrasted with the demotion analysis of impersonal passives, which can be reconstructed as involving a relational network for (1) of the following form (given as a stratal diagram):

(9)
(9) simply involves 'demotion' of the initial 1 to chomeur. There is no dummy and no advancement.

In this paper I give one argument in favor of the advancement analysis of impersonal passives over the demotion analysis. The argument is based on the interaction of this phenomenon with an independently motivated hypothesis about linguistic structure - the Unaccusative Hypothesis. The basic claims of the Unaccusative Hypothesis are sketched briefly in §4.

4. The Unaccusative Hypothesis

The basic claim of the Unaccusative Hypothesis is simply stated:

(10) Certain intransitive clauses have an initial 2 but no initial 1.

For example, under the Unaccusative Hypothesis it is claimed that the English sentence

(11) Gorillas exist.

is associated with the relational network given in (12a) and as a stratal diagram in (12b):

\[ \text{Gorillas is initial 2 but final 1. The advancement in (12) is called Unaccusative. It differs from Passive in that in cases of Unaccusative, the stratum in which the advancee heads a 2-arc does not also contain a 1-arc.} \]

The terminology defined below will facilitate discussion: 4

(13) a. A transitive stratum contains a 1-arc and a 2-arc.
   b. An unaccusative stratum contains a 2-arc but no 1-arc.
   c. An unergative stratum contains a 1-arc but no 2-arc.

An initially transitive, unaccusative, or unergative clause is one with a transitive, unaccusative, bzw. unergative initial stratum.

The Final 1 Law [Perlmutter and Postal (to appear a)] predicts that (while languages may have clauses with initial or intermediate unaccusative strata), clauses with final unaccusative strata will not be well-formed in any language. Taken together with certain other proposed linguistic universals, 5 this has the following consequence:
(14) Every clause with an unaccusative stratum involves an advancement to 1.

Under the Unaccusative Hypothesis, then, initially unaccusative clauses contrast with initially unergative clauses such as

(15) Gorillas play at night.

The simplified relational network for (15) is:

(16)

\[ \text{P} \rightarrow \text{Temp} \rightarrow \text{Play} \rightarrow \text{Gorillas} \rightarrow \text{Night} \]

In (16), gorillas does not head a 2-arc, and (16) does not involve an advancement to 1.

A major question that arises in connection with the Unaccusative Hypothesis is that of the extent to which initial unaccusativity vs. initial unergativity is cross-linguistically uniform and the extent to which it varies from language to language. One can distinguish (at least) three different forms of the Unaccusative Hypothesis:

(17) a. Initial unaccusativity vs. unergativity varies from language to language. There is no way to predict which clauses in a given language will be initially unergative and which initially unaccusative.

b. There exist principles which predict initial unergativity or initial unaccusativity for a certain class of initially intransitive clauses in all languages. There exists another class of such clauses whose initial unergativity vs. unaccusativity varies from language to language.

c. There exist universal principles which predict initial unergativity vs. unaccusativity for all initially intransitive clauses in all languages. Initial unergativity vs. unaccusativity therefore cannot vary from language to language.

(17c) is obviously the strongest and most interesting hypothesis. It therefore deserves to be tested thoroughly for a variety of languages. The necessary first step is to attempt to formulate the principles predicting initial unergativity vs. unaccusativity on which (17c) must be based.

While I will not attempt to do that here, the basic idea is that initial unergativity vs. unaccusativity is predictable from the semantics of the clause. I limit myself here to
sketching some of the general factors that seem to play a role in determining initial unergativity vs. unaccusativity, and to giving illustrative examples. While the examples cited are English verbs, the basic idea is that predicates with equivalent meanings in other languages will behave in the same way with respect to determining initial unergativity vs. unaccusativity.

The class of initial unergative clauses seems to correspond closely to the traditional notion of active or activity (intransitive) clauses. These can be broken down into (at least) two subcategories.

(18) Predicates determining initially unergative clauses
   a. Predicates describing willed or volitional acts
      work, play, speak, talk, smile, grin, frown, grimace, think, meditate, cogitate, daydream,
      skate, ski, swim, hunt, bicycle, walk, skip (voluntary), jog, quarrel, fight, wrestle, box,
      agree, disagree, knock, bang, hammer, pray, weep, cry, kneel, bow, curtsy, genuflect,
      cheat, lie (tell a falsehood), study, whistle (voluntary), laugh, dance, crawl, walk, etc.
      This category includes manner-of-speaking verbs such as whisper, shout, mumble, grumble, growl,
      bellow, blurt out, etc. and predicates describing sounds made by animals such as bark,
      neigh, whinny, quack, roar (voluntary), chirp, oink, meow, etc.

   b. Certain involuntary bodily processes
      cough, sneeze, hiccup, belch, burp, vomit, defecate, urinate, sleep, cry, weep, etc.

There may be additional categories as well. Many verbs in English can be used to describe either voluntary or involuntary actions.

The class of predicates determining initial unaccusative strata is very large. These include the following:

(19) Predicates determining initially unaccusative clauses
   a. Predicates expressed by adjectives in English
      This is a very large class, including predicates describing sizes, shapes, weights, colors, smells,
      states of mind, etc.

   b. Predicates whose initial nuclear term is semantically a Patient
      burn, fall, drop, sink, float, slide, slip, glide, soar, flow, ooze, seep, trickle, drip, gush, hang,
      dangle, sway, wave, tremble, shake, languish, flourish, thrive, drown, stumble, trip, roll,
      succumb, dry, blow away, boil, seethe, lie (involuntary), sit (involuntary), bend (involuntary),
      etc. This includes the class of inchoatives,
including melt, freeze, evaporate, vaporize, solidify, crystallize, dim, brighten, redden, darken, yellow, rot, decompose, germinate, sprout, bud, wilt, wither, increase, decrease, reduce, grow, collapse, dissolve, disintegrate, die, perish, choke, suffocate, blush, open, close, break, shatter, crumble, crack, split, burst, explode, burn up, burn down, dry up, dry out, scatter, disperse, fill, vanish, disappear, etc.

c. Predicates of existing and happening
exist, happen, transpire, occur, take place, and various inchoatives such as arise, ensue, result, show up, end up, turn up, pop up, vanish, disappear, etc.

d. Non-voluntary emission of stimuli that impinge on the senses (light, noise, smell, etc.)
shine, sparkle, glitter, glisten, glow, jingle, clink, clang, snap (involuntary), crackle, pop, smell, stink, etc.

e. Aspectual predicates
begin, start, stop, cease, continue, end, etc. [Perhaps these should be considered a subclass of group (c) above.]

Nothing hinges on the particular subcategories given here; alternative classifications are possible.

In developing principles to predict initial unergativity vs. unaccusativity on the basis of meaning, an approach that seems promising is to characterize precisely the class of meanings that determine initial unergative strata, assigning initial unaccusativity to all other initially intransitive clauses.

These lists are offered here as a first step toward constructing explicit principles capable of predicting initial unergativity vs. unaccusativity cross-linguistically. However, one who does not bear in mind that the items in the lists are intended to refer to semantic predicates rather than to verbs of English having a certain phonological shape will almost certainly be misled. Several remarks concerning these lists are therefore in order.

First, many phonological verbs in English can be used both in simple unaccusative clauses and in clauses of another type or types. For example, compare the following sentences with the verb slide:

\[20\]
\[20a\] The wheels slid on the ice.
\[20b\] Joe slid into third base.
\[20c\] Joe slid on the ice.

Of these three sentences, only \[20a\] is unambiguously a simple unaccusative clause. The initial stratum of \[20a\] contains a 2-arc headed by \textit{the wheels}. \[20b\], on the other hand, describes a willed action. Two analyses of it are possible. It
could have an initial unergative stratum with Joe heading a 1-arc, or it could be the causative of an unaccusative clause, with Joe heading a 1-arc in the clause whose predicate is \textit{cause}, and a 2-arc in the clause whose predicate is \textit{slide}. The choice between these two analyses is irrelevant here. Under either analysis, (20b) does not represent a simple unaccusative clause, and therefore it will not behave like one. (20c) is ambiguous. It can describe either a volitional act, in which case it is like (20b), or it can describe a situation in which Joe unwillingly slid on the ice, in which case it is a simple unaccusative clause like (20a). In English it is very common for a single phonological verb to appear in different clause types, as \textit{slide} does. These examples also illustrate the fact that the distinction between initially unergative and unaccusative clauses does not coincide with the distinction between clauses with animate subjects and those with inanimate ones.

The use of the same phonological verbs in different clause types is quite widespread in English. Consider the following examples:

(21) a. Marcia fell from the second-story window.
    b. Marcia fell right on cue in the second act.

(22) a. The figurine stood on this table.
    b. The children stood on this table.

(23) a. The needle suddenly jumped six degrees on the dial.
    b. The unemployment rate suddenly jumped in July.
    c. Henry suddenly jumped over the fence.

(21b), (22b), and (23c) describe willed acts and thus are not simple unaccusative clauses. (21a), (22a), and (23a-b), on the other hand, are unaccusative clauses. Consider also:

(24) a. The train roared as it approached.
    b. The lion roared as he approached.

(25) a. The train's wheels hummed as it approached.
    b. Henry hummed as he approached.

(24b) and (25b) describe willed acts and are initially unergative clauses. (24a) and (25a), on the other hand, are initially unaccusative clauses.\textsuperscript{6} Note, for example, that in (24a) the roar is produced by the approach of the train, while in (24b) the roar is not produced by the approach of the lion; the roaring is an additional act.

Second, the lists of predicates given here are far from complete. Certain large classes of verbs, such as verbs of motion, have been omitted entirely because they typically involve ambiguities and the possibilities for alternative analyses similar to those observed with \textit{slide}.

Third, care must be exercised in making cross-linguistic comparisons because a given verb in one language may not really be equivalent to an apparent synonym in another language. For example, the English verb \textit{travel} can be used in any of the following sentences:
(26) a. I like to travel in the summer.
b. The package travelled for two weeks.
c. The shuttle travels back and forth on the loom.

The Dutch verb reizen 'travel', on the other hand, cannot be used in the sense of (26b-c):

(27) a. Ik reis graag in de zomer.
b. *Het pakje reisde twee weken.
c. *Het schietspoel reist heen en weer op het getouw.

It is necessary to compare senses or meanings, rather than phonological verb forms.

Despite the practical difficulties that will be encountered in testing the Unaccusative Hypothesis cross-linguistically, however, such work must be done in order to determine which form of the Unaccusative Hypothesis sketched in (17) is to be adopted.

It is instructive to compare the very inadequate attempts made here at describing the semantic difference between initially unergative and unaccusative clauses with descriptions in the literature on other languages where a similar distinction, if not exactly the same one, has been observed. For example, in Dakota [Boas and Deloria (1939)], there are contrasting pronominal forms for the first and second person. While further research must be undertaken to determine whether or not this contrast is determined by the distinction between initial 1s and initial 2s (in our terms), Boas and Deloria's description is highly suggestive:

There is a fundamental distinction between verbs expressing states and those expressing actions. The two groups may be designated as neutral and active. The language has a marked tendency to give a strong preponderance to the concept of state. All our adjectives are included in this group, which embraces also almost all verbs that result in a state. Thus a stem like "to sever" is not active but expresses the concept of "to be in a severed condition," the active verb being derived from this stem. The same is true of the concept "to scrape," the stem of which means "to be in a scraped condition." Other verbs which we class as active but which take no object, like "to tremble," are conceived in the same way, the stem meaning "to be a-tremble." Active verbs include terms that relate exclusively to animate beings, either as actors or as objects acted upon, such as words of going and coming, sounds uttered by animals and man, mental activities and those expressing actions that can affect only living beings (like to kill, wound, etc.). There seem to be not more than 12 active words that would not be covered by this definition....

The distinction between neutral and active verbs is expressed by the pronoun. As in many American languages, the object of the transitive verb coincides with the subject
of the neutral verb. In Dakota this may perhaps be so
understood that the state is expressed in reference to
the person pronoun "being strong is in reference to me;"
i.e. "I am strong."
Boas and Deloria's description suggests not only that the distinc-
tion between initial 1s and initial 2s may determine the choice
of contrasting pronominal forms in Dakota, but also that at
least some transitive clauses (and perhaps also some unergative
clauses) are to be analyzed as complex structures with an embedded
unaccusative clause. Research on Siouan languages may produce
further evidence for the Unaccusative Hypothesis. Considerable
evidence for it has already been amassed, but presentation and
discussion of that evidence is beyond the scope of this paper. My
goal here is limited to showing that the interaction of the Unac-
cusative Hypothesis with the l-Advancement Exclusiveness Law
provides an argument for the advancement analysis of impersonal
passives over the demotion analysis. This is at the same time
an argument for the Motivated Chomage Law.
5. An Empirical Prediction of the Unaccusative Hypothesis,
the l-Advancement Exclusiveness Law, and the Advancement
Analysis of Impersonal Passives

The l-Advancement Exclusiveness Law [Perlmutter and Postal
(to appear b)] can be stated informally as follows:
(28) The l-Advancement Exclusiveness Law
No clause can involve more than one advancement to l.
Using the notion of 'advancee arc' defined in Perlmutter and
Postal (to appear b), the law can be stated more precisely:
(29) The l- Advancement Exclusiveness Law
In a relational network in which A and B are
neighboring l-arcs (i.e. l-arcs with the same tail),
if A is an advancee arc, B is not an advancee arc.

In §4 we have seen that under the Unaccusative Hypothesis,
all initially unaccusative clauses involve an advancement to l.
The l-Advancement Exclusiveness Law and the Unaccusative
Hypothesis, taken together, thus provide a test to distinguish
between the advancement analysis and the demotion analysis of
impersonal passives. Under the advancement analysis of impersonal
passives, the l-Advancement Exclusiveness Law predicts that imper-
sonal passives of initially unaccusative clauses will be uni-
versally impossible. This is because unaccusative clauses
necessarily involve an advancement to l, and if impersonal passives
also involve an advancement to l, impersonal passives of ini-
tially unaccusative clauses will involve two advancements
to l, in violation of the l-Advancement Exclusiveness Law.
In terms of stratal diagrams, under the advancement analysis
of impersonal passives, impersonal passives of initially unaccu-
sative clauses would look like:
Since (30) involves two advancements to 1, such structures will be characterized as ungrammatical by the 1-Advancement Exclusiveness Law.

In (30), Unaccusative advancement is in an earlier stratum than Passive. If the dummy bore the 2-relation in the second stratum, advancing to 1 in the third, the stratal diagram of the relevant relational network would look like:

While (31) does not violate any laws of grammar and therefore is a possible linguistic structure, it is not a Passive structure as characterized in Perlmutter and Postal (1977). The reason is that in the stratum in which the advancee to 1 bears the 2-relation there is no 1. Thus, (31) is an Unaccusative structure and not a Passive structure. Internal to particular languages, (31) will not satisfy the conditions for passive morphology.

Thus, under the advancement analysis of impersonal passives, there is no way to have an impersonal passive of an initially unaccusative clause. If the initial unaccusative nominal advances to 1 in a stratum earlier than the dummy bearing the 2-relation, we get a structure like (30), which violates the 1-Advancement Exclusiveness Law. On the other hand, if the dummy bears the 2-relation in the second stratum, putting the initial unaccusative nominal en chomage, then the structure in question is not a Passive structure, and so cannot be associated with an impersonal
passive.
The advancement analysis of impersonal passives, taken together with the Unaccusative Hypothesis and the l-Advancement Exclusiveness Law, thus predicts that initially unaccusative clauses cannot have impersonal passives. The demotion analysis makes no such prediction. If the prediction is correct, it will be an argument for the advancement analysis of impersonal passives. Further, since the Motivated Chomage Law is incompatible with the demotion analysis of impersonal passives and requires the advancement analysis of impersonal passives, any argument for the advancement analysis is an argument for the Motivated Chomage Law as well. A linguistic theory incorporating the Motivated Chomage Law, in conjunction with the Unaccusative Hypothesis, the l-Advancement Exclusiveness Law, and the advancement analysis of impersonal passives, predicts the ungrammaticality of impersonal passives of initially unaccusative clauses.

6. The Evidence from Dutch

Dutch is a particularly good language for which to illustrate the prediction brought out in §5. This is because unlike many other languages, Dutch allows the Passive chomeur to appear overtly in impersonal passives. The Dutch data thus enables one to see more clearly that the grammaticality or ungrammaticality of impersonal passives depends on initial unergativity vs. unaccusativity, which in turn depends on the semantic relation the initial nuclear term bears in the clause; a mere listing of predicates would not suffice to characterize the difference.

The following examples illustrate the grammaticality in Dutch of impersonal passives of initially unergative clauses:

(32) Er wordt hier door de jonge lui veel gedanst.
    'It is danced here a lot by the young people.'

(33) Er wordt voor de koning geknield.
    'It is kneeled before the king.'

(34) Hier wordt (er) veel gewerkt.
    'It is worked here a lot.'

(35) Er wordt in deze kamer vaak geslapen.
    'It is often slept in this room.'

(36) Over dit problem wordt er vaak gesproken/gepraat/gedacht.
    'About this problem it is often spoken/talked/thought.'

(37) Door deze mensen wordt er altijd gevochten.
    'By these people it is always fought.'

(38) Er wordt hier veel geskied.
    'It is skied here a lot.'
Er wordt geblaft/gehinnikt/gekrast/gemiauwed.
'It is (being) barked/whinnied/crowed/meowed.'

Er wordt gehuild.
'It is (being) cried/howled.'

Er wordt op de deur geklopt.
'It is (being) knocked on the door.'

Er wordt geniesd/gehoest/gehikt.
'It is (being) sneezed/coughed/hiccoughed.'

Er wordt gebeden.
'It is (being) prayed.'

Er wordt geschreeuwd/gemompeld/gemummeld/gefluisterd.
'It is being screamed/grumbled/mumbled/whispered.'

Door de kinderen wordt altijd gelachen.
'By the children it is always laughed.'

Door de jonge lui wordt er nu vaak gemediteerd.
'By the young people it is now often meditated.'

Door jonge meisjes wordt (er) vaak gedagdroomd.
'By young girls it is often daydreamed.'

Er wordt door de kinderen in de tuin heen en weer gerend.
'It is run back and forth in the garden by the children.'

Er wordt door hem altijd gedubd.
'It is always thought deeply by him.'

Er wordt door de kinderen nog niet gerookt.
'It is not yet smoked by the children.'

Just as predicted, initially unaccusative clauses do not have well-formed impersonal passives. In each case a grammatical active unaccusative sentence is cited, followed by the corresponding impersonal passive, which is ungrammatical.

De lijken zijn al gerot/ontbonden.
'The corpses have already rotted/decomposed.'

Door de lijken werd al gerot/ontbonden.

In dit weeshuis groeien de kinderen erg snel.
'In this orphanage the children grow very fast.'

In dit weeshuis wordt er door de kinderen erg snel gegroeid.

Het water was binnen een kwartier verdampd.
'The water had evaporated in a quarter hour.'

Er werd door het water binnen een kwartier verdampd.

De kinderen zijn in Amsterdam gebleven.
'The children remained in Amsterdam.'

Er werd door de kinderen in Amsterdam gebleven.

Het concert heeft een hele tijd geduurd.
'The concert lasted a long time.'

Er werd door het concert een hele tijd geduurd.

(56) a. Zijn moeder alleen overleefd.
    'Only his mother survived.'

b. *Er werd alleen door zijn moeder overleefd.

(57) a. Het water sijpelde/driepelde uit de rots.
    'The water seeped/dripped out of the rock.'

b. *Er werd door het water uit de rots gesijpeld/gedriepeld.

(58) a. Het water gutste uit de kraan.
    'The water gushed from the tap.'

b. *Er werd door het water uit de kraan gegutst.

(59) a. Een heleboel bommen zijn gisteren ontploft in Belfast.
    'A lot of bombs exploded yesterday in Belfast.'

b. *Er werd gisteren door een heleboel bommen ontploft in Belfast.

(60) a. De bloemen waren binnen een paar dagen verflust.
    'The flowers had wilted in a few days.'

b. *Er werd door de bloemen binnen een paar dagen verflust.

(61) a. Vele kinderen verdwijnen uit dit weeshuis.
    'Many children disappear from this orphanage.'

b. *Uit dit weeshuis wordt (er) door vele kinderen verdwenen.

(62) a. Vele kinderen zijn in de rook gestikt.
    'Many children suffocated in the smoke.'

b. *Er werd door vele kinderen in de rook gestikt.

(63) a. De grassprietjes zijn vannacht ontsproten.
    'The grass sprouts sprouted last night'

b. *Er werd door de grassprietjes vannacht ontsproten.

(64) a. De kinderen bungelden aan de kabel.
    'The children dangled from the cable.'

b. *Er werd door de kinderen aan de kabel gebungeld.

(65) a. Zulke dingen zijn hier nooit gebeurd.
    'Such things have never happened here.'

b. *Hier werd er door zulke dingen nooit gebeurd.

(66) a. Dat blok hout heeft goed gebrand.
    'That block of wood burned well.'

b. *Er werd door dat blok hout goed gebrand.

(67) a. In dit ziekenhuis sterven de patienten dikwijls.
    'In this hospital the patients often die.'

b. *In dit ziekenhuis wordt (er) door de patienten dikwijls gestorven.

There are some close contrasts that illustrate the relevance of the unergative-unaccusative distinction in predicting the status of impersonal passives. Consider the following:

(68) a. In de zomer wordt er hier vaak gezwommen.
    'In the summer it is swum here frequently.'
b. *In de zomer wordt er hier vaak verdrongen.
   'In the summer it is drowned here frequently.'

*Zwemmen* 'swim' describes a willed activity. It therefore has an initial unergative stratum and allows impersonal passives. *Verdrinken* 'drown,' on the other hand, describes not a willed activity, but something in which the initial nuclear term is semantically a Patient. It thus determines an initial unaccusative stratum and, as predicted, does not allow impersonal passives. Similarly, if the verb *glijden* 'slide' describes a willed activity, the initial stratum is unergative and an impersonal passive is possible:

(69) a. De kinderen hebben lekker op het ijs gegleden.
   'The children enjoyed sliding on the ice.'

b. *Er werd door de kinderen lekker op het ijs gegleden.
But forms of *glijden* where the final 1 is a Patient rather than an Actor (and hence determines an initial unaccusative stratum), as predicted, do not allow impersonal passives:

(70) a. De sneeuw is van het dak afgegleden.
   'The snow slid off the roof.'

b. *Er werd door de sneeuw van het dak afgegleden.

Another illustration of the predicted status of impersonal passives is the fact that if a native speaker of Dutch is presented with an impersonal passive of a sentence with an initial unaccusative stratum, he or she will either reject it outright, or else try to render it interpretable by imputing an activity reading to it. In this connection, consider *(71b),

the impersonal passive of (71a).

(71) a. De kreuken stonden vreselijk.
   'The carcasses smelled terribly.'

b. *Er werd door de kreuken vreselijk gestonken.

As predicted, *(71b) is ungrammatical as a paraphrase of (71a).
However, a speaker may give it an interpretation in the following way. *Kreuken* is also a pejorative term applied to women, something like 'bitch.' Thus, *(71b) might be interpreted to mean something like: 'The bitches stank terribly, intentionally emitting foul odors.' The key point is that the meaning of intentionality attributed to *(71b) makes it an activity clause describing a volitional act, and hence a clause with an initial unergative stratum, as required by the theory of impersonal passives defended here.

There are examples that show that the status of the impersonal passive cannot be characterized merely by giving lists of predicates. The contrasts observed are precisely the kinds of contrasts associated with the difference between unergative and unaccusative initial strata cross-linguistically. In each case, the (a)-sentence describes a willed action which accordingly determines an initial unergative stratum. The corresponding impersonal passive in the (b)-sentence is grammatical. The (c)-sentence,
however, though constructed with the same verb, does not describe a willed action and consequently has an initial unaccusative stratum. As predicted, the corresponding impersonal passive in the (d)-sentence is ungrammatical.

(72) a. De edelen buigen voor de koning.
    'The nobles bend (bow) before the king.'

b. Er wordt door de edelen voor de koning gebogen.

   De bloemen buigen in de wind.
    'The flowers bend in the wind.'

d. *Er wordt door de bloemen in de wind gebogen.

(73) a. De kinderen staan altijd op deze tafel wanneer zij uit het raam willen kijken.
    'The children always stand on this table when they want to look out the window.'

b. Op deze tafel wordt (er) altijd door de kinderen gestaan wanneer zij uit het raam willen kijken.

   Het beeldje staat altijd op deze tafel.
    'The figurine always stands on this table.'

d. *Op deze tafel wordt (er) altijd door het beeldje gestaan.

(74) a. De nieuwe acteur is in het tweede bedrijf op het juiste ogenblik gevallen.
    'The new actor fell at the right moment in the second act.'

b. In het tweede bedrijf werd er door de nieuwe acteur op het juiste ogenblik gevallen.

   Twee mensen zijn uit de venster van de tweede verdieping gevallen.
    'Two people fell out of the second-storey window.'

d. *Er werd door twee mensen uit de venster van de tweede verdieping gevallen.

(75) a. Het publiek murmelde gedurende het concert.
    'The audience murmured during the concert.'

b. Er werd door het publiek gedurende het concert gemurmeld.

   Het beekje murmelde zachtjes.
    'The brook murmured gently.'

d. *Er werd door het beekje zachtjes gemurmeld.

Examples like this not only support the hypothesis defended here, they also illustrate some of the difficulties that will allow an overt chomeur in impersonal passives. For such languages, if one simply presents a speaker with an impersonal passive such as

(76) Er werd gevallen.
    'It was fallen.'

and if the hypothesis presented here is correct, the speaker will react differently, depending on whether he has in mind a context like (74b) or one like *(74d). Thus, if such a pro-
procedure is followed, the data obtained will show great variation from one speaker to another and with the same speaker from one occasion to another. It is necessary to take into account the semantic factors that determine initial unergativity vs. unaccusativity to obtain a true test of the predictions for other languages of the hypothesis presented here.

7. **Argument against a Characterization of Passive in Semantic Terms.**

The proposal defended here characterizes Passive structures — both personal and impersonal — in syntactic terms, as proposed in Perlmutter and Postal (1977). Pains have been taken, however, to give evidence that the assignment of initial termhood depends on semantic factors. The question might then arise as to why Passive structures should be characterized in syntactic, rather than semantic, terms. For example, it might be proposed that the contrast between grammatical and ungrammatical impersonal passives brought out in §6 can be incorporated into a grammar of Dutch by stating Passive in semantic terms along the lines of one of the statements in:

(77) a. A passive construction is possible only if the initial l is semantically an Agent.

b. A passive construction is possible only if the clause describes a willed or volitional act, or certain involuntary bodily processes.

While such statements may describe the situation for impersonal passives in Dutch, there are numerous examples of personal passives where these conditions are not met:

(78) Dat wordt door bijna iedereen geloofd/verstaan/verondersteld/voorondersteld/betwijfeld/vermoed. 'That is believed/understood/assumed/presupposed/doubted/suspected by almost everyone.'

(79) Zij wordt door iedereen gehaat/veracht/bewonderd/geacht/gerespekteerd. 'She is hated/despised/admired/respected by everyone.'

(80) Hij wordt door zijn kollega's als incompetent beschouwd. 'He is considered incompetent by his colleagues.'

(81) Zijn verwaandheid wordt alleen door zijn algemene onaangenaamheid overtroffen. 'His arrogance is exceeded only by his general unpleasantness.'

(82) Deze hypotese wordt door de feiten weerlegd/bevestigd/gesteund. 'This hypothesis is refuted/confirmed/supported by the facts.'

(83) Ik werd aan zijn verdwijning herinnerd door een kort nieuwsberichtje op pagina 5.
'I was reminded of his disappearance by a short news item on page 5.'

(84) De klasse van grammatikale zinnen wordt geken-
merkt door een set voorwaarden op goedgevormde
relatiele netwerken.
'The class of grammatical sentences is charac-
terized by a set of conditions on well-formed
relational networks.'

(85) De situatie werd verergerd door een verhoogde
afhankelijkheid van buitenlandse petroleum.
'The situation was exacerbated by increased
dependence on foreign oil.'

(86) Zijn positie is door de recente ontwikkelingen
ondermijnd geworden.
'His position has been undermined by the recent
developments.'

(87) Het dak wordt door stalen palen geschut.
'The roof is supported by steel columns.'

(88) Het huis wordt door hoge elmen omringd.
'The house is surrounded by tall elms.'

(89) Hij werd door een gevoel van hopeloosheid overvallen.
'He was overcome by a feeling of hopelessness.'

(90) De brief werd door de geadresseerde niet ontvangen.
'The letter was not received by the addressee.'

(91) Dat ze loog werd door de jury aangevoeld.
'That she was lying was sensed by the jury.'

The initial list in these examples have a variety of semantic
roles - Experiencer, Cognizer, Recipient, and others whose nature
remains obscure. Both attempted characterizations in (77)
fail.

Of course, one might adopt one of the characterizations
in (77) only for impersonal passives, and deal with personal
passives in a different way. There are two arguments against
this.

First, it would miss the generalization uniting personal
and impersonal passives, needlessly complicating the grammar
with two separate characterizations where one suffices. In-
ternal to the grammar of Dutch, it would complicate the rules
that are responsible for passive morphology on the verb and
the marking of the chomeur with door.

Second, the characterizations in (77), if properly
stated, would duplicate the statement that is needed inde-
dependently to assign initial unergative strata. While limi-
tations of space here make it impossible to show that the
distinction between unergative and unaccusative clauses accounts
for many other syntactic phenomena, each such demonstration
will add to the evidence that an ad hoc characterization like
one of those in (77), for impersonal passives alone, is unneces-
sary.
8. **Conclusions for the Grammar of Dutch and Universal Grammar**

What must be stated in the grammar of Dutch to account for the data on impersonal passives presented here? Under the proposal advanced here, the grammar of Dutch needs only:

(92) a. a statement that impersonal passives of intransitive clauses are possible in Dutch,

b. a rule stating the conditions under which the dummy appears in the surface string.

Passive morphology on the verb and marking of the chômeur with *door* are accounted for by the same rules that are needed for personal passives. The conditions governing (92b) in two varieties of Dutch have been studied by Maling and Zaenen (to appear), and will not concern us here.9

The contrasts between grammatical and ungrammatical impersonal passives presented here follow entirely from principles of universal grammar. They are:

(93) a. the universal advancement analysis of impersonal passives imposed by the Motivated Chomage Law

b. the predictability of initial unergative vs. unaccusative strata in accordance with the strong version of the Unaccusative Hypothesis sketched in (17c)

c. the 1-Advancement Exclusiveness Law

d. the Final 1 Law, the Relational Succession Law, and the Active Dummy Law, which together ensure that every clause with an unaccusative stratum involves an advancement to 1 (cf. fn.5)10

Each of these proposed linguistic universals is motivated by data that has nothing to do with impersonal passives. The fact that they predict the contrasts between grammatical and ungrammatical impersonal passives in Dutch thus provides an explanation of those contrasts. At the same time, the Dutch data provides empirical support for the principles of universal grammar in (93).

This situation can be contrasted with that in a grammar of Dutch that incorporates the demotion analysis of impersonal passives. Such a grammar would have to include some ad hoc device to account for the contrast between those intransitive clauses that have grammatical impersonal passives and those that do not. Whatever the nature of that device, it would have to treat clauses with initial unergative strata differently from those with initial unaccusative strata, presumably stating a constraint preventing the demotion of 1s in clauses with initial unaccusative strata. Such a constraint, however, is completely superfluous, since under the advancement analysis of impersonal passives the ungrammaticality of impersonal passives of such clauses is a consequence of universal prin-
ciples of grammar. The failure of the demotion analysis lies in its inability to make the ungrammaticality of such impersonal passives follow directly from universal principles.

9. Evidence from Turkish

The claim that the ungrammaticality of the impersonal passives of initially unaccusative clauses in Dutch follows from universal principles of grammar entails that the same will be true of the corresponding sentences in every language that has impersonal passives. I will illustrate this briefly with data from Turkish. More extensive testing of the hypothesis presented here must be carried out for other languages.

Two factors have dictated the choice of Turkish as an illustrative language. First, since it is a non-Indo-European language, the similarity to Dutch cannot be attributed to genetic relationship. Second, the explanation offered here for the ungrammaticality of impersonal passives of initially unaccusative clauses rests on the advancement of a dummy from 2 to 1. Unlike Dutch, however, Turkish never has dummies appearing in the surface string. On these grounds alone, some linguists would deny that dummies play a role in Turkish sentence structure. It is claimed here, however, that dummies play exactly the same role in impersonal passives in Turkish that they do in Dutch. The only difference is in the conditions under which these dummies are realized on the surface. As Maling and Zaenen (to appear) show, these conditions for Dutch differ dialectally and involve certain complications. For Turkish, however, the generalization is very easy to state:

(94) No dummies appear overtly in Turkish sentences. With this generalization incorporated in the grammar of Turkish, the surface distribution of dummies in Turkish is accounted for.

Since Turkish has many sentences (including impersonal passives) with no overt subject in the surface string, it is also superficially a counterexample to the Final 1 Law. As noted in Perlmutter and Postal (to appear a), many languages superficially appear to violate this law. The question is whether more detailed analysis of the languages in question will provide evidence for final 1s that do not appear overtly. In providing evidence for dummies as final 1s in Turkish impersonal passives, the present paper contributes to the evidence for the Final 1 Law.

Initial unergative clauses in Turkish have grammatical impersonal passives:

(95) Burada gelişilir/oynar/bağılır.
   'Here it is worked/played/shouted.'

(96) Burada sık sık yüksek sesle konuşulur.
   'Here it is often spoken with a high voice.'

(97) Burada sık sık kavgaya edilir.
   'Here it is often fought.'
(98) Burada gecenin geç saatlerine kadar dans edilir. 'Here it is often danced until the late hours of the night.'
(99) Burada müzikçilik edilmez. 'Here it is not cheated.'
(100) Düşmandan kaçılmaz. 'From the enemy it is not run away.'

Passive chomeurs cannot appear overtly in Turkish impersonal passives.

As predicted, impersonal passives of initially unaccusative clauses are ungrammatical.

(101) *Buharlaşıldı/çürüldü/kokuldu. 'It was evaporated/rotted/smelled.'
(102) *Damlanır/fişkırılır. 'It is dripped/gushed.'
(103) *Buzun üstünde sık sık düşülür. 'It is often fallen on the ice.'
(104) *Yazın burada boğulur. 'In the summers here it is drowned.'
(105) *Sonbaharda sararılır. 'In the fall it is yellowed.'
(106) *Sonbaharda kurunur. 'In the fall it is become dry.'
(107) *Bu yetimhanede çabuk büyünür. 'In this orphanage it is grown fast.'
(108) *Bu gibi durumlarda öldürür. 'In such situations it is died.'

There are also some close contrasts illustrating the difference between initially unergative and unaccusative clauses.

(109) a. Bu hapishanedenden sık sık kaçılır. 'From this prison it is often run away.'
    b. *Bu hapishanedenden sık sık kaybolunur. 'From this prison it is often disappeared.'

(110) a. Bu gibi fıkralarda gülünmez de gülülmsenir. 'At such jokes it is not laughed but smiled.'
    b. *Bu gibi fıkralarda kızarılır. 'At such jokes it is blushed.'

The verb kaymak means 'slip' or 'slide,' and is generally used to describe an involuntary action; the initial nuclear term in kaymak clauses in this use is consequently a Patient and the clauses are initially unaccusative. However, kayak kaymak means 'ski,' a willed activity, and therefore determines initially unergative strata. This difference between kaymak and kayak kaymak results in the predicted contrast in impersonal passives:

(111) a. Burada kayak kayılır. 'Here it is skied.'
    b. *Burada kayılır. 'Here it is slipped/slid.'
Limitations of space here prevent a thorough survey of the possibilities of impersonal passives in Turkish. The data presented is exactly what is predicted by the hypothesis defended here. It thus provides further support for the universals in (93). The grammar of Turkish needs only:

(112) a. a statement that impersonal passives of intransitive clauses are allowed.
   b. the constraint that disallows a Passive chomeur to appear overtly in an impersonal passive.
   c. a statement of the generalization in (94).

Everything else follows from the principles of universal grammar in (93). (111a) is associated with a relational network that can be abbreviated in simplified form as the following stratal diagram:

(113)

As in Dutch and other languages, impersonal passives in Turkish involve the advancement of a dummy from 2 to 1. The passive morphology in impersonal passives follows from the rules that are needed independently for personal passives. By predicting the contrasts in grammaticality between impersonal passives of initially unergative vs. unaccusative clauses in Turkish, the principles of universal grammar in (93) explain them.

At the same time, these contrasts provide further empirical support for those universal principles.

10. A further Prediction: Interaction of Passive and Inversion

The predictions of the hypothesis presented here for impersonal passives stem from two things:

(114) a. Clauses with an unaccusative stratum necessarily involve an advancement to 1.
   b. Impersonal passives involve an advancement to 1.

Given (114a-b), the 1-Advancement Exclusiveness Law predicts the ungrammaticality of impersonal passives of clauses with an unaccusative stratum.

The only unaccusative clauses we have been concerned with so far are those whose initial stratum is unaccusative. However, there are also clauses with non-initial unaccusative strata. Initially transitive Inversion clauses are of this type.
In the Inversion construction, a nominal that heads a 1-arc in one stratum heads a 3-arc in the next. Thus, a partial relational network for initially transitive Inversion clauses is the following:

(115)  

In (115), while the first stratum is transitive, the second is unaccusative. Like initially unaccusative clauses, such Inversion clauses necessarily involve an advancement to 1, for the same reasons. Thus, under the advancement analysis of impersonal passives, the 1-Advancement Exclusiveness Law predicts that impersonal passives of Inversion clauses will be ungrammatical.

We will not be concerned here with evidence for the demotion of a 1 to a 3 in the Inversion construction. A considerable amount of such evidence has already been amassed. The only point of interest here is the prediction of the 1-Advancement Exclusiveness Law that Inversion clauses cannot have passives—whether personal or impersonal. Although Dutch and Turkish are not among the languages for which Inversion has been motivated in detail, I will illustrate the prediction with Dutch and Turkish examples.

Consider first the Dutch sentence

(116) Dat detail ontsnapt iedere keer aan onze voorzitter.  

'Had detail escapes our chairman every time.'

Dat detail is the final 1 of (116), and onze voorzitter 'our chairman' is marked with the preposition aan, which marks final 3s in Dutch. Under an Inversion analysis, the relational network associated with (116) can be abbreviated as the following stratal diagram:

(117)
(117) has an un accusative second stratum and advancement of the initial 2 to 1. As predicted, no grammatical impersonal passive of (116) can be constructed:

(118) a. *Er wordt aan onze voorzitter door dat detail iedere keer ontsnapt.
    b. *Aan onze voorzitter wordt (er) door dat detail iedere keer ontsnapt.
    c. *Door dat detail wordt (er) aan onze voorzitter iedere keer ontsnapt.

The impossibility of *(118), a consequence of the 1-Advancement Exclusiveness Law, thus supports the Inversion analysis of (116) in (117).

3-2 Advancement is productive in Dutch, and there is another grammatical sentence in which onze voorzitter, a final 3 in (116), has advanced to 2:

(119) Dat detail ontsnapt onze voorzitter iedere keer.
    'That detail escapes our chairman every time.'

In (119), onze voorzitter is not marked with aan and immediately follows the verb, as other final 2s do. Thus, the simplified network I propose for (119) is:

(120) ![Network Diagram]

Like (117), (120) involves an advancement to 1. Thus, although onze voorzitter is final 2 in (119/120), the 1-Advancement Exclusiveness Law predicts the ungrammaticality of a personal passive:

(121) *Onze voorzitter wordt door dat detail iedere keer ontsnapt.

Under the same analysis (involving Inversion and 3-2 Advancement) of the English sentences

(122) a. Those details escape me every time.
    b. Those details elude me every time.

the 1-Advancement Exclusiveness Law predicts the ungrammaticality of the corresponding passives:

(123) a. *I am escaped by those details every time.
    b. *I am eluded by those details every time.

Turning now to Turkish, I propose an Inversion analysis for sentences such as:
(124) Bu imtihan bana zor geldi.
    this test me difficult came
    'This test was difficult for me.'

(125) Bu bana yeter.
    This me/DAT sufficient+AOR
    'This is sufficient for me.'

Under this analysis, the network associated with (124) can be abbreviated as:

Since (126) involves an advancement to 1, the l-Advancement Exclusiveness Law predicts the ungrammaticality of impersonal passives:

(127) *Bana zor gelindi.

(128) *Bana yetilir.

Note that the impossibility of impersonal passives of Inversion clauses, which are superficially intransitive with a final 3, contrasts with the grammaticality of the impersonal passives of other intransitive clauses with 3s:

(129) Bu adam'a sık sık telefon edilir.
    'To this man it is often telephoned.'

(130) Hasana yardım edildi.
    'To Hasan it was helped.'

Under the Inversion analysis of (124-125), this contrast is a consequence of the l-Advancement Exclusiveness Law. The fact that the law accounts for the ungrammaticality of the impersonal passives constitutes evidence for the Inversion analysis.

11. A Universal Characterization of Passive Clauses

The analysis of impersonal passives defended here brings them under the rubric of the universal characterization of passivization proposed in Perlmutter and Postal (1977). Ignoring the additional complications involved in reflexive passives (both personal and impersonal), passive clauses can be characterized as universally involving relational subnetworks of the form:
Impersonal passives differ from personal passives in that the nominal heading a 2-arc and a l-arc in successive strata is a dummy. In many languages, as in Dutch and Turkish, impersonal passives are morphologically like personal passives. This is accounted for in grammars of those languages in which the rules responsible for the morphology simply refer to subnetworks of the form (131). However, it is not excluded that personal and impersonal passives could differ morphologically in some languages. Any such differences would be accounted for by grammars in which the relevant morphological rules are sensitive to whether or not the nominal heading a 2-arc and l-arc in successive strata is a dummy. Since this requires an extra specification in the relevant morphological rules, it is likely that languages with such morphological differences between personal and impersonal passives will be in the minority, but nothing in the proposal presented here excludes them from the class of possible languages.

Any syntactic differences between personal and impersonal passives in particular languages can be stated in their grammars in the same way. As with morphological differences, any such syntactic differences require explicit statement. Under the proposal for impersonal passives advanced here, then, they will be like personal passives in a particular language unless something in the grammar specifies otherwise. This means that there will be a tendency across languages for personal and impersonal passives to be alike in various ways, but no requirement that they be. This proposal thus includes within the class of possible languages languages in which personal and impersonal passives differ in various ways.

The grammars of languages such as English, which do not have impersonal passives, must state that in subnetworks of the form (131), c cannot be a dummy. The grammars of languages that have impersonal passives but no personal ones must state that in subnetworks of the form (131), c must be a dummy. The grammars of languages that do not have passives at all must state that relational networks with subnetworks of the form
(131) are ill-formed in those languages. In the grammars of many languages, conditions of these kinds will also have to be stated for particular predicates or classes of predicates, since predicates within a given language can differ with respect to whether or not they allow passives, and if so, what type.

The inclusion of impersonal passive constructions with passives does not change the universal characterization of passive clauses proposed in Perlmuter and Postal (1977). In conjunction with other universals proposed there such as the Stratal Uniqueness Law and the Chomeur Law, the following are then universals of passive clauses:

(132) **Universals of passive constructions**

a. The passive construction involves two successive strata, the first of which I will call the 'departure stratum' and the second the 'arrival stratum'.
b. The departure stratum is transitive.
c. The arrival stratum is unergative.
d. The nominal that heads the 2-arc in the departure stratum heads the 1-arc in the arrival stratum.

Under the interpretation of the formalism of relational networks, (132) entails that passivization involves two linguistic levels, with a 1 and a 2 at the first level, but only a 1 (and no 2) at the second level. The nominal that bears the 2-relation at the first level bears the 1-relation at the second level.

Given the proposed universal characterization of passivization, properties of passivization such as the following are hypothesized to vary from language to language:

(133) a. Verb morphology in Passive clauses
b. Marking of Passive chomeurs
c. Ability of Passive chomeurs to appear in surface strings
d. Interaction of the Passive construction with language-particular constraints on definiteness, animacy, specificity, etc.
e. Interaction of the Passive construction with hierarchies of person, animacy, etc.
f. Interaction of the Passive construction with discourse-conditioned and/or pragmatic conditions
g. Restrictions on tense, aspect, mood, morphological class of verb, etc.

The passive construction also interacts with language-particular rules and conditions governing agreement, reflexivization, case marking, word order, and many other grammatical
phenomena, so that a list like that in (133) could be continued.

Under the characterization of impersonal passives defended in this paper, they are passives and therefore are predicted to be cross-linguistically uniform in the ways listed in (132) and to vary in the ways listed in (133). In addition, impersonal passives can vary from language to language in two ways that are not relevant for personal passives:

(134) a. Whether or not they are restricted to transitive or to intransitive clauses.
b. The conditions under which the dummy that advances from 2 to 1 appears in the surface string.

12. Conclusions

The basic empirical result of this paper can be simply stated:

(135) No clause with an unaccusative stratum can have a passive.

Since (135) was shown to follow from principles of grammar proposed as linguistic universals, data from any language could show (135) to be false. That would make it necessary to modify or abandon at least one of the universals that jointly predict (135).

(135) has a number of particular consequences that will be enumerated briefly below.

Most clauses with an unaccusative stratum are also intransitive in all succeeding strata. Most of the concrete predictions brought out in this paper therefore concern impersonal passives. Most of this paper has been devoted to showing that clauses whose initial stratum is unaccusative cannot have impersonal passives. In §10 it was shown that the same is true of Inversion clauses, which have a non-initial unaccusative stratum. Both of these points were illustrated with data from Dutch and Turkish. Their import, however, is universal.

In §10 another consequence of (135) was pointed out—that superficially transitive clauses involving Inversion and 3-2 Advancement cannot have personal passives. This was illustrated with data from Dutch and English.

The fact that clauses with unaccusative strata cannot have impersonal passives was used here as an argument in favor of the advancement analysis of impersonal passives over the "spontaneous chomage" or demotion analysis. Under the advancement analysis of impersonal passives, the ungrammaticality of impersonal passives of clauses with unaccusative strata follows from the 1-Advancement Exclusiveness Law (and the other proposed universals mentioned).

The results obtained here illustrate the predictive power (and hence heuristic value) of linguistic universals. A
small set of proposed universals was shown to make certain empirical predictions, and these predictions were shown to be confirmed for Dutch and Turkish. Thus, the fact that impersonal passives such as

(136) *In Belfast wordt (er) vaak ontploft.
    'In Belfast it is frequently exploded.'

and

(137) *Belfastta sık sık ünlüâk edilir.
    'In Belfast it is frequently exploded.'

are ungrammatical in these two languages is not an accident, but a consequence of universal principles of grammar.

The fact that a large class of intransitive verbs cannot have impersonal passives has not to my knowledge even been systematically noted before. Traditional grammars of languages with impersonal passives typically mention the fact that intransitive verbs can have passive forms, give a few examples, and leave the matter at that. Since such grammars typically do not even note that many intransitive clauses cannot have impersonal passives, the question of characterizing the difference between those that can and those that cannot does not even arise. One of the aims of this paper has been to give a preliminary characterization, inadequate though it may be, of the semantic factors that determine initial unergativity vs. unaccusativity and hence the possibility of impersonal passives. Another has been to make explicit the prediction that, under the strongest version of the Unaccusative Hypothesis sketched in (17c), this characterization will also be relevant for many other syntactic phenomena.

Footnotes

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1. Breckenridge (1975) provides strong arguments for treating passives and impersonal passives in the same way.
2. For an explanation of the notation of stratal diagrams, see Perlmuter and Postal (1977).
3. Impersonal passives of transitive clauses (in the languages that allow them) also involve advancement of a dummy from 2 to 1, yielding relational networks that can be represented as stratal diagrams of the following form:

![Diagram]

Impersonal passives of transitive clauses are ignored in this paper.

4. The terms 'unaccusative' and 'unergative' are due to Geoffrey Pullum.

5. The relevant universals are the Relational Succession Law [Perlmutter and Postal (to appear c)] and the Active Dummy Law [Perlmutter (in prep. a)]. As a consequence of the Relational Succession Law, an ascendant cannot assume the 1-relation unless the host out of which it ascends is also a 1. Thus, an unaccusative stratum cannot be immediately followed by a stratum with a 1-arc as a consequence of an ascension. As a consequence of the Active Dummy Law, an unaccusative stratum in which a nominal other than a dummy heads a 2-arc cannot be immediately followed by a stratum in which a dummy heads a 1-arc.

6. For evidence distinguishing unergative and unaccusative clauses in English, see Perlmutter and Postal (to appear b), Perlmutter (in preparation c), and especially Postal (in preparation).

7. See Harris (to appear c), Perlmutter (in preparation b), and the references in footnote 6. Some of the data adduced by Uhlenbeck (1916) led Sapir (1917) to suggest a form of the Unaccusative Hypothesis for certain Amerindian languages. There is much that bears on the Unaccusative Hypothesis in these two works. While Sapir was to my knowledge the first to suggest the Unaccusative Hypothesis in any form, his proposal differs from that given here and in the references cited in footnote 6 in several respects. First, Sapir suggested it as one of two possible analyses, and then only for certain languages. Thus, he essentially proposed it as the basis for a typological distinction among languages. The current relational grammar proposal, on the other hand, is that the existence of unaccusative clauses is a linguistic universal. Second, we differ from Sapir with respect to which clauses
are assigned to which clause type (unergative vs. unaccusative) in certain cases.
8. But cf. the references in footnotes 6 and 7.
9. I ignore here the many semantic, pragmatic, and stylistic factors governing felicitous use of passives in Dutch which have been studied by Kirsner (1976). While this study brings out much interesting material, a number of Kirsner's conclusions do not stand up under scrutiny. While Kirsner claims that Dutch passives involve "backgrounding of the agent," the examples in §7 show that the Passive chomeur in many examples is not an Agent. The examples in (39) show the incorrectness of his conclusion that the Dutch impersonal passive "refers only to human activities." The present paper also provides evidence against Kirsner's conclusion that in Dutch impersonal passives "there is no grammatical subject." In so doing, it provides a means of achieving Kirsner's goal of accounting for the sameness of morphology in personal and impersonal passives. Kirsner's proposal that passive morphology appears when "the logical subject is not the grammatical subject" does not account for the lack of passive morphology in sentences such as

(ii) Er fluiten jongens.
"There whistle boys.'

since jongens can be shown not to be the final l in (ii).

10. The Active Dummy Law also plays another role in connection with impersonal passives - that of preventing networks such as

(iii)

(iii) is like (7), the network associated with (1), except that in (iii) the dummy heads a 2-arc in the second stratum without heading a 1-arc in the third stratum. Such networks are ruled out by the Active Dummy Law. For discussion, see Perlmutter (in preparation a).

11. See Harris (1976, to appear a, b) and Perlmutter (to appear a, b).

12. I will not attempt to justify the Inversion analysis here beyond pointing out how it automatically accounts for the impossibility of passives. However, semantic considerations of the type stressed in Perlmutter (to appear b) suggest such an analysis. Note that in the Dutch and English examples cited
the Inversion nominal is semantically a Cognizer, while in the Turkish examples it is an Experimenter. Note further that in languages for which a number of syntactic tests of 1-ood are available, such as Italian [Perlmutter (to appear a)], the corresponding nominals behave like 1s with respect to those tests.
14. (126) arbitrarily represents zar gelmek as a simple predicate, ignoring the question of whether it has internal structure, and if so, how it is to be represented.

References

Harris, Alice C. (to appear b) "Inversion as a Rule of Universal Grammar: Georgian Evidence," in Perlmutter (to appear c).
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Perlmutter, David M. (in preparation a) "The Active Dummy Law."
Perlmutter, David M. (in preparation b) "Multiattachment and the Unaccusative Hypothesis: Auxiliary Selection in Italian."

Perlmutter, David M. (in preparation c) "The Unaccusative Hypothesis."


Postal, Paul M. (in preparation) "The Unaccusative Hypothesis."


REMARKS ON THE ANALYSIS OF ASSERTION AND THE
CONVERSATIONAL ROLE OF SPEECH ACTS

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I. Introduction

Much of the previous work on speech acts had concentrated on what might be termed the internal structure of speech acts, in particular the specification of felicity conditions and the question of what speech acts can be performed with the utterance of what sentences. Relatively little work appears to have been done on their external structure, involving such questions as appropriate sequencing of speech acts in discourse, consequences of speech act performance, and similar matters. A major exception is Stalnaker's (1976) paper "Assertion." The purpose of this paper is to offer some discussion and clarification of Stalnaker's analysis and to explore the possibility of using a modified version of his proposal as the basis for a general and formalizable account of the external and interactional nature of speech acts, which may shed light on their internal structure as well.

In his paper, a primary concern of Stalnaker's is to get at the consequences of the successful performance of a speech act. Essentially, what Stalnaker does is to define the common ground of a conversation in terms of the propositions mutually presupposed by the conversational participants, to analyze assertion as the speaker's proposing to increment the common ground by the proposition asserted, and to simply say that if none of the other conversational participants object, the common ground is incremented.

II. Incrementation

Stalnaker proposes that assertion involves the incrementation of the common ground of a conversation. In fact, on his analysis, two incrementations are involved. Think of $G_i$ as the common ground before the speaker utters his assertive sentence. The first incrementation, to $G_{i+1}$ takes place simply as a result of the fact that the speaker utters his sentence. The second incrementation, to $G_{i+2}$ is the one which takes place as the result of the tacit acceptance of the assertion, thus adding the asserted proposition to the common ground. This first incrementation Stalnaker takes to be essentially automatic and passive, in much the same way that
if a goat walked into the room, the fact that the goat was there would be taken for granted and might be referred to in subsequent conversation. The first incrementation, however, is not the one which Stalnaker takes to be involved in the essential effect of assertion; the second one is.

Stalnaker says that this first incrementation may normally be taken to occur simply by virtue of the speaker's speaking, but this "normally" covers a number of complicated and interesting facts. In a recent paper, Goffman (1976) discusses a number of problems which arise in what appears to be getting from G_i to G_{i+1}, and ways in which conversational participants deal with them.

There is first the matter of what Austin (1962, pp. 115-116) called the securing of uptake, which he described as "amount[ing] to bringing about the understanding of the meaning and of the force of the locution." Goffman presents examples involving questions of understanding, including intelligibility and ambiguity, as in the following.\(^7\)

\[(1) \text{A}_1: \ "It \ costs \ five." \\
\text{B}_2: \ "How \ much \ did \ you \ say?" \\
\text{A}_2: \ "Five \ dollars."
\]  
\[
\text{B}_1: \ "I'll \ take \ it." \ (p. \ 295)
\]

\[(2) \ (i) \ \text{Do you have the time?} \\
(ii) \ \text{What did you say?} \ (pp. \ 306-307)
\]

\[(3) \ (i) \ \text{Do you have the time?} \\
(ii) \ \text{What time?} \ (pp. \ 306-307)
\]

\[(4) \ (i) \ \text{Do you have the time?} \\
(ii) \ \text{Do you mean the magazine or the hour?} \\
\hspace{2cm} \text{(my example, based on pp. 306-307)}
\]

The force side of Austin's uptake shows up in examples like the standard schoolboy retort of (6) and cases like (7).

\[(6) \ (i) \ I'll \ see \ you \ tomorrow. \\
(ii) \ Is \ that \ a \ threat \ or \ a \ promise? \\
(7) \ (i) \ Can \ you \ wiggle \ your \ ears? \\
(ii) \ Are \ you \ asking \ me \ a \ question, \ or \ do \ you \ want \ me \ to \ do \ it?
\]

Pretty clearly these are all instances of hitches in getting to G_{i+1} which are normally settled before the conversation moves on.\(^8\)

Once it is established what utterance and what speech act are intended, questions of felicity and presupposition, which also appear to hold off disposition of the speech act until they are
resolved, may be addressed. If these questions are not resolved, the disposition of the speech act appears to be rejection, either overt or tacit; if they are resolved, the initial incrementation is achieved, and the conversation can move on. Consider examples (8)-(12).

(8) (i) Do you have the time?
   (ii) I'm sorry, we are not allowed to give out the time.
        Please call TI-6-6666. (Goffman, pp. 306-307)
(9) (i) "Carrie, stop sucking your fingers!"
       (ii) "(No,) David, you're not the boss of me."\(^9\)
(10) (i) I promise I'll pay you back the five dollars.
     (ii) You don't have five dollars.
        ((iii) Look, Harry owes me ten. When he pays me, I'll pay you.
        (iv) O.K.)
(11) (i) Have you stopped beating your wife?
     (ii) (No, , I haven't.) I never did beat her.
(12) (i) The Duke of Pudney has cholera.
     (ii) (No he doesn't.) There is no Duke of Pudney.
        ((iii) Yes there is. Don't you remember the funny-looking guy with the pince-nez? Well he's the Duke.
        (iv) Oh yeah. Too bad.)

In order for a speech act to have an effect, or play an integral role, in a discourse, it must, of course, first be performed. It must also be understood by the other conversational participants, which is the point of uptake. In addition, its performance and presuppositions must generally be judged acceptable by the other participants before it is accorded common ground status in the discourse. We have terms for the first two steps, performance and uptake, but none for the felicity and presupposition step,\(^{10}\) which I suggest calling admittance, in view of the fact that its successful completion results in the speech-act's being admitted to common ground status. If, of course, questions of uptake, felicity, or presupposition do not arise, then the speech act is automatically, or better, perhaps, tacitly admitted to the common ground. This, I take it, is what normally means when it is said that the incrementation from \(G_i\) to \(G_{i+1}\) may normally be taken to be accomplished by virtue of the performance of the speech act. The incrementation from \(G_i\) to \(G_{i+1}\), then, involves the admittance to the common ground of the proposition representing the fact that the speaker performed a particular speech act, where, to be admitted, the act must be understood by the addressee(s), and judged acceptable.
What then of Stalnaker's second incrementation, $G_{i+1}$ to $G_{i+2}$, which is the most important one for explaining the consequences of assertion? This step I suggest we call disposition. Recall that essentially, what Stalnaker suggests (p. 19) is that to make an assertion is to propose to add the proposition asserted to the common ground, provided none of the conversational participants object. The logic of dividing the analysis of assertion between performance (plus, as we have seen, admittance) and disposition was the aspect of Stalnaker's analysis which puzzled me the longest—until I saw its analogy to betting. It is universally recognized that betting is a two-step operation. In order for a bet to be in effect, it must first be offered by one of the parties involved and then be accepted by the other. Only after acceptance does the state of reciprocal conditional obligation between the two bettors exist. Stalnaker's analysis of assertion is like that. A speaker may perform the act of assertion, and that performance may be admitted, but the assertion is not in effect, i.e., the asserted proposition (as opposed to the proposition of assertion) is not admitted to the common ground until it is accepted by the addressee, either tacitly or overtly. Stalnaker deals only with tacit acceptance, which is enough to establish the essence of his proposal, but not with overt acceptance or with rejection.

Speech acts like assertion, betting, suggesting, proposing, and perhaps in general all of Searle's (1976) representatives and McCawley's (1977) advisories appear to differ from what we probably tend to think of as more typical speech acts such as promises, orders, appointments, excommunications, and perhaps in general Searle's commissives, declarations and representative declarations and McCawley's directives, in a simple and fundamental way. If I perform the speech act of, say, promising someone to do something, and the person I am promising understands what I say and what speech act I intend and admits my performance as felicitous and presuppositionally acceptable (in other words, if the incrementation from $G_i$ to $G_{i+1}$ is successful) then a positive disposition from $G_{i+1}$ to $G_{i+2}$ is automatic. The proposition that I am obligated to that person to do what I promised to do is automatically added to the common ground as a consequence merely of admittance. Similarly with orders, appointments, excommunications, etc. They are all automatically "in effect" as a result of admittance. The admittance step and a positive disposition step essentially collapse for this class of speech acts. For bet-type speech acts these are separate steps.

As a consequence of the fact that for bet-type acts, admittance is separate from acceptance, it is perfectly permissible
for the same common ground to contain opposing admitted (but not accepted) bet-type speech act propositions, provided they are performed by different speakers, such as "A asserted that X = Y." and "B asserted X ≠ Y.", because the propositions which increment the common ground differ. On the other hand, a common ground containing opposing accepted propositions will be inconsistent, as in "X = Y" and "X ≠ Y." For order-type speech acts, however, inconsistency arises immediately. Consider admitted felicitously executed orders "A ordered C to do Z." and "B ordered C not to do Z." C is both obliged to and obliged not to do Z.

The basic difference between these two types of speech acts seems to lie in whether or not the addressee has an option about whether the consequences of the speech act go into effect or not, given that it is admitted. It seems then that assertion, as a speech act is a one-step affair, but that as a conversational element, it involves two steps, whereas orders are one-step in both functions.\(^{12}\)

What we seem to have established here is that in order to understand the role of speech acts in conversation, we need to draw a three-way distinction among the performance of a speech act, the admittance of a speech act to common ground status, and the disposition (acceptance, rejection, or whatever) of that speech act. Performance simply refers to the utterance of the words by some speaker with some illocutionary force in some language. In performing a speech act, the speaker proposes a certain incrementation of the common ground, what incrementation depending in general upon both the illocutionary force and the propositional content of the speech act performed.\(^{13}\) And by proposing, he implicitly warrants both that he believes his performance to be felicitous and that the presuppositions involved in that speech act are satisfied. Admittance of the speech act involves the addressee's, usually tacit, agreement that he understands the speech act, that he recognizes its performance as well-formed and that he therefore admits the proposition representing the fact that it has been performed to the common ground of the conversation. Acceptance (or other disposition) is for assertion and bet-type speech acts, a further step, although it is not a separate step for order-type speech acts. Acceptance involves the addition to the common ground of a further "operative" proposition, in the case of assertion, the asserted proposition, in the case of orders, roughly that the addressee is obliged to perform some act, etc. The addition of this operative proposition seems, logically, to be a separable step from admittance, even though, in the case of order-type speech acts, it is an automatic consequence. Obviously, for bet-type speech acts, the disposition
step may involve rejection rather than acceptance, and acceptance may be non-tacit, but I don't want to get into how those might work here.

III. Presupposition and Common Ground

Stalnaker views the relationship between presupposition and common ground as a very tight one. In fact, he defines the common ground of a conversation in terms of the presuppositions of its participants. Thus he says:

A proposition is presupposed if the speaker is disposed to act as if he assumes or believes that the proposition is true, and as if he assumes or believes that his audience assumes or believes that it is true as well. Presuppositions are what is taken by the speaker to be the common ground of the participants in the conversation, what is treated as their common background knowledge. (p. 14)

We may define a non-defective context as one in which the presuppositions of the various participants in the conversation are all the same. (p. 16)

Think of a state of a context at any given moment as being defined by the presuppositions of the participants as represented by their context sets [sets of possible worlds in which the presupposed propositions are true AR]. In the normal, non-defective case, the context sets will all be the same, so for this case we can talk of the context set of the conversation. (pp. 17-18)

The context set of the conversation is, I take it, Stalnaker's formal representation of the notion common ground of the conversation, or context. What Stalnaker seems to be getting at is that by employing an expression which bears a presupposition, one gives one's audience to believe that one believes that the presupposed proposition is true, although one may not in fact believe it to be true, and that further the use of a presupposing expression is somehow inappropriate if one doesn't also assume that one's audience believes it to be true, although they may not believe it either.14

Similarly, in Karttunen (1974), it is claimed that both speaker and audience normally assume or take for granted the truth of the presupposed proposition, and that in those instances where this condition is not met, due to the fact that the audience does not assume the truth of the presupposed proposition, the audience
is expected to accept its truth, somehow as a result of the presupposing expression's being employed by the speaker. It is further explicitly stated that these are "leaps" or "short-cuts" in the "ideal orderly fashion" of conversational interaction which this notion of presupposition sets up. Unfortunately, little is said about exactly how these shortcuts are taken, so, as that analysis stands, such shortcuts are deviant, and in any case, they are labelled as at least somehow aberrant.

The kinds of examples these discussions are attempts to deal with are like (13)-(16), where the addressee does not, before hearing the sentences used, believe that the presupposed propositions are true. The relevant presupposition-bearing expressions are underlined.

(13) I have to pick up my sister. (Stalnaker, 1974, p. 202)
(14) We _regret_ that children cannot accompany their parents to commencement exercises. (Karttunen, 1974, p. 191)
(15) It has been _pointed out_ that there are counter-examples to my theory. (Karttunen, 1974, p. 191)
(16) I'm sorry I'm late, _my car_ broke down. (Gazdar, 1976, pp. 173-174)

Even worse, for analyses which impose belief or knowledge conditions on the hearer, or on the speaker's beliefs or knowledge about the hearer, are such well-formed discourses as (17), where the speaker of (i), who is the addressee of (ii), explicitly asserts the negation of the presupposition involved in (ii).

(17) (i) She didn't do it.
(ii) I regret that she did.

On Karttunen's analysis, these are all at worst deviant and at least short cuts. On Stalnaker's analysis the speaker must be somehow pretending to assume that the audience believes the presupposed propositions.

There are at least two issues here. First, there is the matter of Stalnaker's "disposed to act as if" qualification in the definition of presupposition (p. 14). That, I think, is included because speakers sometimes employ presupposing expressions when they do not in fact hold the beliefs which the use of those expressions requires. People also lie, but I do not see much point in building that fact into an account of the rules for asserting. Speakers simply do not always follow the rules, and in so doing they may deceive others as to the truth or their beliefs, but they can only do so by taking advantage of conventions concerning truth or belief.
The second, more controversial question is whether or not any condition involving addressee belief is involved in presupposition. We have seen that such a condition gets one into difficulty in cases like (13)-(17). Suppose we eliminate the addressee condition. The claim implicit in Stalnaker and Karttunen's analyses is that any proposition which is non-defectively presupposed is also a part of the common ground and that any proposition which is a part of the common ground is non-defectively presupposed. If we drop the addressee condition, then only the latter condition holds.

To see this more clearly, let us review what the status of the common ground is, based on the discussion of section II. The only mechanism I have proposed for admitting propositions to the common ground is agreement, either tacit or overt, among the conversational participants in the process of either admitting speech act performances or accepting the consequences of speech act performances. On this way of looking at it, the common ground of a conversation is a sort of scorecard for the conversation, listing all and only those propositions, including presupposed propositions, which the conversational participants have agreed to in the course of their conversation. In performing a speech act, a speaker proposes to increment the common ground by a certain proposition or propositions, including presupposed propositions. Since the common ground is to include all and only the propositions which the conversational participants have agreed to, by proposing this incrementation, the speaker is implicitly expressing his belief in the proposed incrementing proposition(s). In admitting or accepting, the addressee agrees to consider it (them) true for purposes of the conversation as well. Thus any proposition, once it is admitted to the common ground, will, from that point on have the status of a presupposition in the discourse.

Now, what accounts for the fact that there are constraints, although not as strong as Stalnaker and Karttunen claim, on the use of presupposing expressions? The answer is very simple. In order for a proposition, even a presupposition, to enter the common ground, it must be accepted by the addressee. Thus there is normally little point in the addressee's use of a presupposing expression unless he has reason to believe that the addressee will accept it. Obviously the safest bet is to use presuppositions which the speaker believes the addressee already believes, but if the speaker has other reason to believe that the addressee will or may accept the presupposition, there is little risk involved in using it. Interestingly enough, all of the examples that I know of in which it is generally agreed that
it is felicitous for a speaker to utter a sentence even though the speaker does not believe that the addressee shares his belief in the truth of the presupposed proposition are examples in which the speaker is in a vastly better position to determine the truth of the presupposition than is the addressee, so that it is extremely unlikely, though possible, for the addressee to reject the proposed incrementation on the basis of that presupposition.

Consider again examples (13)-(16).

(13) I have to pick up my sister.
(14) We regret that children cannot accompany their parents to commencement exercises.
(15) It has been pointed out that there are counter-examples to my theory.
(16) I'm sorry I'm late, my car broke down.

Under normal circumstances, I am far more likely to know whether or not I have a sister than someone else is, and the same goes for my having a car. In example (14), the we who regret is the we who are staging the commencement or at least someone "in the know," and the similar we regret to inform you locution the regretting we is also the informing we. As for (15), who is more likely to know whether the things pointed out are counter-examples than the man whose theory they are about? Notice that if we substitute your for my in (15) then the tone of the sentence shifts from confidently authoritative to less authoritative and more contentious. If the we of (14) is not taken also to be somehow in authority over the commencement exercise, or "in the know," sentence (14) becomes decidedly peculiar as a sentence for informing someone about a prohibition on children at commencement.

Example (17) is somewhat more complicated, and the following is only an approximation, but, I think a credible one, pending further work on rejection.

(17 (i) She didn't do it.
(ii) I regret that she did.

In uttering (17i), its speaker is proposing to add the asserted proposition to the common ground. Just as clearly, the utterance of (17ii) in response constitutes a rejection of that proposal. How does it constitute a rejection? As we saw earlier, by using a presupposing expression, a speaker represents to his audience that he believes the proposition which the expression represents. Since that proposition, in the case of (17ii) contradicts the proposition asserted in (17i), by uttering (17ii), its speaker
indicates his rejection of the asserted proposition, since the speaker of (17ii) cannot consistently believe both the proposition asserted in (i) and the one presupposed in (ii).

IV. Conclusion

The proposals made in this paper are put forth tentatively, and obviously an enormous amount of work remains to be done in formulating a theory of speech-act interaction. Much of what I have suggested is very sketchy, and doubtless much of it will turn out to be wrong, when examined more carefully. I think, however, that the basic ideas of the performance/admittance/disposition distinction and the elimination of the addressee condition on presupposition will prove fruitful, both in the analysis of speech acts and presupposition, and, in the longer run, in the analysis of discourse, which I take to consist of sequences of speech act performances. Specific areas in which I believe these proposals will prove useful include presuppositional filters (cf. Karttunen 1974 and Gazdar, 1976), felicity conditions on speech acts, indirect speech acts, and a number of problems in the analysis of conversational interaction, such as those discussed in Labov and Fanshel, Goffman, Jefferson, Sacks, and Schegloff.

NOTES

*I would like to thank Robert Bley-Vroman, Lauri Karttunen, Larry Martin, Stan Peters, Sue Schmerling, and Carlota Smith for helpful discussion of many of the points in this paper.


3Interesting work has been done in these areas by such workers as Sacks, Schegloff, Goffman, and Labov, but not, by and large, in speech act terms. See also Searle (1975).

4This notion of speech act consequence is similar to Searle's (1976) notion of illocutionary point.

5This bare-bones paraphrase does Stalnaker's analysis considerable injustice, and is not intended as an anywhere-near adequate representation of it. In particular, I have greatly oversimplified his analysis of conversational context. I will rectify this somewhat in section III.

6This section owes much to discussion with Larry Martin and Carlota Smith.

7These are not cited as observed data, but as plausible exchanges, although I assume that the use of quotation marks implies source data.
There is a fairly voluminous literature on hitches of various kinds in discourse, which it would behoove speech act theorists to read. Cf. Goffman (1976), Jefferson (1972), Merritt (1976), Ervin-Tripp (1976), and references therein.

Dialogue frequently heard in the presence of the author's children.

Or, I suppose, steps. I have nothing to say about whether this is really one step or two, and, if two, what their logical order is.

Betting and assertion appear to differ in that many speakers are reluctant to declare that, strictly speaking, the speech act of betting has taken place when, in fact, no acceptance is forthcoming; whereas for assertion, no particular response is required. This apparent difference is complicated by the fact that one commonly says that a person bet who in fact only made the offer of a bet. I have no account of these facts, some of which I was reminded of by Lauri Karttunen.

See footnote 11.

See Searle's (1976) discussion of illocutionary point.

Gazdar (1976) argues that what is involved is knowledge and not belief, to my mind, fairly convincingly, but I will employ the more traditional term belief for purposes of this paper. I do not believe that the distinction affects the arguments here.

BIBLIOGRAPHY


A CONTINUUM OF MEANING IN THE COPULA
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Background. Bloomfield (1933: 270) noted that the grammatical categories of a language "are so pervasive that anyone who reflects upon his language at all, is sure to notice them." This, Bloomfield supposed, is the reason that much of "'logic' and 'metaphysics'" is "merely a restating of the chief categories of the philosopher's language." Bloomfield further noted that "a task for linguists of the future will be to compare the categories of different languages and see what features are universal or at least widespread." The purpose of this paper is to propose a "discovery procedure" for doing just that.

Probably most grammarians have noticed that grammatical particles nearly always are capable of marking several different grammatical categories. Starosta (1972) built an interesting article around this obvious fact, and observed (page 72) that because of the "neglect of the study of the ways case relations can be realized on the surface ... important generalities and fruitful lines of inquiry have been missed as a result." After noting the polysemy inherent in such morphemes as the English preposition to (i.e., a directional that also marks the dative and serves as a complementizer), Starosta concluded that "it is not surprising to find that homonymy of realization occurs in other languages as well. It is, however, rather striking to find the same groupings of case relations being homonymously represented in a number of different languages as well." Of course, the grammatical morphemes of every language do not share the same exact polysemsies, but they do to a significant degree. On the other hand, Sloat (1975) proposed that an examination of the differences in polysemy in the derivational/inflectional systems of different languages should be the criteria for "isolating semantic units," and thereby linguists can avoid inventing ad hoc grammatical categories. In addition, Sloat suggested that "the meanings expressed by the closed morphological classes ... in the languages of the world are important elements in lexical entries as well."

In a study of the grammatical functions of the Nez Perce copula (for a seminar), I compared the copulas of Twi and Spanish, and was intrigued to see that some of the meaning in these verbs seemed to be structured along a continuum. The structuring was such that any one
copular morpheme in these languages was polysemous only contiguously on a common scale of meaning. That is, no morpheme had meanings that were discontinuous on the continuum. But what is even more amazing is that the same generalization has held true for approximately 30 randomly selected languages.

It is of course true that grammatical morphemes change in meaning over time. In view of this, if the polysemy permissible in grammatical morphemes truly is restricted, then defining these restrictions would not only constitute a valuable descriptive mechanism, but also a model for historical change. Thus the implications of this kind of structuring are immediately both synchronic and diachronic.

Many have contributed to the development of the descriptive mechanism I am proposing, but I mention Starosta (1972) and Sloat (1975) as my immediate input. Starosta suggested the means for discovering the horizontal structure implied in Fig. 1. Sloat showed that grammatical categories are justifiable in a principled way for those regions between the vertical lines of Fig. 1. Thus categories are determined by observing where various languages make distinctions.

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Fig. 1. By requiring that identical morphemes in every language examined be contiguous on the above grid a tentative continuum of meaning began to emerge. The procedure is analogous to that which archeologists employ in piecing together a historical continuum by examining wood samples for common tree rings.
morphologically and in closed classes, and the continuum emerges when we note the various homonymies manifested in these morphemes.

At the 1977 Linguistics Institute I found Derek Bickerton's "principle of contiguity" perfectly descriptive of the contiguity in my continuum. This principle states that no morpheme or word in any language may encode meaning from discontinuous regions of a meaning continuum, and conversely that a morpheme may manifest polysemy with respect to any of the categories on such a continuum as long as they are contiguous. Bickerton hypothesized a two dimensional "semantic space", but in this paper I am suggesting the practicality of constructing one dimensional meaning continua. Such continua prove to be finitely bounded because there is always eventual discontinuity reached in some languages. For example, the Twi verb *ve* is discontinuous on the continuum in Fig. 1. But if the continuum is made circular, as illustrated in Fig. 2, the principle of contiguity is maintained and the continuum becomes finitely bounded.

Fig. 2. A hypothetical continuum of meaning

The procedure. To develop the example illustrated in this paper I began by listing several grammatical functions of the copula in vertical columns and then filled the columns horizontally with the appropriate verbs for each language under consideration. Then I juggled the columns so that all identical morphemes were contiguous, as Fig. 1 shows. Fig. 1 is at this point still a very tentative structure. As more language data is considered, some categories may have to be removed from the grid if they violate the "principle of contiguity". It is better to remove a category from the continuum than a language if our goal is a universal structure. Also, other grammatical categories are likely to belong in the continuum. Sloat (personal communication) has recently suggested that 'keep' ought
to be somewhere in the continuum. A Korean speaker has partially confirmed Sloat's prediction by noting that in his language 'keep' is issita. Fig. 1 would thus seem to indicate that 'keep' should be sought for between 2 and 3 or between 3 and 4, but not between 4 and 5 because this would break the contiguity in English be. Thus a continuum is discovered, both deductively and inductively, as we explore our intuitions and are led by real languages. Categories are distinguished where natural languages dictate, relationships are revealed by the homonymy inherent in the grammatical morphemes of natural languages. For the moment, the significant point I wish to make is that instead of destroying the theory, 30 real languages have seemed to give it support. Note that instead of charting all these languages on the grid in Fig. 1, I list only examples from each of the different ways the continuum was divided.3

The categories in Fig. 1 are defined, with English examples, as follows. Languages generally have many verbs that fit these categories but with more specialized meanings. Any polysemy in them should also be contiguous on this continuum.

1. make, in the sense of 'produce' or 'bring into being'
   John made a table
2. get, in the sense of 'receive'
   John got (received) a book (from Mary)
3. have, in the sense of general possession
   John has a book; (or stronger) John owns a book
4. be+Locative
   John is in California
5. be+Adjective (temporal)
   John is happy today
6. be+Adjective (inherent or permanent)
   John is tall; John is chronically ill
7. be+Noun Phrase
   John is a doctor

The kind of data I use to build the continuum is as follows. a) In some languages there are morphemes that show polysemy not expressed in English, b) other languages make morphological distinctions where English does not, and c) there are languages that complete the circularity of the continuum. In the following examples I begin with the category 'make' and conclude with the category 'be+NP', and then unite the two with a single morpheme in Twi. Persian seems to justify the connection between 'make' and 'get'.4

(1) a. Parvīn yek miz dorost kārd 'Parvin made a table'
b. Parvīn yek ketab dāryaft kārd 'Parvin received a book (from a distance)'
Note also that in English make sometimes expresses 'get'.

(2) a. John makes (earns) five dollars per hour
   b. John made (acquired) a lot of friends in Hawaii
   c. John made (got) good grades -- all A's

Spanish unites 'get' and 'have' as follows.

(3) a. Juan obtiene libros 'Juan receives books'
   b. Juan tiene libros 'Juan has books'

In colloquial English got can mean either 'receive' or 'have' in such a sentence as I got a book. English is one language that distinguishes between possession and location verbally, with have and be, but many languages do not. Consider Twi.

(4) Kofi wɔ efie a. 'Kofi has a house'
               b. 'Kofi is in a house'

The postposition mu 'in' removes the ambiguity of the copula wɔ: Kofi wɔ efie mu can mean only 'Kofi is in a/the house'. In America sales people often seem to equate being in with possession, as when they offer, for a price, to "get you into this house (or car)".

Many languages distinguish between location and attribution in the copula. Mandarin, for example, does not have a copula for attribution but does for location.

(5) a. qiáng shēng zài tái-běi 'Qiang Sheng is in Taipei'
       b. qiáng shēng hěn gāo 'Qiang Sheng (is) very tall'

The copula of attribution can be split in this continuum into temporal and inherent categories, the division is justified by Spanish.5

(6) a. Juan está enfermo 'Juan is (temporarily) sick'
       b. Juan es enfermo 'Juan is (chronically) ill'

Although Twi seems to make no distinction if the attribute is obviously inherent, the copula ye is required for adjectival predicates that necessitate an adverb to distinguish permanence from temporality.

(7) a. Kofi so 'Kofi (is) big'
       b. Kofi yare 'Kofi (is) sick'
       c. Kofi ye yare fɔɔ 'Kofi is always sick'
       d. *Kofi yare fɔɔ

In Mandarin, as we noted, no copula co-occurs with predicate adjectives. But there is a copula required for predicate nouns.

(8) a. tā hěn gāo 'He (is) very tall'
       b. tā shì yí ge-yī-sheng 'He is a doctor'
Just the opposite is true in Tamil.

(9) a. Kaññan makilcci-yāka i ru-kkip-ān 'Kanan is happy'
   b. Kaññan oru manitan 'Kanan (is) a man'

Lastly, the continuum forms a circle with Twi, where ye is both the verb 'make' and the identity copula.

(10) a. Kofi ye nsofo 'Kofi is a priest'
     b. Kofi ye abodoo 'Kofi made cornbread'

In English also made can serve as an identity copula.

(11) a. John makes a good teacher
     b. Two and two makes four

Implications. Suppose we discover a circular continuum such as I have described, and have included all categories that never cross classify in any language and excluded all those which do, then what have we found? Or suppose we find no discontinuities in a hundred or so languages; of what significance is it?

In such a case I propose that what we would have is a natural class of grammatical categories all of which share a feature, as suggested by Fig. 3. Of course, such a feature should be independently justifiable, by its syntactic behavior as well as in logic.

The continuum in Fig. 3 is by no means a complete and final product, but when and if it ever is, I suggest that it will embody a feature of meaning that I might call 'existence'. At that point all we will have demonstrated is that every category on the continuum shares this one feature. The validity of the other features would be affirmed if a continuum can be found for each of them. To affirm the componential nature of grammatical categories, as shown in Fig. 3, it will be necessary that for each feature, a category will have a place on a separate continuum, in a natural class based on that particular feature. For example, if there

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Fig. 3. A tentative feature designation for a natural class of grammatical categories.
really is a feature 'inclusion' then we ought to discover a continuum for which that will be the binding component. At this point, of course, it is impossible to know if such a continuum of meaning as I have suggested in this paper will include every category that entails the feature implied by that continuum. That is, will one of these wheels include every member of a natural class or only a subset of a natural class?

Obviously one can hypothesize universal grammatical categories by noting where real languages make grammatical distinctions. One can also obviously relate these categories by noting the polysemy inherent in the grammatical particles of real languages. And although such a tedious task remains to be accomplished; as Bloomfield noted, it should be attempted. But can we build bounded continua on the basis of Bickerton's "principle of contiguity"? That we do not yet know. Fortunately, however, this hypothesis is empirically testable, since any proposed continuum can be reduced in size for every discontinuity found in any language. If no continuum survives of sufficient size to be interesting then the principle of contiguity becomes uninteresting.

In conclusion, I see no reason to arbitrarily limit this model. Last summer Derek Bickerton was doing some very impressive work with a definiteness wheel. And I have had some success with wheels dealing with relational cases. Syntactic, semantic, and pragmatic categories ought to be considered. Where the model's usefulness is limited real languages will tell us so. But as can be seen, this model demands an enormous amount of work. Its beauty, as noted however, is that it can be refuted. But if it is not refuted, then what we will learn is not only what the categories of grammar are but also their relationship to one another as well as the nature of their component features. Such findings should be of value to descriptivists, historical linguists, and even perhaps prove insightful to psychologists and logicians.

1: Both Colette Craig and Clarence Sloat read this paper as it was in progress of writing and made helpful suggestions. The data was elicited from many different individuals, mostly students, who were native speakers of these languages. The comment from Bloomfield was brought to my attention by Sharon Taylor.
2: Bickerton credited Eve Clark for the discovery of the principle of contiguity.
3: Other languages I have considered are Estonian, Finnish, French, German, Greek, Hebrew, Hindi, Ika, Indonesian, Japanese, Marshallese, Moru, Russian, Serbo-Croatian, Xhosa, and Yoruba. It must be realized that in eliciting examples from so many languages, errors are bound to occur. I would very much appreciate having them brought to my attention.

4: If the Persian auxiliary کرد lexicalizes any meaning inherent in this continuum then that meaning must be contiguous on it. And any other categories distinguished by compounds with کرد should be fitted into the continuum if they do not break the contiguity of the polysemy in morphemes of other languages. Any pro-verb, such as English do, must be substitutable only contiguously for verbs on the continuum. Without somehow limiting the "principle of contiguity", even (legitimate) paraphrases of the meaning of these categories (e.g., 'come to have' for 'get') must not find any component morphemes discontinuous on the continuum with regard to any other verb or paraphrase of a verb that is on the continuum. For example, 'come to have' is contiguous with 'have'. 'Make', which is contiguous in the other direction, can be paraphrased as 'cause to come to be/ exist'. But one cannot paraphrase 'have' or 'be' with 'come ...'. At this point I also wish to claim, since the claim is refutable, that any areas of the continuum with co-occurrence restrictions (as to tense, aspect, voice, etc.) in any language must be contiguous as well. As an example, 'make' and 'get', which are contiguous, allow the progressive in English, and those areas of the continuum where the progressive is "strange" are thus also contiguous.

Sometimes a language does not have a generalized verb covering a category on the continuum but forces a choice between several morphemes of more specialized meaning. If this is the case then either a) there are finer linear distinctions along the continuum in question, or b) these distinctions are not represented by this continuum but should be sought for on another. Finer distinctions along a continuum are valid if they do not introduce discontinuity in morphemes of other languages. Morphemes that encode general meaning implied in a meaning continuum and also specialized meaning that is implied by another continuum must not violate the principle of contiguity on either. For example, a morpheme meaning 'to make a long cylindrical object' must not have polysemy that would in this manner violate a continuum with a category for 'make', nor (if one exists) a continuum with a category for 'long cylindrical objects'.
5: It may be that this continuum is not the place to introduce temporal features. I suspect that Yoruba and Nzema may occasion their removal, but circumstances have prevented me from investigating further.

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SUBJECT/DIRECT OBJECT RAISING IN NIUEAN

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In this paper, I argue for the existence of a rule of Raising in Niuean, a Polynesian language. The rule operates on the subject or direct object of complements of a small class of higher governing verbs. A raised NP becomes the subject of the governing verb. Since Niuean Raising applies freely to complement direct objects as well as subjects, it violates Postal's (1974) suggestion that Raising should be restricted universally to complement subjects. It is therefore of theoretical interest to demonstrate that the Niuean rule should in fact be regarded as an instance of a universal rule of Raising. I will do so in sections 1-3 by presenting syntactic arguments which establish that (i) a raised NP in Niuean originates as a complement subject or direct object; (ii) it also acts as the subject of the higher, governing verb; and (iii) it cannot have originated in the higher clause and triggered deletion of a coreferential NP in the complement clause.

Niuean is a strict VSO language with an ergative system of case marking. Case is indicated by two series of prepositional particles, one for common nouns, the other for pronouns and proper nouns:

(1) Case Particles: Abs Erg Loc Goal/IO
Common N e he he ke he
Proper/Pro a e i ki

By way of illustration, compare (2a) and (2b):

2a. Nofo e tagata ia i Tuapa.
    live Abs man that in Tuapa
    'That man lives in Tuapa.'

b. Ne lagomatai he ekekafo e tama.
    Past help Erg doctor Abs child
    'The doctor helped the child.'

The discussion here is limited to two of the verbs which I claim govern Raising in Niuean, the epistemic modal maeke 'can, be possible' and the aspectual kamata 'begin'. Raising operates on sentential complements introduced by the subjunctive marker ke and embedded to one of these verbs. For example, Raising relates (3a) to (3b):

3a. Maeke ke nofo a Pita i Tuapa.
    possible Sbj stay Abs Pita at Tuapa
    'Pita can stay at Tuapa (village).'

3b. Ke nofo a Pita i Tuapa.
    Raising Abs Pita at Tuapa
    'Pita is getting ready to stay at Tuapa.'
b. Maeke a Pita ke nofo i Tuapa. possible Abs Pita Sbj stay at Tuapa 'Pita can stay at Tuapa (village).'

Raising may apply to subjects of intransitive complements, as in (3b), and to subjects of transitive complements. Thus, Raising relates (4a) to (4b). Furthermore, Raising may apply to complement direct objects, relating, for example, (4a) to (4c):

4a. To maeke ke lagomatai he ekekafo e tama ê. Fut possible Sbj help Erg doctor Abs child this 'The doctor could help this child.'

b. To maeke e ekekafo ke lagomatai e tama ê. Fut possible Abs doctor Sbj help Abs child this 'The doctor could help this child.'

c. To maeke e tama ê ke lagomatai he ekekafo. Fut possible Abs child this Sbj help Erg doctor 'This child could be helped by the doctor.'

The next three sections will defend the position that (3b), (4b), and (4c) actually involve a Raising rule.

1. Downstairs Subjecthood or Direct Objecthood

Verb Agreement provides one of the arguments that raised NPs originate as complement subjects or direct objects. Certain verbs in Niuean agree in number with their subjects, the plural form being obligatorily triggered by a dual or plural subject. For example, compare the singular verb in (5a) to the plural in (5b):

5a. To fano a au apogipogi ki Queen Street. Fut go Abs I tomorrow to Queen Street 'I'm going to Queen Street tomorrow.'

b. To o a tautolu apogipogi ki Queen Street. Fut go,Pl Abs we,Pl,Inc tomorrow to Queen Street 'We're going to Queen Street tomorrow.'

For our discussion, the important generalization is that agreement may be triggered only by the subject in the same clause as the agreeing verb.

Now, in sentences like those in (6), it is the raised NP which triggers agreement on the complement verb:

6a. Ai maeke a au ke fano ki Queen Street. not possible Abs I Sbj go to Queen Street 'I can't go to Queen Street.'

b. Ai maeke a tautolu ke o ki Queen Street. not possible Abs we,Pl,Inc Sbj go,Pl to Queen Street 'We can't go to Queen Street.'

In order to maintain the generalization that Verb Agreement is a
clause-internal rule, we must adopt an analysis in which the raised NPs in (6) originate as complement subjects.

There are also several transitive verbs in Niuean, such as hala 'cut', which obligatorily agree in number with their direct objects. It turns out that in sentences like those in (7), where such a verb is embedded in a Raising complement, agreement is triggered on it by the raised NP:

7a. Kua kamata e akau ke hala e Pita.
    Perf begin Abs tree Sbj cut Erg Pita
    'The tree had begun to be cut down by Pita.'

b. Kua kamata e tau akau ke hahala e Pita.
    Perf begin Abs Pl tree Sbj cut,Pl Erg Pita
    'The trees had begun to be cut down by Pita.'

Assuming Verb Agreement to be clause-internal, it must be that the raised NPs in (7) originate as complement direct objects.

A second argument that raised NPs originate as complement subjects or direct objects involves the Niuean version of Quantifier Float. The quantifier oti 'all' immediately follows the noun it modifies. Through Quantifier Float, oti is optionally removed from an NP and cliticized to the verb in the same clause. Thus, the rule relates (8a) to (8b):

8a. Kua fia-momohe tuai e tau tagata oti nā.
    Perf want-sleep,Pl Perf Abs Pl person all that
    'All of those people have gotten sleepy.'

b. Kua fia-momohe oti tuai e tau tagata nā.
    Perf want-sleep,Pl all Perf Abs Pl person that
    'Those people have all gotten sleepy.'

Quantifier Float may apply to intransitive subjects, as in (8b), and to transitive subjects and direct objects:

9. Kua tele oti tuai e lautolu a au.
    Perf kick all Perf Erg they Abs me
    'They've all kicked me.'

10. Moua oti e maua mo Sione e tau mata afi.
    get all Erg we,Du,Ex with Sione Abs Pl match
    'Sione and I already got all the matches.'

But oblique NPs cannot undergo Quantifier Float. For instance, oti may not be removed from an indirect object:

11a. Ne tutala a au ke he tau momotua oti.
    Past talk Abs I to Pl elders all
    'I talked to all the elders.'

b. *Ne tutala oti a au ke he tau momotua.
    Past talk all Abs I to Pl elders
    ('I talked to all the elders.')
In addition to being limited to subjects and direct objects, Quantifier Float is clause-internal, i.e. an NP always launches oti to the verb in the same clause, never to a verb in a higher or lower clause.

Significantly, oti may optionally be launched in a Raising sentence from the raised NP to the complement verb:

12. Kua kamata tuai e tau tagata nā ke fia-momohe oti. Perf begin Perf Abs Pl person that Sbj want-sleep,Pl all 'Those people have all begun to get sleepy.'
13. Mæke e tau talo nā ke kai oti he faiaoga. possible Abs Pl taro that Sbj eat all Erg teacher 'Those taros can all be eaten by the teacher.'

Since Quantifier Float is clause-internal, the NPs affected by it in (12) and (13) cannot simply have originated in the higher clause. Instead, the facts are explained only if those NPs originate as complement subject and complement direct object in (12) and (13), respectively, and launch oti before undergoing Raising.

2. Upstairs Subjecthood

Quantifier Float also provides an argument that a raised NP acts as subject of the higher, governing verb. The sentences below show that a raised NP may launch oti to mæke or kamata:

14. Mæke oti a tautolu ke vagahau fakapālagi mo e fakaniue. all Abs we,Pl,Inc Sbj speak English and Niuean 'We can all speak English and Niuean.'
15. Kua kamata oti tuai e tau fuakau ke fakagoagoa e ia. Perf begin all Perf Abs Pl old-man Sbj fool Erg he 'The old men have all begun to be fooled by him.'

Since Quantifier Float is clause-internal, we can account for (14) and (15) only by assuming that Raising promotes a raised NP to the higher clause.

Strictly speaking, (14) and (15) only argue that raised NPs are either derived subjects or derived direct objects of mæke and kamata. It turns out, though, that raised NPs undergo those rules in upstairs clauses which apply exclusively to subjects. One such rule is Possessive Preposing in sentence nominalizations.

Nominalizations in Niuean are introduced by a case marker from the common noun series. For example, (16b) is a nominalization related to the simple sentence (16a). One NP in the nominalization may optionally become a possessive modifier of the nominalized verb through a rule of Possessive Marking, which relates (16b) to (16c):
16a. Kua pākia tuai a au he pilu nā.
   Perf injured Perf Abs I on knife that
   'I've been injured on that bush knife.'

b. e pākia a au he pilu nā
   Abs injured Abs I on knife that
   'my being injured on that bush knife'

c. e pākia haaku he pilu nā
   Abs injured my on knife that
   'my being injured on that bush knife'

Possessive Marking may apply to the direct object in a nominalization, instead of the subject, as in:

17. e kotofa haaku (e lautolu) ke fakamatala
   Abs choose my Erg they Sbj speak
   'my being chosen (by them) to make a speech'

A rule of Possessive Preposing shifts a pronominal or proper possessive NP in front of the noun it modifies. The preposed possessive is separated from the noun by a particle a, the rearticulated aa in singular possessive pronouns becomes long ā, and the absolutive marker e may fail to appear when this rule has applied. Consider (18) and (19), related to (16c) and (17), respectively:

18. hāku a pākia he pilu nā
   my injured on knife that
   'my being injured on that bush knife'

19. *hāku a kotofa (e lautolu) ke fakamatala
    my choose Erg they Sbj speak
    ('my being chosen (by them) to speak!')

Notice that stating Possessive Preposing solely in terms of linear order cannot produce the right results, since the possessivized NP in a nominalization, whether a subject or a direct object, always immediately follows the nominalized verb. This argues that Possessive Preposing must be limited to the subject of the nominalized verb.

In light of these facts, it is interesting that when a Raising sentence is nominalized, the raised NP may become a possessive modifier of the nominalized Raising verb, and may also undergo Possessive Preposing:

20a. e maeke haaku ke āhi he kapitīga haaku
    Abs possible my Sbj visit Erg friend my
    'the possibility of me being visited by my friend'

b. hāku a maeke ke āhi he kapitīga haaku
    my possible Sbj visit Erg friend my
    'the possibility of me being visited by my friend'

Since Possessive Preposing applies exclusively to subjects of nominalized verbs, (20b) argues that a raised NP is the subject.
of the governing verb.

3. Movement

It has been established that a raised NP in Niuean originates as a complement subject or direct object, but is also an upstairs subject at some level of structure. A Raising analysis predicts both of these facts. But so does an analysis which would treat raised NPs as underlying higher subjects which trigger deletion of a coreferential NP in the complement clause, after such rules as Verb Agreement and Quantifier Float have had an opportunity to apply there. I will refer to the latter as the two-NP analysis. The deletion would have to be obligatory, since raised NPs can never be resumed by a downstairs pronoun copy:

21a. To maeka e ekekafo ke lagomatai (*e ia) e tama o.
    Put Abs doctor Sbj help Erg he Abs child this
    'The doctor could help this child.'

b. To maeka e tama o ke lagomatai he ekekafo (*a ia).
    Put Abs child this Sbj help Erg doctor Abs he
    'This child could be helped by the doctor.'

Since it would also need to be bounded and lexically governed, the appropriate deletion rule would be some obligatory version of Equi, call it R-equí. I will now go on to show that the two-NP analysis is untenable.

There is a genuine rule of Equi in Niuean governed by verbs of intention, volition, desire, and command which take sentential complements introduced by the subjunctive marker ke. The rule obligatorily deletes the subject of a ke-complement under coreference with an upstairs controlling NP:

22. Kua lali a au ke tā (*e au) e fāloku.
    Perf try Abs I Sbj play Erg I Abs flute
    'I tried to play the flute.'

Significantly, Niuean Equi never deletes coreferential complement nonsubjects. Instead, complement nonsubjects in Equi configurations which are coreferential with an Equi controller must undergo personal pronominalization:

23. Kua lali lahi e kapitiga haau ke sake e au a ia.
    Perf try really Abs friend your Sbj sack Erg I Abs him
    'Your friend is really trying to get me to sack him.'
24. Lali e tama tāne ke age e au taha tupe ma-ana.
    try Abs child male Sbj give Erg I Nsp money for him
    'The boy is trying to get me to give him some money.'

Under the two-NP analysis, the deletion rule involved in Raising sentences, R-equí, would have to delete complement subjects to derive sentences like (21a), and complement direct objects to derive ones like (21b). This means that Niuean would
have two distinct versions of Equi. The first, governed by verbs such as lali 'try', deletes only complement subjects; the second, R-equ, governed by verbs such as maeki and kamata, would delete complement subjects and direct objects. This situation would be quite unusual from a cross-linguistic point of view, but one might argue that it is only as unusual as the alternative proposal that Niuean has a version of Raising which operates on direct objects as well as subjects.

Nothing about the two-NP analysis as it stands would prevent underlying structures in which the complement NP coreferential with a higher subject of maeki or kamata is an oblique NP. Such structures would simply fail to undergo R-equ, resulting in sentences featuring a lexical subject of maeki or kamata coreferential with an oblique complement NP. The fact is, however, that no such sentences exist. Instead, raised NPs must be underlying complement subjects or direct objects. For instance, the result of raising the oblique object of a verb of emotion, such as ke he tehina haau 'to your little brother' in (25a), is ungrammatical, with or without a downstairs pronoun copy, as (25b) attests:

25a. Maeki nakai ke falanaki a mautolu ke he tehina haau?
    Q Sbj trust Abs we,PL,Ex to brother your
    'Can we trust your little brother?'

25b. *Maeki nakai e tehina haau ke falanaki a mautolu (ki ai)?
    Q Abs brother your Sbj trust Abs we,PL,Ex to him
    ('Can your little brother be trusted by us?')

To rule out sentences like (25b), the two-NP analysis would have to impose a constraint, somewhat reminiscent of Perlmutter's (1970) like-subject constraint, on the underlying structure of R-equ configurations:

(26) Like-subject-or-direct-object constraint:
An R-equ controller (i.e. lexical subject of maeki or kamata) must be coreferential in underlying structure with the complement subject or direct object.

In contrast to R-equ, notice that genuine Niuean Equi configurations are not subject to any like-NP constraint. With genuine Equi verbs, the controlling NP may be coreferential with a complement subject, direct object, or oblique NP, as shown by (22), (23), and (24), respectively. For that matter, an Equi controller need not be coreferential with any complement NP:

27. Kua lali a mautolu ke tokologa e tau tagata ka o mai
    Perf try Abs we,PL,Ex Sbj many Abs Pl person Fut come,Pl
    ke he fonoaga apogipogi.
    to meeting tomorrow
    'We are trying to have plenty of people come to the meeting tomorrow.'
We can now see a second significant way in which genuine Niuean Equi and R-equii would be distinct. Although there is no coreference constraint on underlying configurations involving Equi governors, those involving R-equii governors would be subject to the constraint in (26). Note that the constraint does not follow from any intrinsic feature of the two-NP analysis, but rather is motivated exclusively to account for the ungrammaticality of sentences like (25b). Here the Raising analysis becomes more interesting than the two-NP analysis, since the ungrammaticality of such sentences follows as a necessary consequence of positing a Raising rule limited to subjects and direct objects.

Furthermore, it is highly improbable that syntactic theory should allow a constraint like (26). Perlmutter's like-subject constraint is apparently a constraint on agency or controllability: the would-be target for deletion must be able to control the event described by the embedded verb. But semantically, direct objects are the least likely NPs to control acts. So it is implausible that a controllability constraint would identify subjects and direct objects, to the exclusion of all other types of NPs. Since the two-NP analysis would impose such a constraint on R-equii configurations, it is quite suspect as a possible analysis. Therefore, we are led to prefer the Raising analysis, which calls for no coreference constraint.

So far, this section has argued that R-equii would have to be an extremely bizarre version of Equi. The final argument against the two-NP analysis, which involves reflexive and reciprocal clauses, is stronger, because it shows that Raising sentences simply must not be derived through an obligatory deletion rule.

What is of interest here is the way reflexive and reciprocal clauses are treated by obligatory deletion rules in Niuean. Although Niuean Equi is in general obligatory, complement subjects related reflexively or reciprocally to a clausemate are only optionally deleted when the conditions for Equi are met. Thus, the reflexive complement subject e koe 'you' may or may not be deleted under coreference with the Equi controller below:

28. Fia manako nakai a koe ke kitia (e koe) a koe i loto want want Q Abs you Sbj see Erg you Abs you in middle he vai? of water 'Would you like to see yourself in the water?'

When subjects or direct objects are relativized in Niuean, they undergo a rule of Relative Deletion, which obligatorily deletes the relative noun under coreference with the head. Thus, the relative clause in (29) is ungrammatical if it includes a pronoun copy of the relativized subject:

29. e tagata ne hoka (*e ia) a Maka Abs man [Nonfut stab Erg he Abs Maka] 'the man who stabbed Maka'
However, if a reflexive or reciprocal subject is relativized, Relative Deletion applies optionally. For example, the reflexive relative clause in (30) may include the subject pronoun e ia 'he':

30. e tagata ne hoka (e ia) a ia
    Abs man  [Nonfut stab Erg he Abs him]
    'the man who stabbed himself'

Though I cannot offer a satisfying explanation for the resistance of Niuean reflexive and reciprocal clauses to deletion, the generalization to be made based on (28) and (30) seems clear enough. Reflexive and reciprocal subjects in Niuean optionally undergo deletion rules which are otherwise obligatory.

Now the rule required under the two-NP analysis to derive Raising sentences, R-equi, would be an obligatory deletion rule. So the generalization which I have just motivated would predict that reflexive and reciprocal subjects should undergo R-equi only optionally. The prediction is wrong, though, because (31a) is grammatical, but (31b) is not:

31a. Liga ai maeka e fifine ke logona a ia (nī).
    likely not  Abs woman Sbj hear Abs her Rfl
    'The woman couldn't hear herself.'

b. *Liga ai maeka e fifine ke logona e ia a ia (nī).
    likely not  Abs woman Sbj hear Erg she Abs her Rfl
    ('The woman couldn't hear herself.')

Since it has previously been established that R-equi would have to be an obligatory deletion rule, but the facts about reflexive and reciprocal clauses argue that R-equi could not be an obligatory deletion rule, the two-NP analysis arrives at a contradiction. What (31) suggests is that Niuean Raising sentences simply do not involve deletion.

The ungrammaticality of (31b) follows immediately from the Raising analysis, since Raising is a movement rule. A reflexive or reciprocal subject which undergoes Raising is removed from the complement clause in which it originates, so it automatically cannot surface there as a pronoun copy.

4. Conclusion

I have shown that Niuean has a version of Raising which operates on complement direct objects as well as subjects. This result is theoretically significant because Niuean Raising violates Postal's (1974) suggestion that Raising should be restricted universally to complement subjects, a view which has been implicit in most work on Raising both in transformational and relational frameworks. Specifically, Postal proposed that Raising might be represented in universal grammar simply as:

(32) 'Promote the subject of a complement.' (Postal 1974:288)
There are two alternative ways universal grammar might be made flexible enough to recognize the Niuean rule as an instance of universal Raising. Perhaps the representation of Raising in universal grammar should explicitly mention direct objecthood, i.e. should state that it operates on complement subjects and may operate on complement direct objects. On the other hand, it may be desirable to view universal rules as representations of preferred rule types, rather than as absolute constraints on permissible versions of rules. Thus, universal Raising could simply refer to complement subjecthood, and extending the rule to complement direct objects, as in Niuean, would be taken as a permissible language-particular deviation from the universally preferred statement. This second approach gains support from Chung and Seiter's (1977) discussion of the history of Raising in Polynesian languages.

Niuean Raising also poses a more particular problem for Postal's representation of Raising (32). Relational Grammar (cf. Perlmutter and Postal 1974) recognizes several types of promotion rule, including ascensions, rules which assign an NP a grammatical relation in a higher clause, and advancements, rules which assign an NP a higher rank clause-externally along the relational hierarchy: Subject < Direct Object < Indirect Object < nonterms. What (32) claims is that the fact that Raising is an ascension follows automatically from its being a promotion. That is, if a complement subject is promoted, it must ascend to a higher clause, since it cannot advance within the complement clause. However, stating Niuean Raising along the lines of (32) will not work:

(33) Promote the subject or direct object of a complement.

The trouble is that through (33), subjects would ascend to the higher clause, but direct objects might, incorrectly, only advance to subject in the complement clause. So Postal's representation of Raising, even when extended to direct objects, is incorrect, because it is too general. Apparently, the statement of Raising in universal grammar must explicitly mention that it is an ascension rule, i.e. that the complement NP it operates on is promoted to a higher clause.

Footnotes
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2. Niuean also has several verbs which govern Raising to Object. Chapter 3 of Seiter (forthcoming) presents a unified
treatment of Raising to Subject and Raising to Object in Muean, both of which operate on complement subjects and direct objects.

3. To my knowledge, the only theory of grammar which has attempted a cross-linguistic characterization of Raising is Perlmutter and Postal's Relational Grammar, in which a significant class of syntactic rules are represented in universal grammar in terms of grammatical relations (cf. Perlmutter and Postal 1974, 1977). For this reason, my discussion of Muean Raising will likewise be in terms of grammatical relations.

4. In the Muean orthography, $g = [\eta]$, and before front vowels $t = [s]$. The orthography distinguishes long vowels (e.g. $\ddot{a}$) from rearticulated like vowels (e.g. $aa$). Word stress is penultimate.

The glosses include the following abbreviations: Abs absolutive; DU dual; Erg ergative; Ex exclusive; Fut future; Inc inclusive; IO indirect object; Loc locative; Nonfut nonfuture; Perf perfect; Pl plural; Q question particle; Rfl reflexive; Sbj subjunctive.

5. Other verbs which govern Muean Raising include an emphatic negative verb *fakaai* 'not', and aspectual *mahani* 'usual, customary' and *teitei* 'almost'. The arguments involving *maeke* and *kamata* may be made in essentially the same form for these Raising governors as well.

6. Sentences with a raised DO differ subtly from their non-raising counterparts in topicality, emphasis, and so forth. This semantic difference is approximated by the English translations, which involve raised passive subjects.

7. See Seiter (forthcoming) for independent arguments that objects like ke he *tehina haua* in (25a) are syntactically oblique.

8. In general, nonsubjects in Muean may be marked with the post-nominal particle $ni$ optionally under coreference with a clausemate subject.

Several verbs, including *maeke* and *kamata*, govern Equi controlled by an oblique case-marked NF. In Equi sentences with such a controller, the governing verb conveys a root sense, i.e. predicates ability, volition, or obligation on the part of the controller. This construction allows for a near-minimal syntactic contrast between Raising and Equi. Compare the ungrammatical (31b) with the analogous Equi sentence below:

(i) *Liga ai maeke he fifine ke logona e ia a ia (ni).*
likely not at woman Sbj hear Erg she Abs her Rfl
'The woman was probably unable to hear herself.'

The complement reflexive subject $e ia 'she' may appear in (i), since it only optionally undergoes Equi controlled by *fifine* 'at the woman'.
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The Ilokano Causative in Universal Grammar*
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Introduction

There are three basic ways, relative to the noncausative situation, in which causation may be expressed in Ilokano,\(^1\) namely analytic, morphological, and lexical, as illustrated in (1) to (3), respectively:

   table
   'He/she forced Juan to make a table.'

2. Ag-pa-katawa-(na) ni Juan AT,fut.-caus-laugh-(3sg) Det. Juan
   'Juan will make him/her laugh.'

   -OT,past-stretch-lsg. this rubber band.
   'I stretched this rubber band.'

The purpose of this paper is to analyze and place in universal grammar perspective the type of causative construction illustrated in (2), where a non-causative verb has undergone a derivational process in order to express causativity, and there is no separate expressed predicate of causation (as there is, for example, in (1)).

1. The Ilokano sentence structure.

The simple sentence of Ilokano consists of a verb followed by a string of one or more noun phrases, one of which is marked as the topic.\(^2\) Formally, the topic is either unmarked when it is nonpronominal, or marked by the use of a topic pronoun form. Semantically, the topic is always interpreted as definite. A case-marking affix on the verb indicates the case role of the topic NP. Thus, depending on the case marking affix, a verb may be actor-topic (AT), object-topic (OT), indirect-object-topic (IOT), beneficiary-topic (BT), or locative-topic (LT), and the topic NP that occurs with these verbal forms may be called the actor-topic, the object-topic, and so on.

4. Ag-luto ni Marya ti tarong.\(^3\) AT-cook det. M. det. eggplant
   'Maria will cook eggplant.'

5. Lutu-en ni Marya daydiay tarong.
   cook-OT Dem.
   'Maria will cook that eggplant.'

   sell-IOT he-us man dog
   'The man will sell a dog to us.'
7. I-bulud-an ni Maria ni Juan ti kuarta.  
   'Maria will borrow money for Juan.'

   'Manila is where Rosa will live.'

The order of the constituents in citation sentences is VAX (where A=actor and X=other constituents in a fairly free linear arrangement). The position of the actor is fixed in non-actor-topic sentences but flexible in actor-topic constructions. Non-topic noun phrases that occur in the sentence are marked for case either by the use of a non-topic pronoun or by a prenominal marker in the case of indirect objects and other oblique constituents. Semantically, non-topic noun phrases may be definite or indefinite. Formally, non-topic definite NP's must be marked as non-topic by the use of prepositional markers such as ka-ken-, and para, with the exception of non-topic actors, which are unmarked, and non-topic direct objects, which must be indefinite, i.e. the only determiner allowed to occur in this NP is ti, as illustrated in (9) and (10).

   'Maria wrote a poem.'

    'Maria saw John.'

On the other hand, non-topic indirect object and benefactive NP's may be definite, as (11) and (12) illustrate.

11. I-ted ni Maria ti libro ni Pedro.  
    'Maria will give the book to Pedro.'

    'Maria will cook the eggplant for Pedro.'

2. The causative construction  
   In Ilokano, causation is expressed by the use of a productive causative verbal affix pa-. The causative sentence consists of a verb which includes this causative affix (henceforth the causative verb), which typically involves one more NP argument than the corresponding non-causative verb. Thus, a non-causative intransitive verb requires one NP, while the corresponding causative intransitive verb requires two NP's, as shown by (13) and (14).
13. Ag-taray ni Maria.
   AT-run
   'Maria will run.'

14. Ag-pa-taray [ti babae] [daydiay aso]
   NP2       NP1
   AT-caus. det. woman dem. dog
   'That dog will make a woman run.'

The NP1 and the NP2 as illustrated in (14) are respectively called the causer and the causee. The causer is the NP that expresses the entity that causes or brings about the event, and the causee is the NP expressing the entity that is caused to carry out the event. In causative constructions there is, therefore, one more NP which may be the topic of the sentence than in the corresponding noncausative constructions. Thus, again depending on the case-marking affix, a verb may be causer-topic causative (ClT), causee-topic causative (C2T), object-topic causative (OTC), etc., each form related to a corresponding NP topic.

2.1 Causer-topic constructions

In ClT sentences an actor-topic affix on the causative verb indicates that the causer NP is the topic. Examples (15) to (17) illustrate this type of construction.

15. \{Ag-pa-taray\} ti babae daydiay aso. (see 14.)
   AT-
   'That dog will make a woman run.'

16. \{Nag-pa-katawa\}
   \{Nang-pa-katawa\} ti lalaki daydiay ubing.
    man dem. child
   'That child made a man laugh.'

17. \{Ag-pabpa-basa\} ni Maria \{ka-daydiay\} ubing ti libro.
   AT-cays.+imp.-read
   'Maria is making \{the\} child read a book.

   All verbs may take either the ag- or the mang- affix paradigm, regardless of the affixes they may take in AT noncausative sentences. However, not all noncausative AT affixes can cooccur with the causative affix pa. Observe, for instance, that no ClT constructions may be formed from a noncausative sentence with an -um- AT verb.

18. *Pa-t-um-aray ni Juan ti ubing.
   caus-stem-AT-run
   'Juan will make a child run.'

In (15) to (17) the causer is the topic and it may therefore be definite. On the other hand, the causee must be indefinite in (15) and (16), that is in sentences with intransitive causer-topic verbs. This is the same restriction that applies to non-topic
direct objects so it appears to indicate that the causee is a syntactic direct object. In sentences with transitive causer-topic verbs, as in (17), there is no such restriction on the definiteness of the causee. Hence, the causee is marked as a non-topic indirect object, as a comparison with (11) shows.

2.2 Causee-topic constructions
The affixes which mark a direct object as the topic of a noncausative sentence are used in C2T constructions to indicate that the topic is the NP whose referent is the causee. In addition to pa-, the causative affix pag- may also be used to indicate causation in these sentences. In this section I shall argue that pa- is a more productive and older causative morpheme than pag-.

In non-causative sentences verbs may take one of three different affixes to mark the direct object as topic: '-en', '-i-', or '-an', as illustrated in (19) to (21).

   cook-OT-3sg
   'He'll cook roast beef.'
20. I-serra ni Maria daydiay tawa.
    OT-shut
    window
    'Maria'll shut that window.'
    sweep-OT
    kitchen
    'Juan will sweep the kitchen.'

Of these three sets of affixes, -en may cooccur with pa-/pag- in C2T constructions, -an may cooccur only with pa-, and i- does not occur at all as a causee-topic marker.

22. \{ *I-pa-luto
    Pa/pag-lutu-en \} ni Maria ni Juan ti karne asada.
    OT-caus-cook
    caus-cook-OT
    'Maria will make Juan cook roast beef.'

Lexicalized causatives provide evidence that the causative morpheme pa- is an older form as compared to pag-. Thus it is the morpheme pa- the one that appears in the following lexicalized causative verbs: padara ('to have a hemorrhage'--dara, 'to bleed'); pakan ('to feed'--kaan 'to eat'); pasirut ('to tie'--sirut 'to fasten into a knot'); patay ('to kill'--matay 'to die'); pakita ('to show'--kita 'to see'); pataray ('to ride'(a horse)--taray 'to run'). It does not seem to be justified to analyze the sentences where these verbs occur as containing a syntactic causer and a causee, as illustrated in (23) and (24):

    AT-ride
    horse loc. field
    'Juan rode a horse in the field.'
24. Im-pa-kita-na daydiay libro.
   OT-caus-show-3sg
   'He showed that book.'

   There are some verbs which may be causativized only by means of pa-, as for example turog ('to sleep') and pagna ('to walk').

    b. *Pag-pagna-en-na
caus-walk-OT-3sg
   'He'll make the man walk.'

    b. *Pag-turog-en
caus-sleep-OT
   'Maria will make the child sleep.'

   The b sentences in (25-6) are interpreted as ungrammatical because Ilokano has the verbs pagnagna and pagturog with the respective meanings 'to walk on' and 'to put on something to sleep'. The segment pag- in pagnagna is a reduplication with the meaning of 'to do X continuously', and the pag- in pagturog seems to be the instrumental affix pag- ('what you put on in order to sleep').

   Independently, the morpheme pag- functions as an instrument-topic affix, as illustrated in (27-8).

27. Pag-laba ni Maria ti sapun ti lupot.
   Inst.T-wash soap clothes
   'Maria will wash clothes with soap'

28. Pag-pinta-na ti sepillo ti balay
   Inst.T-paint-3sg brush house
   'He'll paint a house with the brush'

   We conclude, therefore, that: (i) the exclusive occurrence of pa- in lexicalized causative verbs, (ii) its occurrence in all topics in causative constructions, (iii) the restricted productivity of pag- as a causative affix, and (iv) its parallel function as an instrument topic marker, offer sufficient evidence in support of the claim that pa- is the older causative morpheme. In fact, it is likely that pag- has acquired its causative status more recently, probably as a result of the semantic similarity between causation and instrumentality, i.e. the causee may have been interpreted as the instrument used by the causer to bring about an event.

2.3 Object-Topic Causative Constructions (OTC)
    Two of the affixes used to mark OT in noncausative sentences, i- and -an, are also used to indicate that the direct object is the topic in causative constructions. Noncausative verbs that take -en and i- in OT sentences, take only i- in the corresponding causative constructions, while -an verbs use the same affix -an in
the derived causative verbs. Representative examples below.9

   read-OT
   'A child will read that book'

b. I-pa-basa ni Maria daydiay libro iti ubing iti lalaki.
   OT-caus-read
   'Maria will make a child read that book to a man.'

   OT-buy
   'Pedro bought the horse.'

b. Im-pa-gatang ni Maria ti kabalyo kenni Pedro.
   OT-caus-buy
   'Maria made Pedro buy the horse.'

   OT-Red.,imp.-sell
   'Pedro is selling the horse'

b. I-pa-lak-lako ni Maria kenni Pedro ti kabalyo.
   OT-caus-Red.,imp.-sell
   'Maria is making Pedro sell the horse'.

32. a. Sagad-an ni Juan ti kusina.
   sweep-OT
   'Juan will sweep the kitchen.'

b. Pa-sagad-an ni Maria kenni Juan ti kusina.
   caus-sweep-OT
   'Maria will make Juan sweep the kitchen.'

2.4 Indirect Object and Benefactive Topic Causative Constructions (IOTC, BTC)

Both in noncausative and causative sentences the suffix -an marks IOT, and the affixes i- -an BT. In causative sentences, however, IO and B topic verbs which have an incorporated prefix i- in their stem (e.g. ilot ('to rub'), igad ('to grate'), isuro ('to teach')) usually mark both IOT and BT with the affixes i- -an.

33. Pa-basa-an ti babae ti libro kenni Pedro ti lalaki.
   caus-read-IOT
   'A woman will make Pedro read a book to the man.'

34. I-pa-isuru-an10 ni Pablo kenni Lourdes ti Ilokano daguiti
   IOT-caus-teach-IOT det. pl.
estudyanote.
   'Pablo will make Lourdes teach Ilokano to the students.'

35. Im-pa-lutu-an ni Juan kenni Maria ni Pedro ti tarong.
   IOT-caus-cook-IOT
   'Juan made Maria cook eggplant for Pedro.'

3. The Semantics of the Ilokano Causative Construction

It was stated at the beginning of this paper that we would be concerned here with a study of a mode of causation where at least two participants are overtly responsible for the occurrence
of an event: the causer and the causee. One semantic question that arises from this causative situation is the degree of participation of the causer in causing the resultant event. The different degrees of involvement of the causer in the effect caused are reflected in the semantic differences between various types of causative constructions. Observe, for instance, the following examples from Spanish.

36. Juan botó a María. 'Juan 'dropped' María' (made her fall)
37. Juan hizo caerse a María. 'Juan made María fall'
38. Juan causó la caída de María. 'Juan caused Mary to fall'
39. Juan hizo irse a María. 'Juan made María leave'
40. Juan la dejó irse a María. 'Juan let Mary go'

The lexical causative in (36) implies a direct physical connection between the subject's ('Juan') action and the result. Juan must have touched María in order to cause her to fall. The analytic causative (38) implies less direct causation, and (37) represents an intermediate stage of causer involvement.

(39-40) illustrate another aspect of the relation between causer and result: the difference between causation proper and permission. (39) means that somehow Juan caused María to leave, while (40) implies that Juan, the causer, had some control of the situation but that rather than causing it he did not prevent it from occurring; he allowed it to happen.

In Ilokano, the strong agentivity of the subject and its physical manipulation of the object (as illustrated by (36)) is also conveyed by lexical (or lexicalized) causatives. These verbs do not allow a meaning of incidenceality nor of mediated causation, as the examples below show.

   OT-dress-OT
   'Maria dressed the child, *because he could do it'
42. In-tinnag ni Maria diay ubing, *gapu ta naglaawna.
   OT-drop
   'Maria dropped the child, *because she shouted'

On the other hand, the affixal causative in Ilokano does not necessarily imply a physical connection between subject and object. These morphological causatives may express, however, both causation proper and permission in all the different topics. Thus, in the preceding sections we have consistently glossed the Ilokano examples with the causative predicate 'make', but a more exact translation must allow both meanings. Corresponding to (41-2) we have the causatives (43-4).

43. P-in-ag-sukat-an ni Maria diay ubing, gapu ta mabalinanna.
   OT-caus-dress-OT
   'Maria caused/made/let the child dress, because he could do it'
44. P-in-a-tinnag ni Maria diay ubing, gapu ta naglaawna.
   caus-OT-caus-fall
   'Maria caused/made/(let) the child fall, because she shouted'

   Various other semantic differences may be expressed by pre-
   fixing different affixes to the causative verb. For example, na-
   in (45)

45. Na-pa-sangit-na-k ni Juan.
   caus-cry-3sg-lsg
   'Juan made me cry (unintentionally)'

implies that Juan caused the event without intention. The rich
semantic nuances conveyed by these verbal affixes remain to be
investigated. The purpose of this section was simply to point out
that of the various semantic possibilities related to causation,
the morphological causative in Ilokano covers the range of two:
causation proper and permission.

4. A Lexicalist Analysis of Causatives

   Given the data presented and discussed in section 2, we con-
   clude that in Ilokano causation is expressed by the use of two pro-
   ductive causative morphemes: pa- (in all topics) and pag- (in C2T),
   which are prefixed to a noncausative verb stem to form a causative
   verb.

   We adopt in our analysis a slightly modified version of
   Jackendoff's (1975) lexicalist approach, incorporating Thompson's
   (1975) proposal for dealing with productive processes in the
   lexicon.

   Accordingly, we propose that one level of the Ilokano lexi-
   con should list, among others, verb stems and derivational mor-
   phemes. This level would contain entries such as those given in
   (46-7).

46. / basa /
   +Verb
   *Aspect
   
   Actor Topic
   {{+AG}
   +MANG
   [+NP₁ (NP₂) (PP)]
   +top.
   x y z
   x READ (y) (to z)

47. / pa /
   +verbal affix
   +causative
The derivation of causative verbs would be stated in another level of the lexicon as part of the productive lexical rules of the language. This level has been suggested by Thompson as an improvement to Jackendoff's theory of the lexicon. Thompson states: "...it is not appropriate to consider the rules which account for a speaker's productive capacity as simply redundancy rules "used generatively", since this does not allow a distinction to be made between a productive process and a non-productive relationship." (1975:345).

Rule (48) represents the speaker's ability to create causative from noncausative verbs in a completely productive way.

\[
\begin{align*}
48. & \quad \left[ \begin{array}{c}
/X/ \\
+\text{Verb}
\end{array} \right] \\
& \quad \rightarrow \\
& \quad \left[ \begin{array}{c}
/pa + X/ \\
+\text{Verb} \\
+\text{Causative}
\end{array} \right]
\end{align*}
\]

In the same manner, I would suggest that the syntactic relationships should be captured in the lexicon, given that they are a consequence of the differences in both the morphology and semantics of the base verb. So I would modify rule (48) to include this information.

\[
\begin{align*}
48' & \quad \left[ \begin{array}{c}
/X/ \\
+\text{Verb} \\
+\left[ \begin{array}{c}
\_\text{NP}_1
\end{array} \right] \\
\_x \\
\_X
\end{array} \right] \\
& \quad \rightarrow \\
& \quad \left[ \begin{array}{c}
/pa + X/ \\
+\text{Verb} \\
+\text{Causative} \\
+\left[ \begin{array}{c}
\_\text{NP}_2, \_\text{NP}_1
\end{array} \right] \\
\_y \\
\_x \\
\_Y \ \text{CAUSE} \_X \_X
\end{array} \right]
\end{align*}
\]

(48') shows the regular and productive relationship that holds between the morphology, the syntax, and the semantics of a causative and a noncausative verb: the causative verb always involves one more NP argument (the causer) than the corresponding noncausative verb; the actor in the noncausative sentence corresponds to the causee in the causative one.

The difference between (48') and Jackendoff's lexical redundancy rules is that (48') reflects a productive process in the lexicon, and we believe (with Thompson) that this property should be differentiated from the nonproductive relationships captured by redundancy rules.

We would further suggest that the grammatical relations in which the causee appears with respect to the verb may also be represented in the lexicon as part of the productive processes related to a change in the valency of a derived causative verb. Rule (49) represents this generalization.
(49) shows the relationship that holds between the grammatical function of the causee and the number of arguments of the verb: in intransitive sentences the causee appears as direct object (NP₀), and in transitive sentences as indirect object (PP when non-topic), so when the verb has an IO there is syntactic doubling on this position.¹³

Neither Jackendoff nor Thompson consider these types of rules, but the analysis of Ilokano causatives suggests that the generalizations reflected by (49) should be expressed by the grammar of a language.

5. The Ilokano causative in universal grammar

This section places the Ilokano causative construction within the universal framework for these types of constructions set up by Comrie (1976).

It has been observed that when the subject of a noncausative verb is demoted to the status of causee in a causative sentence, the extra NP expressing the causer must be accommodated in some way by the syntax of the language. B. Comrie (1976) has pointed out that in some languages (e.g. Turkish, French) the surface exponency of the "embedded subject" (the causee) is determined by the syntactic arguments of the "embedded verb" (the causative verb) in such way that if the syntactic positions are ordered as follows:

subject - direct object - indirect object - other oblique constituent

"we find that the embedded subject is shifted from left to right along this list to the leftmost position that is not already occupied" (1976: 263).

Keenan and Comrie (1977) propose to consider the ordering of the syntactic constituents as a "case hierarchy" on the basis of the evidence provided by the relative accessibility of NP positions to relativization. Comrie (1976) further proposes this hierarchy as also valid for causatives in view of the evidence provided by the analysis of this type of construction in a wide variety of languages. Our analysis of the Ilokano causative lends some support to Comrie's hypothesis about the validity of the case hierarchy as a principle of universal grammar, which may be used in different areas of the grammars of natural languages.

In Ilokano, the causee is shifted from left to right down to the indirect object position. In intransitive causative sentences
the causee appears as direct object, as illustrated in (50) and (51), and discussed in 2.2.

50. C1T Agpataray [ti babae] daydiay aso. (see 14) DO  
That dog will make a woman run.' (see 26)

51. C2T Paturogen ni Marya [ti ubing] DO  
'Maria will make the child sleep.'

When the causative verb has a direct object, as in (52-3), the causee appears as indirect object.

52. C1T Agpabpabasa ni Maria \{kadaydiay\} ubing [ti libro]. (see 17) DO  
'Maria is making \{the\} \{a\} child read a book.'

53. OTC Pasagadan ni Maria ti kusina kenni Juan. (see 32b)  
'Maria will make Juan sweep the kitchen.'

A comparison of C1T sentences (50) and (52) lends support to the hypothesis that in intransitive sentences the causee appears as direct object and in transitive sentences as indirect object since in (52) the causee 'kadaydiay/iti ubing' is marked by the oblique (IO) determiners kadaydiay and iti, while in (50) 'ti babae' is unmarked just as the direct object is unmarked in (52).

In sentences where the causative verb has an indirect object there is doubling of this constituent given that both the causee and the IO proper appear as IO, as in example (54).

54. OTC Ipabasa ni Maria daydiay libro iti ubing iti lalaki (see 296)  
'Maria will make a child read this book to a man'

Comrie (1976) sets up a "paradigm case" of causative constructions with reference to which it is possible to discuss this type of construction in a wide range of languages. The remaining part of this paper discusses the characteristics of the Ilokano causative with reference to the framework provided by the paradigm case.

1. Ilokano has no syntactic restrictions on the formation of causative constructions. Besides, no matter how many arguments a given noncausative verb has, there is also an equivalent causative verb with one more argument:

55. Niluto [ni Maria][daydiay tarong][para kenni Pedro]. NP NP PP  
'Maria cooked the eggplant for Pedro.'

56. Impaluto [ni Juan][kenni Maria][daydiay tarong][para kenni P.]. NP PP NP PP  
'Juan made Maria cook the eggplant for Pedro.'

2. Ilokano is an exception to the characteristic of the paradigm case which states that "doubling on the syntactic positions subject,
direct object, indirect object, is forbidden: i.e., a simplex sentence can have not more than one each of these constituents" (p. 265). As we have shown before in this paper, Ilokano doubles on the indirect object position. This is not surprising, however, because Comrie himself notes that the restriction on doubling has the greatest number of exceptions. In fact, restrictions on syntactic doubling follow the proposed case hierarchy: doubling on subjects is rare, if nonexistent; few languages allow doubling on direct objects; many more languages allow doubling on indirect objects; and there are no restrictions on doubling of other oblique constituents. The higher in the hierarchy the given constituent is, the greater the restriction on syntactic doubling.

3. Ilokano supports the generalization that it is always the "embedded subject" that is either omitted or demoted down the hierarchy when the restrictions on doubling require that some constituent be removed. In Ilokano, as pointed out before, the causee is the mobile constituent demoted down the hierarchy, and it is also preferably deleted in causative sentences where objects and oblique constituents are expressed.

4. Ilokano is an exception to the fourth and last feature of the paradigm case according to which "when the embedded subject is demoted down the hierarchy, it is demoted stepwise" (p. 265), always to the next-highest position that is still available. Observe that in Ilokano the causee is demoted to DO when the causative verb is intransitive (as in 50), and to IO when the causative verb is transitive, regardless of whether the DO position is filled or not (cf. (57) and (58)).

57. Mangpabasa ti libro ni Marya [kenni Pedro].

'Maria will make Pedro read a book.'

58. Mangpabasa ni Maria [kenni Pedro].

'Maria will make Pedro read.'

Comrie does suggest that this fourth feature of the paradigm case may have to be modified to account for instances of "preemption" as the one illustrated by Ilokano. Observe that in (58) the direct object NP that could be present as an argument of the causative verb "preempts" that position even though it is not overtly present, and forces the causee to the next position down: the indirect object position. It has also been noted that the same phenomenon occurs in Turkish, French, Italian, Tagalog and possibly some dialects of Spanish.

**FOOTNOTES**

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constructive criticism of my work. I alone, of course, am respon-
sible for the facts and analysis presented here.
1. Ilokano is a Philippine language currently spoken by approxi-
mately three million people. It is one of the eight major
Philippine languages, the other seven being: Tagalog, Cebuano,
Hiligaynon, Bicol, Waray, Kapampangan, and Pangasinan. Philippine
languages belong to the Austronesian or Malayo-Polynesian language
family.
2. It must be noted that in Ilokano there are also verbless sen-
tences (E.g. Napintas ti babae (beautiful, woman - 'Women are beau-
tiful'), and topicalized sentences with normalized clauses that do
not contain any topic NP (cf. note 4) (E.g. Ni Rosa ti gumatang
kadaydiay bado ('Rosa (is the one who) will buy the dress').
3. Ag- is only one of several AT affixes. There is also more than
one set of OT affixes, while the other topic NP's have only one
affix paradigm associated with each.
4. Locative-topic verbs are restricted to occur in normalized
clauses with no surface topic. See Schwartz (1976) for a discus-
sion of these clauses in Ilokano.
5. Ilokano appears to be a pragmatic word order language. We have
observed that the linear arrangement of constituents becomes more
or less flexible depending on various pragmatic factors, such as
ambiguity, newness of information, etc.
6. Later we show that in addition to pa-, the causative affix
pag- is used in causee topic sentences.
7. As discussed in section 2.2, in intransitive causatives the
causee may be definite if it is the topic of the sentence and the
verb is marked with a causee topic affix.
8. Distributional evidence also supports this conclusion. Pa- is
a causative affix in a large number of Austronesian languages
(cf. Starosta, 1974); it is also the causative affix in other
Philippine languages, namely Tagalog, Kapampangan, and Hiligaynon.
9. Thus, the topic marking affixes on -an verbs are undifferen-
ciated for C2T, OTC, and IOTC. In these cases, the determiners on
the nouns will signal the topic from the non-topic NP's (causee:
single underlining, topic: double underlining).
C2T  Pasagad-an ni Maria ni Juan ti kusina.
OTC  Pasagad-an ni Maria kenni Juan ti kusina.

'Maria will make Juan sweep the kitchen'
IOTC Pasagad-an ni Maria kenni Juan ni Pedro ti kusina.

'Maria will make Juan sweep the kitchen "to" Pedro'
10. An optional rule may delete either the stem initial /i/ or the
IOT /i/, but not both.
11. See Starosta (1971, 1974) for extensive arguments in support
of a non-transformational analysis of morphological causatives in
Philippine and Formosan languages.
12. Stockwell, Schachter, and Partee (1973) use the asterisk (*)
to indicate that at least one realization of the feature thus
marked must be chosen in the derivation.
13. The morphological, syntactic, and semantic relations that hold between the different causative topics also hold in noncausative constructions. I do not concern myself with them here.

14. Obviously, this discussion is only possible to the extent that we equate "embedded subject" (in Comrie's terms) to "causee" (in my terms). This is not an easy matter to settle in view of the contradictory proposals on the question of subject in Philippine languages (cf. Schachter (1976-7), Noonan (1977), and Schwartz (1976)). However, the discussion in this section would be valid even if we accepted Schachter's suggestion about the nonexistence of a category subject in these languages. Schachter's argument is that the characteristic properties of subject NP's listed by Keenan (1976) are shared by two NP's in Philippine sentences: the actor and the topic. From this it is possible to conclude that when the actor is also the topic, we may safely call this NP the subject of the sentence. On this assumption, the causee may be equated with the "embedded subject" given that in a noncausative AT sentence, the NP corresponding to the causee would be considered the subject.

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Deixis and Deducibility in a Wasco-Wishram Passive of Evidence

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In memory of Jerzy Kuryłowicz

If the regular active voice of the Wasco transitive verbal paradigm is represented as 'NP₁ Ved NP₂', as shown in (1), then the voice form I discuss here¹ should be represented as 'NP₂ seems to have been Ved' (there is no expression of Agency possible in the clause), or as 'NP₂ must have been Ved'. It is

(1) Schema of the passive of evidence

Active transitive:
\[(Tns-) \text{ Erg}_2 - \text{ Abs}_3 - (\text{ Dat}_4 - \text{ Postp} - \text{ STEM} ) = 'NP₁ Ved NP₂'\]

Passive of evidence:
\[
\left\{ \text{ Abs}_3 - \begin{array}{c} \text{ STEM - ix} \\ \text{ Dat}_4 - \text{ Postp - STEM - ix} \end{array} \right\} = 'NP₂ must have been Ved'
\]

thus a formation that expresses the speaker's estimation that the person or thing referred to with NP₂ has been the undergoer or Patient of some transitive action, described by the verb stem. The use of this formation thus "indexes" this referent as having been Ved, based on some evidence available in the context of speaking. In other words, from some available evidence the speaker deduces the fact that "Somebody Ved NP₂."

There are three aspects of this formation I want to highlight here. First, by its nature this is a "pragmatic" or indexical category, the meaning of each occurrence of which is bound up with the specification of factors in the context of the speech event. It is impossible to assimilate this pragmatic category to the treatment of voice in standard transformational or other similar kinds of grammar-as-usual. Second, since the Wasco-Wishram dialect of Chinookan is unique in the family in possessing such a category, I want to show the historical process involved in its rise. It is possible to see the filling out of a formal morphosyntactic paradigm by an interesting analogical change. Third, such a pragmatic category is illustrative of the
vast majority of linguistic structure, similarly pragmatic in character, that requires methodological strategies distinct from those of grammar-as-usual. It requires for its investigation a “metapragmatic” dialogue with the speakers of the language, and attention to the inherent limits on metapragmatic awareness of speakers (and of linguists), which I will illustrate from my own field records.

If we look at the basic set of inflectional possibilities for a regular transitive verb in Wasco, as shown in (2), we find

(2) Conjugational forms of the verbal paradigm

a. Active: \( \text{ni - } \xi_2^d - d_3 - u - j / \xi x m \)  'he\(_2\) boiled them\(_3\)'  
b. Antipassive: \( \text{ni-g}\(- \) \( i_3^d - k'i - j / \xi x m - a l \)  'he\(_2\) was doing b'in  
c. Indefinite Agent: \( \text{ni - } q_2^d - d_3 - u - j / \xi x m \)  'sbdy\(_2\) b'ed them\(_3\)'  
d. Collective Agent: \( \text{ni - } l k_2^d - d_3 - u - j / \xi x m \)  'they\(_2\) b'ed them\(_3\)'  
e. Transitional Passive: \( \text{ni - } d_3 - u - j / \xi x m - x i t \)  'they\(_3\) became b'ed'  
f. Evidential Passive: \( d_3 - u - j / \xi x m - i x \)  'they\(_3\) must have been boiled'  

that they range over three ‘voice’ categories, which can be termed active, antipassive, and passive. The regular active, as shown in (2a), is inflected for both Agent and Patient, as we would expect, coded by the Ergative\(_2\) and Absolutive\(_3\) pronominal elements respectively. The initial prefix ni(g)- indicates the ‘far past’ tense (Silverstein 1974; Hymes 1975) in all these examples. Related to each such active voice transitive is an antipassive form, as exemplified in (2b), with a morpheme -k'i- that replaces the stem-initial ‘directional’ element, and a pronominal element for the Agent of the action only.\(^2\)

In ergative languages like Chinookan, this active-antipassive relationship has a systemic status corresponding to the active-passive relationship in our normal (“Standard Average European”) accusative languages, as has become much clearer over the last several years. The syntactic perspective of clause-level abstract propositionality, which has informed all our grammatical theory in recent memory (see Silverstein 1977a), would note the parallelism in both these kinds of linguistic systems, as shown in (3). In the English type, (3A), the regular active voice shows a special inflectional status for the Patient of a transitive action (the accusative marking), and the passive voice expresses this Patient case-relation with the same marking as the Agent gets in the active. Some languages permit expression of the Agent in the same clause (with a peripheral case-marking), and
(3) Types of clause-based 'voice' alternations

A. Accusative (English) type:
\[
\begin{align*}
\text{NP}_1 & \rightarrow \text{V} \rightarrow \text{NP}_2 \\
\text{Agent} & \rightarrow \text{Patient} & \text{NP}_2 & \rightarrow \text{V-pass} \rightarrow (\text{NP}_1) \\
\text{(Nominative)} & \rightarrow \text{(Accusative)} & \text{Patient} & \rightarrow (\text{Agent}) \\
& \downarrow & & \downarrow \\
& \text{Adverbial} & \downarrow & \text{Adverbial}
\end{align*}
\]

B. Ergative (Chinook) type:
\[
\begin{align*}
\text{NP}_1 & \rightarrow \text{V} \rightarrow \text{NP}_2 \\
\text{Agent} & \rightarrow \text{Patient} & \text{NP}_1 & \rightarrow \text{V-antipass} \rightarrow (\text{NP}_2) \\
\text{(Ergative)} & \rightarrow \text{(Absolutive)} & \text{Agent} & \rightarrow (\text{Patient}) \\
& \downarrow & \downarrow & \downarrow \\
& \text{Adverbial} & \text{Adverbial} & \text{Adverbial}
\end{align*}
\]

Some do not. Likewise, in the ergative languages, while the Agent in the active voice has the special status for case-marking, as shown in (3B), in the antipassive voice the Agent shows the same overt case-marking as the Patient of the regular active. Some languages permit the expression of the Patient in the same clause and some do not. Chinookan does not.

Among the active voice inflections of the Chinookan verb, there are two forms, given in (2c) and (2d), that deserve special mention. The first is the Indefinite Agent form, where a pronominal element q- appears in the Ergative\textsubscript{2} position, the effect being to indicate a definite, but unspecified Agent. This avoids committing oneself to referring to some specific Agent(s), and is extensively used, for example, in polite directives. Contemporary speakers of Wasco use especially the second of these forms, active voice with 'neuter-collective' Agent marking by pronominal ĥk- in Ergative\textsubscript{2} position, as a kind of equivalent to the first. It would appear that this is a calque from the English usage of they for unspecified or indefinite Agent. This collective inflection occurs in the examples of elicitation cited below with the value of an Indefinite Agent form.

Turning now to the last two forms in the voice paradigm (2), we have two kinds of passive voice formations. A transitional passive (2e), inflected just for Patient and featuring a suffix -xit, presents the referent as moving into a state describable as "Ved" for some verb stem V. No Agent is expressed, but note that for transitive verbs the transitional has the propositional characteristics that our current grammatical theories would ascribe to so-called "get-passives." By contrast, the passive of evidence (2f), inflected just for Patient and featuring a suffix -ix,
presents the referent as having probably undergone some action based on evidence available for the deduction. Within the bounds of a strictly clause-propositional theory of language structure, both of these formations must be seen as at least "shallow" passives, though it is clear that only the transitional passive (2e), 'become Ved', is semantically akin to the usual 'passive'.

The passive of evidence cannot really be encompassed by such a theory because, as was indicated at the outset, it is like any deictic or tense or honorific category in languages, the meaning of which must be stated in terms of its occurrence in certain kinds of speech situations, within a more encompassing theory of speech-event-bound reference (Jakobson 1957; Kuryłowicz 1964, 1972). In particular, we must first describe the passive of evidence as presupposing and indexing the evidence available to the senses in the very context of utterance, or in the context described for a quoted instance. This means that there is no strictly morphosyntactic control on the "acceptability" of such an instance of the passive of evidence, and hence no way (save for arbitrary notational artifice) that language-internal "grammaticality" can be described for the category. Second, we must describe the category as creating or performing a speech event different from descriptive reference (or neutral predication). It indexes the speaker's evaluation of the available evidence as leading to a probabilistic conclusion, that the referent indicated shows the presupposed evidence by virtue of having undergone some action. The modality of such a speech event is not descriptive reference, the meaning system that lies at the basis of the usual clause-propositional kind of analysis.

The rise of this unique form in Wasco-Wishram is of interest precisely because it demonstrates the opportunism of surface form in pragmatic usage. The suffix -ix in the various Chinookan dialects is, in general, connected with deixis, and matches the English element there in its ubiquity. This is a reasonable comparison, actually, because the suffix -ix occurs in all dialects as a word-final element both deriving noun phrases of adverbial value, and locating actions with respect to place. Let us take these functions in order.

The adverbial-forming use of -ix is seen in many different kinds of derivations, illustrated in (4). From adverbial particles

(4) Adverbial formations in -ix (Wasco-Wishram as exemplar)

\(\text{kaxn 'out'}\) \(\text{kaxnix 'outside'}\)
\(\text{gigw\text{al} 'down, under'}\) \(\text{gigw\text{alix} 'below, underneath'}\)
such as $\lambda$axn 'out' and gigwal 'down', we get place adverbials such as $\lambda$axnix 'outside' and gigwalix 'below'. From entity nouns such as $t$u$x\textsuperscript{w}$a$\check{c}$k 'brush, bushes', we get adverbials such as $t$u$x\textsuperscript{w}$a$c$g$ix 'brushy place'. From inalienably possessed quality nominals like i- $\lambda$qt 'to be long' and i- $t$ukdi 'to be good' we get the adverbial formations i-ia-$\lambda$qdix 'far away, long time' by use of the dummy or non referring third person singular masculine possessor, and $t$ukdix 'well' by use of the bare stem. Similarly, a number of pan-Chinookan adverbials of time have etymologies in older constructions that include suffix -ix. Such are $\text{cagwaix} 'summartime'$ from the possessive construction *(i-)- $\text{ca-gw}$a 'its day' or 'its daylight', and $\text{ckdidx} 'dawn'$ from the fully inflected verb of weather *(c\textsubscript{2}-(a\textsubscript{3}-)u-kdi-t-)ix 'time where it makes morning-star'. These specifically Wasco-Wishram examples are paralleled in the other dialects.

The second function of the suffix -ix, in verbs that locate actions with respect to place (or, by extension, time), is also pan-dialectal. A particularly salient formation is that containing the prefix combination of a dummy (non-referring or invariant) Dative\textsubscript{4} pronominal -i\textsubscript{4}- with some postpositional morpheme, as well as the final suffix -ix. This places the action described in the verb in a precise and culturally-understood appropriate place. Some Wasco-Wishram examples are shown in (5). The

(5) Locational verbs in -i\textsubscript{4}-Postp-...-ix (Wasco-Wishram)

a. ga-$\text{\check{e}}$d\textsubscript{3}- u-\textit{\check{c}}u 'the-two\textsubscript{3} went down, fell'
   ga-$\text{\check{e}}$d\textsubscript{3}-i\textsubscript{4}-l- \textit{\check{c}}u-ix 'the-two\textsubscript{3} went down into [hole\textsubscript{4}]
   ga-$\text{\check{e}}$d\textsubscript{3}-i\textsubscript{4}-k- \textit{\check{c}}u-ix 'the-two\textsubscript{3} went down upon [hill\textsubscript{4}]

b. ga-$\text{\check{q}}$k\textsubscript{2}-d\textsubscript{3}-a\textsubscript{4}-gl-\textit{\check{c}}i+m 'they\textsubscript{2} struck her\textsubscript{4} with the-many\textsubscript{3}'
   ga- n\textsubscript{2}- l\textsubscript{3}- i\textsubscript{4}-gl-\textit{\check{c}}i+m- ix ilp'a$\text{\check{g}}$wa\textsubscript{3} 'I\textsubscript{2} struck the-blanket\textsubscript{3} against [place\textsubscript{4}]
   a$\text{\check{g}}$agia$\text{\check{g}}$l\textsubscript{3} a-lg\textsubscript{2}-a\textsubscript{3}-gl-\textit{\check{c}}i+m-a$\text{\check{x}}$d-ix 'they\textsubscript{2} will-knock the-woman\textsubscript{3} against [place\textsubscript{4}]


verb root in (5a) is -jču, an intransitive that is obligatorily in-
flected only for intransitive subject in the Absolutive position.
But this construction can have in addition the dummy indirect ob-
ject -i₄- in Dative position plus some specific postpositional ele-
ment such as -l- 'into' or -k- 'upon, over', together with the
word-final -ix. The resulting constructions indicate 'going down
into' the culturally or contextually understood place, i.e., a hole,
or 'going downwards upon' the culturally or contextually under-
stood place, i.e., a hillside. No reference to 'hole' or 'hill'
by a noun stem, nor allusion with a grammatically "correct"
pronominal in Dative position, is necessary here. Similarly, as
shown in (5b), the transitive verb -jči+m 'strike, hit' is regu-
larly inflected with the "instrument" of hitting expressed by the
Absolutive pronominal and the person or thing struck expressed
by the Dative pronominal. It is really a morphological idiom
that is literally 'someone uses something repeatedly on some-
one'. But when inflected with dummy -i₄- pronominal prefix and
final -ix suffix, the construction means 'to strike something, or
knock someone on or against [place]', again understood cultur-
ally or contextually.

If we look at other Chinookan dialects, attested in text col-
lections (Boas 1901 for Cathlamet; Boas 1894 for Lower Chinook),
we find that they too have the same kind of construction. There
are numerous examples in the narratives of two kinds of dummy
-i-...-ix constructions, as shown in (6). One type, illustrated

(6) Locational verbs in -i-...-ix (Cathlamet and Lower Chinook)

a. Cathlamet (Boas 1901)

113.15 i-št₃-i₄-g-u-/s-ix, i-št₃-i₄-g-u-/s-am-ix 'the-two
went across [river₄], the-two got across
[river₄]'

93.10 ig-i₃-i₄-g-u-/pčk-am-ix, i-č₂-i₄-x-/laqʰq-i₄ 'he
came up to [house₄], he opened [door₄]'

120.13 aqa wi ʰəkəkək i-č₂-i₃-u-/xʷ-ix 'now again he dug
[ground₅]'

241.5 manix ḥlu n-i₃-x-u-/xʷa-x-ix 'whenever [water-
surface₃] got calm'

175.3 čamalix₃ n-i₃-x-u-/xʷa-x-ix 'when it becomes fall₃'
b. Lower Chinook (Boas 1894)

51.6 mš₃-i₄-g-u-ʃčt-am-a-i ‘you-all₃ will get across [river₄]’ [cf. Cathl. 113.15.]

166.8 n-i₃-i₄-g-u-ʃpšg-am-i ‘he₃ came up to [house₄]’ [cf. Cathl. 93.10.]

by Cathlamet examples 113.15 and 93.10 (and paralleled exactly by Lower Chinook examples 51.6 and 166.8) in (6a), has the dummy -i- in Dative₄ position, followed by a specific postpositional element such as -k- ‘upon, on surface’ (phonetic -g-) or -x- ‘with respect to, from...’s’. This is the same as the examples cited in (5) from Wasco-Wishram. The other type, illustrated by Cathlamet examples 120.13, 241.5 and 175.3 in (6a), has the dummy -i- in Absolutive₃ position, coding either locational Patient, as in 120.13 where ‘ground’ is understood from the inflection of the transitive auxiliary root -ʃ/x(a),₃⁶ or locational Subject, as in 241.5, where ‘river- or ocean-surface’ is understood from the inflection of the intransitive (reflexive) auxiliary -x-...-ʃ/x(a), or even temporal Subject,⁷ as in 175.3, where the term for ‘fall month’ is cross-referenced in the inflection of the auxiliary. In all these cases, the combination of dummy -i- with final -ix signals just the same thing as in Wasco-Wishram, namely, that the activity or state is predicated for or with respect to some particular understood place, or some explicit time.

What is common to all these uses in verbs so far are the following: (a) the dummy element -i-, the unmarked third singular masculine pronominal, occurs in the rightmost possible morphological slot in the verb, according to the way pronominal elements code surface syntactic transitive subject (Ergative₂), transitive object/intransitive subject (Absolutive₃), indirect object (Dative₄); and (b) the inflection of the verb stem is “full,” that is, all possible inflectional slots for a given stem are filled, depending on transitivity, so that transitives have both Agent and Patient inflection, intransitives (including mediopassives in -x- ‘reflexive’ such as (6a) 241.5 and 175.3) have Subject inflection. Passives of evidence, such as that illustrated in (2f) above, contrast on both of these dimensions.

Obviously, then, from an historical point of view the innovation in Wasco-Wishram must start from the structure common to all the dialects. From this perspective, the passive of evidence is a locational construction in -ix with an actually referring
pronominal element in the rightmost morphological slot, in contrast to the dummy element -i-. Further, in contrast to the "full" inflection of the forms cited in (5) and (6), the passive forms are not inflected with any actually-referring pronominal in the expected leftmost position. And finally, this passive is "tenseless," formally a present without tense prefix.

So, one dimension of historical change has been generalization of the older 'locational' construction, with its unmarked third person singular masculine dummy pronominal -i-, to the entire pronominal paradigm, as shown in (7). This may be seen as

(7) Paradigmatic generalization of locational verbs in -ix

\[
\begin{align*}
&\left\{ \ldots i_3^- \right\} \text{STEM-ix} \quad \left\{ \ldots \text{Pron}_3^- \right\} \text{STEM-ix} \\
&\left\{ \ldots -i_4^- \text{Postp} \right\} \text{STEM-ix} \quad \left\{ \ldots \text{Pron}_4^- \text{Postp} \right\} \text{STEM-ix}
\end{align*}
\]

merely a referential extension of an already-existing pattern of morphosyntax. This already-existing pattern must have arisen from the centrally syntactic historical change shown in (8).

(8) "Analogical" change creating passive-like forms

\[
\begin{align*}
&*\text{Tns-} (\text{Erg}_{2}^-) \left\{ i_3^- \right\} \text{STEM-ix} > \left\{ i_3^- \right\} \text{STEM-ix} \\
&\left\{ \text{Abs}_3^- i_4^- \text{Postp} \right\} \text{STEM-ix} \quad \left\{ \text{Abs}_3^- i_4^- \text{Postp} \right\} \text{STEM-ix}
\end{align*}
\]

Such a schema shows the change from the pan-Chinookan usage of dummy -i- in fully inflected locational constructions, to the specifically Wasco-Wishram usage of tenseless and "passive"-like forms. I believe that this change must have come about by the "analogical" (Kuryłowicz 1945/49) pressure of three factors, which are schematized in (9). The first factor, as shown

(9) Determinants of the "analogical" creation of passive

1. The -xit 'transitional passive' provides a model of secondary intransitive from primary transitive:

\[
\begin{align*}
&\text{Tns-} \text{Erg}_{2}^- \text{Abs}_3^- (\text{Dat}_4^- \text{Postp}-) \text{STEM} : \text{Tns-} \text{Abs}_3^- (\text{Dat}_4^- \text{Postp}-) \text{STEM} : \\
&\text{ :: Tns-} \text{Erg}_{2} \left\{ -i_3^- \right\} \text{STEM} : *x
\end{align*}
\]

2. Transitive ('causative') and intransitive ('noncausative') inflections are possible for the same stem:

\[
\begin{align*}
&\text{Tns-} \text{Erg}_{2}^- \text{Abs}_3^- (\text{Dat}_4^- \text{Postp}-) \text{STEM} : \text{Tns-} \text{Abs}_3^- (\text{Dat}_4^- \text{Postp}-) \text{STEM}
\end{align*}
\]
3. Adverbial noun phrases of location and time provide a tenseless model of secondary derivatives:

\[
\text{[STEM]}_{\text{NP/Part}} : \text{STEM-ix} :: \{ \text{Abs}_{3}^{i_{3}}\text{-Postp}\} \text{STEM} : *_{x}
\]

in (9.1), is that the transitional passive, an old and pan-Chinookan formation in suffix -xít, provides a model of a secondarily intransitive verb with deletion of the leftmost inflectional pronoun of the “full” form. The second factor, as shown in (9.2), is that in such an ergative language, the only kind of stems ambiguous for inflection (or in two inflectional classes with “full” inflection) are precisely those that are ‘causative’ or ‘noncausative’. The same stem either takes, or does not take, Ergative₂ pronominal inflection, this being the only indication of the semantic distinction. The third factor, as shown in (9.3), is that the adverbial noun phrases in -ix, pointing out ‘the place where... ’ or ‘the time when... ’, provide a model of a tenseless secondary formation that has been generalized from noun and particle stems to verb themes. I think that the passives of evidence originally entered Wasco-Wishram idiomatic speech as forms pointing out where such-and-such an action took place, as a conversational equivalent to referring to the evidence for that action. Such evidence is, in fact, now presupposed in correct usage of the passive forms.

Looking at the evidential passives in this comparative light, we can see that they still do have a basically pointing-out character, though the pointing is rather submerged in their function as passive-like constructions. Having arisen through the morphosyntactic change (8) and the semantic generalization (7), the ‘pointing’ function has become ‘deixis’—presupposing and referring to the evidence in the context of discourse—as the predicating function has been absorbed into the paradigm of ‘voice’ as a ‘passive’—the ‘topic’ of which manifesting the presupposed evidence for the named action. And, it would seem, the specifically ‘passive’ function depends upon certain native-speaker intuitions about propositional relations of these forms in actual situations of use, relationships of “deducibility,” as we might term them.

Now inasmuch as passives of evidence are pragmatic forms, speech-event-bound constructions, their meaning in terms of contextual presuppositions plus illocutionary effects is never subject to definition in terms appropriate to context-independent categories of reference. How then can we analyze such linguis-
tic categories? The point is not unimportant, given our desire to perfect field techniques for the empirical investigation of languages. If we cannot merely give translation equivalents for such categories in terms of English (or other) categories of reference; if we cannot merely manipulate these forms in terms of some abstract, context-independent grammatical investigation; if we cannot be claiming that we are tapping native intuitions of "grammaticality" (which are, by definition, context-independent propositional relations); how do we get at these pragmatic operators in speech? I think we must depend on analyzing what I call the "metapragmatic" properties of the language in question, the way in which native speakers can talk about, or describe, the speech usage of their own language, as well as on observation of language use itself. In the case of the evidential forms, the metapragmatic relations of deducibility given by native speakers provide the key to seeing how the apparently 'locational' suffix -ix with attenuated pronominal inflection of the verb has entered the pragmatic system of 'voice'. For the native speakers tell us that from a valid occurrence of such a form, the proposition 'Somebody has Ved' (V being the relevant verb stem) is deducible as true.

Some excerpts from my field elicitation sessions are shown in (10) by way of exemplification. I have translated all but the examples of forms under discussion into English in the verbatim transcripts, and have given the morphological analysis of the relevant verb forms separately, for comparison with the schemata given above in (1). At the time of elicitation, it should be understood, I had no understanding that these were pragmatic forms. Hence, guided by accumulated prior knowledge of Wasco-Wishram grammar that saw these merely as 'passives', I asked questions that now seem, with hindsight, ignorant and misguided.

In the first excerpt (10a), we start by trying to check a form gathered earlier in a text, 'I made them cry recently'. The informant volunteers naniugʷičaxmida 'I made him cry recently', a fully-inflected transitive form. Then she offers the form with collective-neuter object -ɬ3-, nanluγʷičaxmida 'I made them cry recently'. And, having gotten the pattern, we have several more such fully transitive active inflections, including the first person singular object -n3- form, načnugʷičaxmida 'he made me cry recently'. Now, when I ask for the first person singular "passive", ?nuγʷičaxmidix "somebody made me cry", the informant understands the feminine singular form uγʷičax-midix 'she must have been made to cry', obviously a silent correction of my pragmatic blunder of using a first person topic with this verb stem in the passive of evidence. Note that the
(10a) ‘cause to cry’ -u-gʷíčáḵxmit
Inf: Wonder how'd you say that now, nānugʷačaxem—
I made them cry. I'm real sure but it's kinda hard. ə••m, you could say əne—for one—you
can say nānu—naniugʷíčáḵxmid.

MS: naniu•…
Inf: gʷíčáḵxmid, I made him cry.
MS: naniugʷi•…
Inf: čáḵxmid, I made him cry. Else nānu—naniugʷi—
I guess you could say same way nānugíc—čáḵ-
xmid, see? nānugícáḵxmid. Now I got it. I
made 'em cry nānugícáḵxmid. nānugícáḵxmid.
nānugícáḵxmid.

MS: əhə•. And how 'bout like if he made me cry,
you say načnu•…

Inf: naču—načnugʷíčáḵxmid, he made me cry.
MS: I see. Interesting. əhə•. Could you say like,
ə•, somebody made me cry; could I say, ə••,
nugʷíčáḵxmid?x?
Inf: nugʷíčáḵxmid? O'h, person—the way you can
tell a person, she looks like she was crying,
igícáḵxmit—

MS: —How?
Inf: ugʷíčáḵxmid.
MS: əhə•,

Inf: —Like if you see somebody, she been cryin',
like it looks somebody she—she musta been
crying, see?
MS: Yeah—

Inf: —ugícáḵxmid, her eyes shows it. ugičáḵmid, ugičáḵmid or somethin', they made her cry
I guess.

na-n-i-u-gʷíčáḵxmid-a ‘I recently caused
him to cry’

na-n-i-u-gʷíčáḵxmid-a ‘I…them…’

na-n-[a-]u-gʷíčáḵxmid-a ‘I…her…’

na-č-n-u-gʷíčáḵxmid-a ‘he…me…’

? n-u-gʷíčáḵxmid-ix “somebody caused me
to cry”

[a-]u-gʷíčáḵxmid-ix ‘she must have been
causd to cry’

i-ľg-[a-]u-gʷíčáḵxmit ‘they just caused
her to cry’
(10b) 'pinch' - s₃ - n-xap'iyatk
Inf: —ənsanxap'iyantk, that means 2 or 3 times I guess. i-n-s-a-n-xap'iy-a-n-tk 'I was just pinching her'
MS: Oh, I see—
Inf: —But incáx—incánxap'iyatk that's just once. i-n-s-a-n-xap'iyatk 'I just pinched her'
MS: Can you also say like, ē-ē—could you say, I'm pinched? Could you say, snxap'iyatgix?
Inf: Yeah—
MS: —How?—
Inf: I'm pinched. šnxə—šnxap—
MS: —snx—
Inf: —snxap'iyatKix. xsnxap'iyatk—iłksnxap'iyatk.
MS: əhsə.
Inf: Somebody pinched me like.
MS: You could say snxap'iyatgix though?
Inf: əhsə! If you show where you was pinched.

(10c) 'bump into' - l-/ta+qʷ
Inf: inf'il'əq too you can say you bumped into something, inf'il'əq.
MS: əhsə. How 'bout I'm going to?—might—
Inf: dalaʔax anildaqʷa. 
MS: əhsə. əhsə. Could you also say ildaqux? ildaqux. dalaʔax a-n-i-l-/da+qʷ-a 'perhaps I will bump into it'
Inf: ildaqux. O...h, like if he'll leave a mark or something somebody run into. That's what it means, somebody nii'-li'təq ḥə, -lił'təq—nii'-lił'təq'. i-1-/da+qʷ+x 'it must have been bumped into'
MS: əhsə. ... ni-1-i-[l-t-]/ta+q ḥə 'they bumped into it not long ago, probably'
Inf: ildaqux it means it shəws where it's been bumped.
MS: əhsə.
informant has carefully explained the context presupposed for the appropriate occurrence of the form—"a person, she looks like she was crying...her eyes shows it"—and has given as equivalent the deduced proposition, the truth of which is guaranteed by an appropriate occurrence of the evidential passive form—"iğugiçaxmid...they made her cry I guess"—with a transitive active form inflected with -lk₂ for unspecified Agent, as described earlier.

A second case of this sort, shown in (10b), involves the verb for 'pinching'. Having established the regular active form, both iterative (or continuative) 'I was just pinching her' insanxa-p'iyaṭ, and noniterative 'I just pinched her' insanxa-p'iyaṭ, the investigator asks for the "passive" form with first person singular -n₄ (the morpheme -s₃ is a constant element in the morphological idiom for 'pinch'), "I'm pinched...? snxa-p'iyaṭgix". Note that the informant responds with the form, and gives in the same breath (stumbling once over the initial cluster) the deducible proposition ilksnxa-p'iyaṭ 'they just pinched me', again with -lk₂-neuter-collective unspecified Agent, explaining that the meaning is "like" this. Pressing for the correctness or incorrectness of the form, I repeat it, and the informant says this form could be said if the speaker "shows" (sc. 'manifests' in the local usage) the presupposed evidence.

A final example is an excerpt on the verb 'bump into', shown in (10c). Here, in the course of elicitation of some related item, the informant volunteers iniltaq 'I just bumped into it'. To check on whether the stem ends in back -ěw or front -kw, I ask for the future form. And then I check on the labialization once more, seeking the "passive"? ildaq. \ Sure enough, the informant characterizes this construction by the presupposed evidence—"like if he'll leave a mark or something"—plus the deducible proposition in English—"somebody run into it"—and, most interestingly, the modalized proposition in Wasco—"nili-t'eq lgo" 'they bumped into it not long ago, probably'. And, finally, the informant stresses once again the presupposed evidence, "it shogws where it's been bumped."

I think it is obvious that the "evidential" component of the meaning of these pragmatic forms is precisely a deictic function, specialized from the locational value of the whole set of constructions in -ix. These "evidential" forms point to the evidence presupposed in the context of speaking and manifested by the referent of the pronominal prefix, much as do the English constructions with there is/are... Further, the "passive" component of the meaning comes from the metapragmatic linkage of the use of the construction to a deduced unspecified or col-
lective Agent proposition (with "full" leftmost pronominal inflection) as the understood "meaning" of the speech event. The speakers' consciousness of such an entailment, evident in the metapragmatic discourse, establishes the construction in question as a "passive" propositionally equivalent to the active voice.

I want finally to suggest that such examples from categorically rigid and morphologically complex ergative languages have a tremendous importance for linguistic theory in general, since they demonstrate clearly the pragmatic origin and function of such voice alternations as active vs. passive. Such examples show why it is fruitless to build a grammatical dogma in terms of abstract, context-independent synonymy relations of active and passive sentence types. This is the specious result of limiting ourselves to scientific discourse based on Standard Average European and its typological equivalents, and to Standard Average European metapragmatic theories about linguistic function, couched in terms of abstract clause-propositional meaning relations. In the latter languages, active vs. passive has a double functional value, at the levels of both abstract propositionality ("semantics" in the narrow sense) and effective speech use ("pragmatics"). At the opposite extreme, substantially ergative languages like Chinookan have an active-antipassive voice opposition for many of the proposition-bound functions, while pragmatic functions are separable in the active-passive voice opposition, as for this passive of evidence. When American Indian linguistics, and the linguistics of "exotic" languages generally, frees itself from the dogma of abstract propositionality, currently rampant in our formal grammatical theories, and looks instead at how linguistic categories structure speech events, the study of structure will be united with the study of ethnography of speaking. And both will profit.

Notes

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Observe that this example shows the Agent pronominal coded in the Absolutive_1 morphological form-order class of the verb. Further analysis, beyond the scope of this paper, would reveal that syntactically it behaves like a Dative_2 pronominal (Silverstein 1977b, §§ 2.4, 4.2). The simplified treatment does not affect the argument, however.

The Chinookan family of languages, centered around the lower Columbia River, is reasonably divided into two classificatory units, Lower Chinookan and Upper Chinookan. Lower Chinookan is represented by a single attested dialect, called here Lower Chinook. Upper Chinookan is represented by the Cathlamet language, and, further upriver, by a language known as Kiksht to the speakers of its many mutually-intelligible dialects, such as Multnomah, Clackamas, Cascades, Hood River, and Wasco-Wishram.

In the last form of (5b) the 'future' is coded by the combination of a...-a-χd-, the second element of which precedes final -ix.

I cite these examples in a modernized orthography by page and line of the published text collections. Lower Chinook final suffix -i is the expected cognate form, final *-x being regularly lost. Boas, who documented the resulting dialect correspondence (Boas 1911:569), nevertheless expresses uncertainty in his grammatical sketch as to the identity and significance of the Lower Chinook final -i. He attributes to it an incorrect meaning, "successful completion; across") (1911:597), on the basis of examples which code these senses with other morphemes.

The labialization to -χw- here is an automatic consequence of the position following -u-. Such labialization of gutturals k, q, x, χ after u is canonical in all the dialects, but may be seen as a "variable" phonological process, partly bound up with affective diminutivization. This variability is evident in forms in (10a).

For the general projection of spatial locations onto temporal ones, a pervasive feature of Chinookan "cognitive style," see Hymes 1975 and refs. there. Note that the temporal point is explicit in this example, rather than implicit. čamalix, referring to a month of the Cathlamet calendar, is itself a form in -ix, *(i-)ča-mal]-ix 'time of its river', i.e., "rivertime"; cf. (4).

As will be seen in further examples in (10), the expected Ergative for transitive verbs does not appear, nor does the expected Absolutive for intransitives. But there are idioms with fixed (non-referring) pronominal elements, such as 'pinch' in (10b), where such morphemes are, of course, preserved in the passive of evidence. Observe that the effect in these constructions is in accord with a hierarchy of case-marking, and with a hierarchy of "promotions" and "demotions" of case-relations in apparent (surface) form.
Anthony Woodbury (p.c. 21-I-78) points out that there is a parallelism between the lexicalized relationships 'causative': 'non-causative' or 'factive': 'static (adjectival)', and the grammatically-expressed relationship 'past-active': '(present)-passive'. This explanation, of course, makes semantically explicit the direction of analogical determination in (9.2). Further, as Woodbury notes, even in English verb stems (lexicalized forms) have different degrees of implication of a prior event (expressible as NP1 Ved NP2, given NP2 is Ven), stems like boil (It is boiled) being strongly suggestive, stems like freeze (It is frozen) being weakly suggestive.

Anthony Woodbury (p.c. 21-I-78) points out the interaction of tense and locative deixis in these English constructions as well, by contrasting the double value of There is a Santa Claus (both deictic and existential) vs. the single function of There was a Santa Claus (existential, except when place is or has been concomitantly established in discourse). This parallelism deserves further investigation.

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Thematicization and aspects of the verbal morphology in Burmese: the principles of organization.*

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1.0 Introduction. Burmese is one of the Tibeto-Burman languages of Burma. Its structure has been described in some depth by several quite competent scholars so that a good description of much of it already exists. However a thoroughly satisfying description of its topic/comment system was still lacking. This paper describes this thematicization process in Burmese in terms of two primitive semantic oppositions: a dynamic/static opposition such as one often finds between verbs and nouns and a continuing state/changed state opposition. The usefulness of these two basic semantic oppositions for the description of the Burmese thematicization system coupled with their prevalence elsewhere suggests that these oppositions are not solely artifacts of a linguistic description but that native speakers use analogues of these distinctions as basic organizing principles in the language. Further, an examination of part of the verbal morphology reveals that one of these semantic distinctions—the continuing state/changed state opposition—is also the basic organizing principle behind the use of a set of verb particles (se:/?um: and tau?). Support for this analysis is found in the fact that the formative tau? marks a changed condition in both the thematicization system and in the verbal morphology. Further, in English, the distribution of yet/still and anymore not only parallels the use of se:/?um: and tau? in Burmese but is similarly organized on a continuing state/changed state basis.

2.0 Thematicization. The distinction between clause level (intransiential) and discourse level (intersential) organization must be emphasized prior to any discussion of thematicization in Burmese. Many of the particles found marking the thematicization processes in Burmese (ka?, kui, tau?) may be analyzed as taking part in two distinct systems; that is, a single particle plays one role at the clause level and another role at the discourse level. Once this distinction between levels is made, the clause level functions can be described easily and then the thematicization process can be described in terms of the two basic semantic oppositions which form the basis for its organization: the dynamic/static opposition and a continued state/changed state opposition.

2.1 Clause level case marking. Case marking in Burmese is done by means of the particles ka? and kui. For want of better terms I shall describe ka? as designating subjects and kui as designating objects. It is of some importance to note that these particles are not invariably present but instead are used primarily when their omission would result in ambiguity. Thus consider the following sentence (Okell 1969:323):

kyup kui tau? bha hma meprau bhu
I KUI TAU? what-even not say-BHU
'(She) didn't tell me anything'
Since no subject noun phrase occurs in the above sentence, the case role of kyup 'I' would be unclear were it not for the object marker kui. Here the absence of an overt subject required the presence of the object marker kui on the remaining noun phrase to avoid ambiguity. Another common context requiring the presence of a marked noun phrase involves object preposing. When an object is thematicized or topicalized, it is moved to sentence-initial position. In such cases the expected subject/object word order is no longer useful for sorting out intrasentential case relationships and thus both the object and the subject tend to be overtly marked with kui and ka?, respectively. Thus, consider the following example (Lehman 1973:7):

kui ?e: kui su ka? sak tay
Ko Aye KUI he-KA? kill-TAY
'He killed Ko Aye'

Notice that here the ka?/kui case marking system serves two functions: not only do ka? and kui sort out the intrasentential case relationships but, they allow preposing which signals information about intersentential themes. The case markers and the word order combine to show a double contrast: a contrastive theme is marked by the preposing of the object kui ?e: 'Ko Aye' and the intrasentential object and subject are marked by the kui after kui ?e: 'Ko Aye'(object) and the ka? after su 'he' (subject).

2.2 Discourse level thematicization. Having discussed the intrasentential roles of the case markers ka? and kui, we will turn to the marking of thematicization in Burmese. The basic opposition is between the continuation of old topics (marked with ø or ha) and the introduction of new themes or topics (marked most frequently with ka?, kui, or tau?). Continuing topics are most accurately viewed as being signalled by ø as well as ha since more often than not retained topics are omitted altogether in Burmese, a process not uncommon to zero-anaphora languages. The use of zero-anaphora contrasts with English where old topics are most typically reduced to pronouns instead of being completed deleted. Consider the following sentence:

The old man with the tattered coat staggered before he fell.

In this example, the new subject/topic introduced in the first clause is subsequently reduced to a pronoun when it reappears as an old, non-contrastive topic in the second clause; in a comparable Burmese example the old non-contrastive topic would usually be omitted completely.

The basic oppositions distinguished by the topic markers are sketched briefly in the chart below. At the risk of oversimplifying, the distribution can be stated succinctly. The first contrast is between ø/ha, marking the continuation of an already established topic, and ka?/kui and tau?, marking the presence of a new topic. Within the set of new topic markers a basic difference is found between ka? and kui which mark the more static, nominal themes and tau? which marks the
more dynamic, verbal themes. Within the class of nominal topic markers a further distinction is made between kui which, intrasententially, marks objects and ka? which, intrasententially, marks subjects. More specifically, the formatives ka?, kui, and tau? mark the following:

ka?
1. topicalized subjects
2. subjects, 'source' time and place adverbials, subjective sentential complements

kui
2. topicalized objects
2. objects, 'goal' time and place adverbials, and emphatically rather than thematically preposed constituents

tau?
1. topic marker usually found with verbs and with constituents which indicate temporal ordering, that is, the tau? marked constituent was completed before the following constituent. Thus tau? is found with bay tau? 'when', nauk tau? 'afterwards', and di tau? kha 'then'.
2. tau? is also found in the verbal morphology indicating a changed condition.7

Schematically the basic distribution of the topic markers discussed above can be represented in the following chart:

<table>
<thead>
<tr>
<th>Changed Topic</th>
<th>Continued Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>nominals and static entities</td>
<td>ka? (subjects)</td>
</tr>
<tr>
<td>verbals and dynamic entities</td>
<td>tau?</td>
</tr>
</tbody>
</table>

2.2.1 The use of ha. Cornyn and Roop (1968:233) describe ha as "a general particle which emphasizes a noun expression and marks it as the topic of the sentence." An examination of the dialogue that the ha-marked phrase occurred in makes it clear that the ha is being used with an already established topic (228,233):

(1) ?ay: di ?im bhay lui ?im myui: lay:
    this house what house kind wh-Q
    'What kind of house is this one?'

(2) sau ?im ha ?akhan: khrauk khan: hri? ba tay
    Oh house-HA room six room exist BA TAY
    'Oh, the house has six rooms'

Thus ?im 'house' is already established as the topic in the first sentence and continued as the topic in the second (?im ha 'house HA').8

A clue to understanding why ha is sometimes used to mark an established topics while at other times nothing is used can be found in the following examples (1968:223):
Cornyn and Roop note that the answer to a question with ha in it may also contain a ha or else ha may be completely omitted. More interesting is the fact that when ha is included, its noun phrase is, in their words, 'emphasized'. This emphasis is not and should not be confused with a contrastive topic status. Instead the presence of a ha-marked topic, at least in those cases where it does not primarily serve to mark the first linguistic introduction of a deictically established topic, seems to be a stylistic device to place more focus on the topic, in contrast to the unmarked emphasis on the new information in the comment which would be present if the topic were either unmarked or omitted entirely.

In English, a parallel stylistic alternation in emphasis is achieved through the retention or non-retention of the subjects of conjoined clauses in the second clause (examples and analysis from Ennis 1977:Chapter 4):9

(1) a. But she had paid the rent until the end of the month, and could not afford to move.
   b. But she had paid the rent till the end of the month, and she could not afford to move. (92)

(2) a. She spoke carefully, with controlled vowels, and moved with care...
   b. She spoke carefully, with controlled vowels, she moved with care... (153)

(3) a. He was short, squat, and pale...
   b. He was short, he was squat, he was pale... (84)

With the deletion of the identical noun phrase, the emphasis is clearly on the verbal action; with the retention of the identical noun phrase, the emphasis in these clauses moves away from the verbal element and falls, instead, on the identical noun phrase. The alternation in Burmese between φ and the retention of a ha-marked noun phrase works in a precisely parallel way; the non-retention (φ) leaves the expected emphasis on the verbal element and the ha-marked retention shifts the emphasis away from the verbal element onto the subject.

The use of ha is illustrated in the following sentence (Okell 1969:260):

di hywe chuìn: ha tautau ʔəphui tan tay? pac cañ bhay this gold leaf-HA pretty much price be worth-TAY?-object-BHAY 'This gold leaf is an object of considerable value'
The topic _di hywe chuìn_: 'this gold leaf' represents the discussion of a topic that has already been established deictically by _di_ 'this'. Similarly in the following example from Okeill that Lehman discusses at some length, the topic is one that has already been established prior to the discourse, although not deictically (Okeill 1969:260; Lehman 1973:2):

```
Taungthus-HA-also army-HA Shan rulers

tway: pi: hnim may lui? than kra? tay
join-and oppress-MAY-quoted think all TAY
```

'And the Taungthus thought that the army was going to join up with the Shan rulers and oppress them'

Lehman's discussion of this particular sentence is quite instructive. He (1973:2) notes that the presence of _ha_ marking two different phrases was acceptable just in case one had been previously speaking about both subjects; that is, the sentence was acceptable to his informants just in case "one had been speaking previously not only of the Taungthus but also about what they thought about the army." Lehman goes on to establish that the _ha_ marked material is clearly not in any sense being contrasted with any other material. It is important to note that _ha_ is largely restricted to use with nominals. In part this restriction is an expected outgrowth of its historical descent from the noun _ha_ 'thing'.

2.2.2 The new topic marker _ka?_. English often has a clear distinction between a contrastive and a new theme. A contrastive topic is illustrated by the following example:

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It was Bill who ate the radishes.10 (=Bill ate the radishes.)
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_bill_ is the contrastive theme; he has been picked out of some set and made the topic of the sentence. A new, non-contrastive topic is illustrated by the following example:

```
The police finally recovered our stolen car; it had only minor damage done to it.
```

In this example, _our stolen car_ introduces the new information and, in the second clause, _our stolen car_, now pronominalized as it, is the new topic. In both the above examples, the newly topicalized element was a definite noun phrase.

In contrast to _ø_ and _ha_, which mark old topics, _ka?_, _kui_, and _tau?_ mark new topics, including contrastive topics. More specifically _ka?_ is used to mark new topics and, as Delancey (1977:9) has observed it is only used with definite noun phrases.11 Consider the following sentence from Okeill (1969:318):
Okell translates this sentence using italics to indicate what, in English, would be conveyed by contrastive stress. In Burmese, the contrastive nature of the phrase ña kà? 'I-KÁ?' is indicated by the retention of the pronoun ña 'I'. In a verb-final language like Burmese where zero-anaphora is the rule not the exception, a retained pronoun must be an emphatic pronoun. The very existence of the surface pronoun establishes its contrastive nature. The kà? in ña kà? simply labels the phrase as containing a new topic or, at least, an unexpected topic. The new topic is marked by kà? but other markers elaborate by indicating whether the theme is also contrastive or simply a new topic. Thus (Okell 1969: 318):

su kà? lay: bhay:  chàn:  ray:  lwan:  lui?
he-KÁ?-also-emphatic  be poor-exceedingly-because

kui sa pe: lui bhay:  cit pyak ne ta
Ko Tha Bay-manner-emphatic mind destroy-stay-TA

'He too, just like Ko Tha Bay, was miserable because he was so poor'

Here, in the first phrase su kà? lay: bhay: 'he too', kà? alone, lay: alone, or the very presence of su 'he' would be sufficient to establish the new topicality of su 'he'; the presence of all three certainly does the job.

The use of kà? as a new topic marker is consistent with another use of kà? in 'source'12 time and place adverbials (Okell 1969:316):

còne ne? kà?
twe? tay
Saturday-KÁ?  meet-TAY
'(We) met on Saturday'

Here a specific time has been chosen from a known set of times and topicalized. In a similar vein, but this time with a place setting, consider a parallel example (Lehman 1973:9):

man:tele:  ran kun mruì kà?  we: tay
Mandalay  Rangoon-city-KÁ?  far-TAY
'Mandalay is far from Rangoon'

Lehman's analysis (Ibid.) is both instructive and pertinent here:

It is necessarily the case that Mandalay is not inherently and in itself far or near; starting from Rangòon, however, one can plausibly claim that it is far. That is, one must specify a particular (contrastively marked) reference point, and this is the case wherever the meaning 'from' is to be expressed.
Notice that in English a very similar use of adverbial preposing puts the preposed phrase into contrastive focus. Compare the following pair of English sentences:

I watched the bullfights in Spain.

In Spain, I watched the bullfights...

In Portugal, I visited by friend...

In the first sentence in Spain is a piece of information given in the least marked informational context. In the second sentence in Spain has been topicalized and is clearly in contrastive focus; the contrast with another place or other places is at least implied although not always actually stated. The Burmese functional equivalent of this type of preposed, contrastively topicalized 'source' place and time adverbial is the ka? marked phrase.  

Thus far only the distinction between ø/ha and ka? has been discussed. In the sections below the thematic particles found in (near) complementary distribution with ka?, and which together with ka? stand in opposition to ø/ha, will be discussed. Other topicalization devices exist which play more specialized and restricted roles. These will also be discussed.

In addition to kui used as an object marker (discussed in section 2.1 above), Okell (1969:324-7) discusses a now synchronically quite distinct use of kui as an 'emphatic' marker. Later Okell suggests that this emphatic use of kui came from the object marking function of kui, a theme which I shall develop further. Then I shall argue that, just as the object-marking kui is in complementary distribution with the subject marking ka?, the emphatic-marking kui is still in near complementary distribution with the new-theme marking ka? and both particles serve the same basic function: marking new topics. Consider an example from Lehman (1973:7):

\[
\begin{align*}
\text{su ka?} & \quad \text{kui ?e: kui} & \quad \text{sak tay} \\
\text{he-KA?} & \quad \text{Ko Aye KUI} & \quad \text{kill-TAY} \\
\text{He killed Ko Aye}
\end{align*}
\]

In this example kui solely and unambiguously serves to mark the object; it has no apparent emphatic or thematic functions. At this point however, it is pertinent to remember that the object-marking kui is not typically present unless its omission would result in some ambiguity. Bearing this in mind, consider the next example, discussed earlier but repeated here for convenience:

\[
\begin{align*}
\text{kui ?e: kui} & \quad \text{su ka?} & \quad \text{sak tay} \\
\text{Ko Aye KUI} & \quad \text{he-KA?} & \quad \text{kill-TAY} \\
\text{He killed Ko Aye}
\end{align*}
\]

Because the object phrase kui ?e: 'Ko Aye' has been preposed due to its thematicization, the particle kui, which was probably unnecessary for the understanding of the sentence before preposing, is now mandatory! Without this object-marking kui and/or the subject/marking ka? the
subject and object cannot be readily identified. Since the preposing due to thematicization requires the presence of kui to disambiguate the case relationships, kui becomes almost mandatorily present on thematicized objects. Since, as I have pointed out before, the object marking kui is not typically present unless its omission would result in some ambiguity, kui is going to occur with a high frequency in a specific environment characterized by its thematicity and contrastiveness; it is not surprising that the highly marked topics in this environment can be described as 'emphatic'. This use of kui, which is now more intersentential than intrasentential in many cases, is now found in virtual complementary distribution with another set of contrastively marked topics labelled with ka?.

Throughout this discussion I have been using the term 'near complementary distribution' to describe the relationship between the topic marking particles kui and ka?. It is now appropriate to discuss some examples of overlap between these two particles (Okell 1969:326):

saq ra? tay? ?ækhyin tun: kui ka?
learnt-must-TAY?-time-during-KUI-KA?
'ever during the time (we) were learning'

?ay: da kui ka? hma: ta bhay:
that-KUI-KA? be wrong-TA-BHAY:
'That's where (they) went wrong'

In these two examples picked from Okell kui seems to have lost its former association with the object slot to the point where it can cooccur with ka?. Thus, in the first sentence, ka? is used primarily in a deictic sense while the kui marks the contrastive topicality of the phrase and, in the second sentence, ka? seems to mark the intersentential subject role while kui again marks its contrastive topicality.

2.2.3 The topic marker tau?. The particle tau? is used in two contrastive senses: (1) it is used to mark the first of two temporally or causally ordered events and/or (2) it is used not only to state that a contrasting (=new) topic is being used but it also indicates that the contrast is with a previous statement or assumption. That is, it often announces more than just a change of topic; frequently and more importantly a partial or total disagreement with either explicitly or implicitly announced information is being expressed. A quite parallel use of tau? is found in the verbal morphology (see section 3).

2.2.4 The use of kau:. kau:, nicely glossed as 'how about?' by Okell, is described as (1969:322) "usually taking up some information already given or mentioned and asking about its application to other topics" e.g.,

khyak kau: khyak tat se: sela:
cook-KAU: cook-know how-SE:-Se-question
'How about cooking-can (she) do (that) too?'
(e.g. after hearing about her other accomplishments)

This is a specialized contrastive topic marker with the only new information being the newly picked topic and the only question being whether or not it fits into an already mentioned class. This marker
contrasts with the kaʔ marked topics in that after a kaʔ marked topic
there is frequently new information introduced about the topic; there
is no such new information introduced after a kau: marked topic.15
Cornyn and Roop (1968:233) discuss kau: in similar terms:

kau: asks for a comparison with an earlier topic; the answer to
a question with -kau: indicates either that the second topic also
(-lay:) is like the first topic, or that the second topic, by
contrast (-tau?), is different.

3.0 The verbal morphology. Modern Burmese has a pair of particles
in the verbal morphology which are set up in a nice paradigmatic
opposition to each other: se:/ʔum: and tau?. Allott (1965) has
insightfully characterized these particles as 'cumulative' (se:/ʔum:)
and 'culminating' (tau?): Okell (1973) made the contrast between them
even more explicit. The particles se: and ʔum: are in complementary
distribution and function as a single unit in their semantic opposition
to tau?: ʔum: cooccurs with the clause final markers may, nay, and Ø
imperative' while se: occurs elsewhere. Thus what we are dealing with
is a semantic opposition between se:/ʔum: and tau?.

Following the lead of Okell (1973) I will discuss the se:/ʔum:
versus tau? opposition in terms of the continuity or an action (or state)
between two different points in time (time1 and time2). Thus consider
the following chart:

<table>
<thead>
<tr>
<th>time1</th>
<th>time2</th>
<th>particle choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>+action/state</td>
<td>+action/state</td>
<td>se:/</td>
</tr>
<tr>
<td>-action/state</td>
<td>-action/state</td>
<td>ʔum:</td>
</tr>
<tr>
<td>-action/state</td>
<td>+action/state</td>
<td>tau?</td>
</tr>
<tr>
<td>+action/state</td>
<td>-action/state</td>
<td></td>
</tr>
</tbody>
</table>

In short, se:/ʔum: implies the continuation of a previous state,
condition, or action while tau? implies a change in a previous state,
condition, or action. Okell gives a set of examples which correspond
to the above chart:

\[\text{time1:time2}\]

pat tua: ti:ʔum: may  :+:'(I) will go on playing the x.'
pat tua: mati:se:bhu: -:-:'(I) won't play the x. yet'
pat tua: mati:tau:bhu: :+-:'(I) won't play the x. anymore'
pat tua: ti:tau:may :+-:'(I) will play the xylophone
                                 at last'

It should be noted that se:/ʔum: and tau? do not just relate two times
for a single event, state, condition, or action but also they may
relate two quite different events, states, conditions, or actions
(Okell 1973:13):
pat təla: ti:se:ty +:+(I) also played the xylophone

As Okell points out, although one possible reading of se: is that the xylophone playing occurred in the past and is continuing, the se: could alternatively be used in case a flute was being played and now the person has switched to playing the xylophone or, in case the person had made a speech earlier and now was playing the xylophone. In short, while se: and ?um: imply continuation, the continuation need not be restricted to the same state, condition, or action; similarly, while tau? implies discontinuation, the discontinuation need not be restricted to the same vein. The implications of this last observation for a general characterization of tau?, which also occurs as a new, contrastive topic marker are obvious.

Interestingly, a certain well-defined set of examples exists where both ?um: and tau? occur next to each other (Okell 1973:17):

ʔəhku? məlup (nay?) ?um: tau? lyp kyaŋ ra? lyp may
'Even though (he) doesn't do it now, (he) may well do it later'

'(I) always remember you, even though (I) don't come and see you'

tat nui ?um: tau? swa: kui məswa: kyaŋ bhu:
'Even if (I) could afford to, (I) simply don't want to go'

An analysis of the three examples using both ?um: and tau? reveals two pertinent characteristics of the semantics: the continuation (?um:) of some state, condition, or action is juxtaposed to the actual or potential change (tau?) of the state, condition, or action. Given that all the cited examples contain both a continued component and a changed component the presence of both ?um: and tau? should be somewhat less than disturbing.

Finally, it should be noted that the paradigmatic semantic oppositions expressed by these Burmese particles are closely paralleled by the set of semantic oppositions expressed by yet/still and anymore in English. In fact, the so-called anymore-dialect of English expresses a strikingly similar set of oppositions. The anymore-dialect is the general cover term for that set of American dialects where sentences like the following are found:16

Liver costs a lot anymore.
Films are so boring anymore.
Food is very expensive anymore.

Notice that in this sentence, anymore does not mean 'nowadays'; instead, anymore is used for a state that was not true in the past, but which is true now. All the oppositions found in the use of the Burmese particles se:/?um: and tau? can also be found in this dialect of English:
The work is still difficult.  +:  still (positive)/
The work isn't difficult yet.  -:  yet (negative)
 (=The work still isn't difficult)

The work isn't difficult anymore.  +  anymore
The work is difficult anymore.  -  anymore

The parallel with Burmese is perfect. Identical distinctions are being coded in both languages in similar ways.

4.0 Conclusion. Two basic semantic oppositions underlie the use and distribution of the topic particles ka?, kui, ha, and ø: a dynamic/static distinction and a continued/changed state opposition. The second of these distinctions is the basis for the organization of the verb particles se:/¼umː and tau?. In the Burmese topicalization system and within part of the verbal morphology, the first distinction is between those particles found only with nominals and static entities (ka?/kui/ ha) and those found with verbals and dynamic entities (se:/¼umː/tau?). The second distinction separates particles found with a changed condition (ka?/kui/tau?) from particles found with a continued condition (se:/¼umː/ha/ø); a perfect parallel for this second distinction is found in the use of anymore in certain dialects of American English. The following chart summarizes both distinctions:

<table>
<thead>
<tr>
<th>changed condition</th>
<th>continued condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>nominals and static entities</td>
<td>ka?/kui</td>
</tr>
<tr>
<td>verbals and dynamic entities</td>
<td>tau?</td>
</tr>
</tbody>
</table>

Because ka?, kui, ø, and ha only occur with static or at least statically viewed nominals, these particles do not occur as a part of the verbal morphology. However, because both the verbal morphology and the thematic system contain dynamic entities tau? can and does occur as a part of both systems. This prevalence of the dynamic/static opposition and the continuing state/changed state opposition not just in the Burmese thematicization system but also in other languages suggests that these distinctions are not just products of a linguistic description or even just principles underlying the organization of Burmese grammar but are basic organizing principles of language.

Footnotes:

*I shall be surprised if all my errors should prove minor and I will be grateful for corrections from readers.

I am using a transliteration scheme for all the examples. Although it is fairly obvious, those interested in looking it up can find it in Thurgood (1976).

This dual functioning of various particles provides part of the mechanism for the change from the original ergative/nominative system found in the earliest Lolo-Burmese texts to the essentially nominative/accusative system found in Modern Burmese.

In fact, in many languages formatives exist which are susceptible to one analysis at the clause level and another at the discourse level. And, since it is not just the linguist that is faced with alternate possibilities for the interpretation of these particles, this discourse level/clause level indeterminancy undoubtedly provides one mechanism by which topic/comment systems become nominative/accusative systems and vice versa.

In fact, the prime use of ka? and kui is as intrasentential case markers; as intersentential topicalization markers, they have a much lighter functional load.

I am making no distinction between the terms thematicization and topicalization in this paper. Also elsewhere in the literature many of the markers which I will be calling topic markers have been called subject markers. Throughout this paper I will reserve the term subject (and object) to refer to intrasentential case relationships or role relationships and I will use the terms theme and topic interchangeably to refer to intersentential thematicization patterns.

While the markers ka?, kau:, and tau? mark new topics it must be noted that what is new is the topicality of the phrase in question. Apparently only old information can be topicalized in Burmese.

See section 3.

Just after their discussion of ha referred to above, Cornyn and Roop somewhat surprisingly state (1968:233): "-ha marks a topic introduced for the first time." The example just discussed provides a clear counterexample to the claim that "-ha marks a topic introduced for the first time." There is a sense however in which Cornyn and Roop are correct in their observation; ha frequently marks a topic that has already been established extralinguistically e.g., deictically, but which is being introduced for the first time linguistically.

The numbers in parenthesis refer to pages in Martha Quest from which the quotations were taken.
10 Since stress is not indicated in writing there are obvious advantages to the use of the cleft sentence in writing. In spoken English either structure would be quite functional.

11 English contrasts with Burmese in this regard. In the sentence 'There's a man standing near the curb the noun phrase a man is both the topic and new information. (The word there is the grammatical subject).

12 'Source' is used in the sense of Fillmore (1968).

13 It is clear, of course, that the Burmese ka? marked phrase is far more restricted in its range of uses.

14 No major or even minor realignments are necessary to equate Okell's category 'emphatic' with my category 'new topic'.

15 The essential minimal difference between a kau: marked and a ka? marked topic is that the kau: marked sentence asks about the contrastively marked topic while the ka? marked topic has some sort of new information about the topic in the sentence. In general ka? is used for a much, much broader range of things than the highly restricted, almost totally old information based kau:.

16 In standard American English, anymore is a negative polarity item; that is, anymore only occurs in negative environments---never in a positive one. This contrasts with its use in the so-called anymore-dialect where it occurs in both positive and negative environments.

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MODERN GREEK CLITICS: PLACEMENT, ORDER, AND FUNCTION
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0. I intend to present in this paper data pertinent to a
description of the clitic elements in Modern Greek, and to interpret
them in the light of some standard notion of 'cliticness' (cf. Browne
1967, Perlmuttner 1971, Zwicky 1977). This will lead me to propose
some necessary modifications regarding the definitional clitic prop-
erties of placement and stresslessness. The data presented in this
paper originate from extensive consultant work with one speaker,
and they have been brought in line with some important publications
on Greek clitics (in particular Thumb 1912:84-91, Moser-Philtsou
1958:394-401). In addition a recent article (Warburton 1977) dealing
extensively with clitic ordering and cooccurrence restrictions on
pronominal clitic combinations was consulted. After a short clarifi-
cation on what the term clitic shall mean in this paper (section 1)
I will first investigate the differential placement properties of
three otherwise identical sets of clitic elements (possessive markers,
comparative pronouns, and object pronouns; cf. section 2); in the
second part the focus will be on further ordering and cooccurrence
restrictions for pronominal clitic clusters, and on the role of such
clitics as carriers of focused information (section 3).

1. For purposes of the present discussion the term special
clitic will refer to an element which is (A) stressless, (B) attached
to some (more highly) stressed form, and (C) placed into a restricted
position in the surface string. (For some principled discussion
about the relevance of these criteria, cf. Tegey 1977:251-73; also
Zwicky 1977, Wanner 1977.) Taking the illustrations for these cri-
teria from the Greek pronominal clitics, 1 vs. the ungrammatical 2
shows stresslessness to be essential given that absence of stress
implies impossibility of contrastiveness. The phonological attach-
ment can be demonstrated by the fact that nothing (except for another
clitic of the same class) may intervene between the clitic and its
host (neither pause nor actual linguistic material; 3, 4). Nor can
the clitic appear alone; only a full (i.e. stressable) pronoun can
do so (5, 6). The functionally motivated position for the constituent
represented by the clitic, as seen with a full NP or strong pronoun
(7), leads to ungrammaticality with a clitic (8): The clitic must be
contiguous to the verb, located in a restricted position which is not
available to the strong forms (9, 10).

(1) ãen mu-áresi to krasí
not/me/pleases/the/wine 'I don't like wine'
(2) *tis-áresi to krasí, alá ãen mu-áresi
 to her/pleases/the/wine/but/not/me/pleases 'Shé likes wine,
    but I don't'
(3) pés-to-mu tell/it/to/me 'Tell me!
   b. *pés // to-mu
   c. *pés-to // mu
   d. pés-to-mu // eména 'Tell me!
(4) *pés tin alisíà-mu tell/the/truth/me 'Tell me the truth!'
(5) pióon iđan? -- *tin 'Who did they see?' --Her.
(6) pióon iđan? -- artin 'id.' (strong pronoun)
(7) fisiká ĭpe tis adelfí-s-tu to míśćiko 'Naturally he told his sister the secret.'
(8) *fisiká ĭpe tis adelfí-s-tu to
(9) fisiká to ĭpe tis adelfí-s-tu
(10) *fisiká to míśćiko ĭpe tis adelfí-s-tu

The type of clitic described by properties A,B, and C (so-called special clitics) must be distinguished from the so-called simple ones which exhibit surface effects only corresponding to the parameters A and B (stresslessness and attachment), but not C (place-

ment). Such pronominal reduction clitics are e.g. known for English (cf. 11), and similar pronominal or non-pronominal reduction pheno-
mena seem to be typical for language in general (frequently so with articles, prepositions etc.). Such forms shall be of no further con-
cern here.

(11) They gave her a wrong address

  "geyv ḍo "
  "geyv o`i "
  "geyv ± "

2.1. The Greek referential clitics can be grouped into the two following sets of forms: The first one in 12 comprises all clitic elements which function as (a) possessive markers in con-
junction with a NP, (b) comparative terms in conjunction with an AdjP or AdvP, and (c) IO pronouns in conjunction with a verb. The second set in 13 consists of clitics which are DO forms in conjunc-
tion with a verb, representing thus a complementary set to the third function (IO on a verb) of set 12.

(12) sg. mu I su II tu (m,n) tis (f) III
    pl. mas I sas II tus III
(13) sg. me I se II to(n) (m), ti(n) (f), to (n) III
    pl. mas I sas II tus (m), tis/tes (f), ta (n) III

The functional differentiation of the first set of forms into three types is directly correlated with the syntactic frame in which a clitic occurs in a given instance. With regard to the first function of possessive marker, the clitic is attached enclitically to any nominal element of the NP (an adjective or the noun); but an article or other determiner (as a non-lexical element) may not be the host. Thus in 14 the noun patéras or any of its inflected forms is the host of the clitic su; but the articles o, tu in 15 cannot act in this way since they do not provide a stressed support base required according to property B. If the NP contains an adjective the possessive may encliticize alternatively to this element; cf. the various collocations in 16-21 which all convey the same logical con-
tent of 'a brown dress belonging to me'.

(14) a. o patéras-su (nom.) 'your father'
    b. tu patéra-su (gen.)
(15) a. *o-su patéras
    b. *tu-su patéra
(16) to fórema-su to káfé the/dress-my/the/brown 'my brown dress'
(17) to fórema to káfé-mu
(18) to káfé-mu fórema
(19) to kafé-mu to fórema
(20) to kafé fóremá-mu
(21) to kafé to fóremá-mu

The difference between the various versions lies in the focus arrangement, first with regard to the N-A vs. A-N opposition, and second with regard to the possessive itself: The 'normal' linearization is A-N where either the A or the N may be the focus depending on the specific context (and to a minor degree on the stress/intonation rendition, A-N vs. A-N). For heavier emphasis on the adjective the extraposition to N-A takes place where the article repetition before the adjective is obligatory; article repetition in the basic A-N pattern is judged as overprecise and strange. A structural differentiation between the two arrangements may be assumed so that the basic order in 22 is related to the more complex 23 by extraposition (or adjective extraction) plus article copying.

(22) \[[\text{art} \ [\text{Adj} - N]]_{\text{NP}} \]\_\text{NP}

(23) \[[\text{art} - N]_{\text{NP}} \ [\text{art} - \text{Adj}]_{A(P)} \]\_\text{NP}

Within this pattern the enclitic possessive will be attached to the first stressed element of the NP, i.e. the Adj in 22: in this position the focus of the possessive is 'neutral', i.e. encompassing the whole NP. The attachment to a second element in 22 allows for a double interpretation either as a modifier specifically of this second element, or again as a phrase modifier; in 23 the possessive attached to the second extraposed element can only have word focus (i.e. on the Adj) while its positioning with the N in 23 remains ambiguous. Finally the overprecise and insistent versions 19, 21 arise through a further inversion of the internal NP and AP for the purpose of shifting the AP to the first position of even stronger emphasis. The focus on the possessive remains restricted to the adjective in 19 while it is ambiguous in enclisis to the noun. Cf. the contrasts in 24 vs. 25.

(24) o trágos fowáte to kafé fóremá-mu, óxi to kafé(-mu) kapélo
   'The goat is afraid of my brown dress, not my brown hat.'

(25) o trágos fowáte to kafé fóremá-mu, óxi to kókinó-mu (fórema)
   'The goat is afraid of my brown dress, not the red one.'

It is the position of the major elements of the NP, and not the place of the possessive clitic, which determines the emphasis structure. While the phonetic attachment in each case is a phenomenon of amalgamation of two contiguous items (i.e. the host word plus the enclitic), the placement of the clitic (i.e. the syntactic aspect of attachment) may be determined with respect to the smaller unit on the word level, or with respect to the higher level unit of the constituent: In 20 the clitic mu may be placed with respect to the N or the whole NP (resulting in N focus for N-mu vs. NP focus N-P-mu), but in both cases the phonetic surface form is [fóremá-mu]. The possessive clitic cannot be placed to any element or structure which stands outside its NP of origin: Whatever the correct derivation of a possessive expression, its corresponding subtree necessarily is a portion of the configuration yielding the possessed surface NP. The variable placement within this structure is fully predetermined by
the possessor- (and thus clitic) independent conditions of relative prominence. The available free variation between word scope vs. phase scope is the consequence of the potential discrepancy between syntactic collocation and phonological amalgamation. Although the movement of the clitic is not necessarily from its place of origin to its place of occurrence (given that the place of origin is undetermined; cf. above discussion of property C), the movement from place to place as a function of informational organization and surface structure provides the justification for the diagnosis of special clitic status. The impossibility of a double occurrence of the clitic furthermore shows that it is not a mere agreement marker originating from an iterative copying process (26).

(26) *to kafé-μu fôremâ-μu

2.2. In other situations the same set of clitics (cf. 12) is attached enclitically to an adjectival or adverbial expression of comparison; the clitic designates here the term with respect to which the comparison is made, 'more adj/adv than x'. The comparative may be a synthetic (monolectal) modification of the positive degree (27), or an analytical expression consisting of degree adverb plus positive adjective/adverb (28). In a 'flat' context there is no logical or connotational difference between the clitic version of this constituent (28, 30).

(27) o yánis ine megalîterôs-μu 'Yannis is older than I am'
(28) o yánis ine megalîteros apo ména 'id.'
(29) o yánis ine pyo megálos-μu 'id.'
(30) o yánis ine pyo megálos apo ména 'id.'

The clitic expression is only available if the second portion of the comparison has been reduced to a surface NP; if the second part retains its clause structure (with a verb) only the regular non-clitic expressions are admitted; cf. 31a vs. b.

(31)

a. *o yánis ine [megalîterôs-μu íme ' . than I am'

b. o yánis ine pyo megálos apo o ti íme egô 'id.'

The placement of such clitics does not appear to be problematic since they attach enclitically to the only surface element left in their structure of origin. In contrast to the situation with the possessives there is no surface variation in string collocation possible with the adjectival/adverbial phrase of comparison: The clitic cannot be placed to the N of a relevant NP (cf. 32): at best it can occur attached to the NP final adjective (33a). In each of these cases the possessive function of the clitic is prevalent; but only the periphrastic version in 33b will be fully acceptable.

(32) a. *i maría ine kalîteri pêxtra-μu 'Maria is a better player than I'

b. *i maría ine kalîteri-μu pêxtra

(33) a. ?i maría ine pêxtra kalîteri-μu
b. i maría ine kalîteri pêxtra apo ména

(34) *o yánis mu-ine [megalîteros pyo megálos ' (27)']
2.3. In their most prominent placement the still same elements of set 12, complemented by set 13, represent weak anaphoric pronouns of IO and DO function respectively. These clitics appear normally in proclitic position on the finite verb (35, 36), but they are enclitic to an affirmative imperative (2nd person) and to a gerund (37, 38); the negated imperative acts however like a regular finite verb form by demanding procliticization of the pronoun(s) (39).

(35) ᾱen μου-έδοσαν σιγεκρίμενι ἀπάντησι ʽThey did not give me a definite answerʼ

(36) ᾱen θα τυσ-άο prin tin τετάρτι
not/fut./them/I see/before/the/Wednesday ʽI will not see them before Wednesdayʼ

(37) πέσ-μου τιν αλφπια ʽTell me the truth!ʼ
(38) τυσ δόσακε ξάρα δίδοντας-τυς-το
them/we gave/happiness/giving-them-it ʽWe made them happy when we gave it to themʼ

(39) μί με-κάνει na κλέο
not/me/make/that/I cry ʽDon't make me cry!ʼ

In view of the fact that Greek does not have a non-finite verb form to express a complement clause verb under Equi-NP conditions the problem of 'clitic climbing', i.e. leftward movement of clitics from the embedded verb to the higher verb, does not exist. Cf. the Spanish contrast of 40 vs. 41; the comparison with Spanish is a relevant parallel here since the clitic pronouns of the two languages are otherwise identical with respect to their placement properties (cf. Perlmutter 1971; Aissen and Perlmutter 1976). Similar variations in Greek always result in ungrammaticality of the shifted version (42b, 43b).

(40) a. queremos hablarle ahora mismo. ʽWe wish to talk to her right nowʼ
b. le-queremos hablar ahora mismo 'id.'

(41) a. No me convencerán a retirarlo
not me will convince to withdraw it
b. *no me lo-convencerán a retirar
(42) a. téleume na tu-milísume amésus
'We want/that/to him-we talk/immediately ʽ(40)ʼ
b. *tu-téleume na milísume amésus
(43) a. ᾱen θα me-ψίσαν na to-apósiro
not/fut./me-persuade/that/it-I withdraw ʽ(41)ʼ
b. * WINAPIA ᾱen θα me-to-ψίσαν na aposiρο

In compound tense forms consisting of auxiliary + past participle/'fixed form' placement is determined with respect to the whole verbal expression: Verb peripheral proclisis on the auxiliary is the norm except for the compound gerund which as such demands verb peripheral enclisis on the participal element (44, 45 vs. 46). Any verb-internal positioning results in ungrammatical expressions (48). The place of occurrence of a pronominal clitic is therefore given by the surface syntactic structure (it is placed to its verb of semantic pertinence and it is peripheral to the verb constituent), and by morphological identity of forms (enclitic with affirmative imperatives and gerunds vs. proclitic elsewhere); cf. 49 vs. 50 as
schematic characterizations.

(44) i efimerides to-ixan grápsi stin próti sélida
the/newspapers/it/had/written/on the/first/page

(45) kanénas ἄν su-ixe doxi ádia na fívis apo to domátyo
nobody/not/to you/had/given/permission/that/you leave/from/
the/room

(46) éxondas dosi-tus to ček, perímena oti Θα to eksaryrósun
having/given-them/the/check/I expected/that/fut./it/they cash

(47) *éxondas-tus doxi to ček ...

(48) *éxondas tus-dosi to ček ...

(49) \[
\begin{array}{c}
S \\
X & \text{clitic}_o & \ldots & Y & S \\
V & V & & V & S
\end{array}
\]

(X, Y may not contain \[ S, S \] nor \[ ... \]

(50) \[
\begin{array}{c}
S \\
X & \ldots & \text{clitic}_o & Y & S \\
V & V & & V & S
\end{array}
\]

The class of encliticizing contexts does however not correspond to any manifest syntactic, semantic, or morphological generalization: If the motivation for the encliticization in the affirmative imperative and gerund possibly is the same, the renewed proclitization in the negative imperative vs. the persistent encliticization with a negative gerund (cf. 52) shows that the two cases respond to different conditioning factors. As in the comparable Romance systems of predominant proclisis and marked enclisis (cf. Wanner 1978 for Italian, Spanish, and French) the class of encliticizing verb forms is morphologically enumerable, but it does not contain any further common aspects.

(51) a. affirmative imperative: péš-mu-to
    b. affirmative gerund: ášnondás-mu-to

(52) a. negative imperative: mí mu-to-pís
    b. negative gerund: mí ášnondás-mu-to
    c. *mí mu-to-ásnondas

2.4. The placement principles for the three situations considered in the preceding section are clearly distinct: Each one selects a different host structure (N(P) vs. A(P) vs. V(P)), and each one operates in connection with different linearization principles of enclisis vs. proclisis. But the elements affected in these different manners are the same with respect to their morphological shape and general referential function; even the fact that the various functions comprise the possessive, the comparative and the IO is not accidental: Formally the IO pronouns are genitive pronouns, i.e. they represent oblique complement functions otherwise expressed by a small number of prepositional paraphrases with se 'to (IO)', va 'for (benefactive)', apo 'from (separate)' variably found in the strong counterparts of the oblique clitic functions. Nevertheless the discrepancy between the morphological and the syntactic categorizations makes it necessary to recognize three different classes of clitics. While the correlation between expressed function and host selection in the placement process seems to be natural, the particular circumstances of attachment cannot be predicted automatically and they require a statement to this effect.
The differentiation between the three classes is based on a strict observance of the syntactically distinct domains of movement and the direction of attachment so that 53 and 54 are not ambiguous in phonetic rendition.

(53) i áskala-

mu ípe stinómo oti ...

the/teacher-my/told/to the/policeman/that ...

(54) i áskala mu-

ípe oti ... the/teacher/me-told/that...

The independence of the placement processes from each other can be made explicit by showing that pronominal clitic cooccurrence restrictions (in particular the prohibition of contiguous clitic morpheme repetition; cf. below) do not hold across the syntactically non-identical clitic classes; thus in 55 the first mu is placed by the NP clitic placement principle (it is enclitic to the N/NP) whereas the second one of the contiguous mu morphemes is proclitically attached to the following verb, with a major constituent boundary separating the two clitics. The uninterpreted surface string does not count as a determining dimension; only the surface syntactic structure as reflected in phonetic attachment is relevant.

(55) i áskala-

mu ⟩ NP ⟩ mu-ípe oti... 'My teacher told me that...

3.1. The conditions on ordering and cooccurrence within clitic clusters deserve some more attention. Such a situation will only arise with the pronominal clitics due to the possible clause internal cooccurrence of a DO with an IO constituent (cf. the typical derivation in 56-61. In their non-clitic manifestations the DO and IO may occur in both possible orders (56 vs. 57); a single cliticization does not require any ordering (58, 59), but two clitic substitutions at the same time require the clitics to appear in the order given in 60, while 61 is ungrammatical.

(56) étos ana tu fílu-

mu₁ to ček₂ 'I gave my friend the check'

(57) étos to ček₂ tu fílu-

mu₁ 'id.'

(58) tu-étos to ček

(59) to-étos tu fílu-

mu

(60) tu-to-étos

(61) *to-tu-étos

The early approach to such problems was to invoke a single linear positive SSC to account for the apparently unpredictable surface orderings of clitic clusters (cf. Perlmutter 1971). But the shortcomings of this approach are many: (a) It is insufficient as a sole device for regulating the order of all and only the combinations found in a language (cf. Dinnsen 1972 for Spanish, Wanner 1977 for Italian); (b) it does not allow for the necessary connections between clitic behavior and the general syntactic principles of a grammar (cf. Wanner 1974 for the evolution of Romance, Wanner 1977 for Modern Italian); (c) it cannot explain ordering beyond simple observational adequacy (cf. partial explanations in Tegey 1977, Wanner 1977, 1978). In the particular case of Modern Greek, a surface structure constraint has been discussed, and rejected as a whole in Warburton (1977). This constraint might have the form of 62 which contains the potential clitic clusters listed in 63.
The cooccurrence of two genitives (clitic in 66, 67 or non-clitic in 68) in the same clause is always ungrammatical so that one of the genitive constituents must appear in an alternative prep + acc. paraphrase; cf. 69.

(66) *mu-tu-égrapse 'He wrote to him for me'
(67) *tu-mu-égrapse 'id.'
(68) a. *égrapse to gráma eména eséna 'He wrote the letter for mé to you'
   b. *su-égrapse to gráma eména 'He wrote the letter to you for mé'

Given the clitic independent restriction on double genitives the exclusion of the clusters in 65 must not be repeated in the clitic ordering statements. The alternation between case-marked genitive forms (representing an oblique object of various specific instantiations) and prep + acc. versions expressing the same functions leads Warburton to eliminate the SSC 62 altogether: Only a DO or an IO can find a clitic representation; no clitics exist for prep + acc. expressions, and only the IO (but not the DO) alternates with prep + acc. versions. Thus the DO is claimed to be most closely connected to the verb, somewhat less the IO, and least the PP. As a consequence the syntactic configurations for the three types of objects (direct, indirect, prepositional) are differentiated structurally according to the schematic representation 71 for 70. An iterative clitic placement rule (cf. 72) operating from the innermost pair of brackets to the outside can thus provide for the only correct order IO > DO of clitic clusters, and eliminate all the ungrammatical possibilities listed in 64.

(70) égrapsa aftó to gráma tu afendikú-tu ya ton fílomu

(71)[
  VP
  \[ 2 \]
  V DO\[ 1 \] IO \[ 1 \] PP \[ 2 \]
]

(72) \[
  \[ 4 \]
  V \[ 2 \] DO, +clit\[ 1 \] \[ IO, + clit \[ 3 \] \] \[ 4 \] \]

\[
  \[ 4 \]
  IO + clit\[ 3 \] \[ 2 \] DO, + clit\[ 1 \] \[ V \[ 4 \] \]
\]
(73) \([+\text{person}] [-\text{person}]\)

In this way both the wrong clusters of 64, the opposite orderings of 63, and the more-than-two clitic clusters are eliminated without a SSC; the only aspect which requires such a device according to Warburton 1977 is the exclusion of a \([+\text{person}] [-\text{person}]\) clitic sequence (i.e. the combinations of I and II, and any of the combinations in 65). This filter 73 will accommodate the existing clitic sequences while the incorrect ones are eliminated. In conclusion, this account allows us to describe the ordering restrictions on clitic clusters as a consequence of structural properties of the represented constituent functions, but the cooccurrence restrictions still need to refer to a surface structure constraint.\(^2\)

3.2. Even with all the corrections and implications presented in Warburton 1977 the Greek ordering and cooccurrence restrictions are not fully described since they hold at best only for proclitic position. In enclisis (in particular with the imperative, but to the extent that the semantic/pragmatic conditions can be provided also with the gerund) not only the syntactically motivated IO – DO cluster is found, but also its inverse, DO – IO which in proclisis is unacceptable; cf. 74, 75 vs. 76.

(74) pés - mu - to
(75) pés - to - mu
(76) *mi to-mu-pís but mí mu-to-pís
    *o yánis to-mu-ípe but o yánis mu-to-ípe

The variable order in enclitic clusters does not imply that all restrictions are eliminated and that everything is acceptable. The double person constraint 73 remains in effect in 77 (in so far as it has validity for the proclitic position (cf. note 2)); in the same way two genitive clitics cannot be combined into one cluster (78), nor is it possible to find any I – II clusters (as in 79) (only relevant for the gerund since the imperative rejects any clitics of II due to the reflexivity which requires the passive form).

(77) *proskálesè-mu-tin!' \{\} 'Invite her for me!'
    *proskálesè-tin-mu!
(78) *grápanse-mu-tu \{\} 'Write to him for me!'
    *grápanse-tu-mu
(79) *proskálondás-mu-se \{o fílos-mu ékane ena megáló láthos
    *proskálondás-se-mu\}

'By inviting you for me, my friend made a grave error'

Besides these macroscopic constraints, also in effect remains the prohibition against the contiguous repetition of a clitic shape regardless of its potential functional ambiguity (contrary to the discussion above in 55 the present concern refers exclusively to homogeneous clitics). The functionally ambiguous pronominal clitics are mas, sas, tus, and tis (cf. 12, 13). mas, sas cannot stand in sequence since their cooccurrence is already prevented by the double person constraint 73; only tus tus and tis tis might qualify as representations of the functions tus [IO 3 pl] - tus [DO, 3 pl m] (cf. 80, 81), and tis [IO 3 sg f] - tis [DO, 3 pl f] (cf. 82, 83). But both are ungrammatical (or at least highly questionable) in proclisis (80, 82) as well as in enclisis (81, 83).
(80) *tus-tus-prósfera  'I offered them to them'
(81) prósfera-tus-tus!  'Offer them to them!'
(82) *tis-tis-prósfera  'I offered them to her'
(83) *prósfera-tis-tis!  'Offer them to her!'
(84) prósfera-tis-tes!  'Offer them to her!'

The ungrammatical 83 finds a minimally different correct surface expression given that an enclitic tis representing 'DO, 3 pl. f' becomes phonologically differentiated to tes; the resulting non-identity in the morphological expression of the clitic sequence is sufficient to make this cluster fully acceptable (84).

The situation of the enclitic sequences is strange since enclisis does not obey the one ordering property which (according to Warburton 1977) depends not on arbitrary determination but on a structural difference, namely the more intimate connection of the DO than of the IO. Instead of an expected mirror image situation (cf. 85a) between proclisis and enclisis, enclisis shows both orders (one typical for enclisis and the other for proclisis (85b)).

(85) a. [IO [DO-V] ] vs. [V-DO] IO]
   b. V-DO-IO        V-IO-DO

The structural account for clitic order in proclisis cannot be maintained as essential since it can not only not explain, but actually prohibits, the duality of orderings found in enclisis. Thus the proclitic ordering constraints are rather due to a variety of superficial constraints (double person prohibition, genitive>accusative ordering) and more deeply embedded properties (only one case-marked genitive constituent/clitic per clause, thus impossibility of three-clitic sequences which would necessarily include a genitive and a genitive of interest). The enclitic position is subject to the same constraints minus the gen>acc. ordering principle.

3.3. The situation of the enclitic occurrences of clitic pronouns becomes even less clear when examples such as 86 are considered with three enclitics of which two are identical (to); this cluster seems to be heavily restricted since it can not only not appear in proclisis (87), but it may not follow a plural imperative (88), nor can it be attached to an imperative form which is not shortened (89). In turn, the shortening of the imperative is only acceptable with a phonologically defined class of forms which must begin with τ (cf. 90a vs. b); the elision of e between s and t in imperative forms extends also from the inter-word context of host plus clitic to the internal string in the plural imperative form (91) which produces a surface variant to the regular uncontracted form (92).

(86) dós-to-mu-to!  'Give it to me!'
(87) *o yánis to-mu-to-ése  'Yannis gave it to me'
(88) a. *dóssete-to-mu-to!
    b. *dóssete-to-mu-to!
(89) *dósse-to-mu-to!
(90) a. áyásas-tó-mu!  'Read it to me!'
    b. *áyásas-mu-to!    'id.' (cf. áyásas-mu-to! 'id. ')
(91) a. áyábas-tó-mu!
    b. áyábas-mu-to!
(92) a. áyábaseté-to-mu!
    b. áyábaseté-mu-to!
The three-clitic sequences are marginal in all their occurrences; what they convey is an (afterthought) insistence on the DO along the lines of a non-pronominal version 93 (if it is at all different from a simple occurrence of the DO clitic in 94).

(93) pēs-mu-tin, tin istoría! 'Tell it to me, the story!' 
(94) āōs-to-mu! or āōse-mu-tu! 
(95) āōste-mu-to ≅ āōs-to-mu-to (cf. āōste-tō-mu)

The phonetic conditions on this type of clitic sequence are prominent; first, they have the effect of avoiding contiguous repetitions of (near) identical syllables (te, to); and secondly, the tendency to reduce an unstressed syllable set to st leads to the incorporation of the first to in 86 into the verb form as if it were the verbal ending (cf. the plural form in 95). This isolated type of a three-clitic sequence is interesting since it does not seem to have any primary syntactic and/or semantic function; rather it is made possible through phonological means. The phonological nature of its existence explains the restriction to the enclitic position given that the crucial phonological string s(e)t can only appear here in word internal position. On the other hand, the semantically functional three-clitic sequences of the type IO + DO + genitive of interest (in whatever sequence in enclisis) is still not acceptable. It is likely that further investigation will produce a fuller picture of such deviations from the expected norm; at the moment it represents an indication of the relative anarchy in enclitic pronoun clusters.

The particular stress behavior of Greek enclitics is well known: In the appropriate configuration such clitics may acquire a phonetic stress (of secondary, rarely equal to primary strength) which contradicts on the surface the postulated characteristic stresslessness of clitics (cf. property A). The Greek conditions are as follows: Word level stress falls on one of the three last syllables; any enclitic will count as part of the syllable string of its host word; given that such enclitics add one or more syllables to the end of the word, the word level generalization of a restriction to two posttonic unstressed syllables may turn out to be violated. As a result secondary stress is added to the second syllable from the main stress location provided this secondary stress does not fall on the word-final syllable. It is easy to see how under these circumstances clitic elements can appear under stress: 96-98 show the situation with a single clitic attached to words illustrating the three different stress locations; this pattern is valid for the pronominal clitics as well as for the possessive and comparative instances (cf. 99, 100, parallel to 96). 101-103 repeat the same pattern for the addition of two clitic syllables (this holds only for the pronominal enclisis due to the impossibility of clusters with possessives and comparatives).

(96) prōsferē-tu ena komáti tūrta 'Offer him a piece of cake!' x x x ≠ x 

(97) āōse-mu ton kenūryo taxiōrōmo! 'Give me the latest 'Tachidromos' x x ≠ x

(98) pēs-mu tin aλiōia! x x ≠ x

(99) to aftokinitō-mu 'my car'
The one case of interest is 102: The stress on mû is due to an automatic assignment which does not take into account the internal composition or function of the element it might strike. (Cf. statements of this situation in Warburton 1970, 1977; Thumb 1912:29; Moser-Philtsou 1958:13.) The automatic character of this stress designates it as a surface principle; the contradiction of definitional clitic stresslessness should not weigh too much in view of the fact that the added stress is frequently only secondary while the clitic independent stress of the host item is preserved in its location and primacy. Nevertheless these enclitics exhibit in some cases expressive functions which are properly attributable to stressed/stressable elements only: They can express focusing or insistence through their respective ordering, cf. 104, 105; more rarely they are even found under emphatic stress with the appropriate semantic effect; cf. 106, 107. The necessary restriction is that the insistence focus coincide with a syllable that can actually be stressed through the posttonic stress assignment (cf. 96-103), with the addition that now even the final syllable is able to receive such a stress (still in alternation with the requisite unstressed ones).

(104) dôste-mû-to! 'Give it to me! I want to have it.'
(105) dôste-tô-mû! 'Give it to me! I need that thing.'
(106) dôs-to-mû 'Give it to mé!' (contrast)
(107) dôste-tô-mû! 'Give me that thing!' (angry insistence)

These devices of exploiting stress and alternative positioning are not the only, nor even the regular methods of conveying insistence or contrast for pronominal or other cases. The normal marker of emphasis is a strong pronoun, used alone or in a redundant construction with the corresponding clitic; cf. 108, 109.

(108) égrapse ena gráma se ména, óxi stin ksaåelfí-su
'She wrote a letter to me, not to your cousin.'

(109) mu-égrapse ena gráma eména, óxi stin ksaåelfí-su 'id.'

The same optional contrastiveness as with the pronominal clitics appears also with the possessive markers. Already the differences in its NP internal positioning affect the focus structure without any special insistence on the clitic, as discussed above (cf. 20-25); this is the weakest form of emphasis on the possessor, repeated here in 110. A stronger emphasis on the possessor can be conveyed by actually stressing the clitic marker; notice that the stress alternation condition on the post-tonic syllables does not exist (111, 112). The central position of the possessive marker in 113 leads to ungrammaticality with the insistence stress on it while the twice shifted construction of 114 (indicated by the repeated article before the noun) is acceptable in this form since the superficially central position of the possessive is structurally peripheral (cf. above 22, 23). However, the regular means of expressing emphasis on the possessor is either parallel to the pronominal case with a preposed or postposed strong 10 pronoun plus
the redundant enclitic marker (115), or with the empty noun dikós-(clitic) 'possessorship of x' which acts like another nominal element in the NP appearing in different positions (116, 117); again, for signaling a contrast it should not occupy the weak central position (118).

(110) to kafé-mu fórema increasing insistence on -mu
to fórema-mu to kafé
to fórema to kafé-mu
?to kafé to fórema-mu

(111) to fórema to kafé-mu
(112) to fórema-mú' to kafé
(113) *to kafé-mú' fórema
(114) to kafé-mú to fórema
(115) éména to kafé fórema-mu	eména to fórema to kafé-mu

(116) to kafé fórema to dikó-mu
to fórema to kafé to dikó-mu

(117) to dikó-mu fórema to kafé
to dikó-mu kafé fórema

(118) ??to kafé dikó-mu fórema

(119) *o ýánis ðen ìne megalíterős-mú', ìne megalíterős-sú'

In contrast to the possessive, which is very free in the insistence use of the clitics, the comparative does not seem to allow this kind of emphasis. While it might be speculated that the reason for this unavailability of contrastiveness in (119) must be pragmatic and/or semantic, I do not have any clear indication of what is causing this lack of parallelism.

3.5. The pronominal clitics show two markedly different complexes of behavior depending on whether they are proclitic to the verb or enclitic: In the former case they serve anaphorically predictable functions within the limits of occurrence and cooccurrence set by other grammatical principles and by some superficial constraints typical of clitics. In enclisis however these same elements become much more independent of typical clitic behavior by acquiring potential focus differentiations according to their relative order in a cluster; they even exhibit emphatic potential. Some otherwise typical clitic and general grammar constraints on cooccurrence can be violated on the basis of phonological conditions. The clue to this aberrant behavior of enclitics (in pronominal and possessive function, with the unexplained exception of the comparative) is the fact that they may receive stress which is independent of any signaling function in its origin. But the stress defined nature of clitics (their necessary lack of stress) brings it about that the independent assignment of stress to a syllable which happens to be a clitic changes the status of such an element in the direction of an item which can also express functions normally associated with stress. On the one hand the clitics in proclisis (unaffected by special stress rules) reflect the applicable grammatical principles directly, while the enclitics show crucial interaction between these principles and their potential stress. The variability in placement property C, demonstrated in the threefold function of pronouns, possessives, and comparatives, is paralleled by a variable gradated
distinction along the axis of property A, stresslessness (with the ensuing functional consequences.) Only property B, attachment, has not yet been investigated in any detail; there are indications that it offers similar complications (cf. the st cluster in Greek). Instead of a holistic concept of well-defined and narrowly constrained surface particles the picture of clitics emerging from Greek, and more broadly on a cross-linguistic basis, is an unpredictable variety of functions and manifestations dependent on language specific phonological and syntactic/semantic conditions. Clitics are united as surface shells with minimal content (e.g. referential properties as in Greek) which find their functional meaning within the limits of the applicable idiosyncratic conditions on placement, cooccurrence, and surface form.

Notes

1 I would like to thank Eugenia Petridis for her most valuable assistance in coming to terms with Greek clitics as a consultant, as an expert on Modern Greek stylistics, and as a researcher of the grammars written in Greek. The research reported in this paper has been supported by funds from the Research Board of the University of Illinois. Relevant clitics and other features under discussion are underlined in the examples. The accent marking with \(_\) (primary stress), \(\_\) (secondary stress), and \(\_\_\) (emphatic stress) is based on surface phonetic conditions, not on Greek orthographic accentuation.

2 According to my own investigations this constraint 73 against double personal reference for clitic clusters is variable among different speakers; I found (i) - (iii) to be acceptable: (i) proskálesė-mu-ton! 'invite him for me' (ii) proskálesė-ton-mu! 'id.' (iii) mu ton proskálese 'She invited him for me' Such idiolectal variation appears to be characteristic of clitic surface limitations which are not otherwise embedded in the grammar.

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Vocalic change in the Belizean English/Creole continuum and markedness theory*

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The present paper investigates some types of phonological variation involving vowels and diphthongs in the English/Creole continuum spoken in Belize, Central America, and relates those variations to universal processes, with specific reference to the markedness theory (Trubetzkoy 1949; Greenberg 1966; Chomsky and Halle 1968). All languages include marked and unmarked categories. Marked features are generally acquired late by children (see Jakobson 1968), and are likely to be lost first in language disorders like aphasia, as well as in diachronic change. In contact situations which produce pidgins, the emerging variety is expected to retain a higher frequency of unmarked features, or to change marked into unmarked categories. When a pidgin has attained the status of creole, the resulting variety is still widely stigmatized, even by its own speakers, and thus remains unimpeded by any kind of formal standardization (i.e. no normative grammar of creole has ever been written; there is little or no literature written in creole, etc.). Creoles therefore constitute an ideal testing ground for universals of linguistic change.

Belizean Creole is particularly interesting in this respect, due to the complex sociolinguistic situation which obtains in Belize, a small country located east of Guatemala, south of Mexico, and directly west of Jamaica, and thus subject to both Latin American and Caribbean influences. However the latter is predominant, and the population is largely creole-speaking an English based creole, but interacting with a variety of other ethnic groups who use different native languages—Mestizos (Spanish/Maya) speak Spanish, Amerindians speak Maya or Kekchi, Black Caribs (descendants of Arawak-Carib Indians and Africans) speak Carib, an Afro-Indian Creole. In this multilingual society, the creole functions as a lingua franca. As is usually the case with contact vernaculars, there is no sharp separation between English and Creole, but the situation is best described as a continuum of forms which range between two poles: at the upper prestigious end of the continuum, there is a West Indian Standard—a rather undefined combination of British and American standard features—and at the lower end of the continuum, there is "Broad Creole"—mostly spoken in rural areas. Somewhere in the middle, there is "City Creole", spoken in Belize City, which is heavily influenced by Black American English. City Creole is currently undergoing decreolization, as it is subject to a process of informal standardization in the direction of some form of standard English.

My observations will be restricted to non-consonantal segments (vowels and diphthongs) in different varieties of Belizean Creole, while focusing on fully-creolized lects as spoken in rural areas.
In order to illustrate the continuum, I incorporated in my data utterances elicited from native as well as non-native speakers of Creole. Non-native speakers of Creole include Black Caribs (mostly living in the South), and Mestizos (living in the North and West). It is now no longer controversial to observe that there is no homogeneous speech community. A creole situation involves an especially high degree of variability, which can be observed in intra-group as well as in inter-group communication. The salient features recurring in all varieties and especially in the broader varieties are those which provide particular insight into universal unmarked processes.

Tables I and II illustrate the major differences between standard English vowels and diphthongs and their broad Creole counterparts. Both variants coexist in some Belizean speakers who switch from one system to the other, as required by the contextual situation. Tables III and IV focus on the one-to-one correspondence between English segments and their Creole reflexes. As a convention, the arrows point to the creole variant. It can be seen at first glance that
the Creole system is a five-vowel pattern, obviously much simpler
than the eleven or twelve vowel pattern of the West Indian Stan-
dard. In Creole the low front vowel /æ/ and the back mid
unrounded vowels /ɔ,ʌ/ are nonexistent. There are two high vowels,
/i,u/ and one lax mid front vowel /ɛ/ (in vest [ves], bend [ben]).
Tense /e/ and /o/ are raising to high vowels, and losing their
phonemic status, although they phonetically occur. Tenseness is
thus no longer distinctive for mid or high vowels and becomes
redundant with height—especially in the broader varieties. In
intermediate varieties tenseness is replaced by length. In all
varieties, length is distinctive for the low unrounded vowel ([lad]
lad but [la:d] lard, lord). In addition, there is a back low
rounded vowel, which functions as the reflex of mid back unrounded
/ɔ,ʌ/.

The shift of high and mid vowels is quite interesting and
deserves some discussion. As noted above, the tense diphthongized
mid front vowels of bait and boat do not occur in the broadest
Creole varieties, but surface as variants of /i/ or /u/ and in
intermediate lects may be realized as anything between a diphthong
with centralized onset and high nucleus and a high monophthong—
thus ranging from /e/ to /i/ as [ey-ei-iə-i] or from /o/ to /u/
as [ow-o-əu-uo-u]. The raising is, however, more frequent in the
case of the front vowel. Homophonous or near-homophonous sets
result due to the raising of the mid vowels, and the loss of the
tense/lax distinctive feature.

\[
\begin{align*}
[i-iə] & \quad [u-əo-əu] \\
\text{beat=bait=bit} & \quad \text{full=fool=foal} \\
\text{wheel=whale=will} & \quad \text{boat=boot} \\
\text{week=wake} & \quad \text{shoe=show} \\
\text{eat=eight} & \quad \text{new=know} \\
\text{freed=(a)fraid} &
\end{align*}
\]

Tense underlying high vowels remain stable in both systems. They
don't, however, before the liquid /r/. In this special case, the
creole reflexes of standard English /ir/ and /ur/ sequences are
respectively [ɛ-ɛə] and [ɔ-ɔə], since postvocalic /r/ is not pho-
netically realized in creoles, or if it is, it surfaces as a back
coronal glide [ə] or [œ]. This particular shift leads to the
following phonetic homonyms in Creole:

\[
\begin{align*}
[ɛ-ɛə] & \quad [ɔ-ɔə] \\
\text{bear=beer=bare} & \quad \text{pour=poor} \\
\text{airs=ears} & \\
\text{fair=fear} & \\
\text{hair=hear=here} & \\
\end{align*}
\]

A further lowering to [a] occurs occasionally as in airstrip
[aʃtrip].

To account for the shift from one system to the other, which
of course commonly occurs in a code-switching situation like the
one under consideration, I propose an exchange rule where the values
of [+ high] and [- high] are partially interchanged. The simplest solution is to assume that at a certain stage in the formation of the creole system, a vowel shift rule is added to the grammar: high vowels are lowered before a retroflex liquid, and mid tense vowels are raised elsewhere: 3

\[
\begin{align*}
\text{e} & \quad \text{i} & \quad \text{ir} \\
\text{ur} & \quad \text{u} & \quad \varepsilon
\end{align*}
\]

The phonemes /e/ and /o/ thus get lost through partial merger with /i/ and /u/. On the other hand /i/ and /u/ acquire lower allophones before a non-high retroflex liquid:

Creole Vowel Shift (CVS):

\[
[\text{a high}] \rightarrow [\text{-a high}] /-- [\text{a retroflex}]
\]

This rule is part of the grammar of those speakers who haven't quite completed the raising process. Speakers of varieties closer to the upper end of the continuum would have a restricted version of CVS which will also be used by speakers of Broad Creole when switching to more prestigious varieties:

CVSa: [+ high] \rightarrow [\text{- high}] /-- [+ retroflex]

I noted above that there is a discrepancy in the degree of raising achieved by front and back vowels. Back raising is clearly less operational than front raising. A wider range of [o \rightarrow u] variants than of [e \rightarrow i] variants is observed to occur even for a single speaker maintaining the same stylistic level. This suggests that the exchange process started earlier with front vowels and then spread to back vowels. Thus some speakers have a more restricted version of CVS:

CVSb: [\text{- back}] \rightarrow [\text{+ high}] /-- [- retroflex]

An implicational pattern holds between CVSa and CVSb: if a speaker has CVSb he will necessarily have CVSa, but the reverse is not true. Both the progression of change and the frequency of synchronic variants are captured, ranking first the lowering before retroflex (CVSa), second the raising of mid front vowels elsewhere (CVSb), third the raising of back vowels which results in the collapsed and generalized CVS version.

It is interesting to relate the raising discrepancy between front and back vowels to the process affecting the two low upgliding diphthongs /ay/ and /aw/. /aw/ has a regular creole reflex [o] with [ɔu, ōu] variants, indicating the raising of the low nucleus and eventual monophthongization. Homophonous sets result once more, ranging between [o \rightarrow u]:

know=now=no
fowl=foal
town=tone
loud=load
The raising of /aw/ to [o] is very regular in all creole varieties, contrary to the raising of /o/ to [u]. Interestingly /ay/ does not follow a symmetrical pattern. It clearly remains a diaphone, although often surfacing as a centralized diphthong [ɔy]—which is perhaps the early indication of a similar rising trend. Indeed the diphthong /ay/ has increased its distribution, due to the very regular merger of /ɔy/ with /ay/. Thus boil= bile; coin=kind; point=pint; lighter=loiter etc. As could be expected after the previous discussion of preretroflex vowels, /ayr/ and /awr/ sequences undergo a special treatment. The standard phonetic triphthongs are clearly bisyllabic in Creole, while raising affects only /aw/:

**flower** [flowa]      **towel** [towa]
**tired** [taya(d)]      **liar** [laya]

Finally the non-low back lax vowels of standard English /ɔ, r, u/ do not occur in any Creole variety; their reflexes cluster around low back unrounded [a] if unstressed, and low back rounded [ɔ] under stress. Moreover the low front /ae/ of hat and the low back rounded /ɔ/ of dog merge with the [a] of father, yielding the following equivalences:

[a]  
-cot = cat
-hot = hat
-water, father, teacher [wata] [fada] [tiča]
-smart, daughter, law [sma:t] [da:ta] [la:]

[ɔ]  
-cut, mud, hurt
-first, bird, third [fɔs] [bɔd] [tɔd]

Consequently many of the contrasts occurring in standard English are neutralized in Creole, or in the process of neutralizing. Only short /ɛ/ remains stable:

<table>
<thead>
<tr>
<th>standard English</th>
<th>Creole</th>
</tr>
</thead>
<tbody>
<tr>
<td>ae</td>
<td>aɔ</td>
</tr>
<tr>
<td>aɛ</td>
<td>aɔ</td>
</tr>
<tr>
<td>aʌ</td>
<td>ɔu</td>
</tr>
<tr>
<td>aɔ</td>
<td>ɔu</td>
</tr>
<tr>
<td>aʊ</td>
<td>ɔu</td>
</tr>
<tr>
<td>a i e</td>
<td>i e e</td>
</tr>
<tr>
<td>a i e</td>
<td>i e e</td>
</tr>
</tbody>
</table>

The shifts of syllabic nuclei observed in a cross-section of Belizean Creole varieties are particularly revealing because they illustrate the continuity of change in the vowel system. The change is more advanced, of course, in the broader varieties. Belizean Creole has been getting closer to a five-vowel system (/i e u ɔ a/) with intermediate varieties exhibiting seven (/i e e u o ɔ a/) or even nine (/i i e e u u o ɔ a/) vowel systems as opposed to the standard twelve-vowel pattern. Moreover, there is only one diphthong /ay/ in contrast to the three diphthongs of the standard variety /ay aw ɔy/. All vowels and diphthongs converge towards the triangular /i u a/ pattern, generally recognized (Jakobson 1941, Chomsky and Halle 1968, Liljencrants and Lindblom 1972) to be a totally unmarked system, that is, based on a maximal articulatory contrast. This is supported by acquisition studies (where /a/ then /i/, /u/ are the first phonemes acquired), and by typological studies which show
that any language includes at least /i u a/ in its vowel system.

According to Chomsky and Halle's marking conventions⁴ (Chomsky and Halle 1968, 403-411), /a/ is the totally unmarked vowel since it combines the properties of [+ low, + back, - round]. The neutralization of /ae/ and /ɔ/ as /a/ is predicted by marking conventions (vi), (x), (xi) which assign a complexity of two each to /ae/ and /ɔ/. The merger of the diphthong /ɔy/ with /ay/ may be part of the same process, the former being marked with respect to the latter. Thus, all low vowels except /a/ are eliminated through this neutralization. I consider this to be the initial step leading to the evolution of a vowel system. Neutralization to /a/ is consistent in all varieties of Creole, to the extent that it would be totally unmotivated to postulate underlying /ae/ for cat or /ɔ/ for dog at any point on the Creole continuum.

Another basic—or early—step is the loss of midback unrounded vowels /æ, ɐ, ʌ/. Chomsky and Halle only assign a complexity value to /ʌ/ (three), but /æ, ɐ/ can be included in the same category since all three vowels are nonlow and have opposite values for "back" and "round" (conventions (vi), (x), (xi)). As indicated above, they neutralize in two ways: as /a/ if unstressed, and as /ɔ/ if stressed. The discrepancy is not unexpected, since the unmarked segment /a/ then occurs in the most neutral, unmarked unstressed positions. The shift of stressed /ɔ, ʌ/ indicates lesser markedness (from three to two) while preserving certain contrasts:

<table>
<thead>
<tr>
<th>English</th>
<th>Creole</th>
</tr>
</thead>
<tbody>
<tr>
<td>cat</td>
<td>[kæt]</td>
</tr>
<tr>
<td>cut</td>
<td>[kɔt], [kɔt]</td>
</tr>
<tr>
<td>dock</td>
<td>[dɔk], [dɔk]</td>
</tr>
<tr>
<td>duck</td>
<td>[dɔk], [dɔk]</td>
</tr>
</tbody>
</table>

The stability of /i/ and /u/, which are only slightly marked, is evidenced in all varieties. Furthermore the general Creole tendency of high lax vowels to merge with the tense ones confirms convention (xii) which states that the unmarked value of "tense" is [+ tense]. The only instance of phonetic loss of /i,u/ occurs before a retroflex or its reflex, a midback coronal glide. This can be interpreted as a natural assimilation to a nonhigh segment. Thus [ɛ] and [ɔ] function as conditioned reflexes of /i,u/.

Furthermore, the raising—incipient but steadily progressing in the broad variety—observed to affect mid vowels indicates a tendency of the system to conform to the unmarked value of [+ high]. For intermediate varieties, the high component of the nucleus becomes predominant [iɔ] at the expense of the nonhigh element, until the latter is eventually eliminated. I noted above that this phenomenon is more widely operative in the case of the front vowel. Why this discrepancy? Looking at another asymmetric development might provide some insight into the problem: The upgliding diphthong /ay/ remains unchanged while /aw/ undergoes a very noticeable and widespread raising and monoph-
thongization to a back mid or high vowel. Those data suggest that the high front vowel may be less marked than a high back vowel although this may require a slight revision of Chomsky and Halle's marking conventions. I propose to expand convention (x) in the following way:

\[
(Xa) \quad [\text{u back}] \rightarrow \begin{cases} [+ \text{ back}] / [+ \text{ low}] \\ [- \text{ back}] / [+ \text{ high}] \end{cases}
\]

Expansion (b) states that the unmarked value of "back" is [- back] for a high vowel. Since the same conventions apply to vowels and to glides, /i/ and /y/ are now unmarked with respect to /u/ and /w/. However, midvowels remain marked as previously stated. The revised matrix would show an equally null complexity for /a, i/ a complexity of one for /u/, and of two for /e, o/. This change in the computation system is also compatible with Chomsky and Halle's proposal to make the marking of "round" dependent on the marking of "high", and the marking of "high" and "low" dependent on the marking of "back". Under these conditions, the stability of /ay/ follows from its totally unmarked quality—assuming that the complexity value of a diphthong is computed as the sum of the marked features of its members. However, the obviously greater complexity of diphthongs than vowels should be somehow characterized—perhaps by adding an overall [2] for each diphthong. Thus /ay/ has a complexity of [0 + 0 + 2] = 2

/æw/ has a complexity of [0 + 1 + 2] = 3

/øy/ has a complexity of [2 + 0 + 2] = 4.

This notation has the advantage of capturing the greater markedness of /øy/ than /æw/, than /ay/, and explains the merger of /øy/ with /ay/ and the reduction of /æw/ to /ø/. The new unmarked combination of the features of [+ high, - back] can also account for the greater frequency of raised nonback vowels.

The variation observed in Belizean, and the directionality of change assumed, are not applicable only to this specific case. There are many analogous changes in vowel systems of other languages which testify to their naturalness, and to the validity of the marking conventions, both à la Chomsky and Halle, and revised. Most Creoles exhibit a reduced vowel system of the type /i e u o a/.

A word list of 570 items from eight English-based Creoles (Hancock 1969) provides plentiful evidence that all Creoles have lost the low front and mid back unrounded vowels, that most have raised and monophthongized /æw/ but not /ay/, that /i/ and /u/ but not /e/ and /o/ are stable. Similar tendencies are attested in a number of contemporary English dialects—for example the raising of (oh) observed by Labov (1972) in New York City, the raising of short /æ/ in middle Atlantic States (Bailey 1973), the unrounding of low back /ɔ/ common in all American English varieties, etc. The history of English, and in particular the Great Vowel Shift of Early Modern English, is well representative of the poles of attraction /i u a/ which determine changes in vowel systems. Compare the general patterns of the Great Vowel Shift and
the Creole Vowel Shift:

\[ \begin{array}{c}
   i \\
   \uparrow \\
   a \\
   \downarrow \\
   u \\
\end{array} \quad \begin{array}{c}
   i \\
   \uparrow \\
   a \\
   \downarrow \\
   u \\
\end{array} \]

Great Vowel Shift  Creole Vowel Shift

The two shifts differ in the manner in which they respond to the polarization exerted by /i u a/, but not in the general directionality of the systems. Note that in Early Modern English tense vowels before /r/ also underwent the vowel shift, consistently for high vowels (desire, flower), occasionally for mid front vowels (near but pear) and rarely for mid back vowels (poor but door). The lowering influence of /r/ may be the clue to this discrepancy and is, as I have shown, clearly operative in Belizean Creole. And finally, there is the very regular monophthongization of /aw/ to [ɔ] which removed all previous /æ/ diphthongs as new ones were derived from /u/ through the Great Vowel Shift.

Rules which function to maximize the perceptual distance between segments are not restricted to English or English-based Creoles: upward shifts also applied in late Middle Chinese to produce the Standard Mandarin triangular pattern (Chen 1974). There is in Russian a three-vowel contrast /i,u,a/ in unstressed syllables, although there is a five-vowel contrast in stressed syllables. In Bulgarian and in some Greek dialects /o/ and /e/ merge respectively with /u/ and /i/ in unstressed syllables (Trubetzkoy 1949:85).

The foregoing examination of vocalic variations observed in Belizean Creole supports earlier claims made by the proponents of the markedness theory in phonology, namely a vowel system tends to evolve into a pattern which maximizes perceptual differences and eliminates unmarked segments. The lower end of the Belizean continuum displays a simplified vowel system while intermediate varieties preserve more contrasts. Other synchronic varieties of English as well as diachronic developments in many languages indicate similar movements in the direction of an unmarked system. But Creoles remain the ideal field to discover and test language universals.

Footnotes


2. The lowering of /ur/ in Creole is less obvious than the lowering of its front counterpart, simply due to a matter of distribution. There are very few /ur/ sequences in standard varieties: compare more, pour, floor, sore, shore, door [ʊr], but poor, moor, four, sure [ʊr]. For those few items, lowering to [ʊr] or [ʊɔ] is not uncommon in American as well (to a lesser extent) as in British varieties.
3. Note that early 20th-century texts indicate the lowering of /ir/ (for example transcriptions of hear me as 'yerre me'), but do not indicate the raising of tense vowels. There is scant evidence, due to the scarcity of creole texts. However I assume that the lowering of high vowels before /r/ preceded the raising of mid tense vowels. This is supported by the synchronic observation that raising is completed in only a few varieties, whereas lowering is so strongly established that it persists even when creole speakers switch to English.

4. Conventions (VI)-(XII) and the matrix showing complexity values are reproduced here for easier reference.

\[(VI) \quad [u \ low] \rightarrow \begin{cases} [+\text{low}] / \left[ \begin{array}{c} \text{back} \\ \text{u round} \end{array} \right] \\ [-\text{low}] \end{cases} \quad (a)\]

\[(VII) \quad [+\text{low}] \rightarrow [-\text{high}] \]

\[(VIII) \quad [u \ high] \rightarrow [+\text{high}] \]

\[(IX) \quad [+\text{high}] \rightarrow [-\text{low}] \]

\[(X) \quad [u \ back] \rightarrow [+\text{back}] / \left[ \begin{array}{c} + \text{low} \end{array} \right] \]

\[(XI) \quad [u \ round] \rightarrow \begin{cases} [+\text{round}] / \left[ \begin{array}{c} \text{aback} \\ -\text{low} \end{array} \right] \\ [-\text{round}] / \left[ \begin{array}{c} +\text{low} \end{array} \right] \end{cases} \quad (a)\]

\[(XII) \quad [u \ tense] \rightarrow [+\text{tense}] \]

<table>
<thead>
<tr>
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<th>u</th>
<th>æ</th>
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<th>e</th>
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<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

5. Chomsky and Halle present a set of marking conventions for glides (XXXV-XXXIX). In this case, the conventions are the same for vowels and for glides.

6. Phonetically, there is actually a maximal difference between /a/ and /i/, whereas /u/ is relatively closer to /a/ (Ladefoged: A Course in Phonetics, 1975).

Bibliography


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ACOUSTIC CORRELATES OF "BIG" AND "THIN" IN KUJAMUTAY

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University of California, Los Angeles

J. David Sapir
University of Virginia

I. Introduction

Kujamutay¹ (Senegal) is the principal dialect of Diola, a member of the Bak sub-group of the West Atlantic branch of the Niger-Congo superstock (Greenberg, 1963). Along with many other African languages it has a form of vowel harmony apparently found nowhere outside of Africa south of the Sahara (Stewart, 1971).

In the so-called "cross-vowel height harmony" languages the vowels form "two mutually exclusive sets such that (i) the tongue positions of the vowels of one of the sets are high in relation to the tongue positions of their counterparts in the other set, but (ii) the tongue position of at least one member of the relatively high set is lower than at least one member of the relatively low set (ibid:198). The vocalic contrast involved differs from the traditional tense/lax distinction drawn by Jakobson and Halle (1962) in so much as tense vowels are always situated more peripherally than their lax counterparts in a two-dimensional (F1 x F2) acoustic vowel space whereas the criterial dimension separating the African vowel pairs is relative vowel height.

The articulatory basis of the contrast has been the subject of some controversy. Stewart (1967) cites the radiographic data presented in Ladefoged's (1964) study of Igbo in support of the view that the major role is played by the tongue root. Complicating the issue, however, is the observation that the larynx tends to rise when the tongue root is retracted and to fall when the root advances. The opposing movements of tongue root and larynx consequently act to maximize or minimize the size of the pharyngeal cavity. Thus pharyngeal cavity size may be a more precise correlate of the cross-vowel height distinction than tongue root position (Lindau, 1975).

Kujamutay is one of the comparatively few languages which possesses the cross-height harmony in its fullest form with five vowels in each of the contrasting sets. What makes the language even more noteworthy, however, is the social context in
which the vocalic contrast functions. The meta-linguistic terms "big" (kəle) and "thin" (mis) are used by the Kujamaat\textsuperscript{2} themselves to describe a systematic pattern of regional variation in vocabulary and pronunciation that is firmly rooted in the cross-vowel height harmony system (Sapir, 1975).

In this paper we shall attempt to ascertain the depth to which this ethnolinguistic dichotomy penetrates the phonetic and acoustic strata of Kujamutay speech. In the following section we briefly outline Kujamutay phonology and vowel harmony, based on the considerably more detailed accounts presented in Sapir (1965) and (1975). Next, we discuss the pattern of interspeaker variation in vowel harmonization which is grounded in a basic contrast in the language's phonology. Finally, we examine the extent to which a similar pattern of interspeaker variation may exist in the acoustic features of Kujamutay speech.

II. Kujamutay Phonology and Vowel Harmony

Kujamutay has ten distinctive vowel phonemes\textsuperscript{3} which divide into two equal sets such that the vowels of one set are always relatively higher than the corresponding vowels of the other set:

\begin{tabular}{ll}
\hline
Relatively High Vowels & Relatively Low Vowels \\
\hline
\(i\) & \(u\) \\
\(e\) & \(o\) \\
\(a\) & \(\varepsilon\) \\
\hline
\end{tabular}

Coupled with this vocalic contrast is a general harmony rule which converts a vowel of the relatively low (L) set to its counterpart in the relatively high (H) set.\textsuperscript{4} The harmony is triggered by certain grammatical elements and applies retrogressively in verb and noun inflection and in verbal and nominal root derivation. For example, the vowels in the word panalaan(\"he will return\") undergo harmonization upon introduction of a set H vowel, the suffix \(-u\) (\"from\"):

1(a) panalaan \ "he will return"
1(b) pənələənu \ "he will return from"

However, individual speech patterns vary with respect to the size of the linguistic domain over which the harmony applies. This fact was discovered during the course of an elicitation session with three Kujamutay speakers. One of the informants pronounced the negative infinitive of the root -baj "to have" as kəbaʒəti rather than the expected kəbaəʒəti. Queried about this
unusual form, the informant (AB) laughed and replied "We speak thin". The other two agreed, offering that they (AK, KB), in contrast, spoke "big". KB's collective "we" referred to the people of Bignona, his home town and the local administrative center, as well as to the people of several adjacent villages from which the original inhabitants of Bignona had come some seventy-five years ago. In contrast, AK and KB came from outlying villages some 25 km from Bignona.

The speech of the three differed from each other in a number of ways:

A. Vocabulary. Certain Kujamutay words have optional forms with varying degrees of harmonization. In these instances, AB always used the relatively unharmonized variant, AK usually used the fully harmonized form, with KB's usage varying depending on the specific word:

<table>
<thead>
<tr>
<th></th>
<th>AB(Thin)</th>
<th>KB(Int)</th>
<th>AK(Big)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2(a)</td>
<td>-kuntagɛn</td>
<td>-kuntejen</td>
<td>-kuntejen</td>
</tr>
<tr>
<td>2(b)</td>
<td>jifaruba</td>
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<td>jifaruba</td>
</tr>
</tbody>
</table>

B. Suffixes. Three suffixes have regional variants defined, in part, by the cross-vowel height contrast. With any of these suffixes, AB would invariably use the set L form, AK the set H variant, and KB's form would vary depending on the suffix:

<table>
<thead>
<tr>
<th></th>
<th>AB(Thin)</th>
<th>KB(Int)</th>
<th>AK(Big)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3(a)</td>
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<td>ɛti</td>
<td>-ɛti</td>
</tr>
<tr>
<td>3(b)</td>
<td>-ɛrit</td>
<td>-ɛrit</td>
<td>-urit</td>
</tr>
<tr>
<td>3(c)</td>
<td>-uli</td>
<td>-uli</td>
<td>olı/-olı</td>
</tr>
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</table>

C. Harmony. However, neither the vocabulary nor the suffixes can by themselves, or together, provide a sufficient set of criteria for making the discrimination between "big" and "thin" speech. The Kujamaat are able to place someone as either a big or thin speaker without waiting for a diagnostic morpheme or lexical item. Some other, more pervasive, linguistic factor is at play and this other factor proves to be vowel harmony.

A "big" speaker will tend to carry the harmony further back than a "thin" speaker, though in fact, no absolute set of criteria apply to classify an individual's speech as "big" or "thin". Rather, a speaker is "big" only in comparison with another speaker whose speech, in turn, may be "big" relative to a third.

This pattern of interspeaker variation is evident in the harmony associated with infixed ɬ. The hither marker -ułɔ-, when combined with the habitual -ɛ-, reduces to ɬ, which projects its harmonizing influence over the preceding verb form nabajɛbaj ("he always has") to varying degrees in the speech of our three informants. In the case of AK the infixed ɬ casts its harmonizing spell over the entire verb form, it
restricts its influence to the initial base verb for KB, and affects only the habitual marker -ɛ- in AB's speech:

4(a) nêbejeobaj (AK:Big)
(b) nabêjeobaj (KB:Int)
(c) nabajeobaj (AB:Thin)

III. Acoustic Correlates of "Big" and "Thin"

Given the pervasiveness of the big/thin distinction in the phonology, might the contrast permeate the acoustic stratum of Kujamutay as well? To obtain an answer, we shall first examine the general acoustic features of the Kujamutay vowel system as exemplified in the speech of AK, KB and AB. We will then look at some of the acoustic dimensions more closely to determine whether a pattern of interspeaker variation analogous to that found in vowel harmonization occurs in the acoustic domain.

A. Vowel Spaces. A two-dimensional representation of the acoustic vowel space is shown for each speaker (Figures 1-3). Formant data shown in these and all other figures were obtained in the following manner; speech samples, derived from minimal or near-minimal pairs involving the cross-vowel height contrast were digitized from audio tape through a PDP-12 laboratory computer. The central portions of the vowels were spectrally analyzed based on linear prediction (Markel and Gray, 1975) to estimate the center frequencies of the first five formants. 6

In Figures 1-3 the center coordinates of the ellipses represent the means for F1 and F2. A mean is typically based on three tokens, though the sample ranges between 1 and 8 items. The area circumscribed by the ellipse represents an ellipsoid-fitted estimate of the first and second formant ranges. 7

Formant frequencies were transformed from a linear frequency scale (Hz) into Mel units (Figure 10), which more closely approximates the function associated with the frequency resolving power of the ear (Stevens, Volkman, and Newman, 1937).

The vowel spaces deviate from the schematic representation of the Kujamutay system illustrated above in a number of ways:
(i) The seemingly mid-central vowel [ɔɔ] is in fact, rather far fronted, being practically contiguous with [e] and [ɛ]. Its set L counterpart [aa] is fronted only in AB's (thin) speech.
(ii) The mid-back vowel pair oo/ɔɔ has a greater vowel height separation than its mid-front counterpart e/ɛ.
(iii) The high-back pair uu/uu (and u/ʊ as well) is lower than the high-front pair ii/iɪ. [oo] is considerably higher in relation to [uu] than the corresponding front vowels [e] and [ii] are to each other.
Figure 1  Two-dimensional acoustic representation of the vowel space for speaker AK. Non-homogeneity of vowel length due to composition of corpus.

Figure 2  Acoustic vowel space for speaker KB.
B. Spectral Analyses. To determine the identity of the acoustic features most closely associated with the Big:Thin continuum, the spectra of selected vowels were compared along a number of acoustic dimensions (Tables I and II). Our goal was to determine which (if any) acoustic features analyzed displayed a consistent pattern of rank ordering among the three Kujamutay speakers. "Big" as KB's speech may have been, KB was considered by the other informants to be less of a "big" speaker than AK. And indeed, in terms of vowel harmony, vocabulary, and suffixing KB's behavior is in between the other two. Consequently, the appropriate rank ordering would place KB between AB and AK.

The results of this comparative analysis are presented in Tables I and II and in Figures 4-9. Table I includes the results of analyses involving all three speakers. Table II contains some additional data which were only available for AK and KB. Though discussion will be focussed on Table I, most of the general points apply to Table II as well. For the purposes of discussion, the results have been divided into four groups. Analyses involving comparisons of acoustic dimensions within a single vowel across the three speakers will be classified as single-vowel comparisons. Complementary-vowel analyses are those in which the comparison across speakers involves the differential of corresponding set H and set L vowels.
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+ Data presented represent means of samples ranging from 2 to 8 tokens.
### TABLE 1 (b)

Formant Frequencies for Multiple-Formant Dimensions: 3 Speakers

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* Critical Band Units
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<th>Formant 3</th>
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<th>F2-F1⁺</th>
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* Data in this Table not plotted in figures. Frequencies given in Mels unless otherwise noted.

+ Critical Band Units.
A further division is made on the basis of whether the analysis involves single-formant or multiple-formant dimensions.

1. Single Vowel Comparisons. Direct comparisons of formant frequencies are, in general, hampered by the fact that differences between formant frequencies for the same vowel can vary as much as 30 per cent due to variation in vocal tract size (Fant, 1973). Consequently, any consistent rank ordering of single- or multiple-formant dimensions among speakers may be artifactual.

   (a) Single-formant dimensions. Mean values for F1, F2, F3, and F2' are presented in columns 1-4 respectively in Tables I and II. Data for F1 and F2 are also plotted in Figures 4 and 5. Inspection of the figures makes it clear that no consistent pattern of rank ordering prevails across vowels.

   (b) Multiple-formant dimensions. Columns 5-8 of the tables contain similar data for the dimensions F2-F1, F3-F2, and F2'-F1. Again, no consistent pattern of interspeaker differentiation emerges from the analysis.

2. Complementary Vowel Comparisons. Given the failure of single-vowel analyses to extract any consistent pattern of interspeaker variation, we reasoned that if any systematic acoustic pattern correlated with the big:thin continuum did exist it would most likely be found in the acoustic relationship between structurally associated (corresponding set L and set H) vowels. A "big" speaker, exploiting the cross-vowel height harmony to a greater extent than a "thin" speaker, would tend to maintain greater articulatory, and hence acoustic, distance between set H and set L counterparts.

   (a) Single-formant dimensions. The frequency differentials for F1, F2, F3, and F2' of corresponding vowels are shown in columns 5-8 of Tables I and II, as well as in Figures 6 and 7 for F1^H - F1^L and F2^H - F2^L. It is clear from examination of the tables and figures that no consistent rank ordering occurs across all vowels.

   (b) Multiple-formant dimensions. Results of analyses involving corresponding vowel differentials for the dimension F2-F1 are shown in Figures 8 and 9 for Mels and critical bands. The pattern of rank ordering and differentiation among the three speakers is quite close to the pattern of interspeaker variation exhibited in vowel harmony. The rank ordering is consistent all the way through for the data plotted in terms of critical bands and is nearly so for the same data plotted in Mels. The only exception is the pair i/i, which are often extremely similar in the West African vowel harmony languages.

IV. Discussion

What might the correspondence between the acoustic dimension \((F2-F1)_H^H - (F2-F1)_L^L\) and the phonological contrast Big:Thin signify? The dimension F2-F1 has a special status in both the auditory and articulatory domains. Acoustically, F2-F1
Figure 4. Mean values of first formant for five vowel pairs. Immediate consonantal environment identical for vowels of any single corresponding vowel pair.

Figure 5. Mean values for second formant. Speakers are AK, KB, and AB.
Figure 6  Figure 4 replotted to show the relationship between the first formants of corresponding Set H and Set L vowels.

Figure 7  Figure 5 replotted to show the relationship of F2 in corresponding vowel pairs.
Figure 8  The relationship of the distance between the first and second spectral peaks (F2 - F1) for Set H and Set L counterparts is plotted in Mel units.

Figure 9  (F2 - F1)\textsuperscript{H} - (F2 - F1)\textsuperscript{L} plotted in terms of critical band units.
Figure 10  The relationship between a linear frequency scale (Hertz) and a scale derived from magnitude estimation studies (Mels). Also plotted is a technical approximation to the Mel scale. (From Fant, 1973)

Figure 11  Critical bandwidth as a function of frequency. (Adapted from Scharf, 1970)
corresponds to the contrast Grave:Acute (Jakobson, Fant, and Halle, 1952) – a feature which the cochlea appears to be rather sensitive to (Miller et al., 1977). The perceptual significance of F2-F1 for differentiating between "big" and "thin" in Kujamaatay is suggested by the fact that a linear analysis of F2-F1 (Hertz) does not provide as reliable a basis for discriminating among the three speakers. The formant frequencies must be converted to a perceptually-relevant scale in order for the dimension to serve as a consistent differentiator.

Within the vowel-relevant range (250-3000 Hz) a fairly consistent relationship exists between the Mel scale and critical bands (Figures 10 and 11). One critical band equals approximately 100 mels (Lindsay and Norman, 1977). Though the critical band originated as a purely behavioral construct based on studies of loudness and frequency integration (Fletcher, 1940), it has been subsequently determined that it has a physiological correlate in the innervation density of auditory nerve fibers with the basilar membrane.\(^\text{10}\)

In the articulatory domain, the dimension F2-F1 is highly correlated with the position of the tongue in the horizontal plane. As such, it provides a rather direct acoustic correlate of the contrastive articulatory feature Front:Back.

The prominent role played by F2-F1 in both the auditory and articulatory domains is not likely to be a matter of pure chance. Neither is it likely that this dimension could be so sensitive to the speech patterns associated with "big" and "thin" through the operation of coincidental factors.

V. Conclusion

The Kujamaat of Senegal socially intuit with the metalinguistic terms "big" and "thin" a vowel contrast that is basic to their phonology. The two terms are used primarily to identify speech variation among individuals and groups. On the phonological level, speakers who make relatively greater use of vowel harmony are characterized as "big" in contrast to others who are thought of as "thin" speakers. On the acoustic level, the dimension F2-F1 is extremely sensitive to this same pattern of interspeaker variation. In so being, it demonstrates the depth to which a socially-motivated system of classification may penetrate a language.
NOTES

1. Referred to in previous publications (Sapir, 1965; 1975) as Diola-Fogny.

2. This is the name by which the speakers of Kujamutay refer to themselves as a social entity.

3. Length is phonemically distinctive in Kujamutay. Hence, the full complement of vowels numbers twenty when length is taken into account.

4. Occasionally a set L vowel is converted to a vowel other than its own set H counterpart. See Stewart (1971) for a more detailed discussion on this phenomenon and its relation to diachronic processes in vowel harmony systems.

5. The distinction made by the Kujamaat between "big" and "thin" refers on a more basic level to the set H:set L contrast in the vowel phonology. It is not coincidental that the Kujamutay term for "thin" is mis with a set L vowel and that the word for "big" (kələ) is composed of set H vowels. The pervasiveness of "big" and "thin" is exemplified by the fact that the contrast extends into the realm of sound symbolism. Like many other African languages, Kujamutay has a large vocabulary of qualifiers, known as ideophones, which serve to modify in particular ways both nouns and verbs. These ideophones frequently come in pairs, with one considered as being "more of" ,"larger than", "bigger than" the other. Many of the ideophonic pairs are distinguished by way of the cross-vowel height dimension, with the augmentative member of the pair always assuming the set H form. A good example of this type of contrast is jiker jelelel versus jiker jeləel. The verb -jiker glosses as "look out at, regard" and the ideophones refer to the glow or reflection in the eyes moving back and forth when they are caught in a beam of light. Thus:

5(a) ebe Ejiker jelelel "a cow looks with glowing eyes"
(b) ejamən ejiker jelael "a goat looks with glowing eyes"

6. Only the first three formants were analyzed in the present study.

7. The range was computed independently, for F1 and F2 using the following equation: \[ r = \frac{\sigma}{n/3}^{1/2} \], where n = sample size

8. Hertz were transformed into Mels using the technical approximation (Fant, 1973): \[ \text{Mel} = \frac{1000}{\log 2} \log \left(1 + \frac{F(\text{Hz})}{1000}\right) \]
9. F2' is a weighted mean of F2 and F3. It was computed using the formula: 
\[ F2' = F2 + \frac{1}{2} \frac{(F2-F1)(F2-F3)}{(F3-F1)} \] (Fant, 1973)

10. Approximately 1200 nerve fibers innervate the region of the basilar membrane spanned by a critical band (Lindsay and Norman, 1977).

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Speech Aerodynamics and Phonological Universals
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University of California, Berkeley

I. Introduction

A. Explanations in Phonology

One of the most important current questions in linguistics is that of explanation; that is, what constitutes an explanation of certain observed linguistic data. In the area of phonological universals, there seem to be two types of methodologies: first, descriptions of phonological data which are intended as descriptions (for example, the work of Greenberg, Ferguson, and Hockett), and second, descriptions of phonological data which are intended as explanations (for example, the strength hierarchies and markedness conventions of Chomsky and Halle, Hooper, and Foley). These latter types of descriptions fail to be truly explanatory in that their primitives are defined in terms of the theory itself, rather than making reference to empirically verifiable principles outside the theory.

Recently some linguists, for example John Ohala (see Ohala 1977), have argued that those phonological processes which tend to be universal probably are so because they are caused by, and can therefore be explained with reference to, that which all speakers have in common: the human speech production and speech perception mechanisms. Most phonological patterns or sound changes which can be explained in terms of sociolinguistics, for example borrowings or fashion, will tend not to be universal. Since many aspects of human speech production and perception can be empirically investigated, explanations of phonological patterns based on these phonetic data can be truly explanatory, with primitives defined in terms of principles outside the theory, for example, principles of mathematics or physics. Further, theories based on empirically gathered phonetic data should be able to make predictions about phonological universals which can then be verified with reference to phonological data gathered from the world's languages. In this paper I will describe such a theory, present explanations of and predictions about several phonological universals, and then discuss these universals in detail with support from real language data.

B. A mathematical model of speech aerodynamics.

A computer-implemented mathematical model of speech aerodynamics has been reported in Ohala 1975a, 1976. This model basically works as follows: the user speci-
fies starting values for various aspects of the modeled air passages, specifically, the volumes of the oral and pulmonic cavities, air masses in these cavities, and time-varying values for oral and glottal resistances and pulmonic force. The model has built into it various well-known principles of aerodynamics, for example, formulas for predicting when air flow will become turbulent, given its velocity and the dimensions of the channel it is passing through. The model is calibrated with reference to well-documented, measurable data about human speech aerodynamics. The model then outputs time-varying values for oral and glottal air flow and for air pressure in the oral and pulmonic cavities. Some of the values which the model outputs are compared with measurements taken from human speakers, to verify by extension the validity of the predicted values which are not easily measurable, such as pulmonic force or glottal air flow during obstruents.

The two main phonetic factors about which this model can make explanations are 1) voicing maintenance, and 2) introduction of turbulence into the speech air stream.

Voicing is a function of the pressure drop across the glottis; voicing can only be maintained when the air pressure above the glottis is less than that below the glottis, so that air can flow from the lungs across the glottis into the oral cavity, causing the vocal cords to vibrate. When there is a blockage of airflow in the oral cavity, whether it be a complete blockage as in stops, or a partial blockage as in fricatives or the narrow constriction for high vowels, the pressure of the air in the oral cavity will increase. If oral pressure becomes equal to subglottal pressure, voicing stops. So voicing maintenance depends on air pressure and velocity, oral cavity size, and the resistance of the oral constrictions, which are all specified or derived by the aerodynamic model.

Turbulence can be described as follows: when air is passing slowly through a tube or constriction, it moves in a smooth, or laminar flow; however, if air is forced to move through the constriction at faster and faster rates, at some point laminar flow will become turbulent, developing eddies in the air flow. A narrower constriction will cause turbulence to begin sooner, as air velocity increases. Turbulence, then, depends on the area of the constriction and air velocity, which are also specified or derived by the aerodynamic model.

These two factors, voicing maintenance and turbulence, are the key factors in the several phonological universals to be discussed here.
C. Methodology of this study.

Three predictions made by this model about phonological patternings related to aerodynamic factors were researched in the Stanford Phonology Archive. This Archive is a collection of computer-readable descriptions of the phonological systems of 221 languages (at the time of my research). Since the languages in the Archive have been chosen to represent as widespread and characteristic a sample as possible, no data from further languages was included, so that my sample would not be biased. Data was gathered on all languages which exhibited the phenomena in question, and simple counts were made to see whether or not the model's predictions were generally upheld. Examples and counterexamples were further researched to see whether something other than aerodynamic factors might be coming into play in any important way. Finally, languages were looked at in geographical groups, to make sure no purely areal features were surfacing; geographical locations of the languages discussed below are listed in Appendix 1.

II. Universals of Speech Aerodynamics: Three Examples

A. Voiceless vowels and vowel height.

The first prediction is also a well-known observed universal: in vowel systems in which only some vowels devoice, high vowels will devoice before non-high vowels. This universal was noted by Greenberg (1969) among others. The explanation is fairly simple: the narrower constriction for high vowels causes air pressure in the oral cavity to be greater than that during low vowels, so that devoicing due to supra and subglottal pressure equalization can occur sooner, as described above.

The data from the Archive supports this prediction, and reinforces earlier observations, as can be seen in Table 1. Out of 44 languages with voiceless vowels, 24 devoice only part of their vowel systems; of these 24, 20 either devoice only high vowels, as in Dafla, Greenlandic, and Guarani for example, or preferentially devoice high vowels, as in Japanese and Nyangumara. (Greenberg 1969 cites 10 additional languages not included in the Stanford Phonology Archive as having only high voiceless vowels. These languages are listed in Table 2.) Of the five languages which are exceptions (see Table 3), two, Moroccan Arabic and Paez, devoice only schwa. [1] In both of these languages, schwa is described as an overly short transitional sound; in the case of Paez, it is optionally inserted in certain environments, and is not phonemic. In both languages it
<table>
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<th>Language</th>
<th>Devoices</th>
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<td>1. Portuguese</td>
<td>i,u [-stress], in the environment of voiceless consonants.</td>
</tr>
<tr>
<td>2. Malayalam</td>
<td>i,y /e,a,o___#,C</td>
</tr>
<tr>
<td>3. Japanese</td>
<td>all, but high more often</td>
</tr>
<tr>
<td>4. Mandarin</td>
<td>following syllable in high-falling tone, syllable final high vowels</td>
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<td>under weak stress are voiceless following voiceless fricatives or</td>
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<td></td>
<td>aspirated fricatives.</td>
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<td>5. Dafla</td>
<td>i,u / C___C</td>
</tr>
<tr>
<td>6. Akha</td>
<td>i / X___</td>
</tr>
<tr>
<td>7. Garo</td>
<td>i / s___n,r</td>
</tr>
<tr>
<td>8. Korean</td>
<td>y / medially, after fricatives, affricates, or aspir. cons.</td>
</tr>
<tr>
<td>9. Azerbaijani</td>
<td>I,脲,U,Ү when short in unstressed open syllables</td>
</tr>
<tr>
<td>10. Gadsup</td>
<td>i / ___##</td>
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<tr>
<td>11. Western Desert</td>
<td>U in one morphological env.</td>
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<td>12. Nengone</td>
<td>i,e,u,o (not ḫ,a,ɔ) / ___#</td>
</tr>
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<td>13. Nyangumata</td>
<td>all, but high more often, /___#</td>
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<tr>
<td>14. Greenlandic</td>
<td>i,u / C___C</td>
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<td>15. Chipewayan</td>
<td>i, when second element of diphthong</td>
</tr>
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<td>16. Tunica</td>
<td>u, phrase-final preceded by [k,hk] with penult. stress</td>
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<td>17. Alabaman</td>
<td>i / #___s (free variation)</td>
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<tr>
<td>19. Campa</td>
<td>i / ___#</td>
</tr>
<tr>
<td>20. Guarani</td>
<td>i,ɪ,u / ___#</td>
</tr>
</tbody>
</table>
TABLE 2  
Additional languages with only voiceless high vowels listed in Greenberg 1969

<table>
<thead>
<tr>
<th>Language</th>
<th>Devoices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Serbo-Croatian</td>
<td>i, u</td>
</tr>
<tr>
<td>2. Tadjik</td>
<td>i, u, a</td>
</tr>
<tr>
<td>3. Awadhi</td>
<td>i, e, u</td>
</tr>
<tr>
<td>4. Uzbek</td>
<td>i, u</td>
</tr>
<tr>
<td>5. Dagur</td>
<td>i, e, u</td>
</tr>
<tr>
<td>6. Papago</td>
<td>all, high more extensively</td>
</tr>
<tr>
<td>7. Comanche</td>
<td>all but /a/</td>
</tr>
<tr>
<td>8. Shawnee</td>
<td>j forces vowels in preceding syllable to devoice</td>
</tr>
<tr>
<td>9. Huichol</td>
<td>i, [+high], e</td>
</tr>
<tr>
<td>10. Chatino</td>
<td>i, u</td>
</tr>
</tbody>
</table>

TABLE 3  
Languages whose only voiceless vowels are not high

<table>
<thead>
<tr>
<th>Language</th>
<th>Devoices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Morocco Arabic</td>
<td>schwa / $\underline{C}$</td>
</tr>
<tr>
<td>2. Paez</td>
<td>schwa / $\underline{C}$</td>
</tr>
<tr>
<td>3. Hupa</td>
<td>[e,a,o] but not [i,u]; the second half of long vowels devoice; only [e,a,o] occur long.</td>
</tr>
<tr>
<td>4. Tarascan</td>
<td>[i,e,i,a,u] not [o]; before pause when single, unstressed. /o/ is defective phoneme in this system.</td>
</tr>
</tbody>
</table>
devoices between voiceless consonants in unstressed syllables. Because it is a particularly short vowel and non-phonemic, its devoicing in this environment is not surprising; it is clear, however, that it is not a function of aerodynamic factors, but of some other phonetic factors.

The other two languages which devoice something other than high vowels also seem to do so for non-aerodynamic reasons. Hupa devoices /e,a,o/, but not its high vowels, which are described phonetically as: [i, I, ɪ, ɔ, u]. However, vowel devoicing is an attribute of long vowels in this system, that is, the second half of long vowels devoice before pauses, and only /e,a/ and /o/ occur long. In fact, the high vowels in Hupa are sometimes analyzed as "lax" (short, unstressed) allophones of the phoneme /e/, so that they are phonemically never in a position to devoice.

Tarascan has a very odd system in that it devoices /i, e, i, a/ and /u/, but not /o/. Vowels in this language devoice before pause juncture when occurring singly under weak stress, and /o/ does occur in this position, for example in the word Xémembo 'his house'. However, /o/ is reported to be a defective phoneme in Tarascan, of infrequent occurrence, which is never found in a number of environments, namely, after /w, th, t, tsh/ or /s/. One possible explanation for this imbalance is that /o/ may be a more recent addition to the vowel system than the others, and that the devoicing developed in the rest of the system before /o/ became part of the system; however, this is just a speculation. But it appears that none of these counterexamples seriously detracts from the original prediction, that high vowels are more likely to devoice than low vowels.

B. Effect of vowel height on obstruents.

The second prediction is that if a language has rules which either devoice, aspirate, fricate or affricate consonants before only some vowels but not others, it will be before high rather than low vowels. The reason is rather complex. As I have pointed out, the narrow constriction for high vowels causes increased oral pressure; this can delay voice onset time, as reported by Smith (1975). [2] The lag in VOT can be heard as being part of the preceding consonant, so that a voiced obstruent can be heard as voiceless, or a voiceless obstruent as aspirated. Further, high vowels are more likely to create turbulence than low vowels, because they offer a narrower channel for the air flow. This can affect the preceding obstruent in two ways: first, it can actually add frication to it; secondly, it is generally true that the frication on voiceless obstruent
segments is noisier and of higher amplitude than the frication on voiced segments, as noted in Stevens 1971; therefore it is possible that the presence of turbulence itself may favor a reinterpretation of preceding consonants as voiceless, aspirated or fricated.

Before I describe the Archive data I should point out that I did not include in my count cases described as 'palatalization' unless there was actual affrication involved; this is because palatalization is more a function of front-back assimilation (i.e. of tongue body) rather than an aerodynamic feature.

Languages seem to exhibit this phenomenon in two different ways, as shown in Table 4. Some have skewed phonological systems in which only the affricated allophone of an obstructed phoneme occurs before high vowels. Japanese is a well-known example of this situation, in that its alveolar stops and fricatives affricate before /i/ and /u/. The Akan family shows a similar system, in which all alveolar and velar consonants affricate before high front vowels. Other languages have allophonic rules which devoice, affricate, aspirate or fricate single segments only in particular environments; the Gadsup language has three such rules, which are also listed in Table 4. Of the 23 languages, then, that exhibit the phenomenon in question, 20 do so before high vowels, and three before low vowels.

The counterexamples to this claim, listed in Table 5, are particularly interesting. In Yakut, a Turkic language of the USSR, voiceless velar stops are affricated before only low back vowels, and voiced velar stops are fricated before only low vowels, both front and back; the velar stops are also backed to uvulars. My only explanation for this is that in Yakut, as in various Turkic languages, there are front/back allophones of each obstructant (a function of 'palatalization' and vowel harmony), and that the back version of the velar phonemes are fricated, possibly due to the lesser agility of the tongue toward its root. However, this does not explain why even low front vowels cause frication of the voiced stop; I can think of no obvious phonetic explanation for this situation. On the surface, this is a counterexample to the predictions.

In Hupa the frication is used for emphasis, (i.e. $t \rightarrow tX$ in emphatic speech), which is clearly a function of perceptual rather than aerodynamic influences.

Lakhota, or Teton Dakota, has a very odd system in that it not only preferably affricates its aspirated stop phonemes before low vowels, but prefers to affricate them in the environment of nasalized vowels as well. The reason I find this strange is that there seems to be accumulating evidence that in general, nasals have a tendency to block aspiration, devoicing,
TABLE 4
Languages in which consonants devoice, aspirate, fricative or affricate in the environment of high vowels only

<table>
<thead>
<tr>
<th>Language</th>
<th>Rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gbari</td>
<td>tʃ and ɗʒ occur only before /i, e/</td>
</tr>
<tr>
<td>2. Akan</td>
<td>d → dz</td>
</tr>
<tr>
<td></td>
<td>t → tʃ</td>
</tr>
<tr>
<td></td>
<td>g → dʃ / ___/i, e/</td>
</tr>
<tr>
<td></td>
<td>k → tʃ</td>
</tr>
<tr>
<td></td>
<td>h → ɗ</td>
</tr>
<tr>
<td>3. Tigre</td>
<td>alveolar stops become fric. before /e/</td>
</tr>
<tr>
<td>4. Japanese</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i</td>
</tr>
<tr>
<td></td>
<td>u</td>
</tr>
<tr>
<td></td>
<td>e, a, o</td>
</tr>
<tr>
<td>5. Ryukyuan</td>
<td>t → ts, th → tʃh, d → ɗʒ / ___j</td>
</tr>
<tr>
<td>6. Lahu</td>
<td>p, ph, b, m affric. before u</td>
</tr>
<tr>
<td></td>
<td>u → u / w in this environment</td>
</tr>
<tr>
<td>7. Sa’ban</td>
<td>labials fricate / # w</td>
</tr>
<tr>
<td>8. Selepet</td>
<td>ph → ɭ, ʃ / # i, u</td>
</tr>
<tr>
<td>8. Gadsup</td>
<td>a) aspiration tends to be more frequent</td>
</tr>
<tr>
<td></td>
<td>and pronounced before high vowels.</td>
</tr>
<tr>
<td></td>
<td>b) ɿ has less friction before low vowels.</td>
</tr>
<tr>
<td></td>
<td>c) j → y before high vowels.</td>
</tr>
<tr>
<td>10. Sentani</td>
<td>j → ɗʒ / i, w, j</td>
</tr>
<tr>
<td>11. Kunimaipa</td>
<td>l → ɗʃ / high vowels</td>
</tr>
<tr>
<td>12. Nasioi</td>
<td>t → ts / ?___i; t → s / n, V___i</td>
</tr>
<tr>
<td>13. Nuangumata</td>
<td>p → ɭ, pʃ / #_U</td>
</tr>
<tr>
<td>14. Greenlandic</td>
<td>t → ts/___i</td>
</tr>
<tr>
<td>15. Oneida</td>
<td>tʃ, ɗʒ occur only before [j, i]</td>
</tr>
<tr>
<td>16. Totonac</td>
<td>l → ɭ / i___</td>
</tr>
<tr>
<td>17. Amahuaca</td>
<td>w → ɿ / env. of I</td>
</tr>
<tr>
<td>18. Carib</td>
<td>r → ɗʒ / i, j___</td>
</tr>
<tr>
<td>19. Ticuna</td>
<td>ɗʒ → j/ ___ a</td>
</tr>
<tr>
<td>20. Jivarao</td>
<td>w → ɿ / ___i</td>
</tr>
</tbody>
</table>
TABLE 5
Languages in which consonants devoice, aspirate, fricate or affricate in the environment of non-high vowels only

1. Yakut: \( /k/ \rightarrow [qX] / \quad [a, o] \)
   \( /g/ \rightarrow [k] / \quad [a, e, o, \ddot{o}] \)

2. Hupa: \( /th/ \rightarrow [tX] \) in emphatic speech before \( /a/ \).

3. Lakhota: \( \text{(Data from K. Whistler and R. Van Valin)} \)

<table>
<thead>
<tr>
<th></th>
<th>/ph/</th>
<th>/th/</th>
<th>/kh/</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>h</td>
<td>h</td>
<td>h</td>
</tr>
<tr>
<td>e</td>
<td>h~X</td>
<td>h</td>
<td>h</td>
</tr>
<tr>
<td>u</td>
<td>h</td>
<td>h~X</td>
<td>h</td>
</tr>
<tr>
<td>o</td>
<td>X</td>
<td>X</td>
<td>h~X</td>
</tr>
<tr>
<td>a</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ī</td>
<td>h</td>
<td>h</td>
<td>X</td>
</tr>
<tr>
<td>ū</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ā</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*thipi* \( [th\text{i}pi] \) 'house'

*ophethū* \( [op\text{h}etXū \text{ or opXetXū}] \) 'to buy'

*thāka* \( [tXäka] \) 'big'
or affrication of preceding segments [3], so that it seems that a language which preferentially affricates its obstruent phonemes in nasal environments is unusual, if not aberrant. However, the explanation for this phenomenon may in fact lie in its very strangeness. Consider the following speculation: Lakhota has both a voiceless aspirated and a voiceless unaspirated stop series. In certain environments, however, the aspiration tends to be lessened or damped, specifically around low vowels for aerodynamic reasons, and around nasals, probably for perceptual and aerodynamic reasons, since air escaping from the nose has less turbulence and therefore less perceptible noise than air escaping from the mouth. Therefore, in order to preserve the perceptual distinction between aspirated and unaspirated voiceless stops, frication is added to the segments in just those environments where it does not occur naturally. Because this frication occurs in the environment of low and back vowels, it takes on the same tongue position and occurs as velar frication. While this solution is merely speculation, it seems to be plausible, and if it were true, it would in a sense reconfirm the prediction that the more likely place to find devoicing, aspiration, frication, or affrication of obstruents is before high rather than low vowels. [4]

C. Geminates and Long Consonants

The third prediction is as follows: If a language has both voiced and voiceless obstruents, but geminates only part of its obstruent system, it will have long voiceless rather than long voiced obstruents.

The explanation is that a stop closure of long duration will allow air pressure in the oral cavity enough time to equalize with sub-glottal pressure and cause voicing to stop; this is also true of the narrow constriction for fricatives, but not true of nasals, which of course allow air to escape from the nose, disallowing oral pressure build-up. Voiced geminate obstruents are more unstable than voiceless; over time they should either devoice, or devise some means of prolonging voicing, for example, becoming prenasalized or imploded. While this is clearly a diachronic prediction, a synchronic manifestation would be languages with geminate systems skewed in a voiceless direction, or with geminate or long obstruents only among the voiceless series.

In making this survey I of course discounted languages which have no voiced obstruent segments as phonemes or allophones. However, I did include languages which lack phonemic voicing but do have voiced allophones contrasting with the geminate obstruents. Exam-
ples of this are Ojibwa and Delaware.

The data from the Archive, displayed in Table 6 again supports our prediction: 18 of 20 languages with skewed geminate systems, 18 either have only long voiceless obstruents or have systems skewed in a voiceless direction, not counting nasals. Japanese is again the classic case which exhibits this phenomenon in its phonological system, as it has both voiced and voiceless obstruents, but only geminate voiceless. Lak, a Caucasian language, is a further example. Awia, an African language spoken in Ethiopia, demonstrates a voiceless skew, with two voiced and two voiceless geminate stops, but only voiceless geminate fricatives and affricates.

One of the counterexamples (see Table 7) appears to be in fact a verification of the claim that voiced geminates are diachronically unstable. Armstrong (1934) analyses Somali as having voiceless obstruent phonemes of rather limited occurrence, and voiced obstruent phonemes with a number of allophonic variations. Intervocally, voiced obstruent phonemes can occur either short, in which case they are fully voiced and somewhat spirantized, or long, in which case they are described as "[not] sound[ing] fully voiced", or having "weak voicing", or none at all. What seems to be happening is that these long voiced segments are in the process of devoicing, as our model predicts they are likely to do.

The second counterexample, that of Island Carib, seems to be an example of a skew due at least in part to systemic reasons; that is, the voiceless segments /p/ and /k/ only occur initially, and long consonants only occur finally, so that /p/ and /k/ are never in a position to occur long. (p/b and k/g neutralize medially, so that the phonemicization of this language is problematic.) However, of the two voiceless stops which do occur finally, /t/ does occur long, but /c/ does not, and all the voiced obstruent phonemes do occur long. So while in one sense this stands as a counterexample, it appears that whatever is causing the skewing toward voiced geminates is systemic, a function of the somewhat asymmetrical phonological pattern, rather than due to aerodynamic factors. That is, non-phonetic factors have overridden the phonetic factors in determining the behavior of the sounds in this case.

It is interesting to note in passing that the most frequent type of geminate or long consonant in the world's languages is clearly the nasal geminate. This fact was briefly mentioned by Ferguson (1975), but no explanation was offered. As indicated in Table 8, the Archive shows 72 languages with some type of long geminate consonants, 67 of which have long nasals. This leaves only five languages which have only non-nasal long consonants. There are sixteen languages whose only
### TABLE 6
Languages which either have only long voiceless obstruents, or geminate systems skewed in a voiceless direction.

<table>
<thead>
<tr>
<th>Language</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Finnish</td>
<td>10. Lak</td>
</tr>
<tr>
<td>2. Icelandic</td>
<td>11. Yurak</td>
</tr>
<tr>
<td>3. Walamo</td>
<td>12. Evenki</td>
</tr>
<tr>
<td>6. Malayalam</td>
<td>15. Ojibwa</td>
</tr>
</tbody>
</table>

### EXAMPLES

<table>
<thead>
<tr>
<th>Japanese (skewed system)</th>
<th>Lak (skewed system)</th>
</tr>
</thead>
<tbody>
<tr>
<td>p d g z</td>
<td>b d g</td>
</tr>
<tr>
<td>p t k s</td>
<td>p t ts ç k q</td>
</tr>
<tr>
<td>p: t: k: s:</td>
<td>p: t: ts: ç: k: q:</td>
</tr>
<tr>
<td></td>
<td>p' t' ts' ç' k' a'</td>
</tr>
</tbody>
</table>

**Awiya**

<table>
<thead>
<tr>
<th>b q g dz dz z ʒ</th>
<th>p t k ts tʃ sʃ</th>
</tr>
</thead>
<tbody>
<tr>
<td>p: t: q: g: ts: tʃ: s: ʃ:</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 7
Languages which either have only long voiced obstruents, or have a skew towards voiced geminates.

1. Somali: all geminates are phonemically voiced, but are in the process of devoicing.

2. Island Carib: 
   
   /b d g f s h/  
   /b: d: g: f: s:/  
   /p t c k/  

   /p/ and /k/ only occur initially; long variants only occur finally.
<table>
<thead>
<tr>
<th>Language</th>
<th>Has Long:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Atayal</td>
<td>t, l</td>
</tr>
<tr>
<td>2. Cheremis</td>
<td>r</td>
</tr>
<tr>
<td>3. Iraqw</td>
<td>s</td>
</tr>
<tr>
<td>4. Totonac</td>
<td>p, t, k, q, l</td>
</tr>
<tr>
<td>5. Tarascan</td>
<td>k</td>
</tr>
</tbody>
</table>
long consonants are nasals, and another nine which have only long nasals and liquids; combined, these two categories comprise over a third of the languages in this count. The interesting question is this: why are long nasals more frequent than long voiceless oral obstruents; is this just a function of the greater stability of nasals over time, as noted by Ferguson 1975, and Ohala 1975b, or are there other factors, perhaps aerodynamic, involved? The answer will have to be the topic of some future research.

III. Conclusion

In his recent dissertation Hector Javkin has argued that most sound changes of the universal sort can be explained with reference to either primarily articulatory, acoustic, or perceptual facts, and that each of these areas will be able to explain a different type of sound change. Because synchronic patterns are nothing more than the output of previous sound changes, as Greenberg 1966 argues, it follows that phonological universals should also be explainable in these terms. I have shown in this paper that certain facts about the aerodynamic aspects of speech production can be used to predict and explain a particular body of phonological data. The mathematical model of speech aerodynamics discussed here does not pretend to be a theory for explaining all possible speech patterns, but rather only those which are directly a function of aerodynamic facts. Because phonological universals obviously are caused by a wide range of phonetic factors, articulatory, acoustic and perceptual, any theory which hopes to be able to explain fully all phonological universals will have to include data from all of these areas; and since our knowledge in many facets of these fields is at this point sketchy at best, much more research will need to be done before such a comprehensive theory can be developed. However, it is clear that the basis for truly explanatory theories about phonological universals will have to be empirically gathered phonetic data, such as I have described in this paper.

ACKNOWLEDGMENTS

I would like to thank Johanna Nichols, Karl Zimmer, and John Kingston for useful comments on this paper. I would especially like to thank John Ohala for his thoughtful guidance and criticism throughout this project. I would also like to express my appreciation to the numerous people who helped me with the language data. This paper was funded in part by an NSF grant to the U. C. Berkeley Phonology Laboratory, and by a U. C. Regents' Graduate Fellowship.
FOOTNOTES

1. I originally included Puget Sound Salish as a language with voiceless schwa, but have since had several Salishanists explain to me that this is incorrect.

2. Smith's results are somewhat complex in that he finds that fully voiced stops will have more pre-voicing before high than low vowels, while voiceless stops will have a much longer VOT before high than low vowels. This needs further investigation and explanation.

3. The incompatibility of nasalization with oral stops and fricatives is discussed in Ohala 1975a, and with frication on vowels and glides in Ohala 1977. The reason cited is the necessity of high oral pressure for noise bursts in the former case, and turbulence in the latter; the release of air through the nose makes high oral pressure difficult to accomplish. In going through the Archive data I came across a large number of languages with rules which, for example, devoice or aspirate obstruent phonemes everywhere except in the environment of nasals, where they are voiced or unaspirated. However, there is some evidence for an affinity between /h, ʔ/ and nasality (see Matisoff 1975), and 'spontaneous nasalization' is attested around /s/ and /h/ (see Ohala 1975b). This entire area is very unclear and awaits further investigation.

4. This is not a totally unprecedented type of argumentation. Jakobson (1962) has used a similar argument to explain why Ukrainian has palatal consonants only before low back vowels.
<table>
<thead>
<tr>
<th>Language</th>
<th>Area</th>
<th>Language</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finnish</td>
<td>Europe</td>
<td>Gbari</td>
<td>Africa</td>
</tr>
<tr>
<td>Portuguese</td>
<td>&quot;</td>
<td>Akan</td>
<td>&quot;</td>
</tr>
<tr>
<td>Icelandic</td>
<td>&quot;</td>
<td>Tigre</td>
<td>&quot;</td>
</tr>
<tr>
<td>Serbo Croatian</td>
<td>&quot;</td>
<td>Walamo</td>
<td>&quot;</td>
</tr>
<tr>
<td>Moroccan Arabic</td>
<td>Morocco</td>
<td>Awiya</td>
<td>&quot;</td>
</tr>
<tr>
<td>Awadhi</td>
<td>India</td>
<td>Kanuri</td>
<td>&quot;</td>
</tr>
<tr>
<td>Malayalam</td>
<td>&quot;</td>
<td>Somali</td>
<td>&quot;</td>
</tr>
<tr>
<td>Kurux</td>
<td>&quot;</td>
<td>Iraqw</td>
<td>&quot;</td>
</tr>
<tr>
<td>Tadjik</td>
<td>USSR</td>
<td>Greenlandic</td>
<td>N. America</td>
</tr>
<tr>
<td>Uzbek</td>
<td>&quot;</td>
<td>Alask. Eskimo</td>
<td>&quot;</td>
</tr>
<tr>
<td>Yakut</td>
<td>&quot;</td>
<td>Chipewayan</td>
<td>&quot;</td>
</tr>
<tr>
<td>Lak</td>
<td>&quot;</td>
<td>Tunica</td>
<td>&quot;</td>
</tr>
<tr>
<td>Cheremis</td>
<td>&quot;</td>
<td>Alabaman</td>
<td>&quot;</td>
</tr>
<tr>
<td>Azerbaijani</td>
<td>&quot;</td>
<td>Papago</td>
<td>&quot;</td>
</tr>
<tr>
<td>Yurak</td>
<td>&quot;</td>
<td>Comanche</td>
<td>&quot;</td>
</tr>
<tr>
<td>Evenki</td>
<td>&quot;</td>
<td>Shawnee</td>
<td>&quot;</td>
</tr>
<tr>
<td>Dagur</td>
<td>East Asia</td>
<td>Hupa</td>
<td>&quot;</td>
</tr>
<tr>
<td>Mandarin (Peking)</td>
<td>&quot;</td>
<td>Oneida</td>
<td>&quot;</td>
</tr>
<tr>
<td>Atayal</td>
<td>&quot;</td>
<td>Lakhota</td>
<td>&quot;</td>
</tr>
<tr>
<td>Japanese</td>
<td>&quot;</td>
<td>Ojibwa</td>
<td>&quot;</td>
</tr>
<tr>
<td>Ryukyuan</td>
<td>&quot;</td>
<td>Delaware</td>
<td>&quot;</td>
</tr>
<tr>
<td>Lahu</td>
<td>S.E. Asia</td>
<td>Karok</td>
<td>&quot;</td>
</tr>
<tr>
<td>Dafla</td>
<td>&quot;</td>
<td>Mixtec</td>
<td>Mexico</td>
</tr>
<tr>
<td>Akha</td>
<td>&quot;</td>
<td>Huichol</td>
<td>&quot;</td>
</tr>
<tr>
<td>Garo</td>
<td>&quot;</td>
<td>Chatino</td>
<td>&quot;</td>
</tr>
<tr>
<td>Korean</td>
<td>&quot;</td>
<td>Tarascan</td>
<td>&quot;</td>
</tr>
<tr>
<td>Gadsup</td>
<td>Pacific</td>
<td>Totonac</td>
<td>&quot;</td>
</tr>
<tr>
<td>Sa'ban</td>
<td>&quot;</td>
<td>Campa</td>
<td>S. America</td>
</tr>
<tr>
<td>Selepet</td>
<td>&quot;</td>
<td>Guarani</td>
<td>&quot;</td>
</tr>
<tr>
<td>Sentani</td>
<td>&quot;</td>
<td>Paez</td>
<td>&quot;</td>
</tr>
<tr>
<td>Kunimaipa</td>
<td>&quot;</td>
<td>Amahuaca</td>
<td>&quot;</td>
</tr>
<tr>
<td>Nasioi</td>
<td>&quot;</td>
<td>Carib</td>
<td>&quot;</td>
</tr>
<tr>
<td>Nyangumata</td>
<td>Australia</td>
<td>Ticuna</td>
<td>&quot;</td>
</tr>
<tr>
<td>West. Desert</td>
<td>&quot;</td>
<td>Jivaro</td>
<td>&quot;</td>
</tr>
<tr>
<td>Nengone</td>
<td>&quot;</td>
<td>Island Carib</td>
<td>&quot;</td>
</tr>
<tr>
<td>Naranungku</td>
<td>&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
REFERENCES

Abbreviations used:

IJAL = International Journal of American Linguistics
JASA = Journal of the Acoustical Society of America
UCPL = University of California Publications in Linguistics


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Phonetic and Grammatical Explanations for an Epenthesis and a Non-Epenthesis in English [1]

Hector Javkin

At the last BLS, I criticized Wang (1968), Greenberg (1970), and Ladefoged (1971) for failing to notice Boyle (1662). In this paper, I would like to show how Javkin and Ohala (1973) erred in ignoring Javkin (1977), Drachman (1977), and Javkin (1978) which is the paper I am about to read.

In Javkin and Ohala (1973) we discussed an ongoing sound change in English. A number of words with /l/ + /s/ sequences are developing epenthetic /t/, so that a word such as 'false' /fɔls/ is becoming /fɔltʃ/ in the production of a number of speakers of American English. Some of the words in which this is happening are given in 1.

1. else ls lts
pulse pɔls pɔltʃ
false ʃɔls ʃɔltʃ
calcify kæ尔斯ɪfæj kæ尔tʃɪfæj

The epenthetic /t/ occurs rather consistently for certain speakers. These speakers do not appear to form a coherent dialect. Other speakers have this form some of the time. This insertion of a /t/ is very similar to an epenthesis reported by Phelps (1937). Phelps claimed that a number of Indo-European languages including Latin, Greek, Breton and Czech, have developed stl from sl. This would be the same process we found, but with the sounds occurring in the reverse order. However, as Gary Holland and Carol Justus have pointed out to me, none of the words on which Phelps bases his claim can be traced back to Indo-European. Nevertheless, the explanation given by Phelps applies (in reverse order) to the on-going change in English. The process can be seen in Fig. 1, which represents the output of a dynamic palatograph. The system is described in somewhat more detail in Javkin (1977). The areas of contact between the tongue and palate for /s/ and /l/ are complementary in that the gesture for /s/ closes off all but a small area at the front of the alveolar ridge, while /l/ closes off a small area only at the front, leaving an opening at the sides. If the /l/ contact is not released before the /s/ contact occurs, the result will be closure all around the alveolar ridge. Such contact constitutes a
Figure 1
The sound change in English seems somewhat curious given the fact that a similar change has not occurred with /lz/ sequences, that words such as 'falls' /fɔlz/ have not developed into /fɔldz/ even in those speakers who regularly use the /fɔlts/ form for 'false'. In Javkin and Ohala (1973) and in Javkin (1977), we showed that both lts and ldz occurred as articularoty "accidents" as can be seen in Figs. 2 and 3.

The palatographic patterns of contact did not reveal any reason why epenthetic stops should develop in the case of /l/ followed by a voiceless sibilant but not in the case of /l/ followed by a voiced sibilant. The voiced and voiceless sibilants had the same contact patterns. The articulations of both would lead to complete closure if the /l/ contact were not released in time. The articulatory pattern for /lz/ thus cannot explain the lack of epenthesis.

Is /ldz/ difficult to perceive?

In Javkin and Ohala, we suggested that /d/ would be less perceptible than /t/ between /l/ and a following sibilant. The cues for the presence of an alveolar stop in an environment between two alveolar consonants are relatively scarce. The formant transitions which would occur if the stop were surrounded by vowels do not provide a cue for the presence of a stop. The stops are of relatively short duration. One cue for the presence of a stop, of course, would be the presence of a period of silence between the /l/ and the following sibilant. However, the silence characteristic of a stop also occurs at the beginning of a sibilant when a stop is not present. The silence in these cases is probably due to the fact that it takes a certain time for sufficient pressure to build up in the oral cavity to provide fricative noise. A listener, therefore, hears almost exactly the same thing regardless of the presence or absence of a stop in this environment, with one exception. That exception is the burst characteristic of the release of the stop into the sibilant. If a stop is present, there will be a momentarily high fricative noise level, which will decay rapidly. This burst is smaller in the case of a voiced consonant, because the pressure build-up is smaller. The difference can be seen in the overall amplitude of the stop bursts measured for example by Halle, Hughes and Radley (1957). The result is that the one cue available to the listener that a stop has occurred is weaker for a voiced than for a voiceless epenthetic stop. Therefore, although both types of stops probably occur with similar frequencies accidentally, only the voiceless is likely to be noticed.
Figure 2
by listeners, so that such stops are less likely to become part of the listener's code.

The occurrence of /dz/ in other languages

Tests to determine the relative perceptibility of /lts/ clusters versus /ldz/ clusters have not been performed at this time. However, there is a way of assessing the relative perceptibility of the two sequences. Since a preceding /l/ will have a similar perceptual effect on /t/ and /d/, a comparison of the phones /ts/ and /dz/ in the world's languages will show whether /d/ is relatively imperceptible. If the smaller amplitude burst of /d/ causes it to be relatively less perceptible when followed by a sibilant, one would expect /dz/ sequences to occur with less relative frequency than /ts/ sequences in the world's languages. Furthermore, if /d/ were relatively imperceptible in this environment, one would expect that phones consisting of [dz] sequences would tend to alternate with [z] phones and be members of the same phoneme more frequently than would be the case with the phones [ts] and [s].

There is a problem with this comparison in that voiced obstruents occur less frequently than voiceless obstruents. This can be taken into account by comparing the number of times /ts/ and /dz/ occur with the number of times that /s/ and /z/, and /t/ and /d/, occur.

The 221 languages whose phonologies are in the Stanford Phonology Archive were examined. [2] The results are given in 2.

2. The occurrence of dental/alveolar stops, affricates and fricatives

<table>
<thead>
<tr>
<th></th>
<th>t or d</th>
<th>ts or dz</th>
<th>s or z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voiceless</td>
<td>198</td>
<td>84</td>
<td>198</td>
</tr>
<tr>
<td>Voiced</td>
<td>169</td>
<td>42</td>
<td>89</td>
</tr>
</tbody>
</table>

It can be seen that /dz/ occurs in half as many languages as /ts/. This is slightly fewer than one would expect from looking at the frequency of /t/ and /d/, but slightly greater than we would expect looking at /s/ and /z/.

What we really want to answer is how distinct /dz/ and /z/ are, in order to see how perceptible /d/ is. Contrast between them suggests distinctiveness, alternation suggests perceptual similarity. There were
23 languages in which /dz/ and /z/ contrast, while only four have an alternation. The table in 3 allows a comparison with /ts/ and /s/.

3. Contrasts between affricates and fricatives

<table>
<thead>
<tr>
<th>Languages with [ts] or [dz]</th>
<th>84</th>
<th>42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages with [s] or [z]</td>
<td>198</td>
<td>89</td>
</tr>
<tr>
<td>Languages contrasting [ts] and [s] or [dz] and [z]</td>
<td>80</td>
<td>23</td>
</tr>
<tr>
<td>Languages with alternations ([ts] \sim [s] \text{ or } [dz] \sim [z])</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

We can compare the number of languages which contrast the pairs /ts/ and /s/, and the pair /dz/ and /z/, to the probability of co-occurrence of each of the pairs. I have calculated the probabilities, which are given in 4, according to the method in Ohala and Lorentz 1977. \((p) = \text{probability of.}\)

4. Co-occurrence Probabilities

\[
(p)_{ts} = \frac{84}{221} = .38 \\
(p)_{s} = \frac{198}{221} = .90 \\
(p)_{ts \text{ and } s} = (p)_{ts} \times (p)_{s} = .34 = 75.1 \text{ languages} \\
(p)_{dz} = \frac{42}{221} = .19 \\
(p)_{z} = \frac{89}{221} = .40 \\
(p)_{dz \text{ and } z} = (p)_{dz} \times (p)_{z} = .076 = 16.8 \text{ languages}
\]

As shown in 4, 75.1 languages can be expected to have a co-occurrence of /ts/ and /s/; 80 languages actually have a contrast between these two sounds. 16.8 languages can be expected to have a co-occurrence of /dz/ and /z/; 23 languages have a contrast between them. The fact that the number of languages which have a contrast between /dz/ and /z/ exceeds the number of languages which would be expected to have a mere co-
occurrence shows that we cannot conclude that contrasts between /dz/ and /z/ are unlikely.

There is further evidence that it is not for perceptual reasons that the process of /lz/ to /ldz/ is disfavored. Drachman (1977) found some dialects of Greek in which exactly this process occurs. Although Drachman came to some fanciful conclusions on the basis of his evidence, that evidence, together with the evidence just given, argues against a perception disfavoring the epenthesis of /d/.

Finally, if more evidence is needed to show that Javkin and Ohala were wrong in 1973, it can be shown that /dz/ is far more prevalent in the world's languages than other homorganic affricates. Looking at the velars in the Archive sample, there were only 6 languages with the /kx/ affricate and only 2 languages with the /gy/ affricate. Among the labials, there were only 3 languages with /ph/ affricates, and only 1 with /bβ/.

The totals for labials and velars are given in 5 and 6.

5. The occurrence of labial stops, affricates and fricatives

<table>
<thead>
<tr>
<th></th>
<th>p or b</th>
<th>φ or β</th>
<th>pφ or bβ</th>
</tr>
</thead>
<tbody>
<tr>
<td>voiceless</td>
<td>190</td>
<td>119</td>
<td>3</td>
</tr>
<tr>
<td>voiced</td>
<td>177</td>
<td>63</td>
<td>1</td>
</tr>
</tbody>
</table>

6. The occurrence of velar stops, affricates and fricatives

<table>
<thead>
<tr>
<th></th>
<th>k or g</th>
<th>x or γ</th>
<th>kx or gy</th>
</tr>
</thead>
<tbody>
<tr>
<td>voiceless</td>
<td>199</td>
<td>88</td>
<td>6</td>
</tr>
<tr>
<td>voiced</td>
<td>160</td>
<td>69</td>
<td>2</td>
</tr>
</tbody>
</table>

Thus, the presence of /d/ is perceptible in this environment before a sibilant, and the tentative conclusion that it is not must be abandoned. A different type of explanation is needed.

Morphological constraints of English for /ls/ and /lz/

In English, /lz/ and /ls/ occur under different grammatical conditions. Nearly all the words which
potentially could develop an epenthetic /d/ between an /l/ and a following /z/ contain a morpheme boundary between these two sounds. The sound /z/ follows /l/ only as the plural morpheme, as a possessive suffix, or as a third person singular marker. All the cases in which /s/ follows /l/ occur within a morpheme. This difference changes what is involved in the epenthesis of a stop in the two cases.

The fact that epenthesis does not occur when a word boundary separates /l/ and /s/ provides support for the hypothesis that the boundary between /l/ and /z/ also prevents epenthesis. Phrases such as "tall Sam", "tell Sandy", "yell softly" do not contain the epenthetic /t/ even for speakers who have the epenthetic /t/ within words. The non-occurrence of accidental epenthesis in "call Sue" in this experiment of Javkin and Oghala (1973) is suggestive. The organization of the motor movements by the speaker are apparently different in cases where a morpheme or word boundary intervenes. The result could be a delay in the tongue gesture for the sibilant until the /l/ contact is released.

Conclusion

In conclusion, the results suggest that the epenthesis of /t/ between /l/ and /s/ is due to the occasional occurrence of such stops as a result of the failure to release /l/ contact before /s/ contact begins. The failure of epenthetic stops to develop between /l/ and /z/ in English appears to be due to the fact that a morpheme boundary always occurs between these sounds in English.

Three related ideas are given additional support by this paper.

1) Both phonetic and grammatical facts are relevant to sound change.
2) Phonetic facts should be examined first since they are inherently more easily tested.
3) Sometimes the phonetic facts can be determined by looking at the phonological facts.
FOOTNOTES

1. This work was supported by a University of California president's Undergraduate Fellowship, by NSF grants to the Phonology Laboratory at U.C. Berkeley, and by NIMH grant MH15091 to the ITP program at U.C. San Francisco. I am grateful to a number of people, but special thanks are owed to John Ohala, who helped at every stage of the research reported here.

2. In preparing these other tabulations, I noticed that one language, Yurak, had the phone [dz], despite the fact that the computer printout did not list this language as having [dz]. This seems to have occurred because the records of the Archive for Yurak were not complete at the time that the printout was prepared. The phone [dz] thus occurs in 42 languages, although a reader obtaining the same printout from the Archive would only find 41.
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ON THE NOTION 'COMPLETELY ANAPHORIC' IN PHONOLOGY*

Ellen Kaisse
University of Washington

0. Introduction

In Modern Athenian Greek, an apparently ill-assorted group of words is subject to a sandhi process, Contraction, which deletes the weaker of two vowels in hiatus, regardless of order. All other words undergo a completely different rule, First Vowel Deletion, when their final vowels are in hiatus with the initial vowel of a following word. The question that prompts this paper is, does the set of words subject to Contraction form a natural class? What do they have in common? The set includes the clitic pronouns, the subjunctive and conditional verbal particles, and the undeclined relative pronoun, pu, 'that, where'. Crucially, pu is homophonous with the interrogative pronoun meaning 'where?'. But only the relative undergoes Contraction. Clearly, the rule is not strictly phonologically governed.

The first section of this paper is intended to show that it is indeed only the set listed above that undergoes Contraction. Reliable tests for distinguishing between the operation of this rule and First Vowel Deletion are given. With the facts established, the second section goes on to answer our central question, using the contrast between the relative and the interrogative pronoun as a starting point. It is concluded that the relative is completely anaphoric and completely incapable of receiving sentence stress, unlike the interrogative. It is these characteristics which unite the set of items undergoing Contraction. It seems that sandhi rules may make reference to a feature like [$+$ sentence-stressable] or [$+$ new lexical information]. The final section speculates on the use of such a feature in solving other phonological problems, and on the way a language might develop a rule that refers to a non-phonological feature like 'stressability.'

1.0 Distinguishing Contraction from First Vowel Deletion

Consider the following optional changes:

1. ta éxo --→ tá 'xo (the ' marks the site of them I have a deleted vowel)
   CLIT.
2. me álase --→ m' álase
   me it changed
   CLIT
   'It changed me.'
3. tu oēigō tīn Maria --> t' oēigō...
to him I lead (the) Maria
CLIT.

4. tu īpa típote --> tú'ēpa...
to him I said nothing
CLIT

5. tu ēdosa ēna vivlīo --> tú ēdosa
to him I gave a book
CLIT

These examples demonstrate three important characteristics of Contraction which will allow us to distinguish it from First Vowel Deletion. Firstly, as seen in (1), (4) and (5), Contraction can delete the second vowel in a string, so long as it is weaker than the first. Consideration of a full set of examples has led me to set up the following strength hierarchy:

```
  0......a......u......i......e
  5 4 3 2 1
strong ←----------------→ weak
```

The hierarchy is phonetically somewhat arbitrary. Contraction exists in some form in most of the Greek dialects, and the strength scale, as described by numerous linguists, differs in detail from what I have found for urban Athenian. Thus, the association of any one feature with 'strength' is doomed to failure. Athenian favors rounded vowels over non-rounded, back over non-back - this much is clear. Beyond that, the strength of a feature is dependent on what other features it occurs with. For instance, the non-high back vowel is stronger than the high one, but the high front vowel is stronger than the non-high. In a situation like this, a hierarchy is the easiest way to capture the environment of the rule.

The second salient characteristic of Contraction is that it is capable of deleting stressed as well as unstressed vowels. (Examples (1), (4) and (5).) We shall see that this is not true of First Vowel Deletion. Moreover, if a stressed vowel is lost, its stress is not deleted along with it, but rather becomes associated with the remaining vowel. This produces stressed clitics on the surface.

The third thing to note about Contraction is that it is capable of deleting high vowels (examples (3) and (4). This too First Vowel Deletion cannot do, leaving such vowels intact or turning them into glides instead.

We can now write a rule for Contraction:

```
[↑ syll n. strong] --> Ø % [↑ syll ≥ strong](#)#
```
(The % indicates that this is a mirror-image rule. We return to the question of the word boundaries in the structural description in section 2.)

First Vowel Deletion, which operates between most full words, is easily distinguished from Contraction. Compare the following, for instance, with example (1).

6. tá álōga érxonde → ...álōg' érxonde
the horses are coming

While the phonological structure is identical to that of ta éxo, neither of the words belongs to the set that undergoes Contraction, and the output is entirely different. The first vowel has been deleted, even though it is stronger than the second. Nor does an example where the first word is an object behave differently:

7. álōga éxο, má... → álōg' éxο
horses I have, but...

An example with a full NP object before the verb can never be fully comparable to one with a clitic in that position, as clitics normally precede all but imperative verbs, while the normal place for a NP object is after the verb. (7) merely shows that it is not some grammatical relation such as object-verb which triggers the operation of Contraction. Indeed, as we shall see in section 2, the words undergoing Contraction can even be in different constituents.

We noted above that Contraction can delete stressed vowels. This is not true of First Vowel Deletion:

8. tá pedyá érxonde → *...pedy' érxonde
the children are coming

9. tó atelyé agorázi xromata → *...ately' agorázi
the studio buys paints

Finally, while Contraction can delete high vowels, First Vowel Deletion always leaves them on the surface, although they may be shortened or, at the extreme end of shortening, turned into glides:

10. kimísu alá mín parakimísu → kimísh' alá...
sleep but don't oversleep  kimísw alá but
*kimísh' alá

11. tó agóri onirévete → ...agóri onirévete
the boy is dreaming  agóry onirévete but
*agóri onirévete

We now have enough information to formalize First Vowel Deletion:

\[
\begin{array}{c}
+ \text{syll} \\
- \text{hi} \\
- \text{stress}
\end{array}
\rightarrow \emptyset / \_\_ \# \# \left[+\text{syll}\right]
\]
1.1. Other sequences undergoing Contraction

When Contraction has been discussed in the literature, it has always been cited as a phenomenon occurring between clitics and their governing verbs, as in the examples given above. However, there are three other environments in which this rule is operative in the dialect of Athenian I have investigated: between possessive clitic and what follows (which will generally be in a new constituent); between the verbal particles na (subjunctive) and Ωa (conditional) and the verb that follows; and between the undelined relative pronoun pu and what follows.

1.1.1 Possessive clitics

The following examples show contraction between the possessive clitics and a verb in the following constituent. Such clitics follow the noun they modify. All end in [u], or

12. box 1 māna tu ēxi filus → ...tu'xi...
the mother his has friends
CLIT.
'His mother has friends.'

13. i māna mu onireverte → m' onireverte
the mother my is dreaming
'My mother is dreaming.'

Indeed, it is possible to find contexts where even an object pronoun is not in the same immediate constituent as the word that follows, namely, when the governing verb is in the imperative. In this case, the clitic follows the verb, and undergoes Contraction with the next word.

14. diāvase ta elafrā → ...ta 'lafrā
read them lightly

15. diāvase tu elafrā → ...tu 'lafrā
read to him lightly

16. diāvase tu olēna → ...t' oloēna
read to him continually

Such examples show all the characteristic signs of Contraction: stress shift, mirror-image environment, and deletion of high vowels. The significance of inter-constituent Contraction will become clear shortly.

1.1.2 Verbal Particles

It is now very easy to show that na (a subjunctive particle that acts like a complementizer as well) and Ωa (a particle used for future and conditional tenses) both undergo Contraction. It is unfortunate that the two particles both end in the same vowel, but we are still
able to construct examples that will unmistakeably show Contraction, and not First Vowel Deletion, to be the relevant process here.

17. θα éxo --→ θά 'xo
FUT I have

18. na éxis --→ ná' xis
SUBJ you have
'May you have.' or 'Have!' (polite imperative)

19. θα onirévese --→ θ' onirévese
FUT you dream

20. na onirévese --→ n' onirévese
SUBJ you dream

Here again are the distinguishing marks of Contraction: stress shift, mirror-image environment, deletion of stressed vowels.

1.1.3 The relative pronoun 'pu'

The pronoun pu functions as an undeclared relative meaning 'that'('which', 'who') or 'where.' Greek relative clauses are formed much like English ones, with the exception that it is possible to leave an optional shadow pronoun in Greek. pu is the only relative commonly used in colloquial speech. The inherited, declined relative is used only in formal speech or, occasionally, when the pronoun is the object of a preposition. The behavior of these moribund pronouns was not investigated.

Again, the proof that pu undergoes Contraction is not hard to come by, even with only one undeclared relative to test. We need only place pu before words beginning first with e, then with some vowel stronger than u, in order to get the mirror-image behavior we are seeking, the deletion of u, a high vowel, and the transfer of stress from ê to u.

21. τó álago pu éxume --→ ...pu' xume
the horse that we have

22. τó álago pu onirévete --→ p' onirévete
the horse that dreams

23. ekí pu agorázis frúta --→ ...p' agorázis
there where you buy fruit

24. ekí pu éxis filús --→ ...p' xis
there where you have friends

What is particularly interesting about this last member of the set of words undergoing Contraction is that it is homophonous with the interrogative pronoun pu, meaning 'where?'. But this latter does not behave in the same way at all. It appears instead to belong to the class of
items that undergo First Vowel Deletion. Unfortunately, the only other interrogative pronoun that ends in a vowel is póte 'when,' and it cannot give us any information about the rule that applies to interrogatives, since an unstressed e will be deleted before any other vowel whether by Contraction or First Vowel Deletion. All we can say is that pu does not undergo Contraction when it is an interrogative pronoun, and that its failure to lose its vowel is probably due to its falling under the domain of First Vowel Deletion, which does not remove high vowels. The following examples illustrate the imperviousness of the y of interrogative pu to deletion:

25. pú éxume filus? --> pw éxume but *pú 'xume
   'Where do we have friends?'
26. pú agorázis frúta? --> pw agorázis but
   where you buy fruit *p' agorázis

What is the difference between the semantically almost identical interrogative and relative pronouns meaning 'where?' A first reasonable guess might be that the interrogative occurs in absolute sentence-initial position, and this may for some reason be blocking Contraction. But this explanation will not hold up. The most obvious refutation comes when we embed interrogative pu in an indirect question. It still undergoes only Glide Formation, not Contraction.

27. dén kséro pú agorázi frúta -->*p' agorázi
   not I know where he buys fruit
   'I don't know where he buys fruit.'
28. pés mu pú éxis filus --> *pú 'xis
   tell me where you have friends

2.0 Finding the natural class.

Before we consider further the difference between interrogative and relative pronouns, it might be well to investigate the usefulness of some previous proposals for characterizing classes of 'little words' that undergo sandhi rules. When we have become convinced that these will not help us with our problem, we can return to the problem of pu for a new perspective.

Selkirk (1972), in her groundbreaking work on French liaison, proposes that liaison only occurs when one of the words is a monosyllabic grammatical item. But monosyllabicity will not give us the correct result here. Not only is it not a sufficient condition, failing as it does to distinguish between the two pu's, it is not even a necessary one. For indefinite relatives can be formed in
Greek by the prefixation of the morpheme ẹ-. This gives ἐποτε 'whenever', ὀψιος 'whoever, and ὧπο 'wherever.' The latter still undergoes Contraction:

29. ton vrikes ὧπο agorazis glika --> him one found where-ever you sweets buy ...ὅπ' agorazis...

Examples such as these also belie the usefulness of Rothenberg's (1975) reanalysis of Selkirk's criteria for the Greek case. He proposed that words undergoing liaison must be monomorphemic. But ẹ- is certainly a morpheme. The notion of 'grammatical items' which Selkirk uses is perhaps a useful one in our case, but it needs a great deal of further clarification, which the rest of this section is intended to begin to supply. So far it is not obvious why a relative should qualify as a grammatical item while an interrogative does not, or why a clitic pronoun should so qualify when a full pronoun does not.

I believe that the beginning of an answer to our problem lies in the notion 'completely anaphoric,' introduced briefly by Hankamer (1974) in a paper that addressed the question of why English it has no possessive pronoun.

30. This book is mine.
    his.
    *its.

Hankamer suggests that 'it' is completely anaphoric in that it carries no new lexical information whatever, not even number or gender. As such, given recent pragmatic theories of sentence stress assignment (viz. Huckin, 1977), it should not be able to receive sentence stress. I am not sure if Hankamer is right in claiming this property for it, but the allied concepts of unstressability and complete anaphoricity certainly are of use in distinguishing relative from interrogative pronouns, particularly undeclined relatives like ὧπο which carry no information about the number, gender, or case of the NP they replace. Moreover, in Greek, the relative pronoun is almost always preceded by a referential head, so that it is essentially little more that a grammatical place marker. Not surprisingly, its counterpart in English, that, is optionally deletable in certain contexts.

Interrogative pronouns, on the other hand, do introduce new, unpredictable information. Indeed, they represent the focus of the sentence. And they are not coreferent with anything in the sentence or, generally, in the preceding discourse. This contrast between the two types of pronouns is reflected in the possibility of their receiving sentence stress. The following contrasts
in English sentences are essentially identical to those in Greek:

31. Where did you buy that hat?
32. *The place where I bought this hat is a dump.
33. Which are you going to choose?
34. *The one which I'm going to choose is magenta.

33 and 34 are ungrammatical unless we have a metalinguistic context, such as the correction of a mishearing.

The concepts of complete anaphoricity and the resulting complete unstressability are even more easy to apply to clitics. Greek has a full set of unreduced, stressed pronouns which occur in complementary distribution with the clitics, when the pronoun is contrasted or focused. Thus, in order to undergo cliticization in the first place, a clitic must be completely anaphoric. Clitics are unstressed, by definition. They too, like the relative pronoun, are essentially grammatical items, marking object agreement on a verb. Selkirk's criterion of a grammatical rather than a lexical word undergoing liaison does indeed turn out to be relevant for Greek. But it has needed a definition in terms of new information in order to be usable.

The reader may wonder how verbal particles are to be subsumed under a heading of complete anaphoricity, since they do not refer at all. But like 'it', clitics, and relative pronouns, these words do not convey lexical information, and are again grammatical items. In fact, they are on the way to becoming bound morphemes, undeletable by transformation, and allowing only a highly limited set of items to appear between themselves and the verb. While both are etymologically full words, they are suffering a certain erosion. na comes from Ancient Greek iná, a conjunction meaning 'in order to,' and θά from θέλω 'I want to.' In Modern Greek, only clitics may intervene between θά and the verb. na is slightly more free, permitting both clitics and the negative dén to intervene. Neither particle may receive sentence stress. Both are written with a stress mark in Greek, I imagine because they come from full words in the ancient language. The same is true of pu. There is no good way to test whether these words are assigned lexical stress, since Greek has no counterpart of Vowel Reduction in English. They might all be termed 'clitics' under a broad definition of the word, but this definition would have to include inability to receive sentence stress and failure to carry new lexical information, whether because of complete anaphoricity or of being completely non-lexical. pu really meets no other typical standards of
clitichood. It is clearly not enclitic on the preceding head noun, since if it were, it would cause the addition of final stress to antepenultimately stressed nouns, just as possessive clitics do. Nor is it obviously proclitic on the following word, since it can begin clauses and exhibits no restrictions on the sort of word that can come after it, the way genuine clitics in Greek do.

I therefore propose that Contraction in Greek be written to apply to items marked [-sentence stressable] in the lexicon. We might equally well have it refer to items marked [-new lexical information], save that the former is the sort of feature that a phonological rule might be (mis)interpreted to refer to by language learners. We return to this point shortly.

We are now ready to return to the formulation of Contraction that we gave in section 1.0. There we allowed one or two word boundaries to intervene between the vowels. Since clitics are generally assumed to carry no word boundaries of their own, the reader may have wondered why we did not simply restrict Contraction to apply only across single word boundary. This was essentially Selkirk's solution for French. If this approach were feasible, we could hypothesize that pu, na and qa also carried no word boundaries, and make the formulation of the rule straightforward. But we have seen that Contraction can apply between constituents, such as NP and VP. The SPE conventions that posit no word boundaries flanking clitics also require that every node dominating a major category triggers the insertion of word boundaries. The subject NP of a sentence is therefore separated from the following predicate VP by two word boundaries:

35. # [NP] # # [VP] #

A clitic at the end of that NP, such as the tu in example 12, is therefore separated from the following verb by two word boundaries. Yet Contraction applies.

3.0 On the genesis and use of a feature [± stressable]

How would a language get a rule like Contraction which refers to a non-phonological feature like stressability? Note that something phonological like [-sentence stress] will not work, since a full NP that did not happen to receive sentence stress is nonetheless incapable of undergoing Contraction. Orrin Robinson has suggested the following scenario to me. A rule starts out with the phonological feature [-stress] as part of its structural description. Now words that are capable of receiving stress will sometimes undergo the rule, sometimes not, depending on whether they receive sentence stress. Other words, which never receive stress, invariably undergo the rule. To eliminate allomorphy in the first set of
words, analogy may undo the effect of the rule. The items left which continue to be subject to the rule are those which are incapable of receiving sentence stress.

There remains space only for the briefest sketch of the possible uses of our new features. Notice that the argument for it and pu belonging in the class made reference to the r being unmarked for case, number or gender. The relation between unmarkedness, lack of lexical information, and tendency to undergo sandhi rules may be helpful in understanding some oddities of Auxiliary Reduction in English, discussed by Zwicky (1970). Zwicky notes that only pronouns, auxiliaries and certain grammatical items (e.g. that and than) undergo Auxiliary Reduction and Glide Deletion. These correspond to our items marked [-new lexical information]. In addition, only is and has, of the auxiliary verbs, undergo Auxiliary Reduction (to 's) if the preceding word is in another clause. These two are semantically unmarked, in the traditional sense - they are present tense, singular, third person. Hence they convey the least lexical information of their own, and undergo the sandhi rule to the fullest. The formalization of this variable conditioning of an already remarkably complex rule is left as an exercise to the intrepid reader.

Footnotes

* Thanks are due to Jorge Hankamer, Nick Clements, Orrin Robinson, Athan Anagnostopoulos, and most especially, Nanda Papazoglou. Data for this paper was collected in Cambridge, Mass. from a recent emigrant from Athens with excellent, unflagging intuitions and the patience of St. Philaretos. All errors are the author's.

1. See Kaisse(1976) for an autosegmental explanation for the failure of stress to be lost and the mechanism for its transfer.

2. Actually, First Vowel Deletion is a set of three rules. All require unstressed non-high vowels, but within noun phrases, unrounded vowels are not deleted, and within verb phrases, sonorous vowels are not deleted before less sonorous ones. See Kaisse(1977) for a detailed account.

3. A particularly unfortunate gap in the data is that all clitics, particles, and relative and interrogative pronouns begin with consonants, so that we cannot investigate their phonological interaction with the preceding word. The only interaction between a clitic and the word that it precedes is that, if the clitic is governed by that word, it causes the addition of an ultimate stress to antepenultimately stressed 'host' nouns or verbs.
4. I will not address here the sticky question, both for Greek and for English, of whether pu and that are undeclined relatives or complementizers.

5. D. Wanner, in an article in this volume, has found that certain post-imperative enclitics can receive contrastive stress. I do not yet know what to make of this surprising fact. I suspect that if my informant can stress such pronouns, they do not undergo Contraction, but this is only speculation.

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CONSONANT ASSIMILATION IN INUPIAQ ESKIMO

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I. Introduction

Consonant assimilation is one of the outstanding phonological processes of Inupiaq Eskimo\(^1\) and grows in scope as one travels eastward across the Arctic. While the southermmost dialects of Alaskan Inupiaq maintain a high degree of differentiation within consonant clusters, Greenlandic dialects have all but done away with clusters entirely. To the end of comparing differing degrees of consonant assimilation, I have chosen two Alaskan dialects for consideration. The Kobuk River dialect maintains clusters of obstruent plus continuant where the Barrow dialect contains assimilated versions of these clusters.

The facts of assimilation in the two dialects will be presented below with comparisons drawn between the systems. After a set of rules is proposed to account for assimilation in each dialect, I will discuss historical implications of the data and of my solution. The overall problem will then be viewed in light of the universal claim of natural phonologists that, as a grammar evolves, phonological rules may become morphophonemic rules, but not vice versa.\(^2\)

The writing system used to represent data in this paper is the standard orthography for Alaskan Inupiaq, which is straightforward except as noted in the following consonant inventory of the language, where symbols in angle brackets indicate standard orthography where it differs from phonetic notation.

\[
\begin{array}{cccc}
p & t & \ddot{c} & \langle ch \rangle \\
s & \dddot{i} & \dddot{u} & \langle t \rangle \\
v & \dddot{e} & \dddot{h} & \langle r \rangle \\
m & \dddot{n} & \dddot{r} & \langle s \rangle \\
\end{array}
\]

All consonants occur both short and long, except for s which is never long. Clusters contain exactly two consonants, both short, and like long consonants are never word initial or final. Thus, long consonants behave phonologically like clusters.

The three vowels---a, i, and u---may occur short, long, or as diphthongs in all six possible combinations. All vowels and diphthongs may occur in any position.
The Kobuk and Barrow dialects are syntactically nearly identical and morphologically very similar. The major difference lies in phonology and phonetic detail. Because of the poly-synthetic nature of Eskimo, affixation is highly productive, and the variety of potential environments for a given morpheme results in extensive allomorphy.

II. Assimilation phenomena
Assimilation applies at morpheme boundaries, adjusting a morpheme-final C to a succeeding C in features of continuancy, voicing, and nasality. Velars and uvulars are not nasalized preconsonantally in some dialects; in any case the orthography does not reflect this nasalization. The following data exemplify assimilation in both Barrow and Kobuk:

\[
\begin{align*}
\text{mayuq} & \quad + \quad \text{niaq} & \quad + \quad \text{tuq} & \quad \Rightarrow \quad \text{mayuqniatqutuq} \\
\text{climb} & \quad \quad \text{future} & \quad 3 \ sg & \quad \Rightarrow \quad \text{'he will climb'} \\
\text{mayuq} & \quad + \quad \text{li} & \quad \Rightarrow \quad \text{mayuqli} \\
\text{climb} & \quad 3 \ sg \ \text{optative} & \quad \Rightarrow \quad \text{'let him climb'} \\
\text{katak} & \quad + \quad \text{luni} & \quad \Rightarrow \quad \text{katagluni} \\
\text{fall} & \quad 3 \ sg \ \text{partic平ial} & \quad \Rightarrow \quad \text{'he, falling'} \\
\text{makit} & \quad + \quad \text{niaq} & \quad + \quad \text{tuqa} & \quad \Rightarrow \quad \text{makinni泉水a} \\
\text{stand} & \quad \quad \text{future} & \quad 1 \ sg & \quad \Rightarrow \quad \text{'I will stand'}
\end{align*}
\]

Based on these examples and other similar ones, a rule of regressive consonant assimilation may be written, assuming a dialect where velars and uvulars are regularly nasalized:

1) Regressive assimilation

\[
\begin{align*}
C & \rightarrow \left[ \begin{array}{c}
\alpha \ \text{continuant} \\
\beta \ \text{voice} \\
\gamma \ \text{nasal}
\end{array} \right] / \left[ \begin{array}{c}
\alpha \ \text{continuant} \\
\beta \ \text{voice} \\
\gamma \ \text{nasal}
\end{array} \right]
\end{align*}
\]

Rule 1 accounts for assimilation in the examples above and moreover, allows for no unassimilated clusters whatever since it contains no restriction on the position of clusters which satisfy its structural description. In fact, the Kobuk dialect contains clusters which must not undergo assimilation.

<table>
<thead>
<tr>
<th>Kobuk</th>
<th>Barrow</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>qapvik</td>
<td>qavvik</td>
<td>'wolverine'</td>
</tr>
<tr>
<td>itri</td>
<td>irri</td>
<td>'bitter cold'</td>
</tr>
<tr>
<td>qipmiq</td>
<td>qimmiq</td>
<td>'dog'</td>
</tr>
<tr>
<td>ipnaq</td>
<td>imnaq</td>
<td>'cliff'</td>
</tr>
<tr>
<td>mitpiq</td>
<td>mimpiq</td>
<td>'jump'</td>
</tr>
<tr>
<td>tla</td>
<td>lla</td>
<td>'be able'</td>
</tr>
<tr>
<td>atniq</td>
<td>anniq</td>
<td>'be hurt'</td>
</tr>
<tr>
<td>mannik</td>
<td>mannik</td>
<td>'egg'</td>
</tr>
</tbody>
</table>
These single morphemes are intended to demonstrate that Kobuk contains clusters which do not undergo assimilation, while Barrow does not. In terms of relating the two dialects, Rule 1 will account for the differences if Kobuk forms are taken as basic and Barrow forms derived from them. Predictability does not work in the other direction, however, as shown by atniq vs. mannik. The Barrow forms both contain nn and give no suggestion as to which long C reflects a cluster in Kobuk.

At this point the Kobuk rule of assimilation must be differentiated from the Barrow rule. The former must be changed to apply only to clusters whose elements are separated by a morpheme boundary, so that morpheme-internal clusters remain unassimilated:

2) Regressive assimilation at morpheme boundaries

\[ C \rightarrow [\alpha \text{continuant}] \left/ \beta \text{voice} \right. \backslash \gamma \text{nasal} + [\alpha \text{continuant}] \left/ \beta \text{voice} \right. \backslash \gamma \text{nasal} \]

Even this amended version of the assimilation rule is faced with apparent exceptions in Kobuk, since a small number of cases exists where it is possible to have an unassimilated cluster with an internal morpheme boundary. I separate Kobuk forms which appear exceptional to Rule 2 into three classes:

A) qĩñiq - man
   look when 3 sg
   kataq - man
   fall when 3 sg
   qĩñiq - mi - uq
   look also 3 sg
   makit - mi - uq
   stand also 3 sg
   'when he looks'
   'when he falls'
   'he looks also'
   'he stands also'

B) aputi + mun
   man terminalis sg
   supputi + mun
   gun
   'to the man'
   'to the gun'

   but,
   savik + mun
   knife
   imiq + mun
   water
   'to the knife'
   'to the water'

C) qĩñiq - nak
   look 2s neg imper
   qĩñiq - nagu
   2s-3s neg trans
   imperative
   makit - nak
   stand 2s neg imper
   'don't look!'
   'don't look at it!'
   'don't stand up!'
Failure of the assimilation rule to apply in these instances may be understood by further investigating the behavior of certain of the morphemes involved.

Class A exceptions all contain unassimilated stem-final consonants, which regularity suggests that assimilation is somehow blocked by the suffixes present. Following vowel-final stems, these suffixes are found to contain an additional segment which is not present in the A examples: niqipman 'when he eats' and niqipmiuq 'he eats also,' from niqip 'eat.' The initial p of pman and pmiuq undergoes deletion following consonant-final stems, eliminating disallowed clusters of three consonants. This process is captured in a general rule which is motivated elsewhere in the phonology of Inupiaq.

3) Cluster simplification

\[ C \rightarrow \phi/C\_\_C \]

In class B only some stem-final C's fail to undergo assimilation, while others assimilate to a following C in the regular manner. Unassimilated clusters are precisely those which are not clusters underlyingly but sequences of CVC. A syncope rule which is discussed further on deletes stem-final vowels in aputi and supputi creating the clusters which fail to undergo assimilation.

Exceptions under C, like those of A, show consistent failure of assimilation to apply to all stem-final consonants, indicating that assimilation is somehow blocked by the suffixes. While historical evidence points to these suffixes as having been cluster initial, and synchronic evidence from other sectors of the phonology suggests the same, no additional segment ever surfaces which can be held accountable for blocking the assimilation rule. This group of suffixes will then have to be marked as exceptional in that consonants which directly precede them are not subject to assimilation.

To this point Rule 2 accounts for all instances of regressive assimilation in the Kobuk dialect, provided this rule follows cluster simplification and syncope in order of application. Whereas a syncopated vowel creates a cluster which is not subject to assimilation in aputmun, there exist nonetheless other instances of syncope which feed assimilation. The following examples are valid for both Kobuk and Barrow:

ivik + ich \( \rightarrow \) ivkich \( \rightarrow \) ivgich
grass plural 'grass, plural'

kamík + ich \( \rightarrow \) kamkich \( \rightarrow \) kamñich
boot 'boots'

aiq + ich \( \rightarrow \) aivqich \( \rightarrow \) aivqich
walrus 'walruses'

imiq + ich \( \rightarrow \) imqich \( \rightarrow \) imqich
water 'water, plural'
tupiq + ich —> tupqich
tent (B) 'tents' (B)
house (K) 'houses' (K)

Deletion of a penultimate \( \ddagger \) within the stem upon suffixation of another morpheme yields unassimilated clusters which are then subject to assimilation;\(^7\) in this case, however, assimilation applies progressively. In Kobuk, regressive assimilation occurs across morpheme boundaries, according to Rule 2, while progressive assimilation applies to a morpheme-final cluster.

Rule 4) Progressive assimilation

\[
\begin{array}{c}
\text{C} \\
\begin{array}{c}
\alpha \text{ continuant} \\
\beta \text{ voice} \\
\gamma \text{ nasal}
\end{array}
\end{array}
\] / \begin{array}{c}
\begin{array}{c}
\alpha \text{ continuant} \\
\beta \text{ voice} \\
\gamma \text{ nasal}
\end{array}
\end{array} +
\]

In Kobuk the two assimilation processes are separate in terms of their environments as well as their relationship to the syncope rule. While syncope and regressive assimilation must apply in counter-feeding order to generate forms like aquutmun, syncope feeds progressive assimilation to give kampnich, aivgich, etc.

The Barrow regressive assimilation rule (1) was not constrained to apply at morpheme boundaries, since Barrow does not allow unassimilated clusters morpheme-internally as Kobuk does. As in Kobuk, however, the direction of assimilation in Barrow is conditioned by the position of a cluster in relation to a morpheme boundary, i.e. a cluster-internal boundary triggers regressive assimilation whereas a boundary following a cluster causes assimilation to apply progressively.

There is a generalization to be extracted from the two assimilation rules which is that in all cases of assimilation, it is a morpheme-final C which assimilates to an adjacent C, either preceding or following. Regressive and progressive assimilation can be collapsed into a single rule based upon the above principle.

Rule 5) Assimilation

\[
\begin{array}{c}
\text{C} \\
\begin{array}{c}
\alpha \text{ continuant} \\
\beta \text{ voice} \\
\gamma \text{ nasal}
\end{array}
\end{array}
\] / \begin{array}{c}
\begin{array}{c}
\text{C} \\
\alpha \text{ continuant} \\
\beta \text{ voice} \\
\gamma \text{ nasal}
\end{array}
\end{array} +
\]

Within the overall context of Tnupiaq phonology, this rule appears natural, since morpheme-final C's undergo deletion and various alternations, whereas morpheme-initial or internal C's demonstrate little synchronic alternation.

Rule 5 accounts adequately for the Barrow data, since unassimilated clusters never appear in that dialect, and assimilation may be allowed to apply wherever possible. For Kobuk, however, collapsing the two assimilation rules creates an ordering paradox with respect to the syncope rule, since syncope must
sometimes feed and sometimes bleed assimilation. Single rules of assimilation and syncope do not produce the desired result for Kobuk.

The possibility of writing separate rules of assimilation has been discussed and the problem could be solved in this way. With the order 1) regressive assimilation, 2) syncope, 3) progressive assimilation, the correct solution is arrived at. The sole advantage of dividing Kobuk assimilation thus into two rules would be precisely to resolve the ordering paradox which exists otherwise. Other than their differing environments and logical separability, I can find no evidence that regressive and progressive assimilation should be considered separate processes.

There is evidence, however, that syncope should be divided into distinct rules. From what was historically probably a productive phonological rule, syncope has become morphologized and restricted in its application. The type of syncope which counter-feeds assimilation is always morpheme-final but applies sporadically as shown by these Kobuk forms:

\[
\begin{align*}
\text{ajut} & + \text{ mun} & \rightarrow & \text{ajutmun} & \text{'to the man'} \\
\text{man} & & & \text{terminalis sg} & & \\
\text{but,} \\
\text{ajut} & + \text{ mun} & \rightarrow & \text{ajutinun} & \text{'to the men'} \\
\text{man} & & & \text{terminalis pl} & & \\
\text{in} & + \text{ mun} & \rightarrow & \text{inimun} & \text{'to the place'} \\
\text{place} & & & \text{terminalis sg} & &
\end{align*}
\]

The other function of syncope is to delete penultimate \( \mathfrak{f} \) in words like \( \text{ai} \text{vb} \text{g} \) to give \( \text{ai} \text{vg} \text{ich} \), thereby feeding progressive assimilation. Penultimate \( \mathfrak{f} \)'s are regularly subject to syncope.

The distinction between two types of syncope is valid for Barrow as well as Kobuk, although in Barrow the two need not be separated in order for Rule 5 to produce the correct result.

To generate the correct Kobuk forms, however, the more productive syncope of penultimate \( \mathfrak{f} \) should apply first.

Rule 6) \( \mathfrak{f} \rightarrow \emptyset/VC\_C+V \)

Assimilation applies next in its collapsed version, Rule 5, followed by the rule of morpheme-final syncope. This solution allows for progressive assimilation in forms like \( \text{kampich} \) and regressive assimilation across morpheme boundaries except where a final \( \mathfrak{f} \) is present, having not yet undergone syncope.

III. Discussion

Rule 5 accounts for consonant assimilation phenomena in both the Kobuk and Barrow dialects, although resultant clusters are often different from one dialect to the other. This situation arises from the fact that the same rule functions differently in each case. In Kobuk the assimilation rule is crucially ordered with respect to the two rules of syncope, while in Barrow
assimilation may apply whenever its structural description is met.

The actual rule, moreover, has a different significance in each dialect. In Barrow the morpheme boundary's only function is to govern the direction in which assimilation applies, since assimilation is of no importance other than at boundaries. For Kobuk, the + blocks the rule from applying to morpheme-internal clusters such as that in gapvik besides keeping regressive separate from progressive assimilation. In a strict sense, then, the two dialects have different assimilation rules whose form coincides.

The comparison of Barrow Inupiaq with Kobuk proves fruitful from an historical point of view in reconstructing those internal consonant clusters which exhibit no alternation synchronically. Several pieces of evidence point to the unassimilated Kobuk clusters as older forms from which their Barrow analogues can be derived. First, Barrow clusters and long C's can be predicted from their Kobuk equivalents but not vice-versa. Given a Barrow form with a long nasal, its Kobuk cognate may have the same long nasal or else a cluster of homorganic stop plus nasal, for example.

Cross-linguistic comparison with the Yupik branch of Eskimo indicates generally that Kobuk clusters are the most archaic to be found within Inupiaq. If it is true that Barrow clusters reflect archaic unassimilated clusters like those found at present in Kobuk, then the historical rule relating the two would be identical to Rule 1, the original regressive assimilation rule which does not refer to morpheme boundaries.

In Proto-Inupiaq it seems likely that assimilation applied at morpheme boundaries as in the Kobuk dialect, since Kobuk maintains archaic morpheme-internal clusters. The assimilation process must have been generalized at some point to apply anywhere in the word; at least this hypothesis seems best to account for the relationship between Barrow and Kobuk morpheme-internal clusters.

If the historical situation is correct as portrayed, it bears interesting implications for the universal claim of natural phonology that phonological rules may become morphologized but not the other way around. If the original Inupiaq assimilation rule was restricted in its application to clusters in the environment of morpheme boundaries, then the generalization of the rule to apply morpheme-internally in Barrow represents a loss of morphological information required for statement of the rule. This generalization of the environment in which the assimilation rule may apply runs counter to the expected trend of rule morphologization.
Notes
I would like to thank Margaret Langdon and Sanford Schane, as well as members of the Alaska Native Language Center for their contributions, both direct and indirect, to the writing of this paper. I wish to express gratitude also to Edith Rowray and Violet Pungalik who provided the linguistic data which appears here. Quyanaqtutik!
1. Inupiaq is the language called "Inupik" by Morris Swadesh.
3. Inupiaq nasals pattern with continuants and are therefore assigned the feature value +continuant.
4. Representative examples are given for each class, although many other exceptional forms exist.
5. The singular nouns apun and suppun result from rules of apocope and nasalization of a final consonant. I assume underlying /aputi/ and /supputi/ as does Rischel (1974) in such cases. The arguments for these underlying representations in Alaskan Inupiaq are very similar to Rischel's for Greenlandic.
6. Vowels which are subject to syncope are reflexes of the Proto-Eskimo schwa, the historical fourth vowel which no longer exists as a phonetic entity in Inupiaq, having merged with i. I use the symbol Ũ as a notational device to point out those i's which reflect schwa and may undergo syncope.
7. Linguists writing on Greenlandic have usually argued for epenthesis rather than syncope in these cases. I assume syncope to be responsible for the Ũ/Ø alternation here but do not argue the point because of limitations of space.
8. Suffixes which trigger syncope are vowel-initial, although this is not a sufficient condition for the operation of syncope. Some suffixes will need to be specially marked as conditioning syncope when suffixed to a morpheme with a penultimate vowel.

References
The Frequency of Tones.

Ian Maddieson
University of California, Los Angeles.

Introduction
In order to establish reliable estimates of the frequency of occurrence of tones of certain types, a sample of over 200 tone languages has been studied.

The language sample
There are a number of well-known difficulties in the way of constructing high-quality language samples, even if only currently-spoken languages are considered. A proper random sample cannot be taken since the number of languages spoken is not known – both because some languages have escaped attention altogether and because there are no agreed criteria as to what count as separate languages as opposed to dialects of the same language. Furthermore, the quality and quantity of information available on known languages varies enormously, as does the accessibility of the data. These last factors can lead to a language sample which is biased through inclusion only of the most familiar languages, or those whose descriptions are most accessible.

The language sample in this study was selected according to a principle designed to avoid as many of these problems as possible. Each small group of closely-related languages, according to the best available genetic classifications, was considered. One tone language was selected to represent each group if one or more of the languages was tonal. Factors such as the clarity and accessibility of data only played a role in deciding which language to include from within a group. Languages with no (known) close relatives were treated as the equivalent of a group and were included. This approach ensures a language sample which includes the maximum of genetic diversity while representing language families in a manner which is roughly proportional to the number of tone languages they include. The problem of language/dialect discrimination is avoided, since cases which raise this problem obviously concern members of the same language group and only one representative can be included from each group. And the principle directs an outward search for the data to satisfy the requirements of the quota structure, thus reducing the influence of 'bibliographical convenience' (Bell 1978) on the resulting sample. Naturally, many problems concerning inadequacy and insufficiency of data still cannot be overcome, and time has placed limits on the extent to which the ideal sample has yet been approached. If all gaps could be filled, over 400 languages would have been included in the sample.
Interpretation and standardization of data

To make comparisons between languages meaningful, and derive valid generalizations, the languages must be described in a similar fashion. Otherwise, differences in descriptive paradigm are confounded with differences between languages at some common descriptive level. In this study the objective is to standardize the descriptive level at some central point along what is roughly an 'abstract-concrete' parameter ranking phonological descriptions according to the depth of the analysis in a given language and the degree of abstraction permitted by the theoretical model used. The reasons for this choice are partly pragmatic: many available descriptions do not supply enough information about higher-level processes to enable a more highly 'abstract' account to be developed; likewise, many descriptions give inadequate detail on phonetic realizations, etc, for a more 'concrete' account to be developed. However, most of the descriptions which would fall toward either extreme of an 'abstract-concrete' parameter do provide the information required to move them toward the center.

The procedures involved in standardizing the data can be thought of as involving essentially three aspects:—

i) determining the number of basic contrastive tone units,

ii) determining the shapes of the tones,

iii) determining the number of contrastive pitch heights used in the tones and deriving a transcription.

The steps taken in determining the number of tones include attempting to correct over- or under-differentiation. Over-differentiation, resulting in a claim that a language has more tones than it is assigned here, can occur when predictable variant shapes of the same tone are considered distinct; when nontonal features such as contrasting syllabic structures or phonation types are held to distinguish 'tones' when the pitch patterns are in themselves similar; or when tone patterns are considered to be unitary despite evidence that a sequence of more basic tonal units is concerned.

Under-differentiation, resulting in a claim that a language has fewer tones, can occur when tones are considered the same because of a complementarity of distribution despite a lack of similarity in the tones themselves; when abstract or diacritic features are used to predict tonal differences; or when more complex tone shapes are unjustifiably regarded as composed of a sequence of simpler tones simply on reductionist principles rather than because evidence exists to show their sequential nature.

Each language was examined to determine how many tones it would have in the light of such considerations as the above. An example may help to illustrate how this was done. Standard Thai has a type of closed syllable with a short vowel followed by a stop consonant. These syllables can be either high-toned or low-toned. However, as the open or sonorant-final syllables may also have high or low tones at similar pitch levels, the case for recognizing additional distinct 'short tones' is not accepted, as this would be to over-differentiate. On the other hand, Gandour
(1975) has proposed that the (long) rising and falling tones should be regarded as sequences of low and high, and high and low tones respectively. This argument is based only on distributional criteria, rather than on showing that there are some ways that falling and rising tones behave like other sequences of high and low tones in Thai, or result from a coalescence of such units. Consequently, the elimination of rising and falling tones from the inventory is not accepted, since this would result in under-differentiation. The result is that Standard Thai is considered here as a language with 5 tones (it also has a mid tone) rather than a language with either 7 or 3 tones.

Beyond the kind of considerations outlined above, tones which are considered 'marginal' to a system have been eliminated from the basic inventory. These cases include tones which are of very rare occurrence in a language. Such marginal items are eliminated for two principal reasons. First, many available descriptions of languages reflect a level of familiarity too imperfect to be sure that such marginal items would have been reported. Hence comparability of descriptions is best served by matching such de facto elimination of marginal tones by eliminating them from the more detailed descriptions. Secondly, there is a sense in which the structure of an inventory of tones is best represented by an account which reflects the relative frequency of occurrence of tones within the language. The elimination of marginal tones represents a first crude step towards such an account.

A basic shape was determined for each tone in a system in terms of the relative pitch height of each tone and the direction and extent of any movement. The major effort was directed to correctly identifying basically level tones, requiring only one 'pitch target' for their characterization, and essentially contour tones, requiring two (or more) pitch targets for their characterization. In speech, F0 is rarely held in a steady state. Pitch movement occurs because of co-articulation between tones in sequence, because of differences of phonation type and other segmental influences, because of stress placement and the superimposition of intonational contours, and because of mechanical factors inherent in the production of F0. Whatever pitch movement can be reasonably attributed to such factors is discounted in determining basic tone shapes. Thus many phonetically-occurring contours are regarded as resulting from the effects of such natural phonetic factors on tones which can be described with a single pitch target, i.e. they are level tones.

Likewise, factors such as co-articulation of tones and imposition of intonational patterns can result in an enlargement or a reduction or levelling of the pitch movement associated with an underlying contour tone. A basic shape for each contour tone when it is unaffected by the influence of these factors has been sought.

Some of the influences on tone shapes which are discounted can be summarized by such 'natural phonetic rules' as the following: a) unmarked intonational effects tend to cause level tones to fall, especially finally (this effect seems most apparent with the lowest
level tone), and tend to compress the range of rising tones while extending the range of falling tones; b) tones tend to begin at a pitch level which is more central in the pitch range than their (first) target level.

The way in which such rules are used to interpret tone shapes may be illustrated with reference to Standard Thai again. One set of shapes for the 5 Standard Thai tones is given by Abramson (1962). These, shown below on Chart 1, represent 'citation shapes' of the tones and show quite marked pitch movement for all five tones. They may be compared with the shapes for tones in connected speech found by Gandour and Maddieson (1976), shown on Chart 2.

An effect of the citation context can be seen in that the final falling sections of Abramson's tones 2 and 3 can be seen to be absent in the corresponding tones on Chart 2. The overall downward speech melody still makes tones 3 and 4 descend somewhat on Chart 2, but in both charts tones 2, 3 and 4 occupy separate portions of the pitch range. Their shapes can be accounted for if only one pitch target is assumed for each of them, plus the effects of rules (a) and (b) above. They are considered to be high, mid and low level tones. Note that the high and low tones both begin at points closer to the mid tone than their end-points are in Chart 2. A centralized beginning to the tones can be seen also in the two remaining tones, 1 and 5. These two tones cross the pitch ranges of the level tones and thus must be characterized by more than one target. Because the centralized beginning is general it is not assumed to be part of the basic tone shape and hence these tones can be described with only two targets each. Tone 1 is regarded as a falling tone (not a rising-falling) and tone 5 as a rising tone (not a falling-rising). The greater extent of the pitch movement for the falling tone relative to the rising tone, which is more noticeable on Chart 2, can also be understood as an adaptation to an unmarked downward intonation contour. Imposition of falling intonation is facilitated by extending the downward pitch movement of a tone and truncating the upward pitch movement of a tone. Because of these considerations, the underlying pitch range covered by these two contour tones is assumed to be essentially the same, both traversing a distance equivalent to that between the high and low level tones.

Following determination of the tone shapes, tones were coded by means of a standard transcription employing a 5-point pitch
scale. Each tone inventory was examined to determine how many distinct beginning- or end-points ('pitch heights') were required to characterize the tones in the inventory, and each pitch height was assigned to a number on the 5-point scale. Thus, for Standard Thai, 3 pitch heights were recognized, with a level tone at each height, a tone falling from the highest to the lowest of the three, and a tone rising from the lowest to the highest of the three. This transcription enables comparisons to be made concerning the proportion of the pitch-range covered by contour tones in those languages which use 3 or more pitch heights. In these cases the contour tones can be classed as using the whole of the pitch-range used for tones in the language, or as using only a part of it. It is not possible to make direct cross-language comparisons of the pitch heights themselves, as the transcription is derived independently for each language. This is necessary because the data to establish cross-language comparability of pitch phenomena is generally lacking, except in situations such as bilingualism or when borrowings occur between tone languages, see Maddieson 1977.

Results
At the present time, data from 207 languages has been examined. Some of the results are given below.

i) Number of tones in the inventory. The totals have been computed for the number of languages having phonological inventories containing 2 tones, 3 tones, 4 tones, etc. The totals are given in Table I.

<table>
<thead>
<tr>
<th>no of tones</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8(+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>languages</td>
<td>106</td>
<td>62</td>
<td>14</td>
<td>12</td>
<td>11</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

A striking result is that 2-tone systems are overwhelmingly the most frequent. Of the 207 languages, roughly 51% have 2-tone systems. This very striking predominance of 2-tone systems does not seem to have been noted before in the literature on general tonology. Systems with 3 tones are also common, being found in about 30% of the languages sampled. There are only small numbers of languages found with more than 3 tones, with systems of 4, 5, and 6 tones being about equally common (or perhaps more accurately, equally scarce). There are only about 6 or 7% of the languages surveyed that fall in each of these categories. It will be shown later that the step from systems of 3 tones to systems of 4 or more tones also corresponds with the point at which contour tones begin to play a significant part in the make-up of the tone inventories. A further sharp reduction occurs in the frequency of systems with more than 6 tones. Only two 7-tone systems are included in the sample, and there are none with 8 or more tones. Of course, this does not mean that such systems do not occur. The purpose of this study is not to compile a list of all the possible tone sys-
tems that do occur, but rather to derive estimates of how frequently systems with given characteristics occur. We may conclude only that probably less than 1 in 200 tone languages contrasts 8 or more tones.

ii) Frequency of tone types. The total numbers of tones of various types contained in the inventories of the languages sampled were also computed. The frequency of tone types is given in Table II.

<table>
<thead>
<tr>
<th>Tone Type</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level tones</td>
<td>465</td>
<td>84%</td>
</tr>
<tr>
<td>Falling</td>
<td>42</td>
<td>8%</td>
</tr>
<tr>
<td>Rising</td>
<td>38</td>
<td>8%</td>
</tr>
<tr>
<td>Contour tones</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Fall-rise</td>
<td>4</td>
<td>1%</td>
</tr>
<tr>
<td>Rise-fall</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>552</td>
<td></td>
</tr>
</tbody>
</table>

The most striking fact is that, overall, 84% of the tones in the languages sampled are level tones: the number of level tones vastly outweighs the number of contour tones. It will be shown below that this is largely a result of the structure of the common 2- and 3-tone systems.

Among the contours, falling and rising tones are effectively equally frequent in occurrence. The complex bidirectional tones occur very rarely, but both types (falling-rising and rising-falling) occur about as often as each other. These results conflict with earlier claims that falling tones outnumber rising tones in the languages of the world (cf Cheng 1973, Ohala 1973, Hombert 1978). The likelihood is that this claim reflects patterns observed in surface pitch contours, rather than reflecting inherent shapes of tones. It will be seen later that an implicational universal stating that an inventory must have a falling tone before it can have a rising tone would also be false. It seems that any productive or perceptual mechanism that may favor falling pitch in speech does not lead to more falling than rising underlying shapes for tones.

iii) Frequency of tone systems. The frequency of tone systems of various structures was also examined. A summary of the distribution by languages of contour tone types is given in Table III.

<table>
<thead>
<tr>
<th>Type of Tone System</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages with only level tones</td>
<td>163</td>
<td>(79%)</td>
</tr>
<tr>
<td>Languages with level(s) &amp; simple contour(s)</td>
<td>37</td>
<td>(18%)</td>
</tr>
<tr>
<td>Languages including complex contours</td>
<td>7</td>
<td>(3%)</td>
</tr>
</tbody>
</table>

Languages whose tone systems contain only level tones comprise the vast majority of tone languages. There are only 37 languages in the sample with systems consisting of a level tone or tones and a simple contour tone or tones, and only 7 including complex contours as well.

The makeup of each individual system in terms of level (L), falling (F), rising (R), falling-rising (FR) and rising-falling
(RF) tones was also analyzed and the results are given in Table IV. This shows the number of languages in the sample with systems containing each different combination of tones found. Systems with 2 tones, 3 tones, 4 tones, etc are listed separately. So, for example, under 3-tone systems an entry reading 2L + F : 7 means that there were 7 languages whose systems consisted of 2 level tones and one falling tone.

<table>
<thead>
<tr>
<th>Table IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2-tone systems</strong></td>
</tr>
<tr>
<td><strong>3-tone systems</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>4-tone systems</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>5-tone systems</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>6-tone systems</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>7-tone systems</strong></td>
</tr>
</tbody>
</table>

In all of the languages with inventories containing only 2 tones, both of the tones are level. Although other types of 2-tone systems may occur, they must be regarded as decidedly rare - probably occurring in less than 1 in 200 tone languages. 3-tone systems are also predominantly found to contain only level tones. This is the case for 80% of the 3-tone languages, the remaining 20% having systems including 1 falling or rising tone, or, in a few cases, both. Although the most frequent single type of 4-tone system has 4 level tones, there are as many 4-tone systems which include a contour or contours as those which consist of only level tones. A language with 5 tones which are all level is a rarity. There is only one in the sample. The most common type of 5-tone system is one containing 3 levels, one fall and one rise. This is represented by 7 of the 12 languages concerned, i.e. by about 58% of them. Clearly, when the system contains as many as 5 tones contours are normally found to be included. All the 6- and 7-tone systems contain contours; no systems with 6 or 7 level tones are included in the sample and, in fact, no such systems have been reported in the literature.

Thus, although Wang's (1967) claim that systems with 4 tones must include at least one contour tone is clearly false, contour tones are certainly not unexpected in systems with 4 tones, they are highly probable in systems with 5 tones, and are required in
systems with 6 or more tones. As noted earlier, contour tones are rare in 3-tone systems, but become quite common in 4-tone systems. This dividing line which falls between 3 and 4 tone systems is also marked by the restriction of complex contours to those languages which have 4 or more tones.

An odd result is that falling-rising tones only occur in 4- and 5-tone systems, and rising-falling tones only occur with 6- and 7-tone systems in the languages sampled. In view of the small numbers involved, this is likely to be only a sampling error with no significance.

iv) The extent of contours. When 3 or more pitch heights are contrasted in a language, the portion of the pitch range which contour tones cover can be compared. For example, in a system which includes 3 level tones and 1 falling tone, the fall may extend over the whole pitch range from high to low, or may extend only over a part of the range, i.e. from high to mid or from mid to low. The data in Table V show how many of the simple contours in languages with 3 or more contrasting pitch heights cover the whole range or a part of the pitch range. Data are given separately for languages whose inventories include only 1 falling tone (F) or 2 falling tones (2F), and only 1 rising tone (R) or 2 rising tones (2R), as well as totals for all contour tones, all falling tones and all rising tones.

<table>
<thead>
<tr>
<th></th>
<th>falling</th>
<th>rising</th>
<th>totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F 2F</td>
<td>R 2R</td>
<td>falls</td>
</tr>
<tr>
<td>whole pitch range</td>
<td>10 5</td>
<td>4 5</td>
<td>15</td>
</tr>
<tr>
<td>partial pitch range</td>
<td>3 7</td>
<td>5 11</td>
<td>10</td>
</tr>
</tbody>
</table>

An interesting pattern emerges in Table V. The extent of contours is dependent on the direction of movement of the contour and the number of tones in the system that move in a given direction. Two asymmetries stand out in the table (the crucial numbers are underlined). Although full-range and partial-range contours are about equally frequent overall, when there is only one falling tone in the system, it most often extends over the whole tone range. On the other hand, when there are 2 rising tones in the system, the most commonly found type covers only a part of the tone range. It is clearly not the case that simple contours usually cover only a part of the tone range, as suggested by Wang (1967).

The observed asymmetries require explanation. As a first hypothesis, it may be suggested that there is systemic pressure to distinguish 2 tones which move in the same direction by separating them into 2 distinct registers. Both 2F and 2R systems contain more partial-range contours. But there may also be phonetic factors, such as the tendency of falling tones to be extended and rising tones to be truncated, which result in a greater effect of this pressure on the underlying shapes of falling than rising tones.
Where distinguishing between 2 tones which move in the same direction is not a factor, a falling tone is generally found to cover the whole pitch range.

Tone universals

This study also provides an opportunity to test the reliability of generalizations concerning tones, including proposed 'tone universals'. In this connection, it has already been noted that falling and rising tones are equally common and that systems with 4 level tones and no contours occur. Wang's claim that no 4-tone systems occur without at least 1 contour could have been tested by a different strategy involving a direct search for counterexamples; but generalizations such as the claim that falling tones outnumber rising tones can only be tested by constructing a language sample in which the frequencies of tone types are represented in their true ratios. In research on language universals, the direct construction of hypotheses and search for counterexamples is complemented by studies such as the present one using sampling techniques.

For example, an implicational hierarchy has been proposed concerning tone types (Maddieson 1978). This is summarized by the two statements below:-

a) If a language has contour tones it also has level tones.
b) If a language has complex contours it also has simple contours.

These say that no language would have a contour tone without at least 1 level tone in its inventory, and no language would have a complex tone without at least 1 simple contour in its inventory. None of the languages in the sample violates this hierarchy. Because of the way the sample is constructed it can be said that at the very least the normal pattern of distribution of tone types is captured by this hierarchy.

It is important to note that this hierarchy imposes more highly-structured constraints on the distribution of simple and complex contours in tone inventories than are imposed by the simple fact of their rarity. For example, if contour tones were randomly distributed in languages in the same overall ratio to level tones represented in the sample, several 2 or 3-tone systems containing only contours would have been expected to occur.

In fact, the distributional limits on tone types seem even more highly structured than this hierarchy indicates. This can be seen from the data in Table VI, which compares the overall ratio of 84% level tones to 16% contours in the whole sample with the separate percentages of level and contour tones in systems containing different numbers of tones.

<table>
<thead>
<tr>
<th>Number of Tones in the System</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>% level</td>
<td>100</td>
<td>93</td>
<td>78</td>
<td>58</td>
<td>47</td>
<td>43</td>
<td>84</td>
</tr>
<tr>
<td>% contour</td>
<td>0</td>
<td>7</td>
<td>22</td>
<td>42</td>
<td>53</td>
<td>57</td>
<td>16</td>
</tr>
</tbody>
</table>
The overall ratio is most closely matched by the ratio in 4-tone systems. However, this overall ratio is not at all typical of the systems with other than 4 tones. Instead the level to contour ratio is highly dependent on the number of tones in the system; the percentage of levels decreases and the percentage of contours increases as the number of tones increases. In systems with 6 or more tones a majority of the tones involved are contours.

Concluding thoughts
This paper has reported on the frequency of tones and tone systems. It has served to highlight such facts as that the most 'normal' tone system is one with only two level tones. It has provided new, reliable data concerning the relative frequency of level tones and contours of different types. It has provided an opportunity to test certain ideas concerning the constraints on the composition of tone inventories, and revealed that there is more to be done before these are understood better. It provides a source of data from which to derive expectations of the likely historical changes as tone systems evolve.

Note: This work was supported by a grant from the NSF.

References


Southern Bantu vs. the world:  
The case of palatalization of labials  
John J. Ohala  
University of California, Berkeley

Introduction.

Applying typological data to the analysis of particular languages is not new nor is the general principle behind it: the inductive method. Having observed a particular pattern in many languages, positing it in yet another language (given appropriate circumstances) is not wholly unjustified. The purpose of this paper is to demonstrate that one can do a much better job of linguistic analysis if one uses a combination of the inductive and deductive methods, i.e., if one's expectation of a pattern is determined not only by the fact that it has been encountered previously but also because one knows the underlying principles which give rise to it. To illustrate this, I will examine the so-called palatalization of labials, i.e., the shift in place of articulation of palatalized labials or labials followed by a palatal (off-) glide to dentals, alveolars, or palatals (henceforth, for ease of reference, simply 'dentals').

The inductive approach.

A survey of the phonologies of many languages around the world turns up quite a few independent cases of the type of sound pattern exemplified in (1).

(1) \([pj, p^j] \rightarrow [t, ts, tf]\)  
\([bj, b^j] \rightarrow [d, dz, d^3]\)  
\([mj, m^j] \rightarrow [n, n^j]\)  
etc.

(Occasionally, but not necessarily, intermediate stages may be found, e.g., \([pt^f],[bd^3],[mn].\) Some examples of this pattern are listed in (2) through (10).)


<table>
<thead>
<tr>
<th>Standard Czech</th>
<th>East Bohemian</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>(m^j)est(\circ)</td>
<td>(n^j)est(\circ)</td>
<td>'town'</td>
</tr>
<tr>
<td>(pj^j)et</td>
<td>(t^j)et</td>
<td>'five'</td>
</tr>
<tr>
<td>(pj^j:i:v^\circ)</td>
<td>(ti:i:v^\circ)</td>
<td>'beer'</td>
</tr>
<tr>
<td>(pj^j:kni^j)e</td>
<td>(t^jekni^j)e</td>
<td>'nicely'</td>
</tr>
</tbody>
</table>
(3) Tai (data from Li 1977).

<table>
<thead>
<tr>
<th>Siamese</th>
<th>Lungchow</th>
<th>T'ien-chow</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>plaa</td>
<td>pjaa</td>
<td>čaa</td>
<td>'fish'</td>
</tr>
<tr>
<td>plau</td>
<td>pjau</td>
<td>čuu</td>
<td>'empty'</td>
</tr>
<tr>
<td>(plaw)+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>phaaï</td>
<td>phjaai</td>
<td>čaaï</td>
<td>'to walk'</td>
</tr>
<tr>
<td>(phaj)+</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(+ Accepted current phonemic transcription in Thai.)

Evidently the post-consonantal /l/ changed to /j/ first, then /p (h) j/ changed to the palatal affricate. This same pattern of development is also attested in the Romance languages; see (5), (6) below.


<table>
<thead>
<tr>
<th>Old Tibetan</th>
<th>Tzu-ta</th>
<th>Wassu</th>
<th>Mi-li</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>mig~myig</td>
<td>temnā</td>
<td>temniak nie +</td>
<td>'eye'</td>
<td></td>
</tr>
<tr>
<td>byi-ru</td>
<td>ptsyeru</td>
<td></td>
<td>'coral'</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gyarong</th>
<th>Lha-sa</th>
<th>Lolopho</th>
<th>Ahi</th>
</tr>
</thead>
<tbody>
<tr>
<td>bya</td>
<td>pyē-pyē</td>
<td>ca</td>
<td>byo do 'bird'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[tʃa]</td>
</tr>
<tr>
<td>byi-ba</td>
<td>ci-wa</td>
<td></td>
<td>'rat'</td>
</tr>
<tr>
<td></td>
<td>[tʃiwa]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(+ If Thomas' 'Mi-li' refers to the Tibetan language known as 'Muli', then this word should rather be given as /nō∅/ (Nagano 1957).)


<table>
<thead>
<tr>
<th>Latin</th>
<th>Spanish</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>amplu</td>
<td>ancho</td>
<td>'large, spacious'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Old Spanish</th>
<th>Portuguese</th>
</tr>
</thead>
<tbody>
<tr>
<td>implēre</td>
<td>(f)enchir</td>
</tr>
<tr>
<td>plōrāre</td>
<td>chorar</td>
</tr>
<tr>
<td>flamma</td>
<td>chama</td>
</tr>
<tr>
<td>plānu</td>
<td>chāo</td>
</tr>
<tr>
<td>plumbu</td>
<td>chumbo</td>
</tr>
</tbody>
</table>
Other data provide evidence for the following separate stages of development of the Latin pl- cluster in these languages: pl- \( \rightarrow \) pj- \( \rightarrow \) tʃ- \( \rightarrow \)ʃ-.

(6) Italian (data from Jaberg and Jud 1928-1940; transcription simplified).

<table>
<thead>
<tr>
<th>Roman dialect</th>
<th>Genoese and neighboring dialects</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>[pjeno]</td>
<td>[tʃena]</td>
<td>'full'</td>
</tr>
<tr>
<td>[pjanta]</td>
<td>[tʃanta]</td>
<td>'to plant'</td>
</tr>
<tr>
<td>[er fjato]</td>
<td>[uʃa]</td>
<td>'breath'</td>
</tr>
<tr>
<td>[bjanko]</td>
<td>[dʒanku]</td>
<td>'white'</td>
</tr>
</tbody>
</table>

(7) French

<table>
<thead>
<tr>
<th>Latin</th>
<th>French</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>sapius</td>
<td>sage [saʒ]</td>
<td>'wise'</td>
</tr>
<tr>
<td>rubeus</td>
<td>rouge [ʁuʒ]</td>
<td>'red'</td>
</tr>
<tr>
<td>rabies</td>
<td>rage [ʁaʒ]</td>
<td>'rabid'</td>
</tr>
<tr>
<td>cavea</td>
<td>cage [kaʒ]</td>
<td>'cave'</td>
</tr>
<tr>
<td>Proto-Germanic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>laubja</td>
<td>loge [loʒ]†</td>
<td>'arbor'; 'small house'</td>
</tr>
</tbody>
</table>

† Cf. English 'lobby' and 'lodge', the first having a Germanic origin, the second French.


<table>
<thead>
<tr>
<th>Proto-Bantu</th>
<th>Tonga</th>
<th>Xhosa, Zulu</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>*pia</td>
<td>phya</td>
<td>-tʃha</td>
<td>'new'</td>
</tr>
<tr>
<td></td>
<td>Kaonde</td>
<td>Sena</td>
<td>S. Sotho</td>
</tr>
<tr>
<td>*biad</td>
<td>-bjaŋ-</td>
<td>-bzaŋ</td>
<td>dʒal</td>
</tr>
<tr>
<td></td>
<td>Venda</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*piu</td>
<td>tswhu</td>
<td></td>
<td>'knife'</td>
</tr>
</tbody>
</table>

(9) Classical Greek (data from Meillet and Vendryes 1924).

<table>
<thead>
<tr>
<th>Pre-Classical Greek</th>
<th>Classical Greek</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>*gʷam-yo</td>
<td>βαινω (cf. Latin venio)</td>
<td>'I come'</td>
</tr>
<tr>
<td>*kom-yo- (cf. Latin cum)</td>
<td>κοινός</td>
<td>'common'</td>
</tr>
<tr>
<td>*χαλέπτω</td>
<td>χαλέπτω</td>
<td>'provoke'</td>
</tr>
<tr>
<td>*θαπτω</td>
<td>θαπτω</td>
<td>'bury'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Kuta</th>
<th>Ganagana</th>
<th>Nupe</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>byè</td>
<td>dywè</td>
<td>dzò</td>
<td>'sow'</td>
</tr>
<tr>
<td>byì</td>
<td>dywì</td>
<td>dzū</td>
<td>'bury'</td>
</tr>
<tr>
<td>ọpyá</td>
<td>ṑpjà</td>
<td>ětswā</td>
<td>'moon'</td>
</tr>
</tbody>
</table>

The deductive approach.

To understand why such changes occur, it is instructive to examine the spectrographic pattern of palatalized labials and compare this with the patterns of plain labials and dentals. Figure 1 shows tracings of spectrograms (the originals published by Fant 1960) of the Russian CV syllables [ba], [bja], and [da]. In examining this figure it is necessary to keep in mind the fact that place of articulation cues reside in the second formant (F2) transitions and in the noise bursts. That being the case, it is of interest to see in the figure that the F2 transition for the palatalized labial is more similar to that for the dental than it is to that for the plain labial.² Undoubtedly in this instance the noise burst from the release of the stop is a sufficient cue to the labiality of the palatalized labial in spite of the dental-like F2 transition. If a listener were to miss the noise burst cue, however, the consonant would very likely be taken for a dental. Moreover, the impression that such stops were dentals or palatals would be reinforced by any fricative noise generated from the rush of air through the narrow palatal constriction. A sound mistaken for a dental or palatal is likely to be repeated as such. Thus a sound change could occur.

But why should the palatal constriction, a secondary articulation, have a greater influence on the consonantal F2, than the labial constriction, the primary articulation? The beginnings of an answer to this question can be seen in the nomogram in Figure 2 (again, from Fant 1960). The nomogram shows the formant frequencies that would be produced as one varies both the position of the constrictions in the vocal tract and the accompanying lip opening. As can be seen, although the F2 frequency is generally susceptible to change due to both variations in place of constriction and variations in lip opening, its frequency due to a constriction in the palatal region (see arrow) is largely independent of the lip opening. A palatal constriction, even though a secondary articulation, will be the primary determinant of the F2 frequency and will produce a frequency much like that of a dental consonant.

In the case of nasal consonants, there are related but slightly different reasons why the nasal murmur of a palatalized [m] or an [m] coarticulated with the palatal vowel [i], would be acoustically similar to an [n] or [ŋ] (Ohala 1975).

The acoustic similarity of palatalized labials (or labials followed by or coarticulated with palatal vowels) and dentals is
Figure 1. Tracings of spectrographic patterns for the Russian syllables [ba], [bJa], and [da] (from Fant 1960).
Figure 2. A nomogram (from Fant 1960) showing the frequencies of the first two formants (F1 and F2) that would result from constrictions in various places in the vocal tract (horizontal axis) and from variations in the lip aperture (the parameter). The arrow marks the approximate position of a palatal constriction.
also suggested by the results of various speech perception studies. Lyublinskaya (1966) in studying the confusability of VC transitions (i.e., where there were no bursts to aid identification of the consonant) found palatalized labials were up to 30% more likely to be confused with dentals than were plain labials. Winitz, Scheib, and Reeds (1972) published confusion matrices of CV sequences (where C = p, t, k, and V = i, a, u,) obtained under two conditions: stop burst only and stop burst plus 100 msec of the following vowel. The sequence /pi/ was one of the few stimuli that showed a relatively large decrease in identifiability when 100 msec of vowel was included. In accord with the phonological evidence presented above, most of the confusions of this syllable were with the syllable /ti/. (These two studies, as well as that of Wang and Fillmore 1961, also reveal a strong tendency for labials preceded or followed by /u/ to be misheard as dentals. This effect will be discussed further below.)

In addition, the auditory similarity of the syllables [mi] and [ni] has been revealed in other perceptual studies by House (1957), and Gay (1970).

Analysis of the Southern Bantu Palatalization of labials.

We can now attempt to apply this information to an analysis of some rather unusual cases of palatalization of labials in several Southern Bantu languages, e.g., Zulu, Xhosa, Tswana, Sotho, Venda, Pedi. In these languages the palatalization of labials (and some non-labials) plays an important role in a number of morphological processes, all of which, however, are manifested in about three or four types of (surface) phonological environments. (The data to follow on Southern Bantu are taken from Doke 1926, Meinhof and Warmelo 1932, Cole 1955, Tucker 1929, Jacottet 1927, Guthrie 1967-1970).

One of these types is exemplified in (11). Addition of the causative suffix -ya triggers palatalization. Although we might

(11)  Sotho verb stem + a causative English gloss of stem
     etsa
     kena
     but:  ṭapa
Tswana -tlhaleϕa -tlhaletʃhwa 'become wise' or -tlhaletsha
       -nat'eϕa -nat'etʃhwa 'become pleasant' or -nat'etsha

wonder a bit as to where the w came from in the derived forms of the last three verb stems (a point that will be addressed later)³, this seems to be a normal development; it parallels the kind of change we have seen before in many other languages.
Another environment for palatalization is that exemplified in (12) viz., addition of the diminutive suffix -ana. This is a

(12) Diminutive formation of nouns by suffixation of -ana.

<table>
<thead>
<tr>
<th>Sotho</th>
<th>Noun stem</th>
<th>Diminutive</th>
<th>English gloss of noun stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>lebese</td>
<td>lebesana</td>
<td>'milk'</td>
<td></td>
</tr>
<tr>
<td>but:</td>
<td>mori:hi</td>
<td>morits:hwa</td>
<td>'saucer'</td>
</tr>
<tr>
<td>Zulu</td>
<td>u:pha:pea</td>
<td>u:pha:na</td>
<td>'feather'</td>
</tr>
<tr>
<td></td>
<td>u:bu:bu</td>
<td>u:udza:na</td>
<td>'meal-water'</td>
</tr>
<tr>
<td></td>
<td>iŋk'a:bi</td>
<td>iŋk'atf'a:na</td>
<td>'ox'</td>
</tr>
<tr>
<td>Tswana</td>
<td>tlha:p'i</td>
<td>tlha:t'wana</td>
<td>'fish'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(dial. tlha:t'ana)</td>
<td></td>
</tr>
</tbody>
</table>

very unnatural and unexpected environment for this process—given what we have reviewed above. There is no apparent reason why the vowel /a/ or any other phonetic property of the suffix /ana/ should lead to palatalization.

Finally, the most unexpected case of palatalization of labials is that triggered by the addition of the passive suffix -wa to verb stems. Examples are given in (13). Not only should a

(13) Passive formation by suffixation of -wa.

<table>
<thead>
<tr>
<th>Sotho</th>
<th>Verb stem + a</th>
<th>Passive</th>
<th>English gloss of verb stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>lesa</td>
<td>leswa</td>
<td>'leave'</td>
<td></td>
</tr>
<tr>
<td>rēka</td>
<td>rēkwa</td>
<td>'bury'</td>
<td></td>
</tr>
<tr>
<td>but:</td>
<td>bō:ba</td>
<td>bo:jwa</td>
<td>'tie on back'</td>
</tr>
<tr>
<td>tseba</td>
<td>tse:wha</td>
<td>'know'</td>
<td></td>
</tr>
<tr>
<td>thopa</td>
<td>thotj:wa</td>
<td>'capture'</td>
<td></td>
</tr>
<tr>
<td>tōpha</td>
<td>tōtj:wa</td>
<td>'heap up'</td>
<td></td>
</tr>
</tbody>
</table>

following /w/ not cause palatalization of labials, it is the one segment most likely to reinforce the labiality of labials.

A digression on [w].

It might be asked how I can justify that last statement given the evidence mentioned above that in at least 3 perceptual studies labials in the environment of the vowel /u/ were often misheard as dentals. The justification is that /u/, although phonetically close to /w/, differs in the important respect that, unlike /w/, in the environment of a labial it need not have a rapid change in formant frequency. Lyublinskaya presents evidence that one of the cues
for place of articulation of a consonant is direction of F2 transition; presumably a negative (downward) transition for labials and a lack of transition for dentals. Thus the lack of strong F2 transitions between /u/ and a labial could lead to the consonant being taken for dental. Since /w/ necessarily has rapid formant transitions this factor should not apply. There is, moreover, phonological evidence that /w/ should enhance the labiality of labials.  

A labial (velar) glide (sometimes <u + V) adjacent to non-labial obstruents generally precipitates a shift to the labial place of articulation (if it leads to any change at all). Examples of this are not uncommon; (14) and (15) provide a few of many cases that could be cited.

(14) Classical Greek (data from Meillet and Vendryes 1924, Meillet 1964).  

<table>
<thead>
<tr>
<th>PIE root</th>
<th>Latin</th>
<th>Greek</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>*yēkʷr</td>
<td>iecur</td>
<td>ἰκνός</td>
<td>'liver'</td>
</tr>
<tr>
<td>*ekwōs</td>
<td>equus</td>
<td>ἢπερος</td>
<td>'horse'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sanskrit</td>
<td></td>
</tr>
<tr>
<td>*gʷiwos</td>
<td>gayah</td>
<td>βίος</td>
<td>'life'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Cf. also, βαίνω in (9) above.)</td>
<td></td>
</tr>
</tbody>
</table>

(15) Gujarati (data from Turner 1921).  

<table>
<thead>
<tr>
<th>Middle Indic</th>
<th>Gujarati</th>
<th>English gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>dvāra</td>
<td>bār</td>
<td>'door'</td>
</tr>
<tr>
<td>dvē</td>
<td>bē</td>
<td>'two'</td>
</tr>
<tr>
<td>-tvana</td>
<td>-pan</td>
<td>(suffix)</td>
</tr>
</tbody>
</table>

References to further such data can be found in Ohala and Lorentz (1977) and Ohala (forthcoming). These same sources as well as Durand (1956) discuss some of the auditory-acoustic reasons for these sound patterns.

Such data would lead us to expect [w] to reinforce the labiality of labials since it has the power to cause non-labials to become labials.

Previous analyses.

There is a fairly extensive literature on these Southern Bantu languages and I have not had access to most of it. Nevertheless, if there has been any analysis which succeeds in pulling all instances of palatalization together under one rule, it has not found its way into the standard reference works on Bantu. Meinhof and Warmelo (1932) and even Guthrie (1967-1970), for
example, two major contributors to the reconstruction of Proto-
Bantu, simply list for these Southern Bantu languages (what amounts
to) sound changes of the type *\( p \rightarrow t / j \), \( w \); they apparently saw
nothing unusual in the presence of the \( w \) in the environment.
Meinhof does offer an explanation for the \( w \) or labialization that
often remains after the palatalization of Labials occurs:

A very peculiar process is that by which sounds to
some extent exchange their quality, each giving up some
of its own and assuming those of the other. Thus in
Sotho \( fy \) becomes \( swa \). The first sound, \( f \), is a voice-
less labial fricative, the second \( y \) is a lingual (or
more accurately palatal) semi-vowel. The first sound
becomes \( s \), i.e. a lingual (strictly an alveolar) voice-
less fricative, the second becomes \( w \), i.e. a labial
semivowel [16].

However, he seems not to have applied this analysis to cases such
as, e.g., Sotho \( ba\theta a + wa \rightarrow bo\theta wa \), where there is no surface \( y \) to
account for the \( f \).

Doke (1926:139ff) attributed palatalization in the passive to
the process of dissimilation since, as it happens, most of these
Southern Bantu languages do not have (or permit?) sequences of
labial + \( w \). In order to avoid this supposedly forbidden sequence
(which would result upon addition of the passive suffix \( -wa \) to a
stem ending in a labial) speakers, he reasoned, must have shifted
the labials to dentals.

In 1970 Talmy Givon and Erhard Voeltz recognized the need to
unify all the various instances of palatalization in Southern
Bantu under one process triggered by a palatal glide. They found
evidence for the 'missing' palatal glides in all the relevant
cases of palatalization. They incorporated their views and evidence
in various lectures (T. Givon, personal communication).

Stahlke (1976) in arguing for the notion of 'segmental fusion'
(essentially that expressed by Meinhof in the above quote?), cited
Tswana data such as that in (11) and (12) and presented evidence
that the causative, passive, and diminutive formations could all
be accounted for by one basic rule which involved exchange of
features between the labial consonant and a following (sometimes
reconstructed) palatal segment.

Herbert (1977) took issue with Stahlke's analysis and rather
argued that these cases were morphologically not phonologically
conditioned (that is, not phonetically based). His arguments were
based primarily on three points: a) that the alternations observed
are phonetically unnatural, b) that they applied only in certain
morphologically, not phonologically-defined environments, and c)
that they show many exceptions and much free variation.

In what follows I propose to provide additional evidence for
the Givon-Voeltz-Stahlke analysis. I do not dispute Herbert's
claim that these alternations are activated by specific
morphological environments (e.g., diminutive, passive formations) not by phonetic environments. But this is in no way contradictory to the claim that they all had a common phonetically natural origin.

I have already presented evidence for the phonetic naturalness of labials shifting to dentals when followed by palatal glides. What is necessary, then, is to assemble the evidence that palatal glides can be found in earlier stages of the passive and diminutive suffixes.

The history of the passive.

As was pointed out by Stahlke the passive suffix in Tswana has two forms: -wa and -iwa. One can make the case that there was once only one, -iwa. Prosodic factors presumably contributed to the creation of two forms. Zulu, Tswana and Venda for example, use the -iwa form primarily with monosyllabic verb stems but -wa with most polysyllabic stems. We can guess that the -iw coalesced in the latter case, perhaps to [j], perhaps to [y]. Indeed, with simultaneous labialization there is not much difference between these two. As Tucker points out, the labialization of consonants, although indicated in conventional phonetic transcriptions as a w after the sound, is in fact more a prosody of labialization that persists through the segment. If we indicate this prosody as a superscripted line above the consonant, as is done in the Firthian Prosodic tradition, it is easier to see why [ji:] is equivalent to [y]. Pedi probably still shows some remnants of this early development; see (16).

(16) 
\[
\begin{align*}
-\text{rēka} + \text{wa} & \rightarrow -\text{rēk}wā \quad \text{'buy'} \\
-\text{ripa} + \text{wa} & \rightarrow -\text{rip}yā \quad \text{'cut'}
\end{align*}
\]

Assuming that all labial consonants are intrinsically labialized in these languages (which explains why labials cannot support distinctive, i.e., extrinsic, labialization\(^8\)), we may speculate that the two passive forms originated more or less in the sequence indicated in (17).

(17) 
\[
\begin{align*}
[\text{rēkiwa}] & \rightarrow [\text{ripi}wā] \equiv [\text{ripywa}] \\
& \downarrow \quad \text{via glide assimilation} \\
[\text{rēk}wā] & \quad \downarrow \quad \text{via vowel deletion}
\end{align*}
\]

(On this point one wonders what use to make of the comment by Jacottet (1927:110) that an older, rarer form of the Sotho passive suffix exists: -uwa, and that it is used mainly after labials? It could validate the claim that labials tend to round the following vowel--especially when it is assisted in this by the -w--but unfortunately it does not prove that the resulting rounded vowel would be [y].)
Another possible route for the development of a palatal glide after labials is suggested by the passive forms in Venda given in (18) (from Ziervogel and Dau 1961:37).

(18) -beba + wa > -bębwa ≡ [bębwa] ~ -bębja 'bear'

The [yw] is described as having very little frication.

Since the listeners would expect inherent labialization after the labial b, they may have ignored (i.e., treated as redundant or non-distinctive) the labial part of the following labial velar glide w. What would remain to be considered distinctive in this glide, then, would be the velar component, [y]. This is quite speculative, of course, and, in any case, does not reveal how [y] could change to [j] in the environment given or, indeed, whether the [j] is from the [y].

The history of the diminutive.

In the case of the diminutive formation, as Stahlke pointed out, there is another common form of the suffix which has a palatal initial, -jama, and it is possible to trace this and the -ana form to -jama. This morpheme exists in many Bantu languages and means 'child'.

Further evidence for the elided j comes from traces of its influence on non-labials, e.g., in Tswana logon 'piece of wood' + dim. suffix > logonana. The change of [n] to [n] is plausible only if we assume a palatal glide in the suffix.

Possible additional evidence for this point comes from the participation of the diminutive suffix in the pattern of vowel harmony in Sotho. In that language it seems that the lower mid vowels shift to higher mid vowels when followed in the next syllable by a high vowel (either i or u) or--and this is the curious part--by labialized consonants formed by passivization or diminutivization, e.g., selepe 'axe' + dim. > seletswana (transcription simplified). If we can be sure that simple labialization itself doesn't effect vowel harmony (the evidence isn't very clear on this point, but it seems not to) and if we can trust Tucker's transcription of the Sotho vowels (Cole 1955:xxvii, warns us not to) it would seem that the shift of [e] to [e] in the above example could be attributed to the once-present palatal segment.

The source of the w.

Returning to the question raised earlier, 'where did the w or labialization come from after the palatalization had shifted the labial to a dental?,' we can agree with Meinhof and Stahlke that it came from the original labial consonant. From this it follows that the w in the phonetic transcription of passive forms such as tsekw+w+a has a different source from the w in forms such as r+kw+a. In the former case it comes from the labial in the stem tseba; in the latter
it comes from the passive suffix itself -(i)wa. It is not necessary, though to view the process as entirely one of featural exchange as Meinhof and Stahlke do, at least as far as preservation of the labialization is concerned. It is simpler to assume that labialization spanned the stem-final consonant originally (since, as was mentioned, these labials were probably intrinsically labialized) and it spanned the stem-final consonants after the shift in place of articulation as well. Using the prosodic transcription of labialization, (19) presents a probable scenario for the change, taking up where (17) and (18) left off.

(19) Stage 1 \[ \{ p\j^\prime \} \quad \{ p\j \} \quad \{ p\j^\prime \} \quad \{ p\j \} \]

Stage 2 \[ \{ t\j^\prime \} \quad \{ t\j \} \quad \{ t\j^\prime \} \quad \{ t\j \} \]

Stage 3 \[ \{ t\j^\prime \} \quad \{ t\j \} \quad \{ t\j^\prime \} \quad \{ t\j \} \]

Stage 4

Evidence for Stage 2 comes from, among other things, the passive forms in 'old fashioned' Sotho, e.g., bɔΦa + wa > bɔΦjwa, as well as some of the variants given above in (12). It should be emphasized that Stage 2 is a possible but not a necessary intermediate stage between Stages 1 and 2. In the perceptual tests reviewed above, subjects' misperceptions, which may be regarded as the stuff sound changes are made from, were abrupt—hearing a p as a t—and did not involve any intermediate stages.

Evidence for the development from Stage 3 to 4, i.e., loss of labialization, was presented earlier (see 11); Cole (1955:43) testifies that among forms showing this variation, those with labialization are older.

Some support for the scheme in (19) comes from the variant reflexes of the Bantu word for 'dog' as given in (20). Here it

(20)

<table>
<thead>
<tr>
<th>Proto-Bantu</th>
<th>Oli</th>
<th>Swahili</th>
</tr>
</thead>
<tbody>
<tr>
<td>*n-bua</td>
<td>m-bua</td>
<td>m-bwa</td>
</tr>
<tr>
<td></td>
<td>Tonga</td>
<td>Pedi</td>
</tr>
<tr>
<td></td>
<td>m-bja-na</td>
<td>m-pja</td>
</tr>
<tr>
<td></td>
<td>Tsonga</td>
<td>in-dzwa</td>
</tr>
<tr>
<td></td>
<td>Mvumbo</td>
<td>ip-d3a</td>
</tr>
</tbody>
</table>

was a palatal nasal noun class prefix n which sometimes exerted a palatalizing influence on the following consonant. The arrows here do not imply direct genetic development but rather that the form near the head of the arrow represents in some sense a further development than the one near the tail.
Conclusion.

Why is it better to combine the inductive and deductive approaches in linguistic analysis? Because they complement each other. In the present case, the inductive approach could tell us that $j$ is a catalyst in the shift of labials to dentals and $w$ helps to shift dentals and velars to labials but it could not tell that in principle it is unlikely that $w$ could also help shift labials to dentals. The deductive approach, in this case reference to the underlying phonetic factors which cause perceptual ambiguity, can tell us which kinds of misperceptions (which might lead to sound changes) are more likely than others. Nevertheless, the deductive approach works perfectly only if our knowledge of the underlying principles of speech production and perception is also perfect. Since this undoubtedly will never be the case, our deductions based on current knowledge may sometimes be erroneous. Only when we find a match between our deductions and inductions can we have some increased confidence that we are on the right track.

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Footnotes.

1 In general, I retain the transcription used by the source of the data. This creates potential problems only when palatal glides are sometimes represented as $y$ and sometimes as $j$. Given the emphasis of this paper and the context of a particular symbol, no ambiguity should arise. When square brackets surround a word IPA transcriptional conventions are followed, i.e., $[j]$ for a palatal glide, $[y]$ for a high front rounded vowel, $[u]$ for a labial palatal glide.

2 The same high F2 is characteristic of labials adjacent to the palatal vowel $[i]$ (Lehiste and Peterson 1961, Fant 1973, Öhman 1966).

3 Leaving aside, for the moment, where the $w$ came from in these forms, the presence or absence of the labialization in the latter two (the Tswana) cases provides a ready explanation for the alternation between the phonetic quality of the resulting affricates [$tʃ$, $hw$] and [$tʃh$]. As is well known, the presence of lip rounding effectively lowers the resonant frequencies of
the vocal tract. Thus the sibilant noise generated will have a higher or lower center frequency depending on whether or not there is labialization. From such an initial allophonic difference it is quite plausible to find the development of distinctive [ʃ]-type vs. [s]-type fricative releases to the affricates since the primary difference between these fricatives is in their low vs. high center frequencies. In this regard we can note that the lip rounding accompanying English [ʃ] and [tʃ] may not be entirely coincidental: it helps to keep these sounds as distinct as possible from [s].

I pass over three other morphological processes that involve palatalization of labials: the formation of the perfect tense of verbs, the formation of the locative of nouns, and the action of the singular prefix of the 5th noun class li>le (and occasionally some other similar prefixes). In general, the analysis of these cases is less controversial than that of the passive and diminutive and, in some cases, was well understood by Bantuists early on (cf. Tucker 1929:85ff).

[m] in the environment of [w] or [u] is liable to shift to [ŋ] but not [n] or [p]. The reasons for this, which are relevant only to nasals, are given by Ohala and Lorentz 1977a, b. In view of this it is interesting to note the varying fate of stem-final [m] when it is subject to the same derivations that palatalize the obstruents. The result seems to hinge in part on whether labialization is retained or not. If it is not, we find only [ŋ]; if it is retained we can find either [p] or [ŋ]. Thus, e.g., Zulu int'a:mo 'neck' + dim.> int'anana, but Sotho lelewa 'tongue' + dim.> lelenwa. One could venture the prediction that [nw] sequences are unstable and will shift either to [ŋ] or [mw].

Before front vowels, however, PIE labial velars generally become Greek dentals, e.g., cf. Latin que 'and', but Greek τε. See Allen (1957) for an interesting discussion of this exception and of exceptions to the exception.

See also Henderson 1975 for similar views.

The Southern Bantu languages are in no way unusual in not having distinctively labialized labials or labials followed by w. Even in English, clusters of labial + w exist only by virtue of some rather uncommon loanwords, e.g., bwana. Many other examples could be cited (see Ohala, forthcoming).

Muddying the issue somewhat is the fact that some non-labial consonants also show labialization in these derivations. Such cases, however, can be attributed to a stem-final rounded vowel, e.g., Tswana leketo 'leg' + dim.> lekotswana.
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ON THE HIERARCHY OF BOUNDARIES

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1. Introduction.

Chomsky and Halle's (1968) study of phonological organization includes discussion of the following boundary phenomena: full word boundary (\#\#), internal word boundary (#), morpheme boundary (+), and no boundary (\#), representing unanalyzed, unstructured strings. These boundaries, which are uncontroversial and needed in most languages, are arranged by Hyman (to appear) in the following hierarchy:

(1) \#\# # + \#
   strong weak

The above hierarchy is said to represent both the relative synchronic strength and the natural historical weakening of the boundaries.

This paper examines synchronic and diachronic facts from Hungarian which bear on the suggested hierarchy of boundaries. The evidence presented supports the thesis that boundaries are hierarchically organized. However, a slight reinterpretation of the hierarchy in (1) is found necessary.


One obvious interpretation of a linear hierarchy like (1) is that a weaker boundary (i.e. lower in the hierarchy) implies a stronger boundary (i.e. higher in the hierarchy), but not vice versa. That is, if boundary B is stronger than boundary B', then: a, any process (rule) that takes place in the context of B' also takes place in the context of B; and b, there exist processes which are restricted to the context of B to the exclusion of B'.

The facts of Hungarian suggest that a stronger boundary does not imply a weaker boundary. These facts are consistent with the claims Chomsky and Halle make in SPE about boundaries in English. Let us look at some examples.

### does not imply #. Stress is assigned to the initial syllable of a full word:

(2) \( V \Rightarrow [\text{stress}] / \#\# C_0 \)

The initial syllables of enclitic postpositions and the second members of compounds, both of which are preceded by #, are not stressed. Note the following examples, where stressed vowels are underlined:
The failure of rule (2) to apply in the context of \#C0 shows that \# does not imply \#\#. The final \( h \) of nouns is deleted word finally and before a consonant initial suffix:

\[
   (4) \quad h \Rightarrow \emptyset / \text{\#} \text{\#} \text{\#}
\]

For example, \( h \) is not pronounced in méh 'bee', méhtől 'from (the) bee', méhkas (/méh#kas/) 'bee-hive'. \( h \) remains and is predictably pronounced as voiced [\( \mathbf{h} \)] before a vowel initial suffix (by rule (7), formalized below): e.g., méh[\( \mathbf{h} \)]ünk (/méh+unk/) 'our bee'. If \# implied +, then rule (4) would have applied to /méh+unk/.

+ does not imply \( \emptyset \). The low vowels \( a \) and \( e \) are lengthened to \( a \) and \( e \) before a suffix:

\[
   (5) \quad \text{Low Vowel Lengthening (LVL)}
   \[
   \left[ +\text{low} \right] \Rightarrow [+\text{long}] / \text{\#} \text{\#} \text{\#} + [+\text{segment}]
   \]

For example: alma 'apple' almám 'my apple' almáért 'for (the) apple'; kefé 'brush' kefén, keféért. LVL is inapplicable if the low vowel is not morpheme final: e.g., rádít, *rádítir 'eraser'.

Let us now look in the opposite direction and see if a weaker boundary implies a stronger one. It will be seen again that the facts of Hungarian bear out the SPE claims about boundaries.

\( \emptyset \) implies +. In SPE, Chomsky and Halle (1968:364) state the following convention:

\[
   (6) \quad \text{Any rule which applies to a string of the form XYZ also applies to strings of the form X+Y+Z, XY+Z, X+YZ, where X, Y, Z stand for sequences of zero or more units and + represents formative [morpheme] boundary.}
\]

The above convention has received unmitigated support in the post-SPE years of phonological research. For example, Hungarian contains an allophonic rule which voices /h/ to [\( \mathbf{h} \)] between voiced segments:

\[
   (7) \quad h \Rightarrow [+\text{voi}] / [+\text{voi}] \text{\#} [+\text{voi}]
\]


\[
   (8) \quad /\text{konyha}/ \Rightarrow \text{konyha} [\mathbf{h}] a \ 'kitchen'
   /\text{juh+unk}/ \Rightarrow \text{juh[\mathbf{h}]unk} \ 'our sheep'
   /\text{asztal+hoz}/ \Rightarrow \text{asztal[\mathbf{h}]oz} \ 'to (the) table'
\]
Another rule of Hungarian assimilates a vowel in backness to the preceding vowel:

\[(9) \ V \Rightarrow [\alpha|^\text{back}] \ / \ \left[\alpha|^\text{back}\right] \ C_0 \]

Thus, /ember+nal/ 'at (the) man' and /tanár+nal/ 'at (the) teacher' are realized respectively as embernél and tanárnál.

The well known vowel harmony rule (9) interacts with the following epenthesis rule:

\[(10) \ \emptyset \Rightarrow o / \ C \ C \left\{\right.\ ^\# \left.\ C\right\} \]

Rule (10) accounts for stem alternations like \textit{bokor}/\textit{bokr}- 'shrub':

\[(11) \ /\textit{bokr}#rózsa/ \ \textit{bokorrózsa} \ 'shrub rose'
\ /\textit{bokr}+nál/ \ \textit{bokornál} \ 'at (the) shrub'
\ /\textit{bokr}+unk/ \ \textit{bokrunk} \ 'our shrub' \]

When rule (10) applies to a front vowel stem, the epenthetic \(o\) undergoes the vowel harmony rule (9). For example, /tük+nal/ becomes /tükör+nál/ by rule (10); the vowel \(o\) is assimilated to the front vowel \(ü\) by rule (9); /tükör+nál/; rule (9) reappears and harmonizes \(ä\) to \(ö\): /tükör+nél/; the final output is tükörnél 'at (the) mirror'. This derivation illustrates the fact that the vowel harmony rule applies when the focus vowel and the determinant vowel occur in the same morpheme, as well as when these vowels are separated by a.

+ does not imply #. A rule which applies to the string \(X^+(Y)\) does not apply to the string \(X#(Y)\). Observe the application of rule (5), for instance: /kutya+m/ \(=\) \textit{kutyám} 'my dog'; /kutya#ól/ \(=\) \textit{kutyáol}, *kutyáol 'dog house'.

# implies ##. A rule which applies to the string \(X##(Y)\) also applies to the string \(X##(Y)\). Note the application of rule (10): ##bokr##\(=\) becomes bokor 'shrub'.

Another pertinent example of a rule which applies in the context of # as well as ## is the following: (= rule (4))

\[(12) \ h \Rightarrow \emptyset / \ C \ C \left\{\right.\ ^\# \left.\ C\right\} \]

This rule deletes the final \(h\) of nouns word finally, in compounds (also before an enclitic postposition), and before a consonant initial suffix. \(h\) remains before a vowel initial suffix and is predictably realized as [h] by rule (7). E.g.:

\[(13) \ /\textit{meh}###/ \ \textit{mé[h]}[Ø] 'bee'
\ /\textit{meh}#kas/ \ \textit{mé[h]}[Ø]kas 'bee hive'
\ /\textit{meh}+nal/ \ \textit{mé[h]}[Ø]nál 'at (the) bee'
\ /\textit{meh}+unk/ \ \textit{mé[h]}[h]unk 'our bee' \]

In fact, all the low level regressive assimilation rules of Hungarian apply across # as well as ##. If # implies ##, then
these rules need merely contain the specification #; the theory predicts that # = #(#). If # did not imply ##, then all these rules would have to be formulated such that they apply across #(#). Clearly, this misses a generalization and does not explain the fact that there are no rules, at least in Hungarian, which apply across # but not ##.

Kaisse (1977) discusses a rule in Modern Athenian Greek which elides one of the vowels in the sequence V#V, where either the vowel final word or the vowel initial word is a clitic pronoun or verbal particle. Kaisse ranks the vowels in a sonority hierarchy and shows that in the sequence V#V it is the less sonorous vowel which is deleted. Kaisse formalizes this rule as follows:

\[(14) \begin{array}{l}
\{\text{+syll} \\
\text{-cons} \\
\text{n son} \}
\Rightarrow \emptyset % \quad \emptyset \end{array} \begin{array}{c}
\{\text{+syll} \\
\text{-cons} \\
\text{\geq n son} \} \\
\end{array} \]

where % represents mirror image notation, n represents integers in a vowel sonority hierarchy.

The above rule has to be prevented from applying in case one of the words is not a clitic. In some cases the SPE theory of boundaries makes the crucial distinction between clitics and non-clitics: ## is assigned between two full words (non-clitics), but # is assigned between a clitic and a full word if they belong to the same constituent. If # does not imply ##, then rule (14) applies to the sequence V#V (clitic verbal particle followed by verb) but not to V##V (non-clitic followed by verb). However, the SPE conventions assign ## between a clitic and a full word if they belong to different constituents. This is the case when pronouns are cliticized to verbs: e.g. /to##éxo/ ⇒ tø éxo 'it' + 'I have'. If # does not imply ##, then rule (14) cannot elide the ø in /to##éxo/.

Kaisse gets around the problem by positing the following readjustment rule:

\[(15) \quad \# \Rightarrow \emptyset % \quad \# \text{[clitic]} \]

Rule (15) reduces the full word boundary in forms like /to##éxo/; rule (14) then applies to /to#éxo/ correctly.

However, under the assumption that # implies ##, an alternative formulation of the vowel elision process is possible which obviates the need for the readjustment rule (15):

\[(16) \begin{array}{l}
\{\text{+syll} \\
\text{-cons} \\
\text{n son} \}
\Rightarrow \emptyset % \quad \emptyset \end{array} \begin{array}{c}
\{\text{+syll} \\
\text{-cons} \\
\text{\geq n son} \} \\
\end{array} \]

\langle\text{clitic}\rangle_a \quad \langle\text{clitic}\rangle_b

condition: either a or b
Kaisse dismisses the analysis which posits a rule like (16). Instead, she adopts the analysis which posits rules (14) and (15) as an "expedient". But it is obvious that the latter analysis is not in any significant sense superior to the former. In fact, if compounds are analyzed as ##x#I## and not as ##x#I##, then it is necessary to mention the category 'clitic' in the vowel elision rule: compounds are not subject to mirror image vowel deletion.

In brief, the mirror image vowel elision process of Modern Athenian Greek is not a genuine counterexample to the claim that # implies ##.

To sum up the discussion of the synchronic evidence, the facts that ## does not imply # (and +, Ø), that # does not imply + (and Ø), and that + does not imply Ø are consistent with the hierarchy in (1). This hierarchy explains the well known fact, made clear in SPE, that there can be processes which take place intermorphemically but not intra-morphemically. However, the fact that Ø and + do not imply # and ## contradicts part of the hierarchy in (1). These synchronic facts suggest that the hierarchy in (1) should be broken up into two independent sets:¹¹

$$
\begin{array}{c}
\begin{array}{l}
## \\
+ \\
Ø
\end{array} \\
\begin{array}{l}
\text{strong} \\
\text{weak}
\end{array}
\end{array}
$$

3. Diachronic Evidence for the Hierarchy of Boundaries.¹²

If boundaries are hierarchically organized, then changes in word structure and morphology should, in general, adhere to the hierarchy. This section presents this type of evidence from the realm of vowel harmony in Hungarian. The diachronic facts will establish a hierarchical link between the two independent sets of boundaries in (17).

For present purposes, the following two rules of Vago (1976) are assumed to account for vowel harmony in suffixes: (Rule (19) was presented previously in (9)).

$$
\begin{align}
(16) \text{ Marked Vowel Harmony ((m)VH)} & \quad [+\text{syl}] \Rightarrow [+\text{back}] /
\begin{array}{c}
\begin{array}{c}
\text{[+syl]} \\
\text{[+back]}
\end{array} \\
\begin{array}{c}
\mathcal{C}_0 \\
\mathcal{C}_0
\end{array}
\end{array}
\begin{array}{c}
\begin{array}{c}
\text{[-back]} \\
\text{[-round]}
\end{array} \\
\mathcal{C}_0
\end{array}
\begin{array}{c}
\begin{array}{c}
\mathcal{C}_0 \\
\mathcal{C}_0
\end{array}
\end{array}
\end{align}
$$

$$
(19) \text{ Unmarked Vowel Harmony ((u)VH)} & \quad [+\text{syl}] \Rightarrow [\text{back}] /
\begin{array}{c}
\begin{array}{c}
\text{[+syl]} \\
\text{[\alpha\text{back}]}
\end{array} \\
\mathcal{C}_0
\end{array}
\begin{array}{c}
\mathcal{C}_0
\end{array}
\end{align}
$$

The rule of (m) VH derives a back vowel suffix after so-called "mixed vowel roots" which contain a back vowel followed by at least one neutral vowel (i.e. e, é) in the final syllable(s). In all other cases, the rule of (u) VH, applying after (m) VH in a disjunctive manner, derives suffix vowels which have the same value for backness as the last root vowel. Underlying root vowels undergo
neither rule.

A full word boundary is reduced to an internal word boundary when two independent words become a compound word, or when an independent word develops a prepositional/postpositional variant or becomes a preposition/postposition itself. One example of postposition formation will suffice.

The temporal case marker -kor 'at the time of' developed from the noun kor 'age, era'. It is no longer identical semantically (though still identical phonologically) to the noun kor. In the present day language -kor is an enclitic postposition, preceded by #. This analysis explains two facts: -kor does not alternate harmonically, and a preceding low vowel is not lengthened: e.g. Őtkor, Őt órakor 'at five o'clock' (Őt 'five', óra 'hour'). Thus, forms like /Őt#kor/ are postpositional rather than compound structures.

Compounds or prepositions/postpositions may further undergo weakening by respectively developing into 'reduced' compounds or prefixes/suffixes. These changes typify the reduction of # to +.13

The root no 'woman' (< 'wife') developed the variant -né which formed compounds with nouns indicating wives' names. These compounds became reduced: in the present day language -né forms compounds with the boundary + and not #. E.g.: Vajda 'proper name' Vajdáné 'Mrs. Vajda', Vajdánénak 'to Mrs. Vajda'; a word boundary preceding -né would block the application of LVL and (m)/(u)WH.14

The elative suffix -ból/ből 'from the inside', the insessive suffix -ban/ben 'in(side)', and the illative suffix -ba/be 'into' developed from the noun bél 'intestine' through a postpositional structure (Károly 1972:107-8). At the postpositional stage, these elements did not alternate harmonically. The reduction of # to + brought about the harmonic alternations characteristic of suffixes.15

The morpheme boundary is reanalyzed as Ø when a suffix (prefix) fuses with a preceding (following) root so that it is no longer identified as a meaningful unit. This is apparently what happened in the following cases:

<table>
<thead>
<tr>
<th>(20)</th>
<th>Locative</th>
<th>Ablative</th>
<th>Lative</th>
</tr>
</thead>
<tbody>
<tr>
<td>'next to'</td>
<td>mellett</td>
<td>mellől</td>
<td>mellé</td>
</tr>
<tr>
<td>'below'</td>
<td>alatt</td>
<td>alól</td>
<td>álá</td>
</tr>
<tr>
<td>'above'</td>
<td>fölött</td>
<td>fölül</td>
<td>fölél</td>
</tr>
<tr>
<td>'in front'</td>
<td>előtt</td>
<td>elől</td>
<td>élé</td>
</tr>
<tr>
<td>'behind'</td>
<td>mögött</td>
<td>mögül</td>
<td>mögé</td>
</tr>
<tr>
<td>'between'</td>
<td>között</td>
<td>közül</td>
<td>köze</td>
</tr>
</tbody>
</table>

The above forms used to be composed of a root and the locative suffix -tt, the ablative suffix -l, or the lative suffix -a/é (Károly 1972:106-7). Today, however, they are monomorphemic adverbs used as independent postpositions. A bimorphemic analysis could not be maintained for all the forms. For example, no general
rule can derive mellől from /mell+1/ or mögül from /mög+1/. The synchronic relationship between the supposed stem mell- 'next to' in mellett, etc., and the independently occurring stem mell 'breast' is highly suspect; the hypothetical stem mög- 'behind' in mögött, etc., does not occur independently.

Originally, the nouns hátvédt 'fullback', honvédt 'Hungarian soldier', and húsvédt 'Easter' were compounds, most likely: /hát#véd+ő/ 'back' + 'protector', /hon#véd+ő/ 'homeland' + 'protector', and /hús#véd+ék/ 'meat' + 'sin'. Through time, these forms lost their compositional meanings. This loss triggered a gradual reduction of boundaries: ex hypothesis, first to /hát+véd/, /hon+véd/, and /hús+véd/, and later to /hátvéd/, /honvéd/, and /húsvéd/.

In present day conservative dialects the above roots govern front harmony in suffixes. This reflects their original compound structure: the second components contained front vowels. When the compounds became reduced, their front harmonic character was kept; however, it was then necessary to mark these roots as lexical exceptions to (m)VH. This exceptionality persisted through the unanalyzed stage found today. In innovative dialects this exceptionality has become optional: the above roots may take either front harmonic or back harmonic suffixes.  

Decomposing is further seen in the development of ünnep 'holiday', Hejő (name of a Hungarian river), and jambor 'pious'. These forms originally were compounds: /igy#nap/ > /id#nap/ 'holy' (old form) + 'day', /heü#jou/ 'warm (old form) + river' (old form) (Kálman 1972:64), and /jö#ember/ 'good' + 'man' (Hetzron 1972:81, fn. 4). At this point, all the vowels of a root, apparently including compounds, must have had to agree in backness (Hetzron ibid.). Progressive assimilation changed the vocalism of the second members: /id#nep/, /heü#jöü/, and /jö#ombor/. Now the associative bond between nap, jou, ember, and the respective compound variants nep, jöü, ombor was severed and the compounds became reduced: /id+nep/, /heü+jöü/, /jö+ombor/. At this stage the first members were still identifiable. This realization gradually faded away; restructuring and phonological changes give the present day forms /ünnep/, /Hejő/, and /jambor/.

In sum, we see that there exist examples for the progressive weakening of boundaries: ## > # > +∅. These changes can be explained. The boundary ## weakens to # as a result of two general historical processes: compounding, which is a wide spread device of word formation, and (enclitic) preposition/postposition formation, which is the first stage of grammaticalization. The boundary # is further reduced to + when the relationship between a preposition/postposition and its source element is obscured, that is a preposition/postposition becomes a prefix/suffix, or when the compositional meaning of a compound becomes less obvious. The boundary + is lost through fusion, when there ceases to be evidence for internal structure.

4. Conclusion.

The synchronic and diachronic evidence discussed in the pre-
ceding sections suggest the following modification of the boundary hierarchy in (1):

\[(21) \quad \#\# > \# > + > \emptyset\]

where \(>\) represents diachronic development,

\(\leq\) represents synchronic implication

Some well known aspects of rule formalism fall out directly from the implicational relations in (21). If a rule applies in the context of boundary \(B\) but not in the context of boundary \(B'\), that is \(B\) does not imply \(B'\), then \(B\) must be stated explicitly in the formulation of the rule. Thus, if a rule applies inter-morphemically but not intra-morphemically, then the + boundary must be included in the rule. Similarly, if a rule applies in absolute word final or word initial position then \(\#\#\) must be provided for in the rule. Since the boundary \(\#\) is implied by no other boundary, it must be mentioned in a rule which is conditioned by it. Further, if a rule applies in the context of boundary \(B\) and boundary \(B'\), where \(B\) implies \(B'\), then only boundary \(B\) need be stated. Thus, the correct abbreviation of + and \(\emptyset\) is +, not (+), and that of \(\#\#\) and \(\#\) is \#, not \(#(\#)\).

Footnotes

1. This is a substantially revised version of a paper which appeared in CUNYForum Number 2, 1977.

2. The pause boundary, which Hyman places on top of the hierarchy, will be ignored; ditto for the phonologically relevant syllable boundary, and higher level boundaries associated with sentences, phrases, and so on. It appears that in agglutinative languages the morpheme boundary is further broken down into a root boundary, stem boundary, and affix boundary. The placement of these boundaries on the hierarchy is beyond the scope of this paper.

3. The notion of hierarchical ranking of boundaries is not new; see McCawley (1968) and Stanley (1973) in particular.

4. There is another function of boundaries: to define the domains of rules (and constraints). In this sense, rules "apply only within the domain of a given boundary, but not across this boundary or across any other boundary that takes precedence over it in the hierarchy" (Chomsky and Halle 1968:371). Thus, to use Chomsky and Halle's example, stress rules can apply in the context \(#X#\) (more properly \(#\#X\#\#\)), where \(X\) may not contain \# (\#\#), but may contain boundaries lower in the hierarchy.

5. Many of the analyses given here are justified more fully in Vago (in press). In citing Hungarian forms, segments are given as they are spelled. Vocalic length is marked by "over rounded front vowels," over other vowels.

6. It will be shown below that \# does not imply + and that + does not imply \(\emptyset\). Thus, in the linear hierarchy model, by transitivity
we conclude that ## does not imply + and Ø either. Accordingly, the initial syllables of suffixes and morpheme-internal syllables are not stressed.

Hyman (to appear) claims that the morpheme boundary does not have phonological consequences. This is not true in the case of LVL. For arguments against the alternative analysis of Final Vowel Shortening, see Vago (1978).

See Vago (1976:259-60) for arguments that alternations like bokor/bokr- are derived by enphasis and not syncopation.

Kaisse's formulation of rule (16) does not include #. Without the readjustment rule (15), and without # implying ##, the boundary in rule (16) has to be stated as #(#).

Again, by transitivity we conclude that if Ø implies +, + does not imply #, and # implies ##, then Ø does not imply # and ##, and + does not imply ##.

In the final analysis, the previous transitivity arguments are valid: the boundaries will be arranged linearly. See the final section.

I am grateful to Robert Hetzron and Larry Hyman for comments on material relevant to this section.

The hypothesis that root > (enclitic) postposition > suffix, i.e. ## > # > +, explains the fact that, in Hungarian, suffixes on the whole are older historically than postpositions.

It is not obvious that -né is a root as opposed to a suffix. However, there are two facts which seem to suggest that it is a root. Forms with -né are often confused with genuine compounds containing nő (compare tanáné 'teacher's wife', tanárno 'woman teacher'). In innovative dialects suffixes following -ne vacillate: e.g. Vajdánénak, Vajdánének. The description of these variants would be cumbersome if -né were a suffix: this form would have to be exempted from conditioning (m)ZH. See Vago (to appear).

The verbal prepositions be- 'in' and bele- 'into' also developed from the noun běl. In these cases the # boundary is kept: e.g. behoz 'bring in' belevág 'cut into'.

Similarly, férfi 'man' developed from a compound consisting of férf 'husband' and fi 'son'. The harmonizing behavior of férfi is interesting; see Vago (in press).

Thus, loanwords often underwent harmony: e.g. herceg > herceg 'prince', from German (Kálman, ibid.).

Disharmony was resolved alternatively by regressive assimilation. For example, the Slavic loanword milost became malszt 'divine grace'; the compound /neu#ou/ is the origin of the name of another river, Hájó (Kalman, ibid.).

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Creative Neologism as a Dynamic Process in Language Evolution: A Case Study From English

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"For ill is ill, and good good still."
John Donne

1.0 Introduction and Summary

The research paradigm of generative linguistics makes essential use of the acceptability intuitions rendered by fluent, preferably native, speaker/hearers of a language in order to partition the class of possible linguistic sequences into those that are grammatical and those that are ungrammatical. However, it has often been pointed out that "acceptability" and that which it is intended to theoretically construct, "grammaticality", are not coextensive categorizations. Thus, Miller and Chomsky (1963) argued that multiply center embedded sequences should be analyzed theoretically as grammatical even though they are unacceptable on the basis of data.

More recently, linguists have extended the Miller-Chomsky proposal in characterizing a class of syntactic sequences that are acceptable although, it is argued, they should be theoretically analyzed as ungrammatical (Chomsky, 1970; Otero, 1972; Langendoen and Bever, 1973; Bever, Carroll and Hurtig, 1976). Clearly, the most parsimonious general rule in organizing a theory of language is to theoretically analyze "acceptable" sentences as "grammatical" and "unacceptable" sentences as "ungrammatical". Therefore, the Miller-Chomsky proposal and its recent extensions must be scrutinized carefully.

On the other hand, it is argued that there is good reason to study these misfit cases of acceptability and grammaticality. Miller and Chomsky (1963) argued that the study of grammatical but unacceptable sequences could reveal something about the ways in which performance systems limit manifest linguistic competence. Bever, Carroll and Hurtig (1976) argued that the study of acceptable but ungrammatical cases could reveal properties of creative neologism and the patterns of evolution in grammar. In this paper, I will suggest that studying both of these misfit classes diachronically can potentially provide a new source of evidence regarding the existence and nature of language universals. First, however, we turn to some concrete discussion of a particular construction from English and its synchronic and diachronic analysis in English grammar.

2.0 The Synchronic Analysis of "Good And"

2.1 Trying to Account for "Good And" in the Grammar

Example (1) illustrates the peculiar English "good and" construction.

(1) The waiters here are not good, but when it comes to the tip they are good and greedy.

Clearly, this usage must be distinguished from more typical instances of predicate adjective conjunction, as in (2).

(2a) The saints were kind and virtuous.
(2b) The house is old and brick.
(2c) The minister is good and honest.
On its primary interpretation, sentence (1) does not entail that the waiters are good. Sentence (2c), on the other hand, has a primary reading which does entail that the minister is good.

The logical relations inherent to forms like those in (2) can also be realized as prenominal adjective sequences, as in (3).

(3a) The kind virtuous saints ...
(3b) The old brick house ...
(3c) The good honest minister ...

However, the predicate adjective conjunction in (1), good and greedy, has no corresponding prenominal form, as demonstrated in (4).¹

(4) ??The good greedy waiter ...

The problem to be dealt with, of course, is how to account for the peculiar asymmetries in (1) through (4) simply and generally within the theory of grammar. One alternative, which seems at first rather reasonable, is to analyze good and greedy in (1) as an idiom. It is characteristic of idiomatic forms that they are peculiar and unique. The problem with this account is that all of the adjectives in (5) fit very comfortably into the frame "good and Adjective" and manifest properties analogous to those of good and greedy in (1).

(5) old, stupid, skinny, loose, rotten, hard, tight, cold, slippery, warm, ready, horny, hot, long, early, high, dumb, dirty, steep, sick, fresh, bald, smart, red, silly, ripe, drunk, flat, ...

Analyzing good and greedy as an idiom is rather awkward since it requires us to invent the new category "productive idiom" without offering a way to constrain this notion. This account resultinglly has limited theoretical interest.

A second possible analysis posits a difference in scope between the two "good and" examples in (1) and (2). The claim would be that in sentence (1) the adjective good has narrow scope (extending only to the adjective greedy). However, in the noun phrase in (2c) good has wide scope extending to its head noun. This analysis can account for the fact that sentence (1) does not entail that the waiter is good (i.e., "good and greedy" => "good qua greedy"). However, it is not consistent with other data pertaining to the scope of adjectives.

As Quine (1960) noted, the noun phrase in (6a) is scope ambiguous: it can take a wide scope sense (as paraphrased by the sentence in (6b)), or it can take a narrow scope sense (as paraphrased by the sentence in (6c)).

(6a) The big European butterfly ...
(6b) The butterfly is big and European.
(6c) The butterfly is big for a European butterfly.

The facts for the forms in (1) and (3) are just opposite to this. The prenominal sequence "good Adjective Noun" is only acceptable with good taking a wide scope sense, while the predicate conjunction "good and Adjective" (c.f., (6b)) can be ambiguous as to whether good takes wide or narrow scope (e.g., as to whether the waiter is or is not good in (1) and (3)).
The semantics of (1) seems to cast good as a sort of degree adverbial (i.e., "the waiter is good and greedy" =⇒ "the waiter is greedy to a good, or greater than average, degree"). This suggests a third potential account of the "good and" construction. In sequences like good and greedy in (1), good takes an "intensifying" sense, while in sequences like the good honest minister in (2c) it takes an "attributive" sense. Unfortunately, this treatment suffers the same problem of lack of generality as does the scope account. In prenominal position, intensifying adjectives are fully acceptable in their intensifier sense, as illustrated in (7a).

(7a) The bright red house ...
(7b) The house is bright and red.

However, when they occur in a predicate conjunction, as in (7b), they take an attributive sense. This is just the obverse of the facts for "good and": in the prenominal position the intensifier sense is unusual (c.f., (3)), while in a predicate adjective conjunction, good can take either the intensifier or attributive sense (c.f., (1) and (2c)).

This suggests a fourth possible account, namely that good and should be grammatically analyzed as an intensifying semantic constituent. In this account, a rule of semantic interpretation would assign the intensifier sense to the good and construction, even though the sequence good and does not correspond to a syntactic constituent. This rule presents some difficulty in that it is not independently motivated, but rather must be posited only to treat the "good and" data. In allowing rules of semantic interpretation to apply to sequences which are not syntactic constituents, it relaxes otherwise general constraints on what can count as a possible rule of semantic interpretation (see Katz, 1972). This weakens the theory of grammar. (Another difficulty with this solution is that it could not even be stated in a theory of grammar that does not distinguish semantics from syntax; e.g., Lakoff, 1971.)

A fifth account of the "good and" construction would consider good and to be a syntactic constituent, escaping some of the formal problems of the previous solution. However, several facts suggest that even this, and indeed any grammatical solution, would be undesirable. If good and is to be treated within the theory of grammar only a very ad hoc solution will succeed.

Assuming that good and is lexically an adverbial or a syntactically derived structure functioning as an adverbial, it is mysterious that the construction cannot freely appear in the diagnostic sentence-frames in (8) and (9).

(8) A not
   a. terribly
   b. awfully
   c. quite
   d. so
   e. very
   f. ?? good and

(9) She was
   a. terribly
   b. awfully
   c. quite
   d. so
   e. very
   f. ?? good and

bald man entered.

young to be in jail.
Although all of the established (i.e., grammatical) intensifiers may be inserted into these frames, the good and intensifier resists them, as indicated by its unacceptability in these environments.

It is also a mystery that the "good and" intensifier construction cannot appear freely prenominally. Many speakers cannot accept the sequence "good and Adjective Noun" at all, as illustrated in (3) and (10). (Good should, of course, be read in its intensifier sense in these examples.)

(10a) ?the good and sexy movie
(10b) ?the good and deadly poison

This is odd since nominal modifiers typically co-occur in both predicate adjective and prenominal positions (i.e., the movie is good and sexy = >the good and sexy movie). But even given this, there is a further mystery. Those speakers who can accept certain prenominal "good and Adjective" sequences, like those in (10), will generally not accept them unilaterally.

Restricting attention just to the predicate "good and" intensifier, the "Noun is good and Adjective" frame, the acceptability facts are puzzling. For example, adjectives with nasal segments in their initial syllables seem to be especially bad in the "good and Adjective" intensifier construction, as illustrated in (11).

(11) ?? good and \{ nonchallant, noxious, indolent, mild, nice, impassive, inarticulate, macabre, intelligent, mediocre, inebriated, nasty, near, ... \}

(This fact has been experimentally established, see below.) In order to deal with such data in a grammatical treatment of the "good and" intensifier, it would be necessary to "look ahead" in a derivation and assess the phonological representation of an adjective before deriving "good and Adjective". This means that the rule that derives "good and Adjective" must be a global rule.

Indeed, the rule needed to derive the surface "good and" intensifier, may require transderivational power. Consider the sequence in (12).

(12) ?? This year the Jets have been good and bad.

The question-mark judgment refers, of course, only to the intensifier sense of good and. The attributive sense (i.e., the Jets have been both good and bad), is perfectly acceptable. Perhaps the perspicuous semantic polarity of attributive good and its contrary bad "forces" the attributive reading and accordingly reduces the acceptability of the intensifier reading for sentences like (12). But this would mean that in order to avoid deriving sentences like (12), with the "good and" intensifier, the grammar would have to take account of other potential derivations -- namely, the derivation of (12) with attributive good. Thus, if a construction "good and Adjective", with attributive good, comprises a conjunction of contraries, then the derivation of the construction "good and Adjective", with intensifier good and, is transderivationally blocked.

But this is not the worst of it. The rule which derives "good and Adjective" must also make reference to facts about word frequency. At the Linguistic Society of America's Summer Linguistic Institute in 1974 an experiment was conducted in which it was found that acceptability of the sequence "good and Adjective" (in its intensifier sense) correlated r = + .79 with subjective estimates of "frequency in speech" for the adjective alone across a series of 80 adjectives. (These adjective are given in examples
5, 11, and 13 in the text.) A matched sample design was used with ten linguistics graduate students serving as subjects in each of the two groups. The obtained correlation is statistically significant for p<.0005, meaning that the more frequent a given adjective is in speech (or the more frequent people think it is), the more likely it is to be judged as acceptable in the "good and" construction. It is not clear at all how such facts would be treated in even the most elaborate notions of grammar now being considered.

In this same correlational study of word frequency and good and acceptability, an interesting reversal was found for the four adjectives near, nice, nasty, and mild. For these four, word frequency (quite high) correlated with acceptability of "good and Adjective" r = -.94 (statistically significant at p<.05). This experimentally corroborates the judgments in (11) above.

Finally, there are additional empirical indications that good and should be classed with the well-established cases of extra-grammatical phenomena. In many cases, there appears to be a "squishy" range of acceptability associated with the "good and" construction. Informants usually accept all of the adjectives in (5) in the frame "good and Adjective" immediately and then gradually begin to accept more and more of the adjectives in (13).

(13) good and 
{ derogatory, carefree, attractive, brilliant, original, long, vociferous, azure, obese, stodgy, greenish, revengeful, sexy, clandestine, small, responsible, rancid, certain, cadaverous, desirable, obscene, often, soft, stiff-backed, ridiculous, clairvoyant, reddish, slick, respectable, filial, emaciated, irate, breezy, large, fickle, dishonest, late, flippant, ...

Such a "generalization gradient" is commonly reported in investigations of extra-grammatical linguistic phenomena as in grasping the second reading of an ambiguity, as in (14a), or in parsing "garden path" sentences, as in (14b).

(14a) Murdering Cossacks can be horrifying.
(14b) The cows marched past the farmer stumbled.

In making this observation, we cannot claim to have accounted for the general phenomenon of generalization gradients. However, even without such an account, we may note the phenomenal similarity of the acceptability facts for purportedly extra-grammatical cases like good and and generally accepted extra-grammatical cases like those in (14).

2.2 "Good and" as an Analogical Form

As an alternative, we can consider the possibility that the "good and" construction is ungrammatical even though it can be acceptable. This potentially avoids the problems noted in the preceding section, which are incurred when the acceptability of "good and" is given a grammatical account. However, it leaves open how good and comes to be uttered by people if it is not grammatically a part of their language.

Beaver, Carroll and Hurtig (1976) attempted to characterize the process of creative analogy which allows speakers to utter ungrammatical sequences. They analyze analogy as an interaction of behavioral constraints on the use of language. "Optimal" linguistic productions should be easy to say, for the speaker, and easy to perceive and understand, for the listener. In trying to control behavioral complexity, the speaker may occasionally resort to the use of ungrammatical sequences, as in (15)
and (16). In sentences (15a) and (15b), the speaker seems to have "lost his place" in the course of producing the utterances.

(15a) ??I really like flying in an airplane that I understand how it works.
(15a') I really like flying in an airplane the workings of which I understand.
(15b) ??Harry and Bill didn't realize that each other was at the meeting.
(15b') Harry and Bill each didn't realize that the other was at the meeting.

When there are fully grammatical and synonymous alternative forms (as is the case for the examples in (15), namely (15a') and (15b')), these ungrammatical productions are accurately referred to as "speech errors". They are usually considered to be unacceptable (even by the speaker, on a moment's reflection).

However, another class of apparent "speech errors" present more of a problem for analysis. These forms are, like the "good and" construction, refractory to grammatical description but seem even on reflection to be fully acceptable. Bever et al. discuss examples of this type as illustrated in (16).

(16a) Harry will try and do it.
(16a') Harry will try to do it.
(16b) The three of yours's book will make you rich.
(16b') The book which was written by or belongs to the three of you will make you rich.

Bever et al. argue that (16a) is behaviorally less complex than the grammatical (16a'), and that (16b) has no alternate form (sentence (16b') is the closest).

Bever et al. refer to examples like (16a) and (16b) as analogical neologisms. That is, the forms in (16a) and (16b) are grammatically generated but they have been extended (by analogy) to take on new functions, and become thereby ungrammatical but acceptable neologisms. The form in (16a) is that of a verb phrase conjunction (c.f., Harry will try it and do it.). The form yours's in (16b) is also grammatical, as illustrated in (17).

(17a) My guitar's strings are rusted but your guitar's strings are not.
(17b) My guitar's strings are rusted but yours's are not.

However, when these forms analogically take on the functions of (16a') and (16b'), they are no longer analyzed by the system of grammar. They are accounted for by non-grammatical linguistic knowledge, namely, our knowledge about neologism and analogy.

Bever et al. relate the existence of examples like those in (16) to theories of language acquisition and the evolution of language. If there were no acceptable but ungrammatical sequences, the number of ways in which language could evolve would be severely limited: if every acceptable utterance is grammatical, then the only situation which could evoke grammatical restructuring would be the occurrence of grammatical but unacceptable forms. But by definition the occurrence of such forms ought to be rare, therefore it seems unlikely that they are the only stimulus for language change. Moreover, the way in which unacceptable grammatical forms would presumably restructure grammar would be to remove themselves from the set of generated forms. But such a restructuring would represent a net decrease in the expressive power of grammar. This does not seem to be an accurate prediction about the nature of language evolution.
Now consider the language-learning child. The experience of ungrammatical but acceptable sequences must be a commonplace for the child. Presumably, the child must construct a grammar of its language on the basis of a series of exemplars which it takes to be acceptable but which, by definition, must not yet be grammatical. As more and more of these cases are encountered, the grammar becomes elaborated.

In the case of the child's own productions, a similar analysis can be advanced. The child's language productions are, of course, defined to a great extent by his knowledge of the formal structure of his language. But his productions also seem to be structured by his knowledge about the set of utterances he has successfully decoded but not yet internalized as instantiating grammatical principles. In attempting to extend the expressive power of his developing language, the child makes use of the relatively small set of linguistic forms he has mastered by extending their use to new functions (Slobin, 1971). In many cases, these neologisms are simply way-stations and are superseded by adult forms. But in other cases, these acceptable, speakable, comprehensible but ungrammatical (by adult standards) forms may effectively become data for the child's developing theory of language structure, and for him may therefore ultimately become fully grammatical forms.

The child's acquisition of language provides the basis for a mechanism of linguistic evolution. On the one hand, ungrammatical (vis-a-vis adult grammar) sequences made available to the child as primary linguistic data may be misanalyzed as grammatical in his own emerging grammar. On the other hand, the child may spontaneously extend the function of grammatical forms he has mastered to new (and hence ungrammatical) linguistic uses (functions). These elaborations may also become incorporated into his developing grammar.

The sequence "good and Adjective" in the predicate position is a grammatically generated form. Good in such a construction has an attributive sense (recall (2c)). Therefore, a grammatical "source" for the "good and" intensifier construction exists in the language. On the creative analogy account, this independently generated form is analogically extended to have the intensifier sense. (The reason why this analogical extension occurs will be taken up in section 3 below.)

At the intonational level with respect to phonology, the "good and" intensifier is interpreted just as if it were a grammatically generated form. A general rule of stress laxing applies to adverbial modifiers, as illustrated in (18).

(18a) New York City is pretty big.
(18b) The Queen's voice is moderately squeeky.

Thus, contrast the attributive sense of pretty in (19a) with its intensifier sense in (19b).

(19a) a tall pretty woman
(19b) a pretty tall woman

The intensifying sense of good and is (typically) destressed and shortened to <gvdn> (which we will henceforth write as good'n), which contrasts with the stressed attributive sense, as indicated in (20).

(20a) The waiters are good and greedy. (attributive)
(20b) The waiters are good'n greedy. (intensifier)
The creative analogy account of the "good and" intensifier does provide some initial resolution of the grammatically difficult data presented in section 2.1. For example, assuming that ungrammatical forms can become acceptable in virtue of an extra-grammatical process of creative analogy, it is not surprising that the acceptability of such forms is in part sensitive to word frequency facts. It is at least much less surprising of these forms than of supposedly fully grammatical forms. Further, the fact that for many people the "good and" intensifier cannot be fronted is less of a mystery if good and is in fact ungrammatical. Ungrammatical analogical forms certainly need not be obliged to undergo syntactic processes which are defined only for grammatical forms.

Since the intensifier good and is usually shortened and destressed to good’n and thereby distinguished from its attributive source form, anything which might "pull apart" this reduction might be expected to reduce the acceptability of the "good and" intensifier. We have already noted that the sequence "good and Adjective" is often bad when the Adjective in question contains a nasal segment in its first syllable. (Indeed, this observation was experimentally corroborated, as noted in discussion of example 11.) The existence of a nasal segment immediately following the "good’n" reduction tends to pull apart the intensifier reduction and therefore to make the latter more confusable with good and.

The reduction can also be compromised semantically. For example, we have noted sentences like (12) (repeated here as (21) with the good’n orthography).

(21) ??This year the Jets have been good’n bad.

The semantic polarity of attributive good, and its opposite bad, forces the attributive sense. The opposition of attributive good and its contrary is so perspicuous that sentences like (21) can be somewhat unacceptable.

Granting the general viewpoint of this section, an important question remains unanswered. Namely, why does good and exist in the first place? If it is an analytical neologism, in the sense of (16), what does it analogically replace? And, furthermore, why is it less behaviorally complex than that which it has replaced? What answers there are to these questions lie in the history of good and. To this we now turn.

3.0 The Diachronic Analysis of "Good And"

3.1 Assumptions

There are two assumptions which will structure the account of the history of good and to be presented. Both of these assumptions could be somewhat controversial. Nonetheless, not assuming something one way or the other about these issues would severely limit our diachronic analysis of good and.

3.1.1 The Tendency for "Good" to be an Adverb

It is quite a common property of languages that the adjective good has an allomorph which functions as an adverbial intensifier. Thus we have data like that in (22).\textsuperscript{4}

(22a) La femme est bien cruelle. (French)
the woman is quite cruel
(22a’) La femme est bien jolie.
the woman is quite pretty
(22b) Der Mann ist schön hässlich. (German)
the man is quite ugly
(22b’) Der Mann ist schön ehrlich.
the man is quite honest
(22c) Oh čangi xərab e. (Punjabi)
(22c') Oh छाँगी सोनी e.
she quite bad is

(22d) La mujer es bien attractiva. (Spanish)
the woman is quite attractive

(22d') La mujer es bien fea.
the woman is quite ugly

(22e) Mannen är bra årlig. (Swedish)
the man is quite honest

(22e') Mannen är bra dalig.
the man is quite bad

(22f) Voh आच्छी लंबी हाय. (Urdu)
she quite tall is

(22f') Voh आच्छी लत्की हाय.
she quite greedy is

It is true that the intensifier sense for good does not obtain in all languages of the world (Japanese, Arabic and Greek are three exceptions), but the property may have the status of a statistical language universal. Good is a logical choice for an adjective to take a pure intensifier sense. It is the unmarked form of the general purpose evaluative adjective and therefore might be expected to take an intensifying sense without any presupposition of qualitative attribution (i.e., good has no reference). Our first assumption, therefore, is that there is a language universal tendency for an allomorph of the adjective good to realize a pure intensifier sense.

3.1.2 Prenominal Adjectives as Derived From Predicate Adjectives

The traditional approach to the derivation of prenominal modifiers in English (and related languages -- c.f., Arnauld and Lancelot, 1975), has been to generate them in copulative relative clauses and then to move them to prenominal position by means of a rule sequence of Relative Clause Reduction followed by Adjective Preposing (see Chomsky, 1957, pages 72-74; Stockwell et al., 1973, pages 500-501). Thus, we would derive a structure like "Adjective Noun" from an underlying form something like "Noun is Adjective".

The predicate adjective constructions in (22) are paraphrases of the transformational sources for the preposed forms in (23).

(23a) une bien jolie femme (French)
a very pretty woman

(23b) ein schon husslicher Mann (German)
a very ugly man

(23c) छाँगी सोनी हिंदी (Punjabi)
very pretty woman

(23d) una bien linda mujer (Spanish)
a very pretty woman

(23e) En bra ful man (Swedish)
a very ugly man

(23f) आच्छी लंबी आवर (Urdu)
very tall woman

(Note that these preposed forms are often ambiguous as to whether good is to be taken as an intensifier or as an attributive adjective, we will have more to say of this below.)
An alternative treatment of the derivation of prenominal adjectives has been developed by Jackendoff (1972, pages 59-62). In Jackendoff's approach, the two surface sequences "Noun is Adjective" and "Adjective Noun" are generated separately, and are not transformationally related. It would take us too far afield to thoroughly review the issues regarding these two alternative accounts of prenominal modifiers, but we can at least note that no clear choice exists. Jackendoff argues that his account allows one to draw the generalization that adjectives and -ly adverbs share certain formal properties. However, he admits that the transformational account would still be required in order to derive noun phrases with deverbal preposed adjectives (see Jackendoff, page 61; Chomsky, pages 72-75). Moreover, it is a mystery on his account why the occurrence of a sequence "Noun is Adjective" generally ensures the occurrence of a synonymous sequence "Adjective Noun". To an extent one set of generalizations is being traded for another (Jackendoff, 1972, page 62).

We will assume the traditional account of the derivation of prenominal adjectives for the purposes of discussion.

3.2 Three Stages in the History of "Good And"

3.2.1 Stage 1: Before 1350

In Old and Early Middle English there was an allomorphc form of good which took a pure intensifier sense. This form, wel, appeared freely in constructions like those schematized in (24) (recall (22) and (23)).

(24a) Wel Adjective Noun ...
(24b) Noun is wel Adjective.

It behaved like swipe, the dominant intensifier word until circa 1250, as illustrated by the sentences in (25) (for further discussion see T. Mustanoja, 1960).

(25) Wæron her stronge cyningas and wel critene (c. 900)
    here strong kings and good Christian
    were strong and good Christian Kings.
(25b) on wine wel scearpum (c. 1000)
    to a friend good keen
    to a good keen friend
(25c) His mund is get wel unkud wid pater noster and crede (c. 1220)
    his mouth is still good unknown to the Lord's Prayer and Crede
(25d) Engelond his a wel god lond (c. 1297)
(25e) A lyttill citee and a narrow, bot it es wele lang (c. 1400)

In fact, wel was the dominant intensifier word in English from circa 1250 to circa 1350 (see Mustanoja, 1960).

After 1350 the intensifying sense of wel gave way to intensifier forms like full and right. After 1400 wel and swipe were extremely rare. The primary semantic sense of wel changed from something roughly paraphrasable by modern-day very or quite to something nearer to its present connotation of goodness and health. Only a few idiomatic intensifier uses of well remain (with non-deverbal adjectives), as in (26).

(26) well { worth able aware }

3.2.2 Stage 2: 1350 - 1600
In the early fourteenth century, new intensifier uses of the adjective good began to appear, as indicated in (27).

(27a) god long knif (c. 1300)
(27b) Noon oper has ham bitwene Bote gode stronge speres and kene (c. 1330)

None other has then between but good strong spears and keen

One might speculate that the transition from swībe and wel to the new intensifier forms full and right potentiated a specific receptiveness for new intensifier words in English at this time. After wel lost its intensifier sense, English had no intensifier allomorphic with good, therefore, on the basis of the cross-linguistic principle stated in section 3.1.1, it is perhaps not surprising that another form of good adopted an intensifier sense.\(^5\)

This use of good as an intensifier continued into the sixteenth century, as shown in (28).

(28a) some good strong clubbes (c. 1535)
(28b) some good pretie skill (c. 1565)

Notice that the sequences in (28) seem to be potentially ambiguous between the intensifier and attributive senses of good. However, the editors of the Oxford English Dictionary analyze these sequences as having intensifier good. We return to the ambiguity issue below.

3.2.3 Stage 3: After 1600

The prenominal "good Adjective" form was common at the time of Shakespeare, as evidenced by the examples in (29) from his plays.

(29a) good blunt fellow
(29b) good sprag memory
(29c) good shallow young fellow
(29d) good gentle one

However, again it is quite difficult to say definitively whether these examples are examples of intensifier good or of attributive good. On the basis of context, it just isn’t clear.

In any case, it is in Shakespeare that we find the first clear example of a new "good" intensifier, namely the "good and" construction of contemporary English. Shakespeare uses the form in a pun. In the first scene of the first act of the Merry Wives of Windsor (lines 96-99), Shakespeare entertainingly represents two gentlemen in the midst of discussing a greyhound which belongs to one of them. In the exchange, the first man praises the other's dog as "good". The owner, who has just acknowledged that the dog recently lost an important race, denies this praise and scorns the dog as a "cur". The second man then conjoins the attributions of goodness and fairness to conclude that the dog is "good and fair". The joke, of course, is that a dog that is "good and fair" need not be "good" at all.

(30) Shallow: ...’tis a good dog.
Page: A cur, Sir.
Shallow: Sir, he’s a good dog, and a fair dog: can there be more said? he is good and fair.
3.3 Two Cases of Diachronic Analogy

3.3.1 Stage 1 to Stage 2

There is some reason to believe that the "good" intensifier forms at stages 2 and 3 are both analogical forms, that is, acceptable but ungrammatical analogical extensions of existent forms to a new function, namely the function of being an intensifying adverb. First, we will consider the transition between stages 1 and 2 which established the "good" intensifier as in examples (27) and (28). There seem to be two possible accounts of this change one of which can be described by purely grammatical processes and the other of which cannot.

3.3.1.1 A Grammatical Account

Old and very early Middle English had inflectional markings of case, gender, and number agreement between a noun and its modifiers. In this inflected system, the attributive sense of good would have been treated as an ordinary adjectival modifier and therefore would have been inflected to agree with the noun it modified. An intensifier good would have been treated as a monosyllabic adverbial stem and would therefore have only appeared with a single word-final -e. The examples in (31) illustrate the role of inflectional markings in specifying the constituency of attributive modifiers (the inflections are underlined).

\[
\begin{align*}
(31a) & \text{ hē eolfrēgon } Ænē geoge Brellisne mannan, swīpe Æpelne } \\
& \text{ they killed a young Briton of very noble birth } \\
(31b) & \text{ mid twām gōdum } Æpgeñum } \\
& \text{ with two good slaves } \\
(31c) & \text{ fela Æfde godre cnihte (c. 1126) } \\
& \text{ many other good knights }
\end{align*}
\]

Note that both the adjectives and the article in (31a) are inflected to agree with the masculine, accusative, singular nominal mannan. Contrast these forms with the intensifying adverbial modifier swīpe, in example (31a), and (33a) below, which does not morphologically mark case, number and gender.

In inflected English, then, the possibility existed for a morphologically unambiguous prenominal "good" intensifier. This is what would have been expected had good simply been incorporated into the intensifier system when wel fell out of use. This would be similar to present day German where we find sentences like those in (32).

\[
\begin{align*}
(32a) & \text{ Das ist ein schöner ehrlicher Mann } \\
& \text{ he is a good honest man } \\
(32b) & \text{ Das ist ein schön ehrlicher Mann } \\
& \text{ he is a very honest man } \\
(32c) & \text{ ? Das ist ein schöner hässlicher Mann } \\
& \text{ he is a good ugly man } \\
(32d) & \text{ Das ist ein schön hässlicher Mann } \\
& \text{ he is a very ugly man }
\end{align*}
\]

This account of the stage 2 prenominal "good" intensifier has the advantage that it does not require any notion of extra-grammatical neologism: it deals with the stage 2 intensifier examples of good as grammatical word formations routinely predicted by English inflectional morphology.

A problem with this account derives from the Relative Clause Reduction derivation of prenominal modifiers (section 3.1.2). If we assume this derivation of
adjectives, we must explain why it is that the sequence "good Adjective" never occurred in the predicate position with good in the intensifier sense. As indicated in (22) and (23) most languages with "good" intensifiers allow them both in predicate and prenominal positions, as predicted by the Relative Clause Reduction account. Negative evidence is always difficult to assess, it could just be that I missed these examples of good as an intensifier in the predicate position, or that the texts were lost, or any number of other things. Nevertheless, the lack of even one example is disturbing. A second account of the fourteenth century prenominal "good" intensifier relies on the principle of creative analogy.

3.3.1.2 A Neologism Account

In early forms of English, sequences of the form "Adjective Adjective Noun" did not occur. Iterated attributions were expressed in post-positioned conjunctions, as in (33).

(33a) Wæs he swiþe æpelra gebyrda and godra (c. 971)  
      was he very noble birth and good  
      He was of very noble and good birth.
(33b) þu gða þæow and ge-þræowu (Anglo-Saxon)  
      thou good servant and faithful  
      thou good and faithful servant

This word order constraint broke down in Middle English, however, and eventually permitted "Adjective Adjective Noun" sequences. Thus at about the time that swiþ and wel dropped out of use, forms superficially identical to those in (27) and (28) began to appear anyway. Thus, a good long knife, as in (27a), could have been grammatically generated with good taking an attributive sense.

Following the principle of creative analogy, outlined in section 2.2, "Adjective Adjective Noun" forms like good long knife provide potential sources for a "good" intensifier. That is, the grammatically generated good long knife with attributive good, could be extended analogically to fill the intensifier gap created by the disappearance of wel. We know at least that the prenominal intensifier sense of good did begin to appear in English, and just at about the time that the shift in word order constraints began to allow grammatical iterations of prenominal attributive adjectives.

But this analysis of the stage 1 to stage 2 transition, raises other questions. Why, for example, wasn’t another allomorph of good selected as the new intensifier? In particular, why wasn’t goodly the analogical replacement for wel. Goodly at that time was a grammatically generated form and therefore ought to have been available to the processes of creative analogy. However, it did at that time, and indeed always did, connote "goodness", as illustrated in (34).

(34a) the goodliche wordes of dame Prudence (c. 1385)  
(34b) she wolde alwey so goodely (c. 1385)  
(34c) any goodly word (c. 1385)  
(34d) a goodly person (c. 1595)

The form good may have been semantically more unmarked than the form goodly. Perhaps the semantic distinctiveness of goodly was an obstacle to its taking on new analogical senses via creative analogy.

Another possibility is that grammatical forms can be extended via creative analogy more easily when they are recent acquisitions of a language. Thus, circa 1350, prenominal good in the sequence "good Adjective Noun" would have been more
susceptible for analogical extension to the intensifier function than the more established form *goody*. Unfortunately, there is no independent way to assess either of these possibilities within the context of a single case study.

The account of the prenominal stage 2 "good" intensifier, based on the principle of creative analogy, would assert that with the decline of the *wel* intensifier, another form of *good* was inserted into the English intensifier system. The unmarked form *good* was selected. The structure "*good* Adjective Noun" was independently available (grammatically generated) due to the recent relaxation of word order constraints and derived from some structure like "Noun is *good* and Noun is Adjective". This form was extended in virtue of creative analogy to take on the intensifier sense.  

3.3.2 Stage 2 to Stage 3

Whatever analysis is adopted for the first transition, it is a fact that "*good* Adjective Noun" sequences occur in English during stage 2 with the intensifier sense of *good*. Another fact is that in the late sixteenth century, the modern "*good* and" intensifier appears. A striking example of this was given in (30). We cannot really say why the prenominal "*good*" intensifier declined to be replaced by the predicate "*good* and" intensifier, although ambiguity is a possible motivation.

We have noted above in discussion of examples (23), (28) and (29) that "*good* Adjective Noun" frequently seems to be ambiguous between intensifier *good* and attributive *good*. The editors of the *Middle English Dictionary* analyze (35a) and (35b) as intensifier instances, but (35c) as an attributive use.

(35a) Gôde olde fyghtyn was there (c. 1400)  
(35b) a goode high wal with toures (c. 1448)  
(35c) seth in good old ale (c. 1450)  
(35d) gôde faire Whyte (c. 1390)

Indeed, (35d) may be a pun. From the context, one might assume on reading *gôde* that Chaucer is observing that Whyte was a *gôde wif*, a "*good* woman", or, somewhat sarcastically, "not a whore". However, the text is not *gôde Whyte*, but rather *gôde faire Whyte*. Now, the reader must consider the intensifier sense of *gôde*. Resultingly, it is not clear whether Whyte is indeed a *gôde wif* (a virtuous woman) who is also "fair", or merely a woman who is rather fair (but not necessarily a *gôde wif*). (It is curious that Shakespeare's pun turns on a rather similar point of confusion, recall (30).)

It is possible that the apparent potential ambiguity of forms like those in (28), (29) and (35) presented enough behavioral complexity for speakers and listeners of stage 2 English, that a new intensifier form was recruited. One must concede two points, however. First, the stage 3 predicate "*good* and" construction also a potential morphological ambiguity. Second, the devices that work to effectively disambiguate the stage 3 "*good* and" construction, namely stress, phonological shortening, and context of use, or comparable devices, would presumably have been available to disambiguate the stage 2 prenominal "*good*" intensifier.

One might want to say that language change is "blind", in a sense, and that given sufficient motivation (e.g., behavioral complexity of some sort), creative neologism blindly applies, selecting a new form which may or may not even be an improvement over the old rejected form. On this view, it is immaterial that the stage 3 predicate conjunction "*good* and" intensifier admits of ambiguity in just the sense that the stage 2 prenominal "*good*" intensifier does. Unfortunately, as before, this hypothesis cannot be independently assessed in a single case study.
Another question regarding the stage 2 to stage 3 transition is why the predicate conjunction, and not some other potentially available allomorph of good, was selected. Three other possible forms suggest themselves. First, a prenominal "good’n" intensifier, as illustrated in (36b). Second, a new "well" intensifier, as in (36c). Finally, a "goodly" intensifier, as in (36d).^6

(36a) The waiter is good’n greedy.
(36b) The good’n greedy waiter ...
(36c) The waiter is well greedy / The well greedy waiter
(36d) The waiter is goodly greedy / The goodly greedy waiter

The use of goodly as an intensifier at the turn of the sixteenth century would have been an unlikely solution for two reasons. First, goodly, as we have noted before, always had "goodnesses" as part of its semantics. Having been passed up in stage 2, it was also passed up in stage 3. Secondly, at the turn of the sixteenth century goodly was already becoming an anachronism, and simply does not exist in present day English. The first of these reasons also applies to well. By the turn of the sixteenth century, well also had "goodnesses" as part of its semantics. This leaves the prenominal good’n alternative, as in (36b).

The prenominal conjunction, like the predicate conjunction, is independently generated by the grammar, as in (37).

(37) gode and vsuell money of England (c. 1426)

In fact, the only difference between the two, following our assumption of Relative Clause Reduction derivation for prenominal modifiers, is that in the case of the prenominal conjunction, an extra rule of modifier preposing must apply (relative to the predicate conjunction structure for which this rule does not apply). Hence, while no real argument predicts the predicate conjunction solution over the prenominal conjunction solution, perhaps, from the fact that the former was selected, we learn that more basic, less derived forms are preferred as analogical solutions. (Note, in particular, that the grammatical "source" for the stage 3 intensifier, the predicate conjunction structure, is itself a less derived paraphrase of the grammatical "source" for the stage 2 intensifier.)

3.4 Related Cases of Analogy

The preceding discussion suggests some characteristics of creative analogy, namely that it selects a existent form and assigns it a new meaning (or function), one which it would not have on the basis of its grammatical analysis. Further, it may be that forms whose semantic properties are less distinctive may take analogical senses more easily (in particular, that unmarked and general adjectives most easily take pure intensifier senses), that recent acquisitions of a language are most available for analogical extension, and that less derived forms are the ones first considered (or preferred) by the processes of analogy.

A further question is what status these processes of creative analogy have in subsequent instances of neologism. That is, once an analogic form has become established in the language is it in any sense an "extra-grammatical" rule? Carroll and Tanenhaus (1975) suggested that much of what has been called the "word formation component" (Halle, 1973) of the grammar in fact consists of extra-grammatical "rule-schemes" for lexical item creation. Carroll and Tanenhaus argue that word formation rules cannot be stated within the theory of grammar and that indeed they should not be stated in theory of grammar. One of their arguments is that word
formation rule-schemes appear in a language diachronically as "fads". That is, a rule-scheme appears, by means of it several new lexical items are created, which may or may not become permanent words. Ultimately, the rule-scheme disappears, usually leaving only a few new words as its epitaph.

Assuming the construct of rule-schemes, we might ask whether the "good and" process of creative analogy was in any sense productive in English. If another adjective had developed a semantic sense of *good* (unmarked and general), would it have formed a "good and" intensifier. In at least two cases, this has apparently happened.

In Old English the adjective *pretty* had as its primary sense something paraphrasable as "cunning". From the fifteenth to the eighteenth centuries, however, it came to be a general epithet of admiration and appreciation. Thus (38) could be glossed as "good men", "nice men", or "fine men".

(38) praty men  (c. 1400)

By the middle of the sixteenth century we find an example of *pretty* used as an intensifier, as in (39).

(39a) pretie hardie fellow  (c. 1565)
(39b) pretty cunning sleights  (c. 1625)

Finally, by the early seventeenth century we find the "pretty and" construction, taking the same intensifier sense as the "good and" construction, illustrated in (40).

(40a) pretty & sharp  (1615)
(40b) pretty & warme  (1633)
(40c) pretty & cleere  (1633)

There no longer is a "pretty and" construction in English although pretty maintains its intensifier sense. Generally, when the word appears before a noun it has the attributive sense (which now means "somewhat attractive"), and when it appears before an adjective it functions as an intensifier. (It also has a slightly different stress pattern, see example (19) above and discussion.)

Nice provides a far more recent example of the same process. Until the mid-eighteenth century nice actually connoted negative properties. However, in the latter part of the eighteenth century nice became a general epithet of approval and appreciation. By the middle of the nineteenth century we find the "nice and" construction appearing in print as in (41).

(41) You'll be nice and ill in the morning.  (1846)

Indeed, nice and is quite common in modern colloquial English. The alternative form nicely still does exist in English, but it, like goodly connotes "nicenesses" and is less acceptable than nice and as an intensifier.

(42a) Well, Marc Antony is nice and horny.
(42a') ??Well, Marc Antony is nicely horny.
(42b) The guards here are nice and stupid.
(42b') ??The guards here are nicely stupid.
4.0 Language Evolution:
A Hypothesis About Lexical Structure

The traditional distinction between "competence" and "performance", and more particularly that between "grammaticality" and "acceptability", can provide some initial motivation and machinery for a dynamic model of language growth and evolution. From such a viewpoint, our formal knowledge about the structure of language competes with the exigencies, needs and limitations of language use. This dialectic analyzes certain fully grammatical forms as unacceptable and certain acceptable forms as ungrammatical.

Presumably, language-learning children of each succeeding generation attempt to optimize the "fit" of the grammar they construct to the primary linguistic data they encounter. Thus, there will be a tendency over time for grammar as an epistemological structure to evolve so as to bring more forms under the grammatical category. However, by assumption, the processes of creative analogy reiterate and again bring the synchronic state of language as it is used into disequilibrium with the synchronic state of grammar. Previous investigations of "misfitting" forms (i.e., grammatical but unacceptable or acceptable but ungrammatical) have limited themselves to the synchronic state of contemporary language. But this limits what they tell us about the underlying nature of the dialectic between language use and language structure.

In a study of the history of English relative clauses, Bever and Langendoen (1971) attempted to characterize the role of language perception in the evolution of grammar. In their analysis, when the expanding inflectional paradigms of early Middle English declined, word order constraints emerged which were predictable on the basis of behavioral principles of language comprehension. Presumably, then, there was a time when language learning children accepted uninflected sequences which were perceptually analyzable (in virtue of word order) but ungrammatical according to the current adult grammar.

However, linguistic evolution is apparently not always that simple. Multiple embeddings have been grammatically possible in English over many centuries, and have remained unacceptable. Such cases may simply represent counterexamples to the dynamic evolution model of language, but they could also represent a new type of evidence bearing on the universal nature of language. If some property of grammar (in this case its capacity for unlimited center embedding) has been in conflict with the behavioral implementation of language for centuries and yet has not withered, that property must be central to what language is. Indeed, many linguists would claim, on the basis of other evidence, that recursiveness is a defining property of what language is.

This brings us back to the "good and" construction. Like the case of recursive embedding, and unlike the Bever and Langendoen analysis of relative clauses, the "good and" construction seems to be a misfitting of acceptability and grammaticality that has not been equilibrated. On the analysis presented here, the "good and" intensifier of modern English has been an acceptable but ungrammatical part of the English language since the time of Shakespeare (in fact, even its direct ancestor form is arguably acceptable but ungrammatical, see section 3.2.1). There are two ways to interpret this.

First, we can view the "grammatization" of the "good and" intensifier as "slow" -- taking thus far almost 400 years and not yet complete. This view has little to recommend it. Unless further facts come to light, it would be difficult to explain away why the form has remained ungrammatical (even though acceptable) for nearly 20 generations of language-learning children. Perhaps, there has been grammatical restructuring in each of these generations but it has been incremental and effectively
invisible although real. (I think we would not want to claim that the "good and" construction has remained ungrammatical but acceptable throughout these generations, but that very soon it will become incorporated into the grammar. This alternative seems to be too much like claiming that an epistemological system has a memory of those beings who have constructed it.)

Indeed, the view that seems most reasonable is that the "good and" construction is the converse of the case of recursive embedding in grammar. The existence of recursive self-embedding in the grammars of human languages (even though people cannot make use of these structures) is evidence that recursive self-embedding is a defining property of human languages: it exists in the domain of grammaticality in spite of acceptability. Good and is in a sense the converse case. Good and remains ungrammatical in spite of its full acceptability. Thus, despite the fact that in the normal sequence of things, acceptable but ungrammatical forms are incorporated into the developing grammars of children, certain forms apparently cannot be. Such forms are important because they demonstrate what a grammar cannot be. Something in the structure of language has prevented the grammar of English to equilibrate to the acceptable but ungrammatical "good and" construction.

We must now turn to the task of mapping out just what it might be about the "good and" construction that cannot be assimilated into the grammatical structure of language. Here again, we run into the difficulty inherent to the study of a single case: we have no independent basis for determining which of the properties of the "good and" construction are effective in blocking its grammaticization. But consider this possibility. One way the "good and" construction could have been grammatized would be for it to have become a single lexical item. Indeed, it seems that this is precisely what speakers of English attempt to do in using the construction when they reduce good and to good'n. For the reasons presented in section 2.1, we must conclude that the attempt to grammatically lexicalize good and has failed. The question then is why this should be so. I will claim that good and violates a general condition on what can become a grammatical word and that for this reason it remains an ungrammatical (although acceptable) "word".

Recent approaches to the synchronic study of the lexicon have attempted to analyze the underlying "syntactic" structure of surface lexical items (e.g., Morgan, 1968; McCawley, 1968). Of course, not all linguists subscribe to this "generative semantics" approach (e.g., Fodor, 1970; Katz, 1972; Halle, 1973). Nevertheless, within the approach certain generalizations about lexical structure come to light. For example, Morgan (1968) argued that lexical items can only replace complete constituents in underlying pre-lexical structure. According to Morgan, there can be no word sneep that combines the elements underlying saw and soldier, as in (43a), to render the sentence (43b).

(43a) John saw Mary laying a wreath at the grave of the unknown soldier.
(43b) * John sneeped Mary laying a wreath at the grave of the unknown.

Morgan's analysis is synchronic, but perhaps it can be extended to describe diachronic restrictions on what can be a possible word. With this in mind, we return to the "good and" construction. Recall that the grammatical source of the "good and" analogy is a conjoined structure: ((Adjective) and (Adjective)). Thus, the right-most Adjective plus the conjunction and do not define a constituent. Because of this, the two elements cannot be lexicalized.7

In view of this proposal, consider some familiar word formations in English, illustrated in (44).
(44a) like God ==> goodly
(44b) by our Lady ==> bloody
(44c) God be with you ==> goodbye

In (44a) a comparison phrase becomes a single word, in (44b) it is a prepositional phrase that is lexicalized, and in (44c) it is an untensed sentence. In each case, the material which later becomes a single lexical item corresponds to a constituent. The "good and" construction violates this condition, and has never become a grammatical word.\(^8\)

5.0 Conclusion

In their study of speech errors, Bever, Carroll and Hurtig (1976) concluded that ungrammatical but acceptable forms play a fundamental role in energizing the dialectics of language acquisition and evolution. This study of the English "good and" intensifier suggests that certain synchronically ungrammatical but acceptable forms cannot be incorporated into the structure of grammar. While they may create "pressure" in the evolutionary dialectic of grammaticality and acceptability, they do not participate.

Just as chronically grammatical but unacceptable forms, like center embeddings, can reveal the essential properties of grammar, so can chronically acceptable but ungrammatical forms. That the former are continued in grammar, despite their unacceptability, may reflect the importance of properties like recursive center embedding to the structure of grammar. That the latter remain ungrammatical despite their acceptability, may indicate that grammatization of them would violate a basic property of grammar (e.g., that word formation can only operate on constituents).

The present paper sketches a program for diachronic studies of these misfitting forms. Such studies could potentially provide a new sort of evidence bearing on the most basic universal properties of grammar. However, in order to really assess these proposals, further cross-validating analyses must be performed.

Footnotes

1 The point is that it can only have such a corresponding form if good is taken as an intensifying adjective and not, as is more likely in sentence (1), as an intensifying adverbial, see below in text. There are a few exceptions to this: good hard work, good long climb, good long while.

2 This appeal to semantics is only a heuristic adopted here to help motivate the distinction drawn between intensifier "good" and attributive "good". The real issue of the semantics of the "good and" intensifier will not be addressed.

3 Clearly, our phonological (grammatical) knowledge can be applied to sequences which are syntactically-semantically ungrammatical (e.g., nonsense words). The further assumption here is that phonological processes conditioned by typically syntactic properties (i.e., being an adverbial, in (18) and (19)), can also apply when these properties are assigned by extra-grammatical systems, like neologism.

4 Some qualification may be necessary here. There is some question whether in every case the relation between the attributive "good" and the intensifier "good" is truly morphological (e.g., in French bon versus bien). The relation may be still more abstract, i.e., semantic -- see section 3.4.

5 Note though that the prenominal intensifier sense of good is still acceptable
in some dialects in the United Kingdom (according to the O.E.D.). There are also some frozen idioms, as noted in footnote 1. Indeed, in these cases the prenominal intensifier "good" seems more acceptable than good and:

the good hard climb ... ?the climb was good and hard
the good long wait ... ?the wait was good and long

Some dialects also allow the form "Adjective good", as in,

He is drunk good.

6 Another possibility would have been a "well and" intensifier. There might have been such a form as suggested by (i) through (iii).

(i) The husbode knew the estris wel and fyn (c. 1385)
(ii) But you are well and warm and so hold you (c. 1571)
(iii) that's all well and good (modern)

These "well and" forms were limited. Well and fine appeared c. 1350 through c. 1500 but only with the adjective fine. Similarly, well and warm, c. 1500 through c. 1700, and the modern well and good seem to be unproductive and idiomatic.

7 If the rules of pre-lexical syntax allowed the Adjective in the structure "good and Adjective" to be moved out of the coordination, the "good and" construction would be rendered a constituent, and therefore could become lexicalized. Morgan (1968) argues that Ross's (1967) universal constraints on rules of syntax apply to pre-lexical rules. On this basis, he argues that saw and soldier in (43) could never become a constituent, and therefore never be lexicalized as sneeded. In the case of good and the relevant constraint is the Coordinate Structure Constraint. This constraint prohibits moving a conjunct out of a coordinate structure. Hence, no rule can render good and a constituent.

8 Indeed, consider this line of analysis as applied to the historical "pretty and" intensifier. Pretty and, like good and, could not become lexicalized. What apparently happened was that the single item pretty was reanalyzed in grammar such that it could act as an adverbial intensifier (when preceding an adjective) or as an adjective (when preceding a noun -- see discussion above). This grammatical reanalysis did not involve the incorporation of pretty and and into a single lexical form, but ultimately did supplant the analogical "pretty and" form.

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MONOPHTHONG AND DIPHTHONG RELATIONS: INTERNAL EVIDENCE

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In current phonological theory, motivation for sound change is often cast in terms of 1) the phonetic plausibility of the change in question, 2) the presumed phonological universals involved, 3) presumed universal restrictions on rule ordering or 4) types of possible rules, rather than in terms of the internal economy of the phonological system which is undergoing modification. The status of the system as a whole and the interrelation of its parts has been somewhat neglected even though the relevance of teleological considerations has been emphasized as early as 1928 in Roman Jakobson's famous short article, 'The concept of the sound law and the teleological criterion.'

Jakobson is a prominent and influential member of the Prague school of European structuralists. Michael Lane in his anthology, Introduction to Structuralism (1970, p. 17ff) has summarized the attitude of the European structuralists toward explanation. Lane says that structural analysis is centrally concerned with synchronic structures, seen not as determined by any historical process but by the network of existing structural relations, expressed by a set of rules. Structuralism is effectively 'anti-causal' in its pure form, substituting laws of transformation for the notions of cause and effect. In this approach, language change is represented by rule change. According to Lane, objections have been made to this analytical method since, conventionally, scientific explanation as opposed to description has always dealt with causes and, critics say, the elimination of cause and effect prevents the possibility of satisfactory, adequate explanation.

In linguistic terms, changes in rules reflect changes in the distribution of distinctive units but do not tell us by themselves or by their ordering (if it can be determined) why rules should enter the grammar, become more or less general, or disappear. If rules can enter and leave the grammar without motivation, the effect is one of random and destructive change without system as Saussure thought. Jakobson has proposed that phonological components form true systems which maintain an equilibrium among the members such that the system is question is able to exhibit a stable set of contrasts. If this equilibrium is disrupted, a series of sound changes tends to occur until a state of renewed equilibrium is reestablished. (Jakobson, 1972, p. 136). The idea of equilibrium suggests that the stable set of contrasts and the means by which the contrasts are maintained are separate and distinct ideas which should be separately described and have an explicit set of correspondence statements to link them. This means one must determine how many contrasts exist and what their phonetic correlates are, instead of combining the two kinds of description into one system.
In line with the foregoing comments, this paper will examine some aspects of a sound change in the Low German dialect of Soest, Westphalia, in order to test the hypothesis that local equilibrium disruption and subsequent readjustment can offer more insight into certain kinds of sound change and into the relationships of monophthong and diphthong sets than universalist or rule ordering arguments.

The sound change in question is the change called Hiatschärfung in Low German. The change occurred in a number of South Westphalian dialects and has been given a good deal of attention by Low German dialectologists. The term refers to the appearance of a short vowel plus a fortis velar voiced fricative (in Soest) in positions where both synchronic and comparative considerations would lead the investigator to expect a long vowel alone, that is, in positions of hiatus before a vowel. In the Soest dialect, the complex [short vowel + γ] is otherwise the reflex of Middle Low German [short vowel + -gg-]: MLG segge, Soest [sɛɣə] 'ich sage', OLG roggə, Soest [rɛɣə] 'roggən' while the complex [long vowel + γ] is the reflex of either an inherited long vowel or a short vowel lengthened in open syllables plus 'LG -g: MLG hōge, Soest [hɔɣə] 'hoch', Soest [dɔɣə] 'tage'. According to Holthusen, Hiatschärfung appears only in open syllables before a vowel synchronically, i.e., medially but not finally in a word. (Holthusen, 1886, p. 33). Only inherited long vowels or diphthongs participate in this sound change; vowels lengthened in open syllables which occur in hiatus from a lost medial -d- do not show Hiatschärfung. (See Table 1).

The Verschärfung which appears in Faroese and which has been the focus of recent discussion in relation to Stephen Anderson's hypothesis of 'local ordering' of phonological rules is very similar to Hiatschärfung. In Faroese the Verschärfung also develops only in inherited long vowels in hiatus while lengthened or inherited long vowels in hiatus before a lost consonant do not show Verschärfung.

In Faroese, additionally, the Verschärfung appears in final position: Faroese: [brɔva] 'to dwell' [knuː̯a] 'knee', [kɛrgv:] 'cow' but [vʊ́ja] 'dedicate' (ON vɪ́jga) [sʊ́jin] 'cooked' (ON sɪ̞jːa).

The traditional explanation for the development of Verschärfung which is followed by Anderson (1971) and Roe (1965), among others, is that a glide developed between the vowels in hiatus. The glide then doubled and became a true fortis consonant or consonant cluster preceded by a short vowel. This explanation is based on the phonological relations of contiguous segments but the lack of Verschärfung in the positions of hiatus before a lost consonant remains unexplained. The usual assumption is that the Verschärfung rule entered the grammar, affected the relevant forms, and was lost before the medial and final consonants were lost. However, no motivation for the addition or the loss of such a rule appears to be offered.

I have argued at length elsewhere (Grundt, 1974, 1975, 1977) that these two changes of Verschärfung and consonant loss could have been simultaneous and interdependent changes, and that the motivation for Verschärfung (or Hiatschärfung) was to maintain a structure contrast
### TABLE I

**Soest, Westphalia**  
**Low German**  
**Vowel Correspondences**

#### Short vowels:

**Middle Low German**

- i
- U, O
- u
- ø, e (< a + i)
- o
- a

**Soest**

- I
- Y
- U
- ë
- ø
- ø

#### Short vowels — lengthened:

**Middle Low German**

<table>
<thead>
<tr>
<th>Syll.</th>
<th>Open</th>
<th>Before</th>
<th>Hiatus (lost -d-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>t₁. ø:\ (&lt; i, a + i)</td>
<td>ia</td>
<td>i:ø</td>
<td>i:, UI</td>
</tr>
<tr>
<td>t₁. ø:\ (&lt; U)</td>
<td>yø</td>
<td>y:ø</td>
<td>y:, UI</td>
</tr>
<tr>
<td>t₁. ø:\ (&lt; u)</td>
<td>uø</td>
<td>u:ø</td>
<td>(no examples)</td>
</tr>
<tr>
<td>t₁. e:\ (&lt; ø)</td>
<td>ea</td>
<td>ea</td>
<td>e:a</td>
</tr>
<tr>
<td>t₁. ø:\ (&lt; ø)</td>
<td>øø</td>
<td>øø</td>
<td>ø:a</td>
</tr>
<tr>
<td>t₁. ø:\ (&lt; o)</td>
<td>oø</td>
<td>oø</td>
<td>o:a</td>
</tr>
<tr>
<td>t₁. ø:\ (&lt; a)</td>
<td>aø</td>
<td>aø</td>
<td>a:o</td>
</tr>
</tbody>
</table>

#### Inherited long vowels and diphthongs:

**West Germanic**  
**Middle Low German**  
**Regular Reflex**  
**Hiatus Reflex (Hiatschärfung)**

<table>
<thead>
<tr>
<th></th>
<th>i:</th>
<th>u: + i</th>
<th>u:</th>
</tr>
</thead>
<tbody>
<tr>
<td>i:</td>
<td>i:</td>
<td>i:</td>
<td>UI</td>
</tr>
<tr>
<td>u:</td>
<td>U:</td>
<td>U:</td>
<td>IU</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>a: + i</th>
<th>a:</th>
</tr>
</thead>
<tbody>
<tr>
<td>e:</td>
<td>e:\</td>
<td>e:\</td>
</tr>
<tr>
<td>e:\</td>
<td>e:\</td>
<td>a:\</td>
</tr>
<tr>
<td>e:\</td>
<td>e:\</td>
<td>o:\</td>
</tr>
<tr>
<td>a:\</td>
<td>a:\</td>
<td>--</td>
</tr>
<tr>
<td>o:\</td>
<td>o:\</td>
<td>o:\</td>
</tr>
<tr>
<td>o:\</td>
<td>o:\</td>
<td>o:\</td>
</tr>
<tr>
<td>a\</td>
<td>a\</td>
<td>a\</td>
</tr>
</tbody>
</table>

**Hiatus Reflex**

- IY  [frëyn] 'freien'
- YY  [dryø] 'drohe'
- UY  [ryyn] 'reuen'

**Hiatus Reflex (Hiatschärfung)**

- ëY  [fëyölic] 'veränd-
- ëY  [brëyn] 'bähen' lich'

**Hiatus Reflex**

- ëY  [mëyø] 'muhe'

**Hiatus Reflex (Hiatschärfung)**

- ëY  [ëy] 'eier'
- ëY  [høyn] 'hauen'
- ëY  [høyn] 'heuen'
between one-syllable and two-syllable units by structure exchange: CVCC vs. CVV-V and CVCC# vs. CVV#. Assuming this analysis to have been the case, the reason for Anderson's ordering paradox becomes clear: it is a synchronic reflex of a diachronic paradigmatic change which occurred simultaneously and was dependent upon a syntagmatic change. That is, a sequential ordering of rules that represent simultaneous and interdependent changes will result in an ordering paradox such as Anderson's:

1. Dissimilation (Verschärfung) must precede spirant deletion.
2. Glide epenthesis must precede dissimilation.
3. Spirant deletion must precede glide epenthesis.


If synchronic ordering paradoxes can be explained by the wish to describe sequentially sound changes which have occurred simultaneously, it may be possible to examine other aspects of the Soest vowel system in order to determine if any other simultaneous changes may have occurred that would give rise to ordering paradoxes if their interrelations were recognized.

A number of sound changes occurred in the vowel systems of the Low German dialects - and, therefore, of Soest - during the Middle Ages: reduction of final vowels, open syllable lengthening, loss of medial -d-, Hiatschärfung, diphthongization of old long vowels. Can these changes be related chronologically to each other? The historical documents are not entirely unambiguous: open syllable lengthening and final vowel reduction are assumed to have occurred very early with the first attested evidence in the 12th century. According to Müller, the first evidence for the loss of medial -d- in Low German is in a 13th century document with traces appearing in 15th century documents and numerous examples from the 16th century. The 16th century satirist, Daniel van Soest, shows both the loss of -d- and the existence of Hiatschärfung in his work. (Müller, 1960, pp. 24, 29, 30). Lasch quotes many proper names from the 14th century onwards which show the loss of medial -d- and she remarks that the loss was early but after open syllable lengthening of short vowels. (Lasch, 1914, p. 169ff). Hiatschärfung itself is attested from the 14th century. In Soest the diphthongization of the open mid vowels was very early but the diphthongization of the high and close mid vowels was late with evidence appearing after 1685. (Müller, 1960, p. 27, fn. 10). The lengthening of short vowels in open syllables does not seem to have affected all the short vowels at the same time. In Middle English the non-high vowels /a, e, o/ were lengthened first and the high vowels /i, u/ were lengthened later and in a more restricted area, according to Wyld. (Wyld, 1914, pp. 112-113). Wiesinger remarks that open syllable lengthening in dialects of Central German and Lower Alemannic and Southern German, Bavarian and Swabian dialects was only partly carried out: in some dialects only a was lengthened, in others a, e, o and least frequently i, u. The diphthongization patterns are extremely complex in the German dialects but the general trend seems to be that non-high vowels were much more susceptible to open syllable lengthening. (Wiesinger, 1970, p. 23).
If, as V. M. Schirrmunski claims, the lengthening of short vowels in open syllables was responsible for the elaborate diphthongization patterns in the German dialects, then it can only have been because the new lengthened vowels were a threat to the distinctiveness of the old long vowels. It would seem plausible to link the diphthongization of specific long vowels to specific lengthened vowels with the exception of the low vowel a which, Wiesinger claims, is isolated in the German vowel systems. (Schirrmunski, 1962, p. 179ff) (Wiesinger, 1970, p. 31).

We have noted that the diphthongization of the open mid row of inherited long vowels in Soest occurred early. However, this diphthongized open mid row of vowels had its source in the close mid vowels of early Middle Low German. This is shown by the modern Soest reflexes of loan vowels where it is clear that the MLG open mid and close mid vowels have exchanged vowel heights. Holthausen gives the following correspondences: (Holthausen, 1886, p. 57).

<table>
<thead>
<tr>
<th>Loan vowel</th>
<th>Soest vowel</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>e:</td>
<td>œ</td>
<td>[poɛta] 'Peter', [ʃɛva] 'fieber'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[ɛksprœs] 'express', [kafoɛ] 'kaffee'</td>
</tr>
<tr>
<td>i:</td>
<td>ui</td>
<td>[maskœna] 'maschine', [muïta] 'miete'</td>
</tr>
<tr>
<td>o:</td>
<td>ɛo</td>
<td>[mezœde] 'mode', [ɾɛœza] 'rose'</td>
</tr>
<tr>
<td>ö:</td>
<td>œ</td>
<td>[klœosta] 'kloster'</td>
</tr>
<tr>
<td>u:</td>
<td>iu</td>
<td>[riœzakn] 'rüsch'en', [klœsta] 'klöster'</td>
</tr>
<tr>
<td>ü:</td>
<td>ui</td>
<td>[riœus] 'gruss' (&gt;*[œːɾt] expected)</td>
</tr>
</tbody>
</table>

As Table I shows, the vowels which are now used to correspond to the modern close mid vowels of loan words are the Soest reflexes of MLG open mid vowels. This suggests that the vowel height exchange of the inherited long mid vowels was a double paradigmatic response to the open-syllable lengthening of the short mid vowels /e, ɛ, o/ as I have argued at length elsewhere (Grundt, 1974, 1975). As a direct response to a threat to distinctiveness, the vowel height exchange by reciprocal diphthongization would logically have occurred simultaneously with open syllable lengthening. Since the documents show early diphthongization in the open mid row and early open syllable lengthening, they do not contradict this interpretation.

Here we have a situation similar to the Faroese Verschärfung/ consonant loss problem which gave rise to Anderson's ordering paradox; we would predict that an ordering paradox ought to arise here as well. The difference is that Anderson has interpreted the Verschärfung in Faroese as primarily a syntactically conditioned change whereas I have interpreted a similar situation in Soest as a paradigmatic change. The relevant position in the Soest situation is the open syllable but the vowel height exchange and diphthongizations have occurred in all positions, not just in open syllables so that the proposed relationship is obscured. However, in certain dialects of Frisian, it is the case that in dialects with open syl-
lable lengthening long vowels tend to diphthongize in open syllables but remain monophthongs in closed syllables, thus supporting the proposed direct relationship between diphthongization of old long vowels and open syllable lengthening of short vowels. (Siebs, 1889, p. 199).

From the HiatschHärfung reflexes in Table I, it is clear that these reflexes developed from monophthongs before the diphthongization of the high and close mid long vowels. This means that HiatschHärfung in Soest occurred before 1685 since it was after that date that we find the high and close mid vowel diphthongs attested. For example, the HiatschHärfung reflex of *MLG /i:/ is [iy] which must have come from [i:], not Soest [ui]. Likewise, the reflex of *MLG /u:/ is [Yy] which could not have come from modern Soest [ui] and, in addition, shows a separate reflex from that of *MLG /i:/ which the modern Soest long vowel reflexes do not. The Faroese VerschHärfung shows that diphthongs may participate in this sound change as such. In Faroese it is clear that the VerschHärfung occurred after diphthongization of the long vowels: OMS /u:/ = Faroese [yU], but [kriyw] 'cow'. In the Faroese example, one could say that the front quality of the first diphthong element has become the characteristic of the short vowel while the back rounded features of the second diphthong component has been split into a velar stop plus a rounded spirant. Rischel has commented on this apparent development. (Rischel 1968, p. 113).

Table I shows that only those vowel reflexes which must have been high and high mid long monophthongs at the time of HiatschHärfung took part in the sound change. This seems rather odd. Why shouldn’t the open mid row of long vowels - diphthongal or not - participate in the HiatschHärfung? On the assumption that no sound change is unmotivated and that paradigmatic changes can occur in response to threats to their distinctiveness, we must conclude that no threat existed to the contrastiveness of the open mid vowels from the loss of medial -d-. Those reflexes which did contribute HiatschHärfung reflexes show a complete short vowel system, minus the isolate low vowel a:

\[
\begin{array}{ccc}
I & Y & U \\
ε & æ & ə \\
\end{array}
\]

It follows, then, that there did not exist a set of short vowels to correspond to the open mid vowels; therefore, their contrastiveness was safe.

Short vowels lengthened before lost -d-. We have assumed that the non-high vowels lengthened in the open syllables of disyllabic words, including those with -d-. In their modern reflexes in hiatus in Table I these non-high vowels are centering diphthongs with lengthened first members. However, the high vowels have become completely long before this hiatus or have been reanalyzed as old long vowels: Soest [snI-a] 'schnitte' [snuə] 'brodschnitte', [ruə] 'rüde, hund' ([-ə] means the form is disyllabic). If the loss of -d- occurred before open syllable lengthening of the high vowels, the HiatschHärfung response would have been more appropriate and economical.
than a mass diphthongization of old long vowels since only one position of contrast was at issue and it could be handled as the problem of hiatus vs. non-hiatus in two-syllable words. Therefore, a structure exchange of hiatus would amount to a minor restructuring of the set of contrasts instead of wholesale changes in the long vowel system. It follows from this reasoning that the loss of medial -d- and Hiatschhörfung as its response occurred after open syllable lengthening of non-high vowels and the exchange of vowel heights of the mid vowels but before the open syllable lengthening of high vowels. Otherwise, we might expect the high vowels in the hiatus from lost -d- to be centering diphthongs with lengthened first elements like the non-high lengthened vowels. According to Lasch, these diphthong reflexes of lengthened vowels are very early and very stable, their attestation being late because centering diphthongs struck early writers as too changeable to write. (Lasch, 1914, p. 35).

We can now hypothesize that the explanation of late diphthongization of the high and high mid vowels in Soest was due to late open syllable lengthening of the short high vowels. Again, we will assume that these changes were simultaneous and interdependent: open syllable lengthening of /i, U, u/ was a syntagmatically conditioned change to which the high and high mid long vowels responded by diphthongization.

This analysis finally allows us to summarize these complex developments in a schema which shows how they are related:

I. Innovation (syntagmatic) II. Response (paradigmatic)

1. Open syllable lengthening of short vowels in CVCV words (non-high vowels /a, e, o/ only) $\iff$ Close mid and open mid old long vowels exchange vowel vowel heights by reciprocal diphthongization

2. Loss of medial -d- $\iff$ Hiatschhörfung

3. Open syllable lengthening of high short vowels (/i, U, u/) $\iff$ Diphthongization of high and high mid old long vowels

From this schema, I would predict that ordering paradoxes would arise if the rules describing (1) Innovation and (1) Response were to be ordered with reference to each other as we have seen in Anderson's attempt to order the changes in (2). Ordering paradoxes ought to arise from (3) as well. However, the changes in Column I can be ordered with respect to each other as can the paradigmatic changes in II. It is difficult to see how a synchronic analysis of a phonological system like that of Soest with a set of ordered rules could capture the interrelatedness of syntagmatic and paradigmatic changes. The schema proposed above satisfies the criteria suggested by Jakobson, namely, that when the equilibrium of a system is disrupted, adjusting sound changes will tend to occur
until equilibrium is reestablished. Each of the three sets of changes achieved equilibrium until the next innovative disruption appeared. This approach to understanding the structure of a phonological system has been cast in the form of cause and effect rather than rules which describe correspondences between successive states. For that reason, it would seem to offer more insight into the organization of a phonological system and in particular into the relationship between syntagmatic and paradigmatic sound change. Since paradigmatic changes do occur, they should be shown to be systematically generated by the system in which they arise.

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On Panoan Sibilants
Eric F. Hamp
University of Chicago

When we recall that we have reached the centenary of Hermann Osthoff and Karl Brugmann's preface (strictly, the work of KB) to their Morphologische Untersuchungen auf dem Gebiete der indogermanischen Sprachen (I, 1878--), it may not be amiss to consider some of their lasting principles in the context of some problems which arise in the study of New World languages. It will be remembered that Osthoff and Brugmann insisted on 1.) investigating live spoken language rather than just written forms; 2.) explaining the mechanisms of sound behaviour by appeal to psychological and abstract underlying criteria in addition to the physical mechanics of articulation; 3.) the accumulation of a case-book typology as well as detailed diachronic observation by the analysis of long unbroken written tradition as keys both to an understanding of the nature of language and to the reconstruction of languages; 4.) a prominent and principled place, following the formulations of Wilhelm Scherer, for the operation of analogic levelling; 5.) the setting of language in the behaviour of the speaker, and not as an abstract autonomous object; 6.) a strict recognition that ancient literary texts are not representative of colloquial, popular, dialectal speech; 7.) a rejection of the claim that ancient man learned language in a discrete-ly different fashion or with different mechanisms from what has obtained for recent men, or that ancient or "primitive" languages differ in kind from contemporary and observable forms; 8.)--doubtless their most famous pronouncement, credited directly to August Leskien—the principle that sound change for all members of a linguistic community within a dialect, for all words showing the sound in the same defined context, applies in a fashion that can be formulated as a law admitting of no exceptions; 9.) a recognition that progress in their studies had been cumulative and that not all findings of the past were equally erroneous and needed to be rejected or dismantled. It should further be recalled that the Neogrammarians were well aware of Johannes Schmidt's modification of the Stammbaum model (1872), which was later elaborated and enriched theoretically by Meillet and others; though this is not to say that the full purport of dialect geography had yet had the opportunity to register with historical and reconstructive linguistic study of that day.

It is true that problems of comparative and reconstructive linguistics occupy us that transcend in com-
plexity and subtlety most that the Neogrammarians suc-
essfully tackled in their day. After all, many of the
more obvious problems accessible to them have been by
now, or even long since, reasonably solved. But great
numbers of problems of this more obvious order remain
yet to be solved in language families less thoroughly
explored than their Indo-European and familiar Euras-
ian territory. It is also a fact that different lingui-
static stocks emphasize and bring into prominence inter-
estingly different situations which all at bottom call
for an appeal to the same general principles.

While not neglecting the other principles mention-
ed above, it is instructive to consider once again a set
of phenomena which rely for their understanding upon a
strict observation of number (8) above. In our present
problem we shall be occupied in each instance not with
an individual sound, or segment, but rather with com-
plex segmental units or clusters. It will become obvi-
ous as the argument proceeds why most of these corres-
pondences must be considered clusters in the proto-
language. The configuration of these clusters is strik-
ing in the context of the phonological structures in
which they are found, for the Panoan languages are gen-
erally very poor in consonant clusters and have a mark-
edly (C)V syllabic structure. It will be seen that we
arrive at a richer cluster inventory and frequency for
the proto than in the case of any of the daughter lan-
guages; it must always be remembered that the typology
of the parent does not necessarily determine that of
the successor languages, and that consequently we should
hold minimal or reserved expectations for the typology
of our reconstruction when viewing that of our comparanda.
Such a gap seems to be a recurring source of inadequacy
in reconstructions, even though the oversight may be un-
witting and contrary to explicit intent.

A further interest of this set of problems is that
they can be and are solved on purely phonological cri-
teria. There are, of course, many limited problems of
Indo-European or Algonquian or Salishan or Otomanguean
comparison that can be couched and solved in purely
phonological terms. But these languages exploit vowel
alternations, morpheme alternants, sandhi and fusion,
suppletion, and contextually idiosyncratic derivation to
such a high degree that pure phonology—pure Lautgesetz
—reaches only a short distance in our reconstructive
task.

In a generally very commendable pioneering recon-
struction of Proto-Panoan (PP), revised from a 1965
Pennsylvania dissertation, Olive Shell (1975) has
recognized the following correspondences of identity:
(abbreviations are A Amahuaca, Ch Chácobo, Cn Cashinahua,
Cp Capanahua, Csh Cashibo, M Marinahua, SC Shipibo-Conibo.)

\[ \text{A M Ch Cp SC} \quad \text{Csh} \quad \text{Cn} \quad \text{PP} \]

Then (60) properly segregating a near-identity, Shell recognizes on the basis of its occurrence in one daughter language (Cn) the presence of a sibilant cluster in PP:

\[ \text{A M Ch Cp SC} \quad \text{Csh} \quad \text{Cn} \quad \text{PP} \]

The recognition of such a sibilant cluster then leads to the following formulation for another equation:

\[ \text{A M Ch Cp SC} \quad \text{Csh} \quad \text{Cn} \quad \text{PP} \]

However, Shell seems not to notice that the last two reconstructions lead to a paradox of phonetic reasoning in the most natural derivations for the observed reflexes—and this is particularly true for Cn. That is, if Cn \( \check{\varepsilon} \) resulted from PP \( \check{\varepsilon} \), we should expect the same also from PP \( \check{s} \). Shell hypothesizes that \( \check{s} \) went to zero before \( \varepsilon \) in Csh; but she neglects the fact that one must assume that PP\( \varepsilon \) first was assimilated to become \( \varepsilon \) before \( \check{s} \) was lost. To avoid this lapse in reasoning we might suppose that Cn \( \check{s} \) was derived from PP \( s \) by assimilation. But then we should be forced into the more complex assumption of assimilations in opposite directions for very similar clusters, and in a bleeding chronology without any unifying trend. Besides, another correspondence set (70) is relevant here:

\[ \text{A M Ch Cp SC} \quad \text{Csh} \quad \text{Cn} \quad \text{PP} \]

Shell recognizes the parallelism between this and the one she reconstructs as PP \( \check{s} \), but her reconstructions fail to capture this similarity in the sequence of type of sibilant and in the result for Csh against all the others.

I therefore accept Shell's PP \( \check{s} \) and \( s \), but I reverse her \( \check{s} \) to a PP \( s \) instead.

We will now inspect clusters with \( t \). Shell (56) has discerned set No. 489 as follows:

\[ \text{SC Ch} \quad \text{Cp Cn} \quad \text{A M} \quad \text{PP} \]

This set is the unique example of \( st \), yet it is set (56) beside other sets with partial resemblances in a way that fails to illuminate the totality of these perplexingly similar interplays of sibilants and \( t \). Thus set No. 27 is reconstructed as PP \( \cdot \)isto- for the equation of SC \( \cdot \)isto- \( , \) Csh \( \cdot \)isto- 'correr', Csh \( \cdot \)isto- 'rápidamente'; it would appear that Shell is undecided as to the correct assignment of Cn i\( \check{s}u \)- 'saltar' and M i\( \check{c}o \)- 'correr'. The last two, we see immediately, give the appearance of fitting in with PP \( \check{s} \), already recognized above; but then what would the rest of set 27 be? Shell moots the possibility that in these problematic sets we have reflexes of bi-morphemic words, but at best that means that we
must then devise yet another series of morphologically sensitive derivations for the small number of recalcitrant forms at issue; we shall find that by exploring resources at hand more diligently this will not be necessary. For the time being let us simply observe that only a portion of the forms that seem semantically to belong in set 27 find a reconstruction in PP st; that it would require a complex morphological assumption to convert this st into the apparent PP ŞC; that in any case the conversion of PP st into SC st requires one more added phonetic assumption.

Yet, worse than these last, the allotment of set 27 to PP st entails a contradiction to the clear, if sparse, evidence (55, fn.39) that all the languages here under discussion, including SC, Cp, and Csh, show a reflex s for what must best be reconstructed on the testimony of Atsahuaca, Arazaire and Yamiaka as PP st. We shall see that we do best to accept Shell's astute attribution of these last reflexes with s to PPst. The reflexes of set 27 must therefore be accounted for otherwise.

Set 144, discussed on p.61, is a problematic one, and remains so with the reconstruction proposed. This set, meaning a 'kind of ant', shows consonantisms of s throughout, except for A hīgis, for SC, Cp, Cn, and M; Shell reconstructs (136) PP i[s]is[t]i. Yet though the reconstruction of PP šc here is poorly explanatory, it seems to me that the notion of PP st here is particularly suggestive. If instead we start with PP ğistī, to account simply for all the observed forms we have only to assume that a dissimilatory methathesis produced the divergent A ğī.

The seemingly most complex problem of all remains in sets 114 and 115, which, I believe we shall see, Shell needlessly proliferates into two sets; both mean 'charcoal'.

114. SC ğistī, Cp ğistī, Cn ġistī, M ġistī, Ch ġistī --- PP ġistī
115. Csh ġiso, Ch ġisto --- PP [ğ]is[t]o

We can solve these only by considering at the same time 113. SC ġiō, Cp ġi?o, Csh ġio, Cn ġi, A ġi?o, M ġiō, Ch ġi?o 'cigarras' for which Shell vacillates in reconstructing (61) PP ści- (with special restriction before i) and (132) PP ġi-, and also

125. SC ġiī, Cp ġi?i, Csh ġii, Cn ġi, A ġi?i, M ġi, Ch ġi?i 'fuego' which Shell reconstructs, without adequate explanation, as PP ġi?i. The initial could of course, on the basis of our prior argument, be PP šc here.

It will be well if at this point we take a look at
the PP structure points which we have allotted, so that we may perceive the emerging pattern of our assignments and the possibilities not yet occupied. From the starting identities we have PP £, €; we also have s, Š. We then recognized PP sŠ, s€, and Šš. Note that PP sŠ and s€ established systematically the characteristic Csh behaviour whereby in mixed clusters it favours the apical phonetic output. And then we have allotted PP st and Št. Note that, generally speaking, in these clusters a blade groove prevails over an apical, a spirant yields to an affricate, and a t yields to a preceding sibilant. We see clearly now that the single set of possibilities within the pattern that remains unexploited is s€ and Š€.

If we now turn back to set 27 we find a reasonable solution for those baffling consonantisms in the last mentioned cluster. The Cn and M reflexes are easily derived from a proximate Šš, and this again would be an assimilation product of PP šš. For SC, Cp, and Csh we presume first of all a dissimilation of the groove articulation, to yield proximate št, which expectably persists in SC but apparently assimilates in apicality to st in Cp; the outcome in Csh shows the expected apical feature. Set 27 therefore substantiates the cluster PP šš.

We may now return to 114 and 115, which without further ado I reconstruct as PP šššši − šššš; for the final -o cf. set 113 in relation to 125. We then note the change of šš to št; in SC and Cp this may be the same feature change as we have observed in set 27, but it may also be, as it surely is in M and Ch, a dissimilation against the initial. For Cn we must assume a contamination with set 125, yielding šššši, then šššši by assimilation, and finally (too late for the assimilation in set 27) šššši by a groove dissimilation by now familiar to us. Csh must have dissimilated its affricate otherwise, and then expectably reduced the geminate in the resulting žisse. Note that none of the above steps, taken singly, is unparalleled, and each is phonetically natural.

113 shows a perfect PP š as the initial, except for Csh and Cn. For Cn I see a simple semantic contamination from 125, as in 114. For Csh I see no principled solution on the present evidence.

NOTES

1 For a similar theme in an Indo-European context, see CIL 14
2 This and No. 2 constituted a partial, if faulty, recognition of the social rôle of language.
3 This last point seems to me important, as ever, in our present work, and I have raised it before now in relation specifically to the Neogrammarians.

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Some Observations on Relatives and Demonstratives in Greek and Sanskrit

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In this paper we will discuss some of the functional similarities between demonstratives and relatives which permit demonstratives to be used as relatives in Homeric Greek and Vedic Sanskrit. We will then present two mechanisms of change by which the inherited preposed relative clauses became postposed in these languages, and discuss how the use of demonstratives as relatives interacts with these mechanisms.

D. B. Monro (1891:231-2, see also Chantraine 1953:166ff., Monteil 1963:25-38) maintained that in Homeric Greek the clause initial 'definite article', at that time actually a demonstrative, can be used as a relative pronoun. Some typical examples are:

1. ἐρᾶθ᾿ ὁ γεραῖος / Ἀπόλλωνι ἀνακτί, τὸν ἐκκόμος τέκε prayed the old man to Apollo lord that fair-haired bore Leto (Il. 1.35-6)
   Leto
   'The old man prayed to Lord Apollo, whom fair-haired Leto bore.'

2. autíkα δέγνο / ουλέν, τόν ποτὲ μιν sūs élas straightaway and she knew scar that once him boar inflicted (Od. 19.392-3)
   'And straightaway she knew the scar, which once a boar inflicted on him.'

3. ἐβαν κήρυκες áγοντες / κούρεν Βρισέος, τόν μοι dósan came heralds leading daughter of Briseus that to me gave hui̇es Akhaíōn (Il. 1.391-2) sons of Achaéans
   'Heralds came leading the daughter of Briseus, whom the sons of the Achaéans gave to me.'

4. lázeto d'éghkhos / brithú méga stibarón, tójí dámnesi she took and spear heavy long stout with that she tames stíkhas andrōn (Il. 8.389-90) ranks of men
   'And she took the spear, heavy, long, and stout, with which she tames the ranks of men.'

Conditions on this usage, according to Monro, include the requirement that the relative clause be postposed and that the relativized noun be definite, with the relative clause simply 'adding something further', that is, nonrestrictive.

A similar usage of demonstratives is found in Vedic Sanskrit, as illustrated by examples (5) through (7):

5. árcanta éke máhi sáma manvata / ténā sūryam arocayan singing some great chant thought of with that sun they made (RV 8.29.10)
   to shine
'Singing, some thought of a great chant, with which they made the sun to shine.'

6. praṇātaś traśayatnād duhitārā āsan, tāh sūmāya
of Prajapati thirty daughters were those to Soma
rājñe 'dadāt ... (TS 2.3.5.1, cited in Delbrück 1888:213)
king he gave
'Prajapati had thirty daughters, whom he gave to King Soma ...'

7. tām sā mātṣya upanvā pūpluve tāṣva śṛṅge nāvāḥ pāśaṃ
that the fish near to swim that one's horn ship's rope
prāti mumoca (SB 1.8.1.5, cited in Delbrück 1888:213)
to he bound
'To whom (=Manu) the fish swam near, on whose (=the fish's)
tail he bound the ship's rope.'

Although such Sanskrit examples have not been called relative sentences, they clearly show the same structure as the preceding Greek examples and are subject to the constraints listed by Monro for Homeric Greek.

Yet another type of sentence which we feel should be classed with those discussed by Monro is illustrated by examples (8) through (11), where the demonstrative refers not to a preceding nominal, but to an entire preceding clause or sequence of clauses:

8. prá tād Viśnuḥ stavate viṁśeṇa (RV 1.154.2)
for that Vishnu is praised by heroic power
'For which Vishnu is praised by (virtue of his) heroic power.'
(Tād refers to a series of accomplishments listed in the preceding stanza.)

9. tād vo dvo duhitāravo vibhātīr / upa brva
for that you of heaven daughters shining ones pvb. I address
usāso yajñāketuḥ / vayām slīma yaśāso
dawns having sacrifice as banner we would be famous
jāneṣu / tād dyauśe ca dhattāṃ Pṛthivi ca devī
among men that heaven and grant Pṛthivi and goddess
(RV 4.51.11)
'For that I, having sacrifice as banner, 0 daughters of heaven,
address you the shining ones, 0 dawns; we would be famous among
men; that let heaven and goddess Pṛthivi grant.'

10. mēte sū g' ārēa tō ge deīdithi (Il. 5.287)
not you ptc. Ares that ptc. fear
'Which you should not fear Ares for.' (Monro 1891:129 'Fear
not Ares as to this.')

11. allā tā g' ouk egēnto: tō kal kλaïousa
but these things ptc. not happened that even lamenting
tētēka (Il. 3.176)
I pine away
'But these things did not happen: lamenting which, I pine away.'
In these sentences there is no question of nominal modification. It seems that whole clauses can be nominalized and referred to by a demonstrative pronoun, which can be interpreted as a relative in much the same way as the pronouns in (1) through (?).

The use of demonstratives as relatives raises the question: What functions do demonstratives share with relatives? We will limit our discussion of demonstratives to endophoric demonstratives (see Halliday and Hasan 1976:33), that is, demonstratives which refer to something in the text. We suggest that demonstrative pronouns or adjectives in sentence initial position which refer to items -- nominals or clauses -- in the immediately preceding text usually serve two functions. First, they are anaphoric and therefore mark the sentence in which they appear as connected to the preceding text. Second, they usually introduce sentences whose purpose is to add information about their referent or head noun; that is, they serve as, or mark the topic of the sentence in which they appear. An example from English will illustrate these usages; that functions as sentential topic both in (12a), where it refers to a preceding nominal, and in (12b), where it refers to a preceding clause:

12. We're going to visit Athens.
   a. That's where my father was born.
   b. That's been a dream of mine for years.

It should be noted that topics are usually sentence (or clause) initial in the languages under consideration in this paper.

Relative pronouns in postposed relative clauses, by the traditional analysis, introduce subordinate clauses which function as adjectives to modify preceding nouns. A comparison of (12a,b) with (13a,b), however, will lead to observations which are more useful for a discussion of the data presented in (1) through (11):

13a. We're going to visit Athens, which is where my father was born.
13b. We're going to visit Athens, which has been a dream of mine for several years.

Postposed relative pronouns, like demonstratives, are anaphoric and therefore connective. Furthermore, they serve as the topic of the relative clause (Ickler 1977?): the very purpose of a relative clause is to add information about the referent of the relative pronoun. Finally, although according to the traditional analysis relative pronouns refer only to nouns, sentence (13b) shows that they can refer to clauses in the same way as the demonstrative pronoun in example (12b). It seems, then, that relative pronouns in postposed relative clauses and sentence initial endophoric demonstratives function very similarly. The main difference between them, apparently, is that relative pronouns introduce clauses dependent on the preceding sentence, while demonstratives introduce independent sentences -- often a rather subtle distinction,
as illustrated by a comparison of examples (12) and (13). It is not difficult to imagine, then, how in Greek and Sanskrit demonstrative pronouns came to be used as nonrestrictive relative pronouns, especially since demonstratives already played a role in the inherited relative clause construction, as will be discussed below.

In this respect it is significant that while Homeric Greek and Sanskrit form relative clauses with the demonstrative pronoun, Hittite does not. To understand why this should be so it will be necessary to examine the relative sentence structure inherited from proto-Indo-European and the changes it was undergoing in each of these languages.

Preposed relative clauses can be reconstructed to proto-Indo-European on the evidence of Hittite, Sanskrit, and Greek relative sentences like the following:

14. nu-mu NAM.RA ku-in pa-ra-a pí-i-e-er na-aš
    conn.-to me prisoners which over they gave conn.-they
    4 LI-IM NAM.RA e-eš-ta (KBo III 4 III 19f.)
    4,000 prisoners were
    'And which prisoners they gave over to me, they were 4,000
    prisoners.'

15. nu-mu ku-iš DINGIR-IA i-na-an pa-iš nu-mu gi-en-zu
    conn.-me which god-mine sickness gave conn.-me pity
    [da-ú] (KUB XXX 10 rvs 3)
    let take
    'Whatever god of mine gave me the disease, let him take pity
    on me.'

16. apá̄m bílam ápihitam yád ásīt / Vrtrám jaghanváñ ápa
    waters' opening covered which was Vritra slaying prev.
    tá́d vavára (RV 1.32.11)
    that he opened
    'Which opening of the waters was covered, slaying Vatra,
    that he opened.'

17. yó vám rátho, nrpatti, ásti voḷhá / trivandhuró
    which your chariot 0 lords of men is vehicle three-seated
    vásumáñ usráyámá / á na ená, Násatyá, posessing wealth going at dawn to us with that 0
    Nastyas úpa yátam (RV 7.71.4)
    pvb. come
    'Which chariot is your vehicle, having three seats, possessing
    wealth, going at dawn, with that come to us, 0 Nasatyas.'

18. hós ke theoirís' epipeíthetai, mála t' éklouon autoú
    who ptc. gods obeys very much ptc. they hear him
    (TI. 1.218)
    'Who obeys the gods, they listen to him.'

These relative sentences all have the same structure: the relative clause contains a relative adjective (formed from a reflex of IE *kֶu/j(o- or j–) and (optionally) its head noun, to which the main clause refers by a personal or demonstrative
resumptive pronoun. The relative adjective, like any other adjective, can be substantivized when it has no head noun, that is, in so-called 'indefinite' relative sentences like example (18). The type of relative sentence illustrated by (14) through (18) is regular for Hittite, comprises just under half the relative sentences in the Rig Veda (Avery 1881), and represents a definite archaism in Homer; in Vedic Sanskrit and Homeric Greek it competed with postposed relative sentences of the type:

19. apó devēr úpa hvaye / yátra gāvaḥ pībanti nah
waters divine prev. I invoke in which cows drink our
(RV 1.23.18)
'I invoke the divine waters, in which our cows drink.'

20. epēl oukh homogástrios Hēktorós eimi / hós toi
since not of the same womb as Hektor I am who your
hetāiron épephnen (Il. 21.95-6)
companion slew
'Since I am not of the same womb as Hektor, who slew your
companion.'

Sentences in these languages with postposed relative clauses differ from those with preposed relative clauses not only in word order, but also in the role of relative and other 'phoric' words. In the typical postposed relative clause, which does not contain the relativized noun, the relative word functions as a pronoun; in the typical preposed relative clause, which does contain the relativized noun, it functions as an adjective. Furthermore, in sentences with postposed relative clauses the bond between the clauses is often only anaphoric: the relative clause is marked as connected to the preceding clause by the relative pronoun which refers back to the relativized noun, but there is often no formal indication in the main clause that a relative clause is to follow. In sentences with preposed relative clauses, on the other hand, both cataphoric and anaphoric reference operate to mark the relative clause and the main clause as parts of a larger unit. The relative adjective in the preposed relative clause designates its head noun as coreferential to the topic of the main clause (the resumptive pronoun), and thus as fulfilling its communicative function only within that larger context.2 Pronominalization of the relativized noun in the following main clause connects it to the preceding relative clause through anaphora.

This type of 'double bonding' in sentences with preposed relative clauses has a number of interesting consequences. First, each clause has all its grammatical slots filled, but neither can stand as a complete text without the other. The relative clause contains an adjective which points to the existence of a following clause having as its topic a pronoun referring back to the relativized noun. The main clause, like any other clause containing an anaphoric pronoun, cannot occur discourse initially. Thus the relative and the main clause in such a relative sentence are in one sense independent and in another sense interdependent, but it is not the case that one of the two clauses is clearly
subordinate to the other. This impression of nonsubordination is heightened by the optional use of sentence connectives to introduce both clauses. As Sturtevant (1930:149) pointed out for Hittite, "both the relative clause and the main clause are regularly introduced by sentence connectives, just as if they were completely coordinate." The replacement of this 'double-bonded' type of relative construction by one which has a more clearly subordinate structure (that is, which modifies a noun syntactically independent of the relative clause) may be responsible for part of the impression of a shift from 'parataxis' to 'hypotaxis' in Indo-European sentence structure.

A second feature of this type of relative construction is that it obviates the need for center embedding of relative clauses. In the language types investigated by S. Kuno (1974), relative clauses (with or without relative pronouns) are positioned in relation to their head nouns. This procedure obligatorily results in the center-embedding of relative clauses in some sentence types in both SOV and SVO languages. In Hittite and the other early Indo-European languages which preserve the inherited Indo-European relative clause structure, the necessity for center-embedding does not arise, because the relative clause (containing an occurrence of the relativized noun) as a whole is prepessed to the main clause, no matter what the function of the relativized noun in the main clause.

A third consequence of the use of both relative and resumptive forms is that the order of the two clauses with respect to each other is not crucial for the interpretation of the relative sentence. Since both clauses are grammatically complete, and since the relationship between them is marked in each clause, clause order could at least potentially be manipulated either to convey other sorts of information or for stylistic effect. Of course, the reversal of clause position also entails a reversal of phoricity for the relative and resumptive words: the resumptive becomes annunciator and the relative word anaphoric, referring back to the annunciator pronoun. This situation is illustrated in example (21):

21. séd ugró astu Narutaḥ sá şuṣmí yāṃ máṛtyam
that- ptc. strong let be O Marut the powerful which mortal
ávātha (RV 7.40.3, cited in Delbrück 1888:558)
you help
'May that one be strong, O Marut, the powerful, which mortal
you help.'

Or the relativized noun moves into the main clause (with or without an annunciator adjective) and the relative word functions as a pronoun:

22. nā hí tásminn agráu māṃsāṃ pácanti yāsminn āhutīr
not for in that fire flesh they cook in which āhutis
júhvati (MS 1.4.8, cited in Delbrück 1888:563)
they offer
'For they do not cook flesh in that fire in which they offer
āhutis.'
It is significant that of the three languages under consideration, Hittite is fairly rigidly OV, Vedic Sanskrit is less strictly OV, and Homeric Greek represents a word order type transitional to VO. It is no coincidence that Hittite has nearly all preposed relative clauses, as one would expect for an OV language, Vedic Sanskrit has about half preposed and half postposed, and Homeric Greek has nearly all postposed relative clauses, as one would expect for a VO language. These three languages, then, represent three stages of word order change in general and of change in relative and main clause order in particular. We propose that flipping the order of relative and main clauses was a mechanism of word order change made possible by the 'double-bonded' structure of early Indo-European relative sentences.

A second mechanism of clause order change, we propose, was triggered by a complementary process, loss of the resumptive in the main clause and a subsequent reanalysis of clausal constituency.

For purposes of illustration we will take Hittite as representing the inherited Indo-European preposed relative clause structure. In Hittite the relative adjective can either precede or follow the relativized noun, as shown in examples (14) and (15). W. Held (1957:11ff.) proposes that relative adjectives in Hittite precede indefinite relativized nouns and follow definite relativized nouns. Whatever the semantic distinction, we are concerned here with the structure in which the relative adjective follows the relativized noun, the structure illustrated in example (14). Relative clauses with this ordering outnumber relative clauses with adjective-noun ordering by eighteen to one (Held 1957:29). Such relative clauses are also possible in Greek and Sanskrit, although they are quite rare (in these languages the relative is built on the stem *io-*):

23. barhiṣādo  yē svadhāyā  sutāsyā / sitting on grass who with funeral offering of pressed bhājanta pitvās, tā ihāgamistiḥāḥ (RV 10.15.3) partake drink they here-most coming

'Who sitting on the grass partake of the pressed drink with the funeral offering, they come here most.'

24. ulokó yās te adriva / āndrēhā tāta á place which yours O arrow-bearer Indra-from there pvb. gahi (RV 3.37.11, cited in Delbrück 1888:558) come

'The place which is yours, O Arrow-bearer, come here from there, O Indra.'

25. phulakās d'hās  eîreai  hērōs / oí tis kekrimēnē guard ptc.-which you ask about hero not one chosen rhūtai stratōn oudē phulāssei (Il. 10.416-7) protects army nor guards

'The guards which you ask about, hero, not one, being chosen, protects nor guards the army.'
26. ñëes hósai prótaí eirúatai ághki thalássēs / ships as many first are hauled near sea hēlkōmen, pásas dē erússomen eis hála dīan (Il.14.75-6) let us take all ptc. let us drag to sea shining 'As many ships as first are hauled up near the sea, let us take (them), and drag all (of them) to the shining sea.'

It should be noted that the resumptive pronoun in the main clause following a preposed relative clause, though it usually occurs, is not obligatory, as is shown by examples (27) through (29):

28. ZAG-an-na ku-iš pár-si-ja 1 UDU 10 NTNDA41 DUG KA.KAK boundary-and who violated 1 sheep 10 loaves 1 jug beer pa-a-i (KBo VI 26 I 48 f., Held 1957:10) gives 'Who violated the boundary, he gives 1 sheep, 10 loaves (and) 1 jug of beer.'
29. DINGIR-LIM-tar ku-it SÎxâ-at kät-ta a-ri-ja-u-en deity which was determined prev. we determined by (KBo II 2 II 21 f. Held 1957:24) oracle 'Which deity was determined, we determined by oracle.'

We propose that the non-occurrence (or elimination) of the resumptive pronoun in such sentences could have led to a structural re-interpretation. What was originally the relativized noun (for instance DINGIR-LIM-tar in example (29)) in the relative clause would be reanalysed as part of the matrix clause, with a shift in case if necessary. The original relative adjective would then be reinterpreted as a relative pronoun introducing a postposed relative clause followed by more material from the main clause. Such postposed center-embedded relative clauses are possible in Greek and Sanskrit:

30. kouēn hèn ára moi géras éxelon hui̇es Akhaiōn / girl whom ptc. to me prize chose sons of Achaeans dourí d' emoi kteátissa (Il.16.56-7, cited in Monteil 1963:58) spear ptc. my I gained 'The girl whom the sons of the Achaeans chose (as) prize for me I gained with my spear.'
31. tvàm divo duhitar yā ha devi̇ pūrvāhūtau you of heaven daughter who ptc. goddess at early invocation mahànà darśata bhûh (RV 6.64.5, cited in Delbrück 1900:304) with might visible became 'You, 0 daughter of Heaven, who (are) a goddess, became visible at the early invocation with might.'

In Hittite the resumptive is absent most often in sentences where
the relativized noun is nominative, and where the resumptive would have been in the same case, that is, where the relativized noun could be construed with both the verb in the relative clause and the verb in the main clause (cf. examples (27) and (28)). According to Held (1957:24) the resumptive (and the sentence connective) may also be omitted if the resumptive would be the object of the main verb and if the 'relative sentence consists of very short clauses' (cf. example (29)). If the omission of resumptives in a different grammatical function from their coreferential nouns were extended to more complex sentences, this would provide a basis for the reinterpretation described above.

Viewed in this light, such Greek sentences as

32. eis ἐδὲ ἡ̣ν̣ ἀπόκοντο κόμην μεγάλη ἐ̣ν̣ (X.A.4.4.2)

to ptc. which they came village large was

acc. acc.

'Which village they came to was large.'

33. ἵ̣ν̣ ὁ̣ι̣ς̣ φιλοῦσιν ἀποθεῖσκει νέος

whom the gods love dies young

'Whom the gods love dies young.'

have the same structure as the Hittite examples (28) through (30); they contain proposed relative clauses but have no resumptive pronouns. The standard Greek grammars (eg. Kühner-Gerth 1904:413ff.) usually group together sentences of the structure of examples (32) and (33) with those of the structure of examples (25) and (26) under the label attractio inversa, that is, attraction of the 'head noun' into the case of the relative. These sentences, however, merely preserve the inherited Indo-European relative construction. The 'attraction' which they supposedly exhibit the inverse of is the attraction of the relative into the case of the head noun:

34. ἡ̣π̣ό̣ς̣ ἐ̣σ̣ε̣σ̣θ̣ε̣ ἀνδρῆς ἀξιόι τ̣ε̣ς̣ ἐλευθερίας ἢ̣ς̣

so that you will be men worthy of the freedom which

gen. gen.

κέκτεσθε (X.A.1.7.3, cited in Kühner-Gerth 1904:407)

you possess

'so that you will be men worthy of the freedom which you possess.'

This type of attraction seems to be restricted to post-Homeric texts (see Kühner-Gerth 1904:406ff.). The fact that both types of 'attraction' are found after Homer can be viewed as evidence for a certain level of confusion as to the proper case function of the relative and the relativized noun. Such confusion can be explained as one result of the reinterpretation of relative clause structure described above.

Discussion to this point has concerned the structure of early Indo-European relative clauses and changes in that structure. Relevant to this paper, however, are not only the formal properties of relative clauses, but also their functions. Functionally,
relative clauses are traditionally divided into restrictive and nonrestrictive, that is, into relative clauses which define or delimit the relativized noun and those which simply add information about the relativized noun or move the narration forward. Three English examples will illustrate this difference; sentence (35) contains a restrictive relative clause, and sentences (36) and (37) contain nonrestrictive relative clauses:

35. They gave the medal to the runner who came in first.
36. They gave the medal to John, who came in first.
37. They gave the medal to John, who presented it to his mother.

Discussions of restrictive vs. nonrestrictive relative clauses are usually based on a consideration of postposed relative clauses. We propose that this distinction does not apply to preposed relative clauses of the type found in Hittite, Greek and Sanskrit; however, it seems that most preposed relative clauses in these languages can be translated into languages which do make this distinction (such as English) as restrictive relative clauses. That is, the purpose of the Indo-European preposed relative clause is to establish or delimit the topic of the main clause, not to add extraneous information about that topic, and obviously not to continue the narration beyond the information conveyed by the main clause. On the other hand, postposed relative clauses in Greek and Sanskrit could be either restrictive or nonrestrictive, though at least in writing this distinction was not usually formally marked.

The change in relative clause order from preposing to postposing, then, involved not only structural changes, but also changes in the functions of relative clauses. Both these factors are relevant to the use of demonstratives as relatives in Greek and Sanskrit. Structurally, the postposing of relative clauses changed the role of the relative word from that of a topicalizing adjective to that of an anaphoric pronoun, that is, it brought the function of the relative word much closer to that of endophoric demonstrative pronouns. It is significant that demonstrative pronouns are used as relatives in Greek and Sanskrit, which have postposed relative clauses with the inherited relative word, but not in Hittite. Presumably postposed relative clauses first became possible through inversion or reinterpretation, as proposed above, and this structural change entailed a functional change. After they became postposed, relative clauses no longer functioned to define or restrict the domain of the main clause topic; rather, they served to add information in some way about a preceding noun. The purpose of this information may have at first been to restrict the reference of that noun, but postposed relative clauses in the languages under consideration could also be used to simply say something more about a noun whose reference was already clear. It is significant that demonstratives in Greek and Sanskrit were used as relatives only in the latter, nonrestrictive function. That is, they were interpretable as relatives only after relative clauses came to be used nonrestrictively.
Notes

1 These pronouns are the standard third person anaphoric pronouns: Greek ὁ ἡ τὸ, Sanskrit sā sā tād. They typically occur in clause initial position. E. H. Sturtevant (1929:34-5) believed that ultimately they could be derived from a sequence of sentence connective and enclitic anaphoric pronoun, as in Old Hittite ta-āš 'and he' ta-an 'and him' etc., and that their connective function survived in their use as relatives in Homeric Greek.

2 For Indo-European *xo- in Sanskrit, Jan Gonda (1954:13) has observed that 'Often the ya- clause when opening the sentence contains a central complex idea, the theme of the utterance ... . Or it may be said that the ya- clause constitutes an essential introductory part of the utterance, the succeeding demonstrative clause containing the expression of a correlate, a consequence, a new event of the same order etc.'

C. Justus (1976) makes a similar point regarding the use of ku-š in Hittite. Referring to Hittite relative clauses containing an indefinite (new information) relativized noun, she says, 'those modifying a focus which becomes a subsequent theme locally use ku- to mark the initial occurrence of the shared noun phrase' (215), and later, 'In its clause, ku- singles out a noun as a center of attention which will have a role in subsequent part(s) of the construction' (235). Two notions here require comment. We would like to point out, first, that nominal modification is not an appropriate description of the function of Hittite and other early Indo-European preposed relative clauses. If anything, the relative clause might be said to contain a focus, but we do not understand how it could be said to modify anything. Second, although we agree that the *kH- marked noun in the relative clause is coreferential with the theme (or topic) of the next clause, we wonder whether it can always be said to be the focus of its own clause. Justus implies that these relative clauses in Hittite always contain new information relativized nouns; however, she does not discuss any examples in which the relative adjective follows the relativized noun, a construction which according to Held (1957:11ff.) marks the relativized noun as definite, and which outnumbers constructions of the type she does discuss, in which the relative adjective precedes the relativized noun, by eighteen to one.

If the resumptive pronoun is the topic of the postposed main clause (the main clause in a sentence containing a preposed relative clause), then main clauses in such sentences have a topic structure very similar to that of postposed nonrestrictive relative clauses. Each contains a topicalized pronoun referring back to the preceding clause -- though the pronoun in the postposed main clause refers back to a noun which was set up in advance, in the relative clause, just so that it could be referred back to, while the relative pronoun in a postposed nonrestrictive clause refers to a noun existing for independent reasons in the immediately preceding context. The similarity in the function of resumptive and relative pronouns no
doubt contributed to the use of demonstratives as relatives in the languages under consideration, since it was often the demonstrative pronoun which functioned as a resumptive.

3 Parataxis has been used in at least two distinct meanings in the literature on Indo-European syntax (Delbrück 1900:416): on the one hand, it has been used to describe the simple juxtaposition of sentences, without formal marking of their relationship, and on the other, it has been used to describe syntactic patterns which give an impression of linearity and which favor full (coordinated) clause structures rather than participial or other reduced constructions. The second type is usually considered to be intermediate between the first type and full-blown hypotaxis, and it is also considered as evidence for the prior existence of the first type (see for example Porzig 1923 for this type of analysis of Vedic relatives). Although certain subordinate constructions must have had a paratactic origin (in the first sense), it is clear that others must have been marked as (inter)dependent from the earliest times. Aside from speculation about 'primitive languages', the principal reason for regarding paratactic constructions (in the second sense) as providing evidence for parataxis (in the first sense) has been the difficulties inherent in reconstructing morphologically consistent markers of (inter)dependence to proto-Indo-European. Thus, E. Hermann (1895) set up a list of twelve formal criteria for subordinate clauses in Indo-European languages and concluded that there was not sufficient evidence to reconstruct subordinate clauses to proto-Indo-European. Delbrück (1900:405ff.) and Meillet (1937: 373ff.), however, believed that relative clauses had to be reconstructed to proto-Indo-European despite the morphological difficulties.

4 A. Minard (1936:42-58) has isolated a number of stylistic and rhetorical factors which account for the inversion of the 'diptyque' consisting of a clause containing vāthā, vātra, vadā, or vādi (all built on the relative stem) and a clause containing a ta- resumptive in Vedic prose. These factors can easily be extended to the relative proper.

5 J. Haudry (1973:155) remarked for Latin that the insertion of a pause between the relativized noun and a following relative adjective in a preposed relative clause could have led to a resegmentation of the type described here, and that consequently the relationship between the relative and the correlative would be secondary, with the possible subsequent loss of the correlative. The resegmentation is better accounted for by our suggestion that these changes occurred in the opposite order: first, loss of the correlative, and then a reanalysis of clausal constituency, marked by a pause after the relativized noun.

6 As is shown by this example and by example (30), enclitic pronouns and sentence particles (which normally occupy the second
position in the sentence, after the first tonic element) may be placed after sequences of noun plus *10- in Indic and Greek, in spite of the fact that both elements in this sequence are accented. This peculiarity may also have played a role in the reanalysis of clause boundaries described here, since such a reanalysis would have as one result the normalization of enclitic placement in these sentences: $\# \tilde{N} \ 10- \ E \ ... \ # \Rightarrow \ # N \ # 10- \ E \ ... \ #$. Example (30) is structurally ambiguous, since the relativized noun can function as an accusative object in either clause.

7E. A. Hahn (1949) examined 390 relative clauses in Hittite and pronounced approximately 80% (including all 43 of the early Hittite relative clauses in her sample) to be unquestionably restrictive. Of the remaining 79, she interpreted fourteen as unquestionably nonrestrictive. Of those fourteen, five (her examples 40, 41, 42, 77, and 78) seem to us better interpreted as restrictive, and the interpretation of one (76) is problematic. The remaining eight examples, where the relativized noun is a city or personal name, all come from different redactions of the same text, the Annals of Mursilis. Regarding these eight examples, Hahn says that only one could be (though need not be) viewed as a 'fully-developed' nonrestrictive relative clause. She remarks that 'it is a basic characteristic of the fully-developed non-restrictive relative clause that the antecedent [that is, the relativized noun] should stand not only before, but definitely outside, the clause' (354). That is, 'fully-developed' nonrestrictive relative clauses, as well as their use on any scale, would become possible in Indo-European languages only after relative clauses were postposed.

Bibliography


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Icelandic Word Order: In Support of Drift as a Diachronic Principle Specific to Language Families

Karen C. Kossuth, Pomona College

Earliest Icelandic (Iceland was settled by Norwegians beginning in 874 AD) had already made the transition away from the SOV word order posited for Proto-Germanic by Hopper and Lehmann. It probably used an SV- VS word order similar to that which I found in four Sagas from about 1300, in a count using the following categories (Kossuth 1978):

**VS** includes all clauses beginning with the finite verb, including those in which the subject is in a later than second position, and about five percent yes/no questions and commands.

**CVS.** The conjunction in CVS clauses is most often ok 'and', but enda 'moreover', þó 'though' and eða 'or' also appear.

**SV** is subject, then finite verb.

**CSV.** The most common clause type. The relative particles sem and er were counted as C, but if appropriate, also as S.

**TVX.** At the beginning of sections, the T is a time or place adverb. Within sections it is more often a participle or verbal particle. The subject may follow the verb directly, or occur after some or all of the VP.

**CTVX** is TVX with a conjunction.

**OTHER** includes clauses with more than one argument preceding the verb, impersonals which do not fit the above patterns, and a few scrambled orders.

<table>
<thead>
<tr>
<th>Saga (number of clauses)</th>
<th>Njáls Saga (1891)</th>
<th>Laxdœla Saga (1948)</th>
<th>Magnússaga ins Góða (889)</th>
<th>CÝsλa Saga (2744)</th>
<th>Totals Average%</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS</td>
<td>263</td>
<td>224</td>
<td>120</td>
<td>138</td>
<td>745</td>
</tr>
<tr>
<td>14%</td>
<td>12%</td>
<td>14%</td>
<td>5%</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>CVS</td>
<td>129</td>
<td>100</td>
<td>43</td>
<td>360</td>
<td>632</td>
</tr>
<tr>
<td>7%</td>
<td>5%</td>
<td>5%</td>
<td>13%</td>
<td>7.5%</td>
<td></td>
</tr>
<tr>
<td>SV</td>
<td>386</td>
<td>475</td>
<td>155</td>
<td>540</td>
<td>1556</td>
</tr>
<tr>
<td>20%</td>
<td>25%</td>
<td>17%</td>
<td>20%</td>
<td>20.5%</td>
<td></td>
</tr>
<tr>
<td>CSV</td>
<td>517</td>
<td>536</td>
<td>269</td>
<td>807</td>
<td>2129</td>
</tr>
<tr>
<td>27%</td>
<td>28%</td>
<td>30%</td>
<td>30%</td>
<td>29%</td>
<td></td>
</tr>
<tr>
<td>TVX</td>
<td>262</td>
<td>298</td>
<td>204</td>
<td>520</td>
<td>1284</td>
</tr>
<tr>
<td>11%</td>
<td>15%</td>
<td>23%</td>
<td>18%</td>
<td>17.5%</td>
<td></td>
</tr>
<tr>
<td>CTVX</td>
<td>102</td>
<td>157</td>
<td>62</td>
<td>235</td>
<td>556</td>
</tr>
<tr>
<td>6%</td>
<td>8%</td>
<td>7%</td>
<td>9%</td>
<td>7.5%</td>
<td></td>
</tr>
<tr>
<td>OTHER</td>
<td>232</td>
<td>158</td>
<td>36</td>
<td>144</td>
<td>570</td>
</tr>
<tr>
<td>12%</td>
<td>8%</td>
<td>4%</td>
<td>5%</td>
<td>7%</td>
<td></td>
</tr>
</tbody>
</table>
As can be seen from the distribution in the four sagas, each basic word order type appears with and without conjunctions, that is, VS and CVS, SV and C5V, TVX and CTVX. The OTHER category appears to be a function of the interaction of marked topicalization, movement of "heavy" items to the end, of the confusion resulting from the ambiguous syntax of relative particles. Only the clauses with relative particles show any trace of SOV word order. If one sets this category aside, there is very little variation in the basic position of the verb, which is in second position almost three quarters of the time, but in first position under twenty percent of the time. Even as late as the period I counted, the choice of basic word orders--VS, SV, TVX--was not entirely free, since they still had a discourse function, though it was already being undermined by word order innovations. VS order marked discourse continuity and anaphoric subjects as well as questions and commands. These two functions tended to be in complementary distribution, as discourse continuity is a feature of narrative, whereas questions and commands occur in dialogue. SV was the unmarked order, and it appeared more often in the sagas I counted after a conjunction than alone. When SV appeared independently, it was generally at the reintroduction of an established topic. TVX orders marked topic shifts and beginnings of sections or paragraphs. I base my analysis of these discourse functions of word order on their correlation with anaphora in Old Icelandic, particularly on the range of possible NP marking: from definite NP to unmarked NP, to pronoun, to deletion. The type of subject marking correlates with the type of word order, as I discussed in Kossuth (1979), so will only summarize here. The most anaphoric word order is VS. The subject in a VS clause of this period is rarely new information. Further, if the subject is not the discourse topic, it is frequently deleted, in what is essentially a gapped clause, but without a conjunction. Such clauses differ from gapping also in that the antecedent of the subject may be any sentence part, except possessive genitive. True gapping is itself quite common in Old Icelandic, so that if one includes gapping in the percentages given for the counts above, it ranges from just under ten percent in Njáls Saga and Laxdæla Saga to twenty percent in Gísla Saga. It is obviously fair to consider a clause which shares its subject with the preceding clause as representing a discourse continuity. So, if one adds gapped clauses to the category of VS and CVS orders, one gets a substantial percentage of discourse continuous clauses. For the sagas I counted: Njáls Saga 19.5%, Laxdæla Saga 24.6%, Magnússaga 27%, and Gísla Saga, which has so many gapped clauses, 34.5%. Of these three types of discourse continuous clauses, two frequently began with ok 'and' followed by the verb. It is likely that by Old Icelandic times, the coincidence of ok with discourse continuity was great enough to undermine the distinctive function of VS word order, particularly since ok co-occurred completely with verb first word order in most full clause uses, and partially (ok + V + X) in gapped clauses. As time passed, the Icelanders extended the function of ok from one of coordination as in the gapped clauses to one of
discourse function, as in the CVS clauses, so that the marking of
 discourse continuity was transferred from the word order accompan-
ying the conjunction to the conjunction itself. When this happened,
the verb first word order became a free variant to subject first
word order, and in the process lost its function and its viability.
Speakers of Modern Icelandic do not define any particular situation
where VS is the only proper order.

In this discussion of VS order, therefore, I am assuming the
opposite sequence for the development of VS order than that pro-
posed by Nygaard (1905,347). He maintains that VS order resulted
from the original requirement of ok for that particular order, and
that VS order represents in fact a CVS clause with a deleted con-
junction. My research implies that VS order originally stood alone
to mark discourse continuity. By Saga times, the conjunctions ok,
which was used for gapped clauses, and enda, which marked after-
thoughts, were extended to coordinate sentences, marking discourse
continuity redundantly. Eventually, ok usurped from VS order the
function of marking discourse continuity, and began again to allow
SV order, where earlier only VS order was used. Deprived of its
previously distinct function, the role of VS became opaque, and is
being lost from the language. In a count of Modern Icelandic I
found VS orders less than one percent, and CVS one and a half per-
cent, but gapping holding at about ten percent. Why the Modern
Icelandic VS orders I found were chosen, when they did occur, is
mostly not clear; the Old Icelandic explanation that they are dis-
course markers simply doesn't hold for Modern Icelandic. They are
too infrequent, and the contexts where they do appear do not seem
to be in greater need of "ongoing" marking than areas where they
are lacking. Occasionally however a pattern does present itself:
In Sjálfstætt Fólk, Halldór Laxness uses the VS order a great deal
in his first chapter, five pages long, where of 122 sentences, 36
are verb first. In the second chapter however, seven pages long,
there is only one verb first clause, and that one after og 'and'.
The same tendency to verb second order holds for the remainder of
the novel, and one might conclude that VS order is for Laxness
acceptable Icelandic, but a stylistic device with particular impact.
Indeed, the first chapter deals with events in the mythically dis-
tant past, and it is apparent that Laxness is using the archaic
word order intentionally to create a consciously archaic style.
That he does not intend the "ongoing narrative" effect of this word
order is shown by the fact that he even begins a paragraph with VS
order, something which at least the editors of Old Icelandic saga
manuscripts have declared unacceptable for Old Icelandic.

In newspaper style, verb first word order is much more frequent.
It is commonly used in formulas such as "said he", a context where
it has persisted in English also. Beyond that, I could discern no
pattern in its use, and assume that it is truly a free variant.

The other side of the coin is the tendency in Modern Icelandic
to interject something into first position even when it seems unne-
cessary except to support the verb second rule. This struck me
especially in wire service articles, though also in Jökkull Jakobs-
son's popular novel Feilnota í fimmtu sinfóniunni, where I found a pair of sentences, one of which begins with *og* plus VS, the other with a dummy *pað* 'it' and parallel syntax:

page 9: Og leit enginn við þessu áður í búðunum.

and looked nobody at this before in the stores.

'And nobody paid any attention to this before in the stores.'

*pað* leit enginn við þessu þræslu áður.

it looked nobody at this trash before.

'Nobody paid any attention to this trash before.'

The first sentence has a syntax acceptable in Old Icelandic, but the second does not, and only Old Icelandic permitted the VS alternative to this order.

For Modern Icelandic I counted sentence types in two novels and a newspaper: Jökull Jakobsson, Feilnota í fimmtu sinfóniunni; Halldór Laxness, Sjálfstætt Fölki; and Reykjavík's premier newspaper Mogunblaðið from the 24th of October 1976, and the 19th of September that year. I kept wire service articles, which had been translated into Icelandic from AP, UPI and Reuters, separate from local news, which can be assumed to have been written originally in Icelandic and to reflect normal Icelandic newspaper prose. The categories I used are roughly the same as those for Old Icelandic above. Elliptical sentences, those I marked -V here, are very unusual in Old Icelandic, but relatively common now, particularly in popular prose. VS orders, much less common in Modern Icelandic, are split into three categories because the percentage of questions and commands is statistically significant in Modern Icelandic. The remaining category labels are the same, but one, the CTX does not represent the same sort of sentence: Whereas in Old Icelandic the T was restricted to time adverbs, verbal particles or participle clauses, in Modern Icelandic the T is any kind of adverb, prepositional phrase, or even object of the verb, all of which are uncommon in Old Icelandic as the T in a TVX order. Here is the count, excluding gapped clauses:

<table>
<thead>
<tr>
<th>Wire Service (261)</th>
<th>Local News (257)</th>
<th>Jökull Jakobsson (404)</th>
<th>Halldór Laxness (289)</th>
<th>Totals Average % (1211)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-V</td>
<td>1</td>
<td>1</td>
<td>40</td>
<td>7</td>
</tr>
<tr>
<td>VS (Q)</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>VS (IMP)</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>VS (other)</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CV(S)</td>
<td>3</td>
<td>15</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Wire Service</td>
<td>Local News</td>
<td>Jökull Jakobsson</td>
<td>Halldor Laxness</td>
<td>Totals</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
<td>------------------</td>
<td>-----------------</td>
<td>--------</td>
</tr>
<tr>
<td>SV</td>
<td>88</td>
<td>34%</td>
<td>70</td>
<td>128</td>
</tr>
<tr>
<td></td>
<td>34%</td>
<td>27%</td>
<td>32%</td>
<td>33%</td>
</tr>
<tr>
<td>CSV</td>
<td>106</td>
<td>41%</td>
<td>76</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>41%</td>
<td>30%</td>
<td>27%</td>
<td>31%</td>
</tr>
<tr>
<td>TVX</td>
<td>23</td>
<td>9%</td>
<td>46</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>9%</td>
<td>18%</td>
<td>21%</td>
<td>22%</td>
</tr>
<tr>
<td>CTVX</td>
<td>18</td>
<td>7%</td>
<td>36</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>14%</td>
<td>1%</td>
<td>4%</td>
</tr>
<tr>
<td>OTHER</td>
<td>16</td>
<td>6%</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>6%</td>
<td>3%</td>
<td>5%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Furthermore, Modern Icelandic is not stopping at a verb second or TVX order similar to Modern German but without the sentence brace; it is moving toward a SV or TSV order such as Modern Scandinavian and Modern English have. I will call this order strict SVO, and for the sake of comparison, consider normal English word order as the paradigm. The outside influence on Icelandic after the "English period" of the fourteenth century was primarily Danish, and one should seek with Danish any language contact there might have been. It is precisely the lack of contact with English which supports the principle of drift when there are parallel developments in Icelandic and English.

So far, in Icelandic the only T which may appear in a TSV sequence is the category of sentence adverb. And only a few adverbs have already made this word order switch, particularly kannski 'perhaps' and svo 'so.' It is possible that this chink in the verb second wall was opened by the borrowing from Danish of the sentence adverb kannski, which requires TSV word order, and that the TSV order with sentence adverbs began to spread from there to other sentence adverbs. Certainly this construction was not grammatical in Old Icelandic:

Jakobsson, p. 6:

> Svo ég læðist hingað.
> 'So I creep over here.'

Laxness, p. 181:

> Kanski þíð hafið sigrað á dauðanum þar á Útíraðsumyrri?
> 'Perhaps you have overcome death over there at Outer Redboq?'

Though kannski is consistent in its requirement of TSV word order, svo may also occur in a TVX construction as its homonym 'then'. If TSV is extended to svo 'then,' the chink will have broadened, and many adverbs will be acceptable in a TSV sequence.

Of course the TSV word order borrowed with kannski is only possible because of overall developments in the language. One such development, a bellwether of strict SVO, is the tightening of restrictions on subjectless sentences. In a topic-oriented verb second system, a sentence lacking a nominative is no anomaly as long
as something fills the first slot. Thus an object or some adverbi-
ial could occupy the first position with impersonal or subjectless
sentence types. This is the situation in Modern German, where it
seems stable for the time being. It was also the system in Modern
Icelandic, apparently until relatively recently, but now Icelandic
is moving toward strict SVO. The Old Icelandic pattern for subject-
less sentences was:

a. Anaphoric subject deletion was allowed in Old Icelandic,
   i. if the subject was coreferential to the subject of the
   preceding clause.
   ii. if the subject was coreferential to the last preceding
       noun, whatever its sentence part.
   iii. if the subject was known or obvious.

b. Indefinite subjects were deleted.

c. Passivization produced a subjectless sentence when the cor-
   responding active sentence had no accusative object.

d. Extraposition could produce a subjectless sentence, or could
   leave behind a slot-filling bet 'it'.

e. Lexical impersonals were common, including both weather verbs
   and subjective state verbs.

Let us assume with Lehmann (1974,30ff) and Hopper (1975,88) that the
Germanic daughter languages are moving along a continuum from SOV
to SVO. In each Germanic language, similar processes are at work
in subjectless sentences. The subject deletion rules become less
flexible, so that subjects are the only acceptable antecedents;
pronouns are innovated to provide a subject where the missing one
had been anaphoric, indefinite or extraposed; and with lexical im-
personals, a non-nominative assumes subject position. These changes
happened in Middle English, and they are happening now in Modern
Icelandic:

aa. Anaphoric subject deletion is only allowed:
   i. if the coreferent of the deleted subject is the preceding
      subject.
   ii. if the subject–verb agreement marked on the verb refers
       unambiguously to a "known" subject.

bb. Indefinite subject deletion is allowed only when the subject
    is unspecific. Otherwise indefinite pronouns are used.
    Modern Icelandic has innovated the pronoun maður 'one.'

cc. Subjectless passives are still common.

dd. For extraposed sentences, the dummy subject bað 'it' is
    still common.

ee. Some lexically impersonal verbs have fallen into disuse, but
    most are still common and still impersonal, and the [+Human]
    dative is very common in first position.

With such tolerance of various subject positions, Old Icelandic had
no difficulty with as many kinds of missing subjects as it had. And
if a certain percentage of sentences were verb–first with all the
nominal arguments following the verb, it should be true that even
the extreme example, those argumentless impersonals, the weather
verbs, for which the verb first word order is the only possibility
unless a time or locative phrase intervenes, could be an acceptable
normal sentence type. Modern Icelandic has proportionately less tolerance, and proportionately fewer subjectless sentences. The weather verbs have innovated, but don't always use, dummy pronoun subjects þá 'it' and hann 'he.' But the lexical impersonals which refer to subjective states have survived, in spite of the changing syntax, by regularly fronting the human object NP. The result is a symptom of the transition to strict SVO, just as English underwent in the very late Middle Ages. Icelandic is developing a subject hierarchy: The S position belongs to an Agent NP if there is one. If not, to an Experiencer NP. If neither is present, then any nominative assumes first position. The case marking accompanying this first position noun is nominative for Agents and the "other" NPs, but accusative and increasingly dative for the Experiencer NPs. Eventually, as this SVO order becomes more established, as it is in English, a non-nominative in subject position will either be reinterpreted as a nominative, or if it retains its original case, as it frequently does in German, then a dummy subject pronoun will be used to fill the subject slot. English has undergone all these adjustments to SVO, whereas German has made all but one: the lexical impersonals from Middle High German still in use in Modern German do not use a dummy subject, but keep the OV word order they have had throughout history. However, new lexical impersonals coming into German require a dummy es 'it' even when the sentence starts with a dative or accusative (Lockwood, 1968, 172). There is as yet no indication that Icelandic is beginning to use a dummy pronoun with subjective state impersonals. But it is following English and German in leveling its case markings with these verbs in favor of the dative, where before there had been a possibly ambiguous accusative. Of the two surface cases possible with these verbs, the dative is the less common historically, but it is taking over from the accusative the marking of many impersonals. School grammarians in Iceland rail futilely at the growing "Dative Sickness" (þágufrælsýki), but it seems to be well entrenched. So, for example, in a review in the educational periodical Menntamál of a book entitled Modurmál 'Mother tongue' by Ársæll Sigurðsson: "Here are also to be found exercises to root out those stubborn dative mistakes." One commonly hears the dative, as in:

Mér vantur... Mér langur... Mér dreymdi...
'Me lacks...'
'Me longs...'
'Me dreamed...'

All of these verbs traditionally govern an accusative. The effect of this change is a somewhat more unified reflection of the underlying semantic function: the new datives appear with impersonal verbs and an accusative or prepositional object, leaving the realm of personal sentences more than ever to the dominant Agent/nominative pattern. There are even examples of nominative Experiencers shifting to the dative case, offering an even stronger support to the idea of an Agent/Experiencer hierarchy for subjects.

The obligatory fronting of the objects of subjective state verbs points to a reanalysis underway of the objects of these verbs as grammatical subjects rather than merely as a fronted T. In a
grammar published in Akureyri, Skuli Benediktsson says: "The position and meaning of the noun complements with impersonal verbs is often similar to the position and meaning of the subject with impersonal verbs." (Benediktsson, 1970, 58) As such, these subjects fulfill many of Keenan's subject criteria (Keenan, 1976, 303); at least, of the criteria which can be used to identify Germanic subjects in general, the Experiencer subject of impersonal verbs fulfills all those not directly related to the nominative case or to the Agent function. The most interesting of these are in Keenan's section on autonomous reference. First, the Experiencers control coreferential subject deletion:

Hann langaði í kaffi, og fór svo heim.
acc V 3sg V 3sg
He desired for coffee and went therefore home.
'He wished for coffee, and so went home.'

And the other way around:

Halldor Laxness, p. 48:
Hann sofnáði og dreymbi kú.
nom V 3sg V 3sg acc
He fell asleep, and dreamed cow
'He fell asleep, and dreamed of a cow.'

In this example the deleted pronoun is the accusative object of the impersonal subjective state verb dreyma 'to dream'. Note the nominative/accusative ambiguity in the pronoun hann; the first and second person pronouns, which are much more common with subjective state verbs, do not have this dative/accusative homonymy.

Second, the Experiencer subjects also control reflexivization:

Hann dreymbi sjálfan sig.
acc V 3sg ADJ,acc acc
He dreamed self himself
'He dreamed of himself.'

Halldor Laxness, p. 25.
beim fæst óbrúandi haf milli hennar og sín.
dat V 3sg ADJ nom N nom PREP gen gen
Them seemed unbridgeable sea between her and themselves.
'It seemed to them that there was an unbridgeable sea between her and themselves.'

Not only do non-nominatives control reflexivization, but the adjectival reflexive may even appear in the nominative:

Hverjum þykir sinn fugl fagur
dat V 3sg ADJ.REFL.nom N.nom PRED ADJ
Each thinks his own bird beautiful.

This is a turn-around of reflexivization as traditionally conceived, since reflexivization is normally a predicate process. The syntax only makes sense if the dative can be considered the "subject". Furthermore, the position of the reflexive relative to the antecedent is not an issue here, for backward reflexivization is also
grammatical.

Halldor Laxness, p. 14:

Gagnvart  undirgefní  hunds  síns  hlær
PREP      N     dat         N  gen   ADJ.REFL.gen   V  3sg
In the presence of subservience dog   his    laughs

honum hugur  í brjósti sökum  máttar síns
dat      N nom  PREP PHR  PREP  N  gen   ADJ.REFL.gen
him    spirit in breast  because of    might    his

'In comparison to the subservience of his dog, his spirit laughs because of his own might.'

Here there are two reflexives, one preceding and one following the antecedent, which is a possessive dative (not, in this case, the Experiencer with a subjective state verb). There is a nominative subject, hugur, and it follows the dative. Though sentences with non-nominative antecedents for reflexives are common in Modern Icelandic, they are ungrammatical in English, and rare in German. I am indebted to Theo Vennemann for this German example:

In each of the above examples a reflexive has had a non-nominative human antecedent, even when a nominative non-human noun was present. Clearly Icelandic has reinterpreted the grammatical definition of subject to allow for a subject which might not be nominative. This development is parallel to the stage in Middle English where subject position was allowed to be dative or accusative. That stage was followed by a period in which the Middle English Experiencers governed verb agreement, even while they themselves were not nominative. Icelandic verb agreement has not taken this step yet, though its reflexivization and deletion functions are at this point.

Assuming that the daughter languages of Proto-Germanic started out with a unified syntax, it is not surprising that they should develop along a similar course. What is surprising is that the pace of their change should vary so much, but the substance so little. Old English permits the verb in all three basic positions: initial, second and final. But in Old English, variant word orders are attributed to clause type, which is probably parallel to the differences I cite for Old Icelandic in the marking of discourse continuity, and it is likely that Icelandic word order was roughly in step with English until the end of the Middle English period. At that point—a turbulent one for English syntax in general—English moved on to strict SVO, making changes that Icelandic is beginning to make now. Certainly the five hundred year interval makes it difficult to attribute this Icelandic change to simple borrowing. And none of the foreign languages commonly learned by Modern Icelanders is at the transition to SVO.

We have an important advantage in looking at Icelandic. It is the most conservative of the Germanic languages, and might be expec-
ted to develop along the same lines as its sisters and cousins on the Continent. At least in the area of word order, this seems to be the case. The genetic basis is clear, as is a linguistic history relatively free of linguistic interference, though it would be unrealistic to ignore the impact of centuries of Danish rule. Because of Old Icelandic's syntactic similarity to its contemporary Middle English, followed until the twentieth century by relatively stable syntax, then by changes parallel to those made in Early Modern English, I consider the Icelandic data to be in strong support of a principle of drift, language family specific, as Sapir proposed it. However, it is possible that this principle can be extended to the status of a diachronic universal, specifying, as Vennemann does, that languages with "pragmatic syntax," typified by the discourse oriented word order variants of earlier Germanic, will move on to the "semantic syntax" of topic oriented verb second word order, and then to subject oriented strict SVO. If Noriko McCawley's data are typical (personal communication), it may further be possible to specify the syntactic conditions under which impersonal objects begin to assume the functions of subject. I might tentatively propose that SV-VS languages with impersonal subjective state verbs are ripe for word order change triggered by, or at least accompanied by, the subjectivization of the objects of those subjective state verbs. Certainly the connection between the strict SVO and these impersonals is a likely subject for more research, since so many languages with attested history have made the shift to strict SVO.

In concentrating my analysis of Icelandic on VS word order and subjectless sentences, I have shown how Icelandic has moved from discourse oriented, post SOV word order in Proto-Norse, through topic oriented verb second order in Old Icelandic, on to the brink of strict SVO word order in Modern Icelandic. It is my contention that this word order development is common Germanic, and the result of a built-in tendency for a language to change along a course specific at least to its own language family.

BIBLIOGRAPHY


Advancement Rules and Syntactic Change:
The Loss of Instrumental Voice in Mayan
William M. Norman
University of Pittsburgh

0. Introduction The verbal suffix -b'e occurs in a number of Mayan languages in sentences where an instrumental noun phrase has been focused, questioned, or relativized. In some languages (e.g. Quiche), -b'e marks the advancement of instrument to direct object. This advancement is subject to the restriction that any instrument which advances to direct object must subsequently be focused, questioned, or relativized. Other languages (e.g. Ixil, Cakchiquel) have no rule of instrument to direct object advancement but do have -b'e as a marker of instrument extraction. It is argued here that -b'e was originally a marker of advancements and that the loss of instrument advancement in languages like Ixil and Cakchiquel is motivated by the interaction between instrument advancement and extraction rules. In certain types of sentences, the evidence that the extracted instrument has advanced to direct object is ambiguous; ambiguity of this type leads to 'telescoping' of instrument advancement with extraction rules. Once telescoping has taken place, -b'e is reanalyzed as a marker of instrument extraction.

After first reviewing some typological characteristics of Mayan languages, we investigate the synchronic behavior of -b'e in Quiche, Ixil, and Cakchiquel. Subsequently, data on -b'e in other Mayan languages is introduced to show that *-b'e can be re-constructed as an advancement marker for proto-Central Mayan. Lastly, a diachronic analysis is proposed to account for the loss in some languages of instrument advancement.

1. Typological characteristics Before proceeding further, some typological characteristics of Mayan languages are reviewed. Word Order: Quiche, Ixil, and Cakchiquel all have verb-initial basic word order (as do most Mayan languages). Application of the rules of Topicalization and Focus may produce the alternate surface word order patterns shown in Figure 1.

Figure 1. Word Order

<table>
<thead>
<tr>
<th></th>
<th>basic</th>
<th>derived</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiche</td>
<td>VOS</td>
<td>SVO, SOV, OVS</td>
</tr>
<tr>
<td>Ixil</td>
<td>VSO</td>
<td>SVO, OVS</td>
</tr>
<tr>
<td>Cakchiquel</td>
<td>VOS</td>
<td>SVO, SOV, OVS</td>
</tr>
</tbody>
</table>

Constituents are topicalized by placing them in sentence-initial position. Focused constituents are placed immediately before the verb (Norman, forthcoming).

Verbal Agreement: Verbs in Mayan languages are inflected for aspect and person. Intransitive verbs agree with their subjects, while transitive verbs are marked for agreement with both subject and object. There are two sets of person markers: the ergative set (abbreviated as E) cross-references transitive subjects and
noun possessors; the absolutive set (abbreviated A) cross-references direct objects and intransitive subjects. The relative order of aspect, ergative, and absolutive affixes is shown in Figure 2.

Figure 2. Order of Verbal Affixes

<table>
<thead>
<tr>
<th>Language</th>
<th>Affix Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiche</td>
<td>Aspect-A-E-Stem (-phrase final suffix)</td>
</tr>
<tr>
<td>Ixil</td>
<td>Aspect E-Stem-A</td>
</tr>
<tr>
<td>Cakchiquel</td>
<td>Aspect-A-E-Stem</td>
</tr>
</tbody>
</table>

Nominal Inflection and Case-Marking: Nouns in Mayan languages are not inflected for case. Subjects and direct objects are unmarked noun phrases. Nouns may be inflected for possession by prefixing to the possessed noun an ergative person marker agreeing in person and number with the possessor. The syntactic function of a noun phrase which is neither subject nor direct object may be marked by a preposition or 'relational noun'. Relational nouns are abstract or locational nouns syntactically possessed by the noun whose case role they mark. For example, in Quiche the relational noun -uuk' may mark NPs in an instrumental or comitative function, e.g. r-uk' lee achih 3sE-WITH THE MAN 'with the man' (literally 'his withness the man').

2. Instrument Advancement in Quiche It is argued here that in Quiche -b'e marks the advancement of instrument to direct object. A number of syntactic characteristics distinguish direct objects from other NPs, including instruments which have not been advanced. In sentences with -b'e, it is the NP understood as instrument which displays the characteristics of direct objects, while the NP understood to be patient or goal of the action has the syntactic characteristics of an oblique NP. This is accounted for by assuming that instruments may advance to direct object; as a result of this advancement, the underlying direct object is put en chômage and the verb is marked with the suffix -b'e.

2.1 Direct objects are syntactically distinct from instruments with respect to the following: 1) case marking, 2) control of verbal agreement, 3) advancement to subject via Passive, and 4) extraction strategies.

Direct objects are unmarked for case; this is seen in (1), which is a normal transitive sentence with VOS word order.

(1) x-Ø-u-rami-j  
    lee cheeh lee achih.  
    asp-3sA-3sE-CUT-suffix THE TREE THE MAN  
    'the man cut the tree'

x-Ø-u-rami-j is a transitive verb with a third-person singular absolutive prefix (Ø-) agreeing with the direct object and a third-person singular ergative prefix (u-) which agrees with the subject. Both subject and object are unmarked NPs. In (2), the absolutive marker at- agrees with the second-person singular object.
(2) x-at-in-sok-oh.
    asp-2sA-1sE-WOUND-phrase final suffix
    'I wounded you'

Note that no independent pronouns appear in (2); independent pronouns in Quiche are always emphatic.

Direct objects may advance to subject by the rule of Passive as illustrated in (3).

(3) x-∅-rami-x          lee chee7 r-umal    lee achih.
    asp-3sA-CUT-passive THE TREE  3sE-BY    THE MAN
    'the tree was cut by the man'

The verb is intransitivized through the addition of the passive suffix -x and is marked for absolutive agreement with the derived subject. The old subject appears as an oblique constituent introduced by the relational noun -umal.

The extraction of direct objects does not require any special markers in the clause from which the extraction takes place, as shown in sentences (4)-(6). Direct objects are focused by preparsing them to the verb, as in (4).

(4) chee7 x-∅-u-rami-j    lee achih
    TREE asp-3sA-3sE-CUT-suffix THE MAN
    'the man cut a tree'

Direct objects are questioned by preparsing to the verb the appropriate interrogative word (jas for non-humans, jachin for humans), as illustrated in (5).

(5) jas x-∅-u-rami-j    lee achih?
    WHAT asp-3sA-3sE-CUT-suffix THE MAN
    'What did the man cut?'

Relative clauses on direct objects are formed by deleting the coreferential noun in the relative clause. If the relativized noun is definite, then the relative clause is optionally introduced by the definite article. This is exemplified in (6).

(6) x-∅-w-il            lee chee7 [(lee) x-∅-u-rami-j
    asp-3sA-1sE-SEE THE TREE  [(THE)asp-3sA-3sE-CUT-suffix
    lee achih] 'I saw the tree that the man cut'
    THE MAN]

2.2 Having reviewed some of the characteristics of direct objects in Quiche, we will now consider the properties which distinguish instrumental NPs from objects. While direct objects are unmarked, instrumental NPs are marked by prepositions or relational nouns, as in (7).
(7) x-∅-u-rami-j  
    lee cheeʔ lee achih
    asp-3sA-3sE-CUT-suffix THE TREE THE MAN
    ch-ee  
    jun ch'iich'.
    preposition-(3sE-) GENITIVE A MACHETE
    'the man cut the tree with a machete'

In (7), the instrumental NP is marked by ch-ee, which is composed of the preposition chi plus the relational noun -ee. Instruments do not control verb agreement, nor do they advance to subject by Passive. Instruments also differ from direct objects with respect to extraction strategies: extraction of instrumental NPs requires that the particle wih~wi appear following the verb of the clause from which the instrumental NP is extracted. For example, focusing an instrumental NP requires that the instrumental phrase be prepositionalized following the verb, as shown in (8).

(8) ch-ee  
    jun ch'iich' x-∅-u-rami-j
    prep-(3sE-) GENITIVE A MACHETE asp-3sA-3sE-CUT-suffix
    wi  
    lee cheeʔ lee achih.
    particle THE TREE THE MAN
    'the man cut the tree with a machete'

Thus instruments and direct objects differ with regard to the four parameters listed in figure 3.

Figure 3. Differences between Direct Objects and Instruments

<table>
<thead>
<tr>
<th>case marking</th>
<th>direct object</th>
<th>instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>unmarked</td>
<td>controls absolutive agreement on verb</td>
<td>preposition or relational noun</td>
</tr>
<tr>
<td>verbal agreement</td>
<td>advances via Passive</td>
<td></td>
</tr>
<tr>
<td>advancement to subject</td>
<td>no special marking</td>
<td>requires wih</td>
</tr>
</tbody>
</table>

2.3 In sentences where -b'ē is suffixed to the verb, the underlying instrument has all those properties which characterize the direct object while the underlying direct object has none. In such sentences, the underlying direct object is an oblique NP and functions syntactically as possessor of the relational noun -ee. This is explained by positing a rule in Quiche which advances the underlying instrument to direct object, marking the verb with the suffix -b'ē and putting the direct object en chômage. This chômeur is marked by the relational noun -ee.

Several different types of evidence support the claim that in sentences like (9) where -b'ē is suffixed to the verb, the NP which denotes the instrument is syntactically a direct object.
(9) ch'iich' x-Ø-in-sok-b'e-j        aw-eech.
    MACHETE    asp-3SAs-1sE-WOUND-instr-suffix 2sE-GENITIVE
'I used a machete to wound you'

First of all, in (9) it is the underlying instrument and not the
underlying direct object which controls absolutive agreement on the
verb. xinsokb'ej agrees with a third person object, not second per-
son. Sentences like (10), where the verb xatinsokb'ej agrees with
its underlying direct object, are ungrammatical.

(10) *ch'iich' x-at-in-sok-b'e-j        (aw-eech.)
    MACHETE    asp-2SAs-1sE-WOUND-instr-suffix(2sE-GENITIVE)
    ('I used a machete to wound you')

The assumption that in (9) ch'iich' is syntactic direct object and
that the underlying direct object is en chômage would account for
the facts of verbal agreement and predict the ungrammaticality of
(10).

Second, in (9) the underlying instrument is an unmarked NP,
while the underlying object is marked as an oblique NP. Thus, the
case-marking of the NPs also supports the claim that ch'iich' is
syntactic direct object (hence an unmarked NP) while the oblique NP
aw-eech is a direct object chômous.

Third, if sentences like (9) are passivized, the underlying in-
strument advances to subject in place of the underlying direct ob-
ject. In (11), ch'iich' is the derived subject and controls ab-
solutive agreement on the passivized stem sok-b'e-x.

(11) ch'iich' x-Ø-sok-b'e-x        aw-eech.
    MACHETE    asp-3SAs-WOUND-instr-passive 2sE-GENITIVE
'a machete was used to wound you'

Finally, in sentences with -b'e the underlying instrument is
focused like a direct object and not like an oblique instrumental
NP, that is, without leaving wih in the clause from which the ex-
traction takes place. This may be seen by comparing (12) with (4)
and (8).

(12) ch'iich' x-Ø-u-rami-b'e-j        lee achih
    MACHETE    asp-3SAs-3sE-CUT-instr-suffix THE MAN
    r-ee        lee chee7.
    3sE-GENITIVE THE TREE
'the man used a machete to cut the tree'

The above facts show that in Quiche, the NP understood as in-
strument is the derived direct object of verbs suffixed with -b'e,
while the underlying direct object is a chômous, appearing as an
oblique NP. A rule of Instrument to Direct Object Advancement ac-
counts for this realignment of grammatical relations. The effect
of this advancement rule is represented schematically in figure 4.
(NB: the order of constituents in figure 4 is schematic; it is not intended to reflect actual word order.)

Figure 4. Instrument → Direct Object Advancement

level 1: Verb Subject Object Instrument
level 2: Verb-b'e Subject Object chômeur Object

2.4 The rule which advances instruments to direct object has close functional and formal connections to extraction rules. Above, it was seen that underlying instruments may be focused in either of two ways: directly (i.e. without advancement) or as direct objects (i.e. with advancement). The Instrument to Direct Object Advancement rule also feeds the rules of WH-Question and Relativization which apply to direct objects, as may be ascertained by comparing (13) and (14) to (5) and (6) respectively.

(13) jas x-∅-u-rami-b'e-j leechi achih
WHAT asp-3sA-3sE-CUT-instr-suffix THE MAN
r-ee leechi7
3sE-GENITIVE THE TREE
'What did the man use to cut the tree?'

(14) x-∅-inw-elaq'a-j leechi 'iich
asp-3sA-1sE-STEAL-suffix THE MACHETE
[x-∅-u-rami-b'e-j leechi achih r-ee leechi7].
[asp-3sA-3sE-CUT-instr-suffix THE MAN 3sE-GEN.THE TREE]
'I stole the machete that the man used to cut the tree'

In the dialect of Quiche under discussion (that of Nahuala), instruments may not be questioned or relativized directly; they must first advance to direct object, then undergo extraction. Instrument to Direct Object Advancement is thus functionally related to extraction rules in that the advancement rule functions to make instruments accessible to extraction.

Besides this functional link between the advancement rule and the extraction rules, a formal link also exists: any instrument which has advanced to object is obligatorily extracted, i.e. it must be focused, questioned, or relativized. Sentences where an instrument advances to direct object without being extracted are ungrammatical, as shown by (15).

(15) *x-∅-u-rami-b'e-j ch'iich' leechi achih
asp-3sA-3sE-CUT-instr-suffix MACHETE THE MAN
r-ee leechi7.
3sE-GENITIVE THE TREE
('The man used a machete to cut the tree')

This condition also holds even when an instrument advances to direct object and then to subject by Passive. Sentences like (16) are ungrammatical, since the underlying instrument has advanced to direct object and then to subject without being either focused, questioned, or relativized.
(16) \*x-∅-sok-\text{b}'e-x \quad \text{ch'iich' aw-eech.}
asp-3\text{S}\text{A}-\text{WOUND-instr-passive MACHETE} \quad 2\text{S}\text{E}-\text{GENITIVE}
('a machete was used to wound you')

As these facts show, the sole function of Instrument to Direct Object Advancement is to feed extraction processes; instruments simply pass through the direct object state en route to extraction, as depicted in figure 5.

Figure 5.

\[
\text{instrument} \quad \rightarrow \quad \text{(direct object)} \quad \rightarrow \quad \text{extracted NP}
\]

\[
\text{instrument} \quad \rightarrow \quad \text{(direct object)} \quad \rightarrow \quad \text{(subject)} \quad \rightarrow \quad \text{extracted NP}
\]

3. \text{-b}'e in Ixil and Cakchiquel  
The \text{-b}'e suffix is used in other Eastern Mayan languages in clauses which have instrumental NPs. In some of these languages, however, \text{-b}'e does not function as in Quiche to mark the advancement of instrument to direct object. In this section, we investigate the function of \text{-b}'e in Ixil (a language of the Mamean subgroup) and Cakchiquel (Quichean subgroup).

3.1 In Ixil, \text{-b}'e marks the extraction of instruments. However, in sentences where \text{-b}'e occurs, there is apparently no realignment of grammatical relations; the underlying direct object retains the syntactic properties of a direct object. Instrumental NPs in Ixil may be marked with the relational noun \text{-a7n} as shown in (17).

(17) n-in-tzok'-∅ \quad \text{tze7 \quad t-a7n machit.}
asp-1\text{S}\text{E}-\text{CUT-3\text{S}\text{A TREE} \quad 3\text{S}\text{E}-\text{BY MACHETE}}
'I cut the tree with a machete'

As in Quiche, instruments are focused by preposing them to the verb; this extraction is marked by suffixing \text{-b}'e to the verb, cf. (18).

(18) machit \quad n-in-tzok’-\text{b}'e-∅ \quad \text{tze7.}
MACHETE \quad asp-1\text{S}\text{E}-\text{CUT-instr-3\text{S}\text{A TREE}}
'I cut the tree with a machete'

In (18), \text{machit} appears as an unmarked NP (note the absence of \text{-a7n}) when it has been preposed to the verb.

Two facts indicate that in sentences like (18) the instrument does not advance to direct object. First, the direct object remains an unmarked NP; it does not have to be introduced by a relational noun. More importantly, transitive verbs to which \text{-b}'e is suffixed continue to agree with their underlying direct objects, as may be seen in (19).

(19) uula \quad a-k'oni-b' \quad \text{in.}
SLINGSHOT 2\text{S}\text{E}-\text{SHOOT-instr 1\text{S}\text{A}}
'You shot me with a \text{slingshot}'
In sentences where a non-third person instrument is allowed, it is apparent that the verb with -b'e does not agree with the instrument, cf. (20).

\[
(20) \text{axh la7 in-paxi-b'e-Ø} \quad u \quad \text{ispeeva.}
\]
\text{YOU asp lsE-BREAK-instr-3sA THE WINDOW}
'I'm going to use you to break the window'

These facts indicate that in (18)-(20), the underlying direct object retains its grammatical relation. Despite the fact that the instrumental NP loses its relational noun when it is preposed to the verb, its grammatical relation appears unchanged. According to Ayres (1977), the instrumental NP must be preposed to the verb when the -b'e suffix is used. Thus -b'e in Ixil simply marks the extraction of an instrumental NP; there is no evidence that instruments must pass through the direct object state in order to be extracted. In Ixil, a single rule of Instrument Extraction corresponds to two distinct rules (an advancement rule and an extraction rule) in Quiche.

3.2 In Cakchiquel, -b'e also occurs as a transitive stem formative. Its function, however, is simply that of registering the presence of an instrumental NP in the clause without marking a change in grammatical relations.

There are a number of different strategies for focusing an instrument in Cakchiquel. One of these involves preposing the instrument and suffixing -b'e to the verb, as in example (21).

\[
(21) \text{r-ik'in jun machät x-Ø-u-choy-b'e-j}
\]
\text{3sE-WITH A MACHETE asp-3sA-3sE-CUT-instr-suffix}
\text{ri che7 ri achin.}
\text{THE TREE THE MAN}
'the man cut the tree with a machete'

Despite the occurrence of -b'e, several facts show that in this construction the instrument does not advance to direct object, this relation being retained by the underlying direct object. First, in Cakchiquel, the instrument is always introduced by a relational noun or preposition, even when preposed to the verb. Second, absolutive agreement on the verb is with the underlying direct object and not with the instrument, as shown in (22).

\[
(22) \text{r-ik'in jun machät x-i-ru-sok-b'e-j}
\]
\text{3sE-WITH A MACHETE asp-1sA-3sE-WOUND-instr-suffix}
\text{ri achin.}
\text{THE MAN}
'the man wounded me with a machete'

Third, if (22) is passivized, it is the underlying direct object and not the instrument which advances to subject; in (23), the underlying first-person direct object serves as derived subject of the passivized verb and therefore controls absolutive agreement.
(23) r-ik'in jun machät x-i-sok-b'e-x
3sE-WITH A MACHETE asp-1sA-WOUND-instr-passive
r-oma ri achin.
3sE-BY THE MAN
'I was wounded with a machete by the man'

Cakchiquel is thus similar to Ixil in that in sentences with b'e, the instrument does not advance to direct object.

Cakchiquel differs from both Ixil and Quiche in that -b'e may appear in Cakchiquel in clauses where the instrument has not been extracted. That is, in clauses which contain instruments, -b'e may occur even when the instrument is not focused, questioned, or relativized, cf. (24).

(24) ri achin x-∅-u-choy-b'e-j
THE MAN asp-3sA-3sE-CUT-instr-suffix THE TREE
r-ik'in jun machät.
3sE-WITH A MACHETE
'the man cut the tree with a machete'

Thus, in Cakchiquel, -b'e appears not to be uniquely associated with the extraction of an instrument NP; it may simply register the presence of an instrument. The significance of this fact will be discussed below.

A second fact of relevance for our eventual diachronic analysis is the existence in Cakchiquel of a second strategy for extraction of instruments which involves the particle wi, cognate with Quiche wih and similar to it in function. An instrument may be focused, questioned, or relativized in Cakchiquel by preposing the instrument together with its relational noun and inserting wi after the verb.

(25) r-ik'in jun machät x-∅-u-choy wi ri che7 ri achin.
3sE-WITH A MACHETE asp-3sA-3sE-CUT prt. THE TREE THE MAN
'the man cut the tree with a machete'

(26) achoq-k'in x-∅-a-choy wi ri che7?
oblique-interrog.-WITH asp-3sA-2sE-CUT prt. THE TREE
'with what did you cut the tree?'

Instrument extraction thus may be marked by the particle wi, which also may be used to mark the extraction of locatives. It consequently appears that -b'e is entirely superfluous in Cakchiquel since the instrumental relation is always marked by a preposition or relational noun, and since wi may be used to mark instrument extraction.

3.3 To summarize the arguments presented so far, we have seen that -b'e in Quiche is associated with a relation-changing rule which advances instruments to direct objects. The direct objects created by this rule must be extracted. In Ixil, -b'e marks instrument extraction but is not associated with any relation-changing rule.
In Cakchiquel, -b'ε registers the presence of an instrument in the clause and may function to mark instrument extraction; in both cases, it merely replicates the functions of other morphemes.

4. The Direction of Change The fact that -b'ε has different functions in Quiche, Ixil, and Cakchiquel clearly indicates that one or more of these languages has undergone some syntactic change which has affected the advancement and extraction of instruments. From the evidence presented so far, however, it is not obvious what the direction of the change has been: has -b'ε changed from an advancement marker to an extraction marker, or vice versa? In this section, it is argued that -b'ε was originally an advancement marker and not an extraction marker. This is based on the fact that -b'ε is distributed among the Mayan languages more widely as a marker of advancement than as a marker of extraction. The use of -b'ε to mark extraction of instruments is an innovation confined to Eastern Mayan.

The Mayan family comprises thirty distinct languages distributed among six different subgroups. The interrelations among these subgroups are depicted in the family tree in Figure 6. (The triangles in Figure 6 serve as a reminder that the label at the end of each branch designates a subgroup, not an individual language.)

Figure 6. Subgroups of Mayan

```
proto-Mayan
   / \
Huastecan  Yucatecan
   / \
   Central Mayan

Western Mayan  Eastern Mayan
       /  \       /  \
Greater Tzeltalan  Kanjobalan  Mamean  Quichean
```

Reconstructing the precise function of -b'ε involves a number of complex problems which will not be dealt with here. For our present purposes it is sufficient to show that a transitive suffix *-b'ε can be reconstructed for proto-Central Mayan and that this suffix originally functioned as a marker of advancements to direct object.

Although definite cognates of -b'ε have not so far been attested for Huastecan and Yucatecan, cognates have been found in all four remaining subgroups of Mayan. (The subgroups where -b'ε is attested are indicated by underlining in Figure 6.) In the Greater Tzeltalan subgroup, -b'ε occurs as a transitive stem formative in Chol (Warkegentin and Whittaker 1970:86-87), Chontal (Smailus 1975:194), Tzotzil (Aissen, to appear), and Tzeltal (Kaufman 1971:67). In the Kanjobalan subgroup, -b'ε apparently occurs only in Mocho (Kaufman 1967: ix). In the Mamean subgroup, -b'ε has been attested in Teco (Kaufman 1969:165) as well as in Ixil, and -b'ε apparently occurs as a frozen
suffix on several transitive stems in Mam and Aguacatec. In the Quichean subgroup, the languages besides Quiche and Cakchiquel where -b'e is productive include Pocomam (Smith-Stark 1976), Tzutujil (Dayley 1977), and Uspeantec (Kaufman 1970). A few transitive stems with frozen -b'e exist in Kekchi.

The widespread occurrence of -b'e in the Central Mayan branch could be explained either by assuming that it is an innovation which originated in one subgroup and spread into others or by assuming that -b'e is inherited from proto-Central Mayan. It is unlikely that the distribution of -b'e is due to diffusion, since the geographical area where it occurs does not form a continuum, being interrupted by those Kanjobalan languages (Jicalteca, Kanjobal, Acatec, Chuj) which do not have cognates of -b'e. Therefore we conclude that *-b'e is to be reconstructed for proto-Central Mayan.

The suffix -b'e may mark two distinct types of advancements to direct object. In some languages, e.g. Mocho (Western Mayan), Teco, Quiche, Pocomam (all Eastern Mayan), -b'e marks advancement of instruments to direct object, while in other languages, e.g. Tzotzil, Tzeltal, Chol, Chontal (all Western Mayan), -b'e marks the advancement of indirect object to direct object (cf. Aissen, to appear, for a detailed treatment of -b'e in Tzotzil).

In the languages where -b'e marks the advancement of indirect objects, this advancement has no special connection to extraction processes. For example, an indirect object which has advanced to direct object does not have to be extracted. The occurrence of -b'e as an extraction marker thus appears to be confined to the Eastern Mayan branch, whereas its use as a marker of advancement to direct object is common to both Western Mayan and Eastern Mayan. On the basis of the widespread distribution of -b'e as an advancement marker versus its limited distribution as an extraction marker, we conclude that *-b'e marked an advancement to direct object in proto-Central Mayan (though it is not clear whether originally the advanced NP was an instrument or an indirect object.) This implies that Quiche represents a more conservative usage of -b'e than does Ixil or Cakchiquel.

5. **Telescoping and the Loss of Instrumental Voice** We have shown that Quiche has an instrumental voice, i.e. a rule which converts underlying instrumental NPs into direct objects of instrumentive verbs in -b'e. Presumably proto-Eastern Mayan was like Quiche in this respect; Ixil and Cakchiquel have undergone innovations whereby instrumental voice was lost and -b'e reanalyzed as an extraction or registration marker. In this section we show that the innovations in Ixil and Cakchiquel are an instance of a type of reanalysis encountered in diachronic phonology: the 'telescoping' of two rules into a single rule through the loss of the intermediate stage of the derivation. The factors which led to the reanalysis are shown to be 1) the limited nature of the evidence that instruments actually passed through the direct object stage, and 2) the functional cohesion of the advancement rule and the extraction rule. Finally, we discuss aspects of this case study which may prove relevant to the formulat-
ion of general principles of syntactic change.

To avoid repetition of the relevant grammatical properties of various languages and proto-languages in the discussion below, we refer instead to two grammatical types, G1 and G2. G1 embodies the features of Quiche and proto-Eastern Mayan relevant to the behavior of instrumental NPs (cf. Section 2 above); in particular, G1 embodies what we shall term the Advancement Analysis of -b' e, wherein -b' e signals instrument to direct object advancement. This advancement is subject to the restriction that any instrument which advances to direct object must subsequently be extracted. G2 embodies the relevant grammatical properties of Ixil (Cakchiquel will be discussed later), including the Extraction Analysis of -b' e wherein -b' e marks the direct extraction of an instrumental NP without any redistribution of grammatical relations.

The comparative evidence presented in the preceding section indicates that the use of -b' e in G1 is more archaic than its use in G2; at some point in the prehistory of Ixil and Cakchiquel, a G2 grammar replaced the earlier G1 grammar. Before discussing why this change occurred, it would be helpful to identify the mechanism involved in the replacement of G1 by G2. The principal difference between G1 and G2 concerns whether instruments pass through the intermediate stage of direct object before being extracted: in G1 instruments are advanced, then undergo direct object extraction rules, while in G2 they are extracted directly by special instrument extraction rules. In G1 it requires the application of two rules to extract an instrument, while in G2 only one rule application is required. The type of reanalysis which has resulted in the replacement of G1 by G2 is known as telescoping, a form of reanalysis first recognized in studies of phonological change (Wang 1968:708, Hyman 1975:173-5, Kenstowicz and Kisseberth 1977:64-5). Telescoping designates the diachronic process whereby two rules, the first of which feeds the second, are collapsed into a single rule as a result of the loss of the intermediate stage of the derivation. Suppose that a language once had two rules, R1: A > B and R2: B > C. The ultimate effect of these two rules is to map A onto C, with B as intermediate stage. Suppose that subsequently the synchronic motivation for positing the intermediate stage B is lost. Language learners will now reconstruct a single rule R3: A > C, mapping A directly onto C with no intermediate stage. From a diachronic perspective, R1 and R2 have been telescoped into a single rule whose effect is identical to the net effect of the two earlier rules.

Positing a change of this sort accounts for the different functions of -b' e in G1 and G2: in by-passing the intermediate stage of direct object in the instrument extraction process, G2 has telescoped two earlier rules into a single rule. In G1 the net result of advancing an instrument to direct object, then extracting that direct object, is an extracted NP which represents an underlying instrument. Once these two rules were telescoped, there resulted a new instrument extraction rule in G2 whose immediate effect was identical to the net effect of the two G1 rules. The new rule
in G2 retained the surface signals of the earlier advancement rule (the suffix -b'e, the absence of any case marker on the instrumental NP) and of the direct object extraction strategies. Since the new rule was an extraction rule, -b'e was reanalyzed as an extraction marker in G2. The change in the function of -b'e was thus an automatic consequence of the telescoping process.

Since G2 was chosen to represent Ixil, the preceding remarks are sufficient to account for the function of -b'e in Ixil. For Cakchiquel, however, further discussion is necessary, since -b'e in Cakchiquel at times functions as an advancement marker and at times merely appears to register the presence of an instrumental NP in the clause. This may be explained by assuming that Cakchiquel went through the G2 stage but in addition had wi as a marker of instrument and locative extraction. During this phase, Cakchiquel marked instrument extraction sometimes with -b'e, sometimes with wi. But wi is a more general extraction marker than -b'e, since wi marks locative extraction as well as instrument extraction. Therefore the domain of wi was extended to all clauses where instruments had been extracted, including those where the extraction was already marked by -b'e. Since wi functions as an extraction marker in environments where -b'e does not occur, Cakchiquel speakers attempting to analyze a clause containing both -b'e and wi might identify wi as the real extraction marker, in which case the only information provided by -b'e would be that the extracted NP was an instrument, not a locative. In such cases, -b'e would simply be registering the presence of an instrument. Next, -b'e might be employed as registration marker in clauses from which the instrument had not been extracted, since the link between -b'e and extractions had been severed in the previous change. Apparently, modern Cakchiquel is currently undergoing a change of this type: the generalization of wi as an extraction marker is rendering -b'e superfluous.

So far no explanation has been offered for why telescoping took place. We now provide an explanation for the reanalysis within the framework of Andersen's (1973) model of 'abductive' and 'deductive' change. The elimination of the direct object stage was an abductive innovation based ambiguities in the output of G1; the reanalysis of -b'e as an extraction marker was a deductive innovation which, as argued above, followed as an automatic logical consequence of by-passing the direct object stage. The fact that in the output of G1 -b'e occurred only in association with extracted instruments served to validate this deductive innovation, thereby contributing to its successful implementation.

The transition from G1 to G2 was due to internal properties of the linguistic system rather than to external influences. Such internally motivated changes Andersen calls 'evolutive' and he proposes (1973:780) that evolutive changes proceed in the following fashion. Motivated by structurally ambiguous features of the speech
of his models, a language learner makes an 'abductive' innovation: he accounts for the verbal output of his models by positing a rule not present in their grammar. At the same time, the language learner compensates for any discrepancies between the speech of his models and his own speech by means of 'adaptive' rules, ad hoc rules which adjust his speech to the received norms of the speech community. Subsequently, 'deductive' innovations occur as the language learner follows through the logical consequences of his reanalysis.

The abductive innovation involved in the replacement of G1 by G2 was the elimination of the direct object stage in the instrument extraction process. This innovation was possible because some sentences in the output of G1 to which Instrument to Direct Object Advancement had applied did not contain unequivocal evidence that the instrumental NP had in fact advanced to direct object. This indeterminacy stems from two factors: 1) instruments are nearly always third person; 2) in many Mayan languages, third person direct object chômeurs do not have to be marked with a relational noun. In Quiche, for instance, demoted direct objects are obligatorily marked with relational nouns if they are first or second person, but if they are third person, they may be left unmarked. This is shown in (27) and (28), which may be compared with (14) and (11) respectively.

(27) x-Ø-inw-elaq'a-j  lee ch'iich
     asp-3sA-1sE-STEAL-suffix THE MACHETE
     [x-Ø-u-rami-b'e-j  jun chee7 lee achih]
     [asp-3sA-3sE-CUT-instr-suffix A TREE THE MAN]
     'I stole the machete that the man used to cut a tree'

(28) jaswach x-Ø-rami-b'e-x  lee chee7 ?
     WHAT asp-3sA-CUT-instr-passive THE TREE
     'what was used to cut the tree?'

In both sentences the demoted object (jun chee7 in (27), lee chee7 in (28)) is left unmarked. Since both the underlying instrument and the underlying direct object in (27) and (28) are third person unmarked NPs, either could be construed as controlling absolutive agreement on the verb. Note that in (28) the application of Passive has not reduced the indeterminacy, since either NP could be interpreted as subject of the passivized verb. Thus the overt structural features of (27) and (28) do not indicate that the underlying direct object has actually been put in chôme. A language learner could account for these sentences by assuming that the underlying direct object remained surface direct object and that instruments were extracted directly.

A language learner who adopted this reanalysis would not be able to account for sentences like (9) and (11)-(14) where there is clear evidence that the underlying object has been demoted. At this point he could either abandon his analysis or attempt to mask its deficiencies by means of an ad hoc adaptive rule. Since the most conspicuous difference between the output of G1 and the
language learner's grammar is in the use of relational nouns, he might try to minimize his deviations from the received norm by inventing an ad hoc rule such as 'insert ree~reech optionally after verbs with the suffix -b'ee and before the direct object'. With this rule he could approximate (14) by inserting the relational noun r-e in (27).

Preliminary investigations indicate that there are Quiche dialects (Momostenango, Santa Maria Chiquimula) where -b'ee is in the process of being reanalyzed as an extraction marker. Significantly, some speakers of these dialects have an adaptive rule of the type just mentioned. Consider the following data from a speaker of the Chiquimula dialect (examples provided by Thomas Larsen, personal communication):

(29) chi jun machet x-Ø-in-ket-b'ee-j
  prep. A MACHETE asp-3sA-1sE-CUT-instr-suffix
  r-e la jun cheñe
  3sE-GEN. THE ONE TREE
  'I cut that tree with a machete'

(30) chi jun machet x-in-u-sok-b'ee-j
  prep. A MACHETE asp-1sA-3sE-WOUND-instr-suf. 3sE-GEN.
  r-e la achii
  THE MAN
  'the man wounded me with a machete'

(29) and (30) are anomalous under either the Advancement or the Extraction Analysis of -b'ee. In (29), the Advancement Analysis could account for the use of r-e to mark the demoted direct object but not for the use of the preposition chi to mark an instrumental NP which has presumably advanced to direct object. The Extraction Analysis could account for chi, since the instrumental NP retains its original grammatical relation under that analysis, but not for r-e, since the direct object is not demoted. The occurrence of r-e in (30) constitutes a more serious anomaly, since (a) the object has obviously not been demoted, as it continues to control absolute agreement, and (b) the direct object is first person, while r-e has a third person prefix. Furthermore no rule of Quiche grammar would sanction the use of r-e to refer to either the subject NP or the instrumental NP in (30).

The anomalies of (29) and (30) may be explained by assuming that r-e has been inserted by an adaptive rule. The speaker has internalized an extraction analysis of -b'ee and is employing an adaptive rule to make his speech conform to that of more conservative speakers. His adaptive rule inserts an optional 'pleonastic' r-e following verbs suffixed with -b'ee. In (29) he almost succeeds in disguising his reanalysis, but in (30) he commits a form of syntactic hypercorrection since he has failed to realize that more conservative speakers use r-e only when the underlying object is third person.

We have shown that a class of sentences generated by Gl can be explained by the Extraction Analysis, and that adaptive rules
could have been used to cover up some of the shortcomings of this analysis. Nevertheless, the Extraction Analysis is quite inadequate as an analysis of sentences like (9) and (11), where the demoted object is not third person. This raises the puzzling question of why language learners should have preferred a deficient analysis to one which was observationally more adequate. The answer may lie in the fact that the Extraction Analysis made a prediction about the distribution of -b'e which turned out to be correct.

If a hypothesis leads to predictions which can be tested with empirical data, and the data conforms to the predictions, then the hypothesis has been confirmed. Once the direct object stage was eliminated from the instrument extraction strategy, language learners reinterpreted -b'e as an extraction marker. This was a deductive innovation, since it was a logical consequence of the loss of the intermediate stage of the derivation (see the discussion of telescoping above). The hypothesis that -b'e was an extraction marker made a testable prediction: if -b'e is an extraction marker, then it should occur only where instruments have been extracted. Upon testing this prediction, it was confirmed. Unbeknownst to these language learners, the prediction was confirmed because in Gl instruments which had advanced to direct object had to be extracted. Thus even though -b'e was an advancement marker in Gl, in the output of Gl -b'e only occurred in association with extracted instruments. Despite its deficiencies the Extraction Analysis was adopted because its predictions about the distribution of -b'e were confirmed.

To summarize the main points of this diachronic analysis, we have shown that 'telescoping' is an accurate designation for the type of reanalysis which resulted in the loss of instrumental voice in Ixil and Cakchiquel. A prerequisite for telescoping was the ambiguous status of the old direct object in some sentences where the instrument had undergone advancement. This indeterminacy made way for an abductive innovation—by-passing the direct object stage in instrument extraction—and the reanalysis of -b'e followed as a deductive innovation. Adaptive rules could have been employed to minimize the discrepancies between the output of the new grammar and that of its predecessor. A crucial factor in the adoption of the new grammar was its successful prediction of the distribution of -b'e, made possible by the restricted function of Instrument to Direct Object Advancement in the earlier grammar.

6. Conclusion: Advancement and Extraction Rules in Syntactic Change
This case study has brought to light a diachronic interaction between advancement rules and extraction rules. This interaction suggests two possible generalizations. First, some types of syntactic change may exhibit the same sort of directionality found in many phonological changes: we have seen that under certain conditions it is natural for an advancement rule to be telescoped with an extraction rule, whereas a change in the opposite direction appears much less probable. Second, advancement rules with specialized 'promotional'
functions may be diachronically unstable. Instrument to Direct Object Advancement in Quiche is an example of an advancement rule whose sole function is promotional: it promotes instrumental NPs up the Accessibility Hierarchy (Keenan and Comrie 1977) thereby making them accessible to extraction rules which operate on NPs nearer the top of the hierarchy. The restricted function of this rule made possible the reanalysis of -b'ë as an extraction marker, a factor which facilitated telescoping. Regardless of whether these generalizations turn out to be correct, the interaction of advancement rules with extraction rules promises to be a fruitful area of investigation for diachronic syntax.

FOOTNOTES

1 The research reported in this paper was made possible by a Mellon Postdoctoral Fellowship from the University of Pittsburgh. My fieldwork on Mayan languages has been supported by the Proyecto Linguistico Francisco Marroquin (PLFM). I have benefitted greatly from Judith Aissen's comments on earlier versions of this paper and from discussions with Glenn Ayres, Jon Dayley, Terrence Kaufman, and Thomas Larsen.

2 Quiche data represents the dialect of Nahuala and Santa Catarina Ixtahuacan (except for ex. (29) and (30)) and was elicited during my work with Quiche linguists at PLFM. Ixil data was drawn from Ayres 1977. Data on the Tecpan dialect of Cakchiquel was provided by Wenceslao Tucubal S. of PLFM. All examples are transcribed in the practical orthography in use at PLFM. Symbols have their normal phonetic values except for the following: C' = glottalized consonant, ʔ = glottal stop, ɨ = long vowel, ɨ = /ː/, x = /ʃ/ in Quiche and Cakchiquel but /ʃ/ in Ixil, xh = /ʃ/ in Ixil, ɨ = /ʃ/ or /n/, ch = /ʃ/, tz = /ʃ/.

3 Extraction rules are rules which alter clause structure without affecting grammatical relations. In this paper, the term 'extraction rule' is used to characterize Focus, WH-Question Movement, and Relative Clause Formation.

4 Instrumental NPs in the Nahuala dialect must be advanced to direct object to be questioned or relativized. Thus it might seem that the rule of wih insertion is too general, since Focus is the only extraction rule which can apply directly to instruments. The extraction of locatives, however, also is marked by the insertion of wih; since locatives are focused, questioned, and relativized directly, a general rule of wih insertion is needed. Furthermore, in the Quiche dialects and other Quichean languages (e. g. Kekchi) where instruments may be questioned or relativized directly, the extraction is marked by the cognate of wih.

5 The discussion of -b'ë is restricted to the 'instrumentive' use of this suffix in clauses which have a transitive agent. In the
languages discussed here, other uses of -b'e include marking a kind of 'circumstantial' transitive verb derived from an intransitive (Quiche), marking focused instrumental subjects (Quiche, Cakchiquel), and marking the lexically-governed advancement of indirect object to direct object. The last-mentioned use of -b'e is a historical relic (cf. Section 4 of this paper), while the other two functions may be regarded as secondary extensions of the instrumental function of -b'e. Omitting the discussion of these secondary uses of -b'e does not materially affect the analysis presented here.

6 The analysis of Ixil follows Ayres 1977.

7 Focused instruments also lose their case-markers in some Quichean languages where no advancement has taken place (e.g. Kekchi). Presently I know of no synchronic explanation for these facts.

8 The family tree presented here differs from earlier work (e.g. Kaufman 1976) in regard to the relative affinities of Yucatecan, Western Mayan, and Eastern Mayan. I believe that it is necessary to posit a common ancestor, proto-Central Mayan, for Western Mayan and Eastern Mayan in order to account for grammatical similarities (of which -b'e is an instance) unique to these two branches.

REFERENCES


On *w and *y in Kiowa-Tanoan

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Some ten years ago now Ken Hale (1967) presented a first reconstruction of Proto-Kiowa-Tanoan (PKT) phonology. It was roughly twenty years ago that the Tragers (1959) and Wick Miller (1959) separately argued for inclusion of Kiowa in the Tanoan family. Despite the very close relationships within Kiowa-Tanoan, that relationship was only relatively recently demonstrated. Hale included in his article comments on various grammatical features that are likely reconstructible to PKT and emphasized the need for careful reconstruction of both PKT and Proto-Uto-Aztecan (PUA) before a comparison of the two proto-languages could be undertaken. Far more progress has been made in Uto-Aztecan than in Kiowa-Tanoan, but the time is ripe, with recent field work on several of the KT languages, to remedy the sketchy understanding we have of these languages and their historical development.

A brief look at some of the correspondences presented by Hale reveals the closeness of the family. The ejective and plain stops and the nasals remained the same in all four subgroups, Tiwa, Tewa, Towa and Kiowa. The aspirates developed into spirants in several of the Tanoan languages but remained aspirates in Kiowa. *b and *d descended as m and n in Tanoan where Kiowa retained b and d. The *b and *d correspondences are especially interesting for their participation in voicing ablaut, a feature no doubt of the proto-language, which is reflected in the modern alternations Tanoan m~p but Kiowa b~p, Tan. n~d K. t~d, Tan. y~c K. z~c and, attested only in Kiowa, g~k.

Vowel correspondences have so far yielded no clear picture of the vocalic system of the proto-language. Kiowa seems the most divergent, several proto-vowels having collapsed in Kiowa, leaving a disproportionate number of correspondence sets with low vowels. Trager (1942) remarked on the considerable vocalic differences between Tiwa and Tewa, which are otherwise the closest of the four subgroups. In the end, the certainty of the proposed cognate sets rests on a better understanding of the vocalic correspondences, but we will have to proceed without that understanding for the moment.

My concern in this paper will be with two parts of Hale's reconstruction: the status of *w and the addition of *y to the proto-inventory. The development of the labialized velars and the affricates is of related interest. The revisions I propose here are built on Hale’s considerable contribution to Aztec-Tanoan studies, and will, I hope, bring us a step closer to a detailed assessment of the status of the Aztec-Tanoan stock.

First, a look at one of Hale's poorly attested sets, *w > Tiwa, Tewa, Towa w, Kiowa y, the single example of which is the word for 'two': Ti wi-, Te wiye, To wi-, K yi*. This set is suspect on two counts. First, the w:y correspondence is an unlikely shift.
Second, the vocalic correspondence $i:i:i:i$ occurs uniquely in this set. The fault with the cognates for 'two' lies solely in the Kiowa form, however, the other three correspondences being supported by additional cognate sets (1).

(1) a. $\ast_w$ 'neg. pfx' (W) b. $\ast_w$ 'again/back' (W) c. $\ast_w$ 'good' (W)

| Ti  | $\overline{w}$ | wiwa | -- |
| Te  | $\overline{\text{w}}$ | $\overline{\text{w}}$ | (hi')$\overline{\text{w}}$ |
| To  | $\overline{\text{w}}$ | -- | $\overline{\text{w}}$ |
| K   | $\text{\ddot{s}}$ | $\text{\ddot{y}}$ | $\text{\ddot{y}}$ |

There are gaps in the sets, but only the lack of a Kiowa cognate for the negative prefix (1a) is certain. The picture is clear nevertheless: $\ast_w$ remained $w$ in the Tanoan languages but emerged as a rounded vowel in Kiowa. In 'again, back' (1b), $\ast_w$ has become [+ syllabic] before an unrounded vowel, that vowel becoming [- syllabic], perhaps conditioned by an accent shift.

The validity of the set is strengthened by the occurrence of the form 'again, back' in identical syntactic environments in Tewa and Kiowa. Among other elements that may be compounded in the KT verb are a group of adverbials which must occur between the nominative prefix and the verb stem. Tewa $\overline{\text{w}}$ and Kiowa $\text{\ddot{y}}$ belong to this class (2).

(2) Te na$\overline{w}$-m$\overline{w}$ (3s-back-go) 'he went back'
    do$\overline{w}$-m$\overline{w}$ (1/3s-again-see) 'I saw it again'
    K èm$\overline{\text{\dot{s}}}$-y$\overline{\text{\dot{a}}}$. (2s-back-come) 'come back!'
    hó bè$\overline{\text{\dot{s}}}$-y$\overline{\text{\dot{y}}}$-hó (Q 2s/inv-back-carry) 'did you take it back?'

The set meaning 'good' (1c), which functions also as an intensifier in both Towa and Kiowa, suggests that $\ast_w$ disappeared before a rounded vowel in Kiowa. Again, the syntactic contexts in which these morphemes are found support their cognate status. The examples in (3) show Towa $\overline{\text{w}}$ and Kiowa $\text{\ddot{y}}$ in preverbal position.

(3) To $\overline{4}$-$\overline{w}$-shi (1-truly-full) 'I'm truly full'
    K à$\overline{\text{\dot{a}}}$-th$\hat{\text{\dot{a}}}$. (ls-good-feel) 'I'm happy'
    gyâ-p$\ddot{i}$-q$\ddot{e}$-s$\ddot{e}$ (p-food-good-smell) 'it smells delicious'

The modern reflexes of the plain and aspirated labialized velars nicely corroborate the evidence for the development of $\ast_w$ in Kiowa. $\ast_k^w$ remained $k^w$ in Tiva and Tewa but has descended as a non-labialized velar followed by a rounded vowel, a development we might predict from the preceding discussion of $\ast_w$. In (4a), the labial portion of the proto-segment has become [+ syllabic], the following non-round vowel [- syllabic] in the second syllable of 'young woman'. The development exactly parallels that of 'again, back' (1b). The aspirated labialized velar $\ast_k^\text{wh}$ has similar reflexes, 'drag' (4b). An earlier pronunciation of the modern Kiowa $u$ as $u\dot{o}$, recorded by Mooney (1896) and Harrington (1928) both, reinforces the parallel. $\ast_w$, then, clearly reconstructs to
PKT. Only the putative cognate for 'two' in Kiowa must be rejected. A possible Tanoan cognate for Kiowa 'two' was in fact recorded by Harrington (1910): Taos yi'abata 'second, other'.

(4) a. *k'w 'woman (in prime)' b. *k'wh 'drag'
  Ti k'wäl-
  Te k'wi-
  To --
  K yôkôy (W)

One other correspondence set involves W in the modern languages: *g'w > Ti, Te w, To k'W, K g. Hale presented the cognates for 'tooth' and 'blow' (5a and 5c) without discussing the two Kiowa reflexes g and z. These sets, and (5b) and (5d) from his unpublished cognate list, deserve some discussion since they involve different Kiowa reflexes and reveal one source of Kiowa z, whose PKT antecedents are not fully identified. *g'W is reflected in Kiowa z (5a and 5b) as well as Kiowa g (5c and 5d). Both are followed by a rounded vowel, the expected Kiowa reflex of labialized velars.

(5) a. *g'w 'tooth' b. *g'w 'pine' c. *g'w 'blow' d. *g'w 'breast'
  Ti wi'q
  Te we
  To k'Wô
  K zô' ~ zêm

An examination of the vowels of each set suggests an explanation for the different reflexes in Kiowa. While vocalic correspondences are not yet well understood, it is fairly clear that Tiwa and Tewa provide better clues to the quality of the proto-vowel than does Kiowa, especially following velars. Sets (5a) and (5b) have mid or high front vowels i, ie, or e in Tiwa and Tewa. Sets (5c) and (5d), on the other hand, have back vowels a or o. Palatalization will account for Kiowa z in sets (a) and (b) where *g'W preceded front vowels.

Set (5a) 'tooth', in which Kiowa exhibits the vocalic alternation e ~ o, may also provide a clue to the source of the hitherto unexplained e ~ o ablaut in Kiowa. While there are a few other alternations, e ~ o is the most numerous and is, with one exception, restricted to morphemes with initial alveolar fricatives or affricates: zô' ~ zêm 'tooth', zô' ~ zé-p 'flow', só' ~ sê-p 'sew', só' ~ sê-p 'descend', c'ô' ~ c'é-p 'lay sg. obj.', thô' ~ thêm 'bone'.

Tanoan cognates have not been uncovered for any of the items but 'tooth', but the forms with e and final -p, all perfectives of the verbs in question, appear to reflect an earlier bi-morphemic structure, the -p cognate with either Tanoan 'happen, become' Ti puo, Te po ~ puwa or 'make, do' Proto-Tanoan *pa, neither of which has an independent cognate in Kiowa. The initial consonants are possible products of palatalization, by which we have accounted for Kiowa z < *g'W. The e ~ o alternation most likely derives
from two sources: e from the original proto-vowel and o from the labial element of the proto-segment.

Let us turn now to the second part of the question, *y. Hale does not reconstruct *y, positing instead *z > Ti, Te y, To z, K d. He was motivated both by a desire for symmetry, that is, for a four-way distinction in the affricates paralleling the stops and by the exceedingly general statements that could be made about ab-lauting consonant pairs. Specifically, the Ti, Te pair y ~ c 'walk, move about' could be understood as the reflex of PKT voicing ab-laut if modern y were descended from the voiced affricate *z. In this way, PKT would have had alternating affricates *z ~ *c, just as it had *b ~ *p and *d ~ *t.

(6)  

<table>
<thead>
<tr>
<th>Ti</th>
<th>*z</th>
<th>~ *c</th>
</tr>
</thead>
<tbody>
<tr>
<td>Te</td>
<td>yi</td>
<td>~ cia</td>
</tr>
<tr>
<td></td>
<td>yia</td>
<td></td>
</tr>
</tbody>
</table>

'Twalk, move about'

The evidence is good for accepting Hale's y:y:z:d set (7). The vocalic correspondence in 'song' (7a) and 'command, request' (7b) is one of the most common, so these sets are fairly secure. The set meaning 'sleep' (7c) poses some problems, first in the lack of correspondence in nasalization, and second in the unexpected d where Jemez should have z. Neither is necessarily serious. While the nasal correspondences are on the whole quite regular, there are occasional discrepancies in items that are otherwise clearly cognate.

(7) a. 'sing/song'  b. 'command/request'(W)  c. 'sleep'(W)  d. 'grasp/ 
fight'(W)

<table>
<thead>
<tr>
<th>Ti</th>
<th>yo-</th>
<th>yoy-i</th>
<th>yia</th>
<th>--</th>
</tr>
</thead>
<tbody>
<tr>
<td>Te</td>
<td>--</td>
<td>yon</td>
<td>yα'</td>
<td>yα(-la)</td>
</tr>
<tr>
<td>To</td>
<td>zα·</td>
<td>zα·yi</td>
<td>d·</td>
<td>--</td>
</tr>
<tr>
<td>K</td>
<td>d·</td>
<td>d·pe</td>
<td>d·</td>
<td>d· 'kill'</td>
</tr>
</tbody>
</table>

Jemez d, rather than z, may reflect a morphophonemic alternation peculiar to Jemez in which l affects a following consonant, resulting in palatalization in some cases, affrication in others. Jemez l preceding z regularly yields d or the affricate z. Supporting the correctness of this cognate set is the occurrence of these items in similar syntactic positions, incorporated immediately preceding the main verb in three of the four subgroups. Examples from Towa, Towa and Kiowa, with a cognate main verb as well, 'be lying down, sg.', are given in (8).

(8) Te na-yo'-k'o' (3s-sleep-be lying)'he's sleeping'
    To a-se-də'-k'a (2s-just-sleep-be lying)'you're just
    sleeping'
    K  də·-k'5.  (3s-sleep-be lying)'he's sleeping'

There are, in addition, two incomplete sets in which the Kiowa reflex appears to be z, not d (9). They are especially important
because they both involve ablaut pairs and ought, therefore, to be derived from \*z. The Kiowa cognate for 'walk, move about' (9a) is questionable, as is its ablaut pair c'\*\(\text{c}\)'\(^\text{a}\), since normally the pairs differ only in the initial consonant, vowels remaining identical. 'pull out' (9b), however, looks good, with agreement in nasalization and the Kiowa ablaut pair c\(\text{con}\). This is the only instance of a Kiowa affricate participating in voicing ablaut parallel to the \(\text{y} \sim \text{c}\) alternation of Tiwa and Tewa. c\(\text{con}\) 'pull out', with initial voiceless affricate presumably derived from \*c, has apparently been prevented from undergoing the normal development of \*c\(\text{g}\) in Kiowa by its ablauting status.

(9) a. 'walk, move about' b. 'pull out' (W)

\[
\begin{array}{ll}
\text{Ti} & \text{yia} \quad (\sim \text{cia}) \\
\text{Te} & \text{yi} \quad (\sim \text{ci}) \\
\text{To} & \quad -- \\
\text{K} & \text{ze} \cdot (-ma) \quad (\sim \text{c'\*\(\text{c}\)'})
\end{array}
\]

\(\text{z\(\text{on}\)} \quad (\sim \text{c\(\text{on}\)})

If these two sets, identical in the Tanoan languages, but with Kiowa d in some items, Kiowa z in others, are correct, we must explain the different Kiowa reflexes. With so few examples it is difficult to make much of a case one way or the other, but the Ti, Te vowels in 'walk, move around' (9a) suggest that the Kiowa reflex of \*z is \(z/\_i(a)\) and d elsewhere. 'pull out' is troublesome, though, and this hypothesis cannot be confirmed without more cognates.

To further complicate matters, several sets appear with Kiowa c corresponding to Te y, To z. According to Hale, PKT affricates \*c, \*c', \*ch and \*z collapsed with the stops \*t, \*t', \*th and \*d in Kiowa. The result ought to be the complete absence of modern affricates, but Kiowa clearly does have c\(\text{h}\) and its source remains problematic.

Although Tiwa and Towa cognates are lacking, the Tewa, Kiowa correspondences in (10) seem quite close. Given \*z\(\text{g}\) > Ti, Te y, To z, K d/z, and no apparent conditioning factors that might explain this new set, we are forced to posit an additional proto-segment, \*y. The reflexes of \*y and \*z, then, fell together in the Tanoan languages but remained distinct in Kiowa. Because of the several palatal/velarpalatal/velar reflexes, \*y seems a plausible choice, considering also the absence of \*y in Hale's proto-inventory. In addition, this permits us to retain \*z for those sets that participate in voicing ablaut. It appears, moreover, that \*y can be reconstructed medially and remains y, at least in Tanoan: Ti la-ya, Te sa-ye', To tyo-y'e 'to boil'.

(10) a. 'mother' b. 'pierce/awl' (W) c. 'liquid' (W)

\[
\begin{array}{lll}
\text{Ti} & -- & -- \\
\text{Te} & yiya & yun \\
\text{To} & -- & -- \\
\text{K} & c'\*\(\text{c}\)' & \text{c'\(\text{c}\)}' \quad (sa-)co-y 'urine'
\end{array}
\]

\(\text{(so-)yo 'urine'}\)
A question worth posing at some point after the PKT reconstructions are established is what sort of correspondences can be found in PUA for the sets we have just examined. Without fully reconstructed forms for PKT, it is premature to expect much from the comparison, but some interesting parallels do emerge. PUA 'mother' *γι/ye compares favorably with KT 'mother' (10a), where I have proposed an antecedent *γ. PUA also has a set of motion verbs, one of which may be cognate with PKT 'walk, move about' (9a) with initial *ζ: PUA *γα 'come, pl.', *γέ 'come, sg.', and *γα 'run (walk, flow)' (Miller, 1967). The usual correspondences between PUA and PKT involve the collapse of distinctions in PUA, for example the collapse of the four-way stop distinction posited for Proto-Azteco-Tanoan on the basis of PKT to a single voiceless unaspirated series for PUA. This need not be the case for the glides, of course.

No firm conclusions can be drawn, certainly, but these examples are suggestive of the plausibility of reconstructing *γ for one, if not both, of the KT sets involving γ-reflexes. We must ask whether the criteria of symmetry and generalizability which prompted the reconstruction of *ζ should be maintained in the face of competing evidence. It would not be strange, for example, to find the affricates a defective set compared with the stops. No modern KT language has the phonemes ɔh or ɔ.

What is lacking, if we propose *γ as the source for both sets, which after all are required only by the Kiowa correspondences, is an explanation for the developments in Kiowa. That explanation may lie in the northern Plains and contacts the Kiowa had there, presumably after they split from the Tanoans. Although the ultimate origin of the Kiowa-Tanoans remains a mystery, we do know from Mooney's (1896) 'Calendar History of the Kiowa Indians' that during early historical times and most likely for some time in late prehistory, the Kiowa were in the north, near the headwaters of the Missouri and Yellowstone Rivers. There is personal testimony on the part of the Kiowa and neighboring tribes, particularly the Northern Arapaho, that "the friendship between the Kiowa and Crow was close and intimate" (Mooney 1896:156). Kiowa and Crow learned each other's language, and even after the Kiowa had moved south across the Platte and Republican Rivers some time during the last half of the 18th century, the Kiowa are reported to have sent their children to live among the Crow and learn their language. At the time of Mooney's writing, he reported that "several old people among the Kiowa (had) considerable Crow vocabulary acquired in (that) way" (156).

The reflexes of Proto-Siouan *γ range from γ and ɔ in Ohio Valley Siouan, ɔ and ɔ in the Dhegiha languages to ɔh and d in Dakota and d initially but ɔ in Crow-Hidatsa (Wolff, 1950). Close contacts with northern Siouan speakers could have influenced the direction of change in Kiowa, making *γ all the more plausible as antecedent to Kiowa d, ɔ, and c.

By way of conclusion, I would like to emphasize two major weaknesses in this study, apart from the scarcity of cognates, as areas deserving careful investigation by Kiowa-Tanoanists. They are the problems in the reconstruction of the vowels and the virtual absence
of comparative data on pitch and stress phenomena. Many other gaps remain in our understanding of Kiowa-Tanoan structure. Until those gaps are filled, we are still far from the point at which we can fruitfully compare proto-languages. But refinements such as those presented here are essential if we are ever to reach that point.

Appendix: Kiowa-Tanoan (initial) Consonants (from Hale, 1967)

<table>
<thead>
<tr>
<th>Tiwa (Taos)</th>
<th>Tewa (Hano/Sta Clara)</th>
<th>Towa (Jemez)</th>
<th>Kiowa</th>
</tr>
</thead>
<tbody>
<tr>
<td>*p</td>
<td>p</td>
<td>p</td>
<td>p</td>
</tr>
<tr>
<td>*t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>*c</td>
<td>c</td>
<td>s</td>
<td>t</td>
</tr>
<tr>
<td>*k</td>
<td>k</td>
<td>k</td>
<td>k</td>
</tr>
<tr>
<td>*kʷ</td>
<td>kʷ</td>
<td>g</td>
<td>g</td>
</tr>
<tr>
<td>*p'</td>
<td>p'</td>
<td>p'</td>
<td>p'</td>
</tr>
<tr>
<td>*t'</td>
<td>t'</td>
<td>t'</td>
<td>t'</td>
</tr>
<tr>
<td>*c'</td>
<td>c'</td>
<td>t'</td>
<td>t'</td>
</tr>
<tr>
<td>*k'</td>
<td>k'</td>
<td>k'</td>
<td>k'</td>
</tr>
</tbody>
</table>

(*kʷ'*)

| *pʰ         | pʰ                     | pʰ/f         | Ø     | pʰ |
| *tʰ         | tʰ                     | tʰ/θ         | Šʰ    | th |
| *śʰ         | śʰ                     | tʰ/θ         | Šʰ    | th |
| *kʰ         | kʰ                     | h            | kʰ    |
| *kʰʷʰ       | kʰʷʰ                   | h            | kʰ    |
| *b          | m                      | m            | b     |
| *d          | n                      | n            | d     |
| *z          | y                      | z            | d     |

(*g*)

| *gʷ         | w                      | kʷ           | g/(z) |
| *m          | m                      | m            | m     |
| *n          | n                      | n            | n     |
| *s          | s                      | tʰ/y         | s     |
| *h          | h                      | Ø            | h     |
| *ʔ          | ?                      | ?            | (Ø)   |
| *w          | w                      | w            | y     |

Footnotes

1. Ken Hale, whose generosity is greatly appreciated, has provided me with copies of his unpublished Kiowa-Tanoan Cognate List and Jemez notes. He is not at all responsible for the use I have made of them, however. Cognate sets or individual items marked by (W) are those I am proposing and have been drawn from sources listed in the bibliography, or, in the case of Kiowa, from my own field notes.
I owe thanks, too, to Bob Rankin for pointing out to me the possible Siouan influence in the northern Plains.  
2. This could be explained by loss of \( \text{w} \) and subsequent \( \text{y} \)-epenthesis, but given the apparent development of \( \text{*w} \) and the labialized velars, such a solution for 'two' seems unlikely.  
3. \( \text{yw} \) also functions as an independent static verb, 'be many'.  
4. They are: \( u \sim o \), e.g., \( \text{k'ú} \sim \text{k'ůp} ' \text{lay pl. obj.}' \), \( \text{gú} \sim \text{gůp} ' \text{hit}' \), and \( i \sim a \), e.g., \( \text{k'î} \sim \text{k'y̥hî} ' \text{man}' \).  
5. Hale describes this in more detail in his unpublished Jemez notes.  
6. For example, \( \text{tí colo} \), Te ce, K ce- 'dog'. There are also examples of \( c' \) in Kiowa: \( \text{tí ma-c'ele} \), Te ma-c' \( \text{q} \) ('scratch'), K mon-c' \( \text{q} \), 'fingernail (hand + nail/claw/feather)'(W).

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THE DEMISE OF THE WHORF HYPOTHESIS
(A Major Revision in the History of Linguistics)

--Danny K.H. Alford (UCB)*

In the course of the evolution of academic disciplines, it is imperative that open-minded scholars examine the roots of major controversies central to the history of those disciplines. This is especially true during periods which Thomas Kuhn characterizes in The Structure of Scientific Revolutions as the confusion which precedes paradigm-shifts. It has become increasingly obvious that linguistics in the late 1970's is in a state of both theoretical and methodological confusion, primarily brought about by the neglect of meaning and the omission of culture in the study of language. [1] Perhaps it is time to revisit ideas which intrigued pre-Chomskyian linguists, but were subsequently maligned and discarded.

Tonight I shall attempt to set the historical record straight concerning Benjamin Lee Whorf. Linguists today find themselves in a quandary regarding Whorf, intrigued by his suggestions yet forced to reject what has come to be known as the Whorf or Sapir-Whorf Hypothesis. Almost every discussion about Whorf in the literature of linguistics and related fields is negative in character, and argues for substantial rejection of this Whorf Hypothesis (although most of the harshest critics indicate desire to keep the question open).

As Paul Kay recently pointed out (personal communication), it is as much in vogue today to be anti-Whorf as it was to be pro-Whorf in the early '50s. Take, for example, the attitude of David Premack, who announced during the 1975 New York Conference on the Origins and Evolution of Language and Speech (Harnad 1976:606) that the Whorfian hypothesis is attractive, but not because of the evidence that supports it. As a matter of fact, most of the evidence goes in the opposite direction.... contra Whorf: all the evidence runs against Whorf...

Compare with Premack's attitude that of Harry Hoijer during a 1953 Whorf conference (Hoijer 1954:230) at the conclusion of Joseph Greenberg's argument against Whorf's supposed reasoning processes:

I must enter again an objection to what I consider to be a vulgarization of Whorf's work, and I refer you to his material.

The objection is as valid today as it was then, and equally applicable to all mistaken identifications of
Whorf's stated views with the so-called "Whorf Hypothesis". Indeed, as this presentation will demonstrate, Whorf's own statements decisively refute the Whorf Hypothesis, which was generated only later in the critical writings. First let us examine the nature of the Whorf Hypothesis as it is discussed in the literature.

I. THE WHORF HYPOTHESIS

We must begin with the realization that Whorf never selected out of his vast number of provocative and intuitive insights into language, thinking, culture, behavior, psychology and consciousness, any specific few to be labelled "the Whorf Hypothesis". That such a narrowing of attention has taken place at all is both an injustice and a formidable barrier to new linguists—especially since almost all references to the Whorf Hypothesis are negative. Who narrowed the attention in this way? Roger Brown seems to think Eric Lenneberg was responsible, stating in his recent "Reference" article (1976:158):

Lenneberg in 1953 really said all that was necessary. Whorf appeared to put forward two hypotheses:

1. Structural differences between language systems will, in general, be paralleled by non-linguistic cognitive differences, of an unspecified sort, in the native speakers of the language.

2. The structure of anyone's native language strongly influences or fully determines the world-view he will acquire as he learns the language.

The first hypothesis does loosely correspond to Whorf's linguistic relativity principle. The second, however, is the basis of what has come to be called linguistic determinism. Cole and Scribner, in Culture and Thought: A Psychological Introduction (1974:47), elaborated these two hypotheses twenty years later, although reducing them to one hypothesis containing two propositions:

The Whorfian hypothesis of the language-cognition relationship actually contains two propositions which are best analyzed separately. The first maintains that the world is differently experienced and conceived in different language communities. This proposition has come to be known as linguistic relativity. The second proposition goes beyond the simple statement that there are differences in cognition associated with differences in language to claim that language
actually causes these differences. This doctrine of linguistic determinism is essentially a conception of a one-way causal sequence among cognitive processes with language playing the directing role.

We see how firmly this determinism is linked with Whorf's notion of relativity in Herbert Landar's Language and Culture text (1965:216): In advance confutation of Whorfian relativism, Sapir added, "Nor can I believe that culture and language are in any true sense causally related. Leaving aside for the moment Whorf's stated principle of linguistic relativity, we shall label determinism the first doctrine of the Whorf Hypothesis. At issue here is whether Whorf himself espoused this determinism as, e.g., Dan Slobin claims in his book Psycholinguistics (1971:122): The strong form--often espoused by Whorf himself--holds that language determines thought and behavior patterns...

Slobin's statement introduces an important set of contrastive terms--the strong versus weak versions of the Whorf Hypothesis. Major critics contend that the strong version corresponds to Whorf's views and is untenable, whereas they themselves subscribe to the weak version which is, in Slobin's words, "usually held today in one way or another" (cf. Brown 1976; Berlin and Kay 1969; Cole and Scribner 1974; Leech 1974; Slobin 1971; Taylor 1976.) Geoffrey Leech demonstrates a popular tactic in his Semantics text (1974:31): Various arguments can be advanced against the Sapir-Whorf position. If we took up an extreme version...

He then refutes the extreme or strong version and never returns to the objective of advancing arguments against the Sapir-Whorf position per se; this is normally called the strawman technique of argumentation. At issue here is whether Whorf espoused what critics have called the strong version(s) of the Whorf Hypothesis. The second doctrine we shall call perception-shaping. Premack made this the sole basis of his vehement denunciation of Whorf:

As a matter of fact, most of the evidence goes in the opposite direction, that linguistic skill depends very, very heavily upon a pre-existing perceptual capacity.

According to Premack, then, Whorf claimed that perception is linguistically shaped. More than likely, Premack had in mind Berlin and Kay's Basic Color Terms experiments, which are often cited as having disproved
the strong form of the Whorf Hypothesis. Berlin and Kay state in their opening paragraph (1962:1):

The prevailing doctrine of American linguists and anthropologists has, in this century, been that of extreme linguistic relativity. Briefly, the doctrine of extreme linguistic relativity holds that each language performs the coding of experience into sound in a unique manner. Hence, each language is semantically arbitrary relative to every other language. According to this view, the search for semantic universals is fruitless in principle. The doctrine is chiefly associated in America with the names of Edward Sapir and B. L. Whorf. Proponents of this view frequently offer as a paradigm example the alleged total semantic arbitrariness of the lexical coding of color.

The footnote to this passage demonstrates with relevant quotations that Verne Ray, H.A. Gleason, Bohannan, Eugene Nida and others discuss in their interpretations of the Whorf Hypothesis the arbitrariness of the segmentation of the color spectrum as proof of the Whorfian principle of linguistic relativity. Conspicuously absent are citations from either Sapir or Whorf, with whom this doctrine is claimed to be chiefly associated. At issue here is whether Whorf indeed ever espoused the linguistic shaping of perception.

The third doctrine of the Whorf Hypothesis often found in the critical literature is that of language nontranslatability. Briefly, Cole and Scribner (1974:43) state the strong version as holding that "the absence or presence of a lexical distinction can be taken as an indicator of a corresponding perceptual or conceptual distinction," after which they argue that this is patently false by Whorf's own linguistic behavior in his ability to translate the many Eskimo terms for snow into English phrases. We shall examine later Whorf's statements about translations between languages.

The fourth doctrine of the Whorf Hypothesis concerns the charge that Whorf was guilty of circularity of evidence. Roger Brown (1976:304) voices this common complaint as:

The problem with Whorf's data is simply that they are entirely linguistic; he neither collected nor reported any non-linguistic data and yet all of his assertions... imply the existence of non-linguistic cognitive differences. [2] As the case stands in Whorf's own writings, differences of linguistic structure are said to correspond with differences of a non-linguistic kind, but the only
evidence for these latter is the linguistic evidence with which he began.
To recapitulate: we have seen four major doctrines of the Whorf Hypothesis found in the critical literature. Whorf stands accused of the following: a) espousing causal determination and strong forms of the Whorf Hypothesis in opposition to the critics' weak versions; b) espousing that language shapes color perception; c) espousing absolute nontranslatability between widely different languages because of the lack of lexical distinctions; and d) presenting only linguistic data, which leads to circularity of evidence.

Whorf's linguistic relativity principle CANNOT be considered a part of the Whorf Hypothesis since, to my knowledge, not a single critic has discussed this principle per se without confusing it with one of these four doctrines of interpretation. Let us from this point on clearly distinguish Whorf's own stated linguistic relativity principle from the Whorf Hypothesis doctrines found in the critical literature written after his death. Now we shall see from Whorf's own words--written a generation or more before the Whorf Hypothesis doctrines were formulated—that he stands innocent of all four critical accusations.

II. WHORF REFUTES THE WHORF HYPOTHESIS
It must be remembered that Whorf's death in 1941 precluded any direct answers to his critics of the 1950s, '60s and '70s. That the Whorf Hypothesis doctrines were formed so long after Whorf's final words were written suggests, at the very least, that its formulators were guilty of seriously biased misinterpretation. How this kind of misinterpretation may so consistently come about concerns not just conceptual filtering, but multi-layered filtering as critics interpret and add to other critics' interpretations, until finally dependence on the original thoughts is abandoned altogether.

A. CAUSAL DETERMINISM AND STRONG VERSIONS
Although Whorf named and stated (formally and informally) the linguistic relativity principle, [3] there is no record of his so stating an equivalent principle of determinism. Had Whorf espoused causal determinism as charged earlier by Cole and Scribner, Landar, and Slobin, he would have found it necessary to conceptually separate language from culture in order to claim that one determines the other in a sequentially causal way. We find, instead, that Whorf always defines language as a cultural phenomenon—two
inseparable sides of a single coin, as it were:

[The problem of thought and thinking in the native community is not purely and simply a psychological problem. It is quite largely cultural. It is moreover largely a matter of one especially cohesive aggregate of cultural phenomena that we call a language. (:65)

Which was first: the language patterns or the cultural norms? In the main, they have grown up together, constantly influencing each other. (:156)

And every language is a vast pattern system, different from others, in which are culturally ordained the forms and categories by which the personality not only communicates, but also analyzes nature, notices or neglects types of relationships and phenomena, channels his reasoning, and builds the house of his consciousness. (:252)

Whorf sensed something "chicken-and-egg-y" about the language-culture interaction phenomenon. He sensed its paradoxical unity and attempted to maintain a very difficult stance which would respect the paradox by not choosing one over the other as preexisting or causal. In stating (:138-9), "I should be the last to pretend that there is anything so definite as a 'correlation' between culture and language....", Whorf does not contradict, but instead carefully follows in the steps of his teacher Sapir who said, as we have seen, "Nor can I believe that culture and language are in any true sense causally related." Lenneberg and others have been unusually misguided in ascribing causal determination to either Whorf or Sapir, given these very explicit statements.

It must be noted that one of the main reasons critics have found it so difficult to understand Whorf is that he argued from a non-traditional epistemological viewpoint. His writings are filled with comments regarding Einsteinian relativity and quantum theories, Jungian psychoanalysis, and Gestalt psychology—all more concerned with the holistic appreciation of the cosmos and the individual than with the causal, linear and reductionist modes more usual in the academic disciplines such as linguistics. [4] [5] Imputing causal determinism to Whorf, as we have already seen critics attempt to do, is the basis of the "strong vs. weak" dichotomy so often encountered, and is an indication of how one's own prejudices can color one's interpretations of the ideas of others. This is how Brown can
state that (1976:134):

[I]t became fairly common to hear that the Whorf thesis had been confirmed in its weak form but not in its strong form. Presumably, the weak form was a correlation between linguistic structure and cognition, and the strong form was a causal developmental relation...

To take statements made from the viewpoint of Jungian acausal synchronicity and read causality into them does NOT amount to strong versus weak versions respectively. Just the opposite: the critics' weak-form confirmations nonetheless espouse a weak causality whereas Whorf's acausal views are weaker still. [6]

B. LINGUISTIC SHAPING OF COLOR PERCEPTION

Premack and Berlin and Kay seemed to believe that the evidence for preexisting perceptual capacity constituted a significant disconfirmation of Whorf's work—even though Berlin and Kay did not produce a single quotation from Whorf indicating that he advocated the extreme views held by Ray, Gleason, Nida, and others on the arbitrariness of color terms. We have here guilt by association.

A close reading of Whorf confirms that in not a single instance did Whorf suggest that the so-called arbitrary segmentation of the color spectrum had anything to do with his principle of linguistic relativity. In fact, he is quite clear in stating that perception (which he calls Jungian sensation) is clearly distinct from conception and cognition, or language-related thinking (:66):

Thinking may be said to be language's own ground, whereas feeling deals in feeling values which language indeed possesses but which lie rather on its boundaries. These are Jung's two rational functions, and by contrast his two irrational functions, sensation and intuition, may fairly be termed nonlinguistic.

Later in the article (:85) he clarifies what is meant by the term "sensation" when he says, "...seeing presents a sensation, 'red'...". Quite clearly, he established in the 1930s his position that the perception of color was an irrational, nonlinguistic, nonintellectual act, anticipating Maurice Merleau-Ponty's later assertion that perception is not an intellectual act (1964:15). And how could anyone mistake Whorf's meaning when he says, "visual perception is basically the same for all normal persons past infancy and conforms to definite laws..."? (:163) Whorf refers to synesthesia, which is the identification of the
properties of one sense modality in terms of another, as a fundamental nonlinguistic mode of perception which underlies metaphor (:155). At a Whorf conference in 1953, Fearing noted that (Hoijer 1954:52):

"[I]n another place, Whorf refers to "experience more basic than language." This seems to suggest that there are mental processes which transcend and occur prior to language. This problem is critical with respect to the hypothesized relationship between language and perception. Premack's denunciation of Whorf is therefore groundless, since he is restating (albeit unknowingly) Whorf's own words. All color studies attempting to disprove Whorf are, in the final analysis, totally misconceived since Whorf is innocent of the charge of espousing the linguistic shaping of perception. In fact, Whorf can now be seen as agreeing with Taylor (1976:305), who concludes that there is more opportunity for linguistic relativity to be important as the domain of discourse becomes more abstract and removed from perception. Cole and Scribner also agree with this in an important statement (1974:59):

It may very well be that the "filtering effect" of language is greatest in respect to domains of phenomena that are definable, not in terms of physical properties, but in terms of attributes that are culturally specified...consider the area of ideology or theoretical work in general, where concepts largely acquire their meanings through their being embedded in explanatory verbal networks. It is here that language may play the greatest role in shaping the person's view of reality, in influencing his memory and thinking processes, and in contributing to his understanding and misunderstandings of other cultures.

C. ABSOLUTE LANGUAGE NONTRANSLATABILITY

We have seen that Cole and Scribner believe that Whorf's own linguistic behavior in his ability to translate Eskimo terms for snow into English phrases is evidence contrary to what they assume his position is. Brown also seems to have a peculiar notion about Whorf's position regarding translation, stating (1976:129):

Careful analysis of Whorf's examples of linguistic contrast always shows that the contrast is not absolute. It is never the case that something expressed in Zuni or Hopi or Latin cannot be expressed at all in English. Were it the case, Whorf could not have written his articles as he
[3] "We are thus introduced to a new principle of relativity, which holds that all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar, or can in some way be calibrated." (:214)

"From this fact proceeds what I have called the 'linguistic relativity principle' which means, in informal terms, that users of markedly different grammars are pointed by their grammars toward different types of observations and different evaluations of externally similar acts of observation, and hence are not equivalent as observers but must arrive at somewhat different views of the world." (:221)

[4] Anttila (1977:1) argues that:
Modern scientists tend to foster 'a militantly doctrinaire "reductioanism", which axiomatically prescribe[s] that all the relevant macroinformation about nature must, and eventually will, be derived completely from adding up and piecing together the microinformations about the smallest sample units. Never mind that physics had to give up that claim gradually as Boltzmann's thermodynamics, Planck's quantum theory, and Heisenberg's uncertainty principle came on the scene' (Weiss 1971:19). Also modern linguistics still attempts to support reductionism as the only viable theory. (The tendency has always been clearest in America, witness its structuralism and transformational-generative grammar.)

[5] Just how unfamiliar the non-linear mode of processing reality is has been described by physicist Lawrence LeShan as that necessarily used by a relativity physicist when he is going about his daily work (1976:17):
In this particular reality, there is no such thing as a separate object; all things and events flow into each other so that it is impossible to say where one leaves off and the other begins. It is often not possible to say that two events occurred in the same place or the same time or, frequently, to say which one occurred first and which second. Further, cause and effect often do not operate in making things happen...in this reality.

[6] For completeness, I must add that there is a single phrase which, taken out of context of Whorf's total work, might lead one to believe this determinism charge against him: "Thus our linguistically determined thought world..." (:154). However, one must read this in relation to an earlier statement about meaning (:67-8):
did entirely in English.
That Whorf did not advocate absolute nontranslatability is obvious from his discussion of "An American Indian Model of the Universe" (:58):
In order to describe the structure of the universe according to the Hopi, it is necessary to attempt--insofar as it is possible--to make explicit this metaphysics, properly describable only in the Hopi language, by means of an approximation expressed in our own language, somewhat inadequately it is true...
Moreover, these critics have overlooked the fact [?] that one of Whorf's chief topics concerned the phenomenon of ordinary or habitual thinking and consciousness (i.e., the way we are forced to conceive of a geocentric universe when we use frozen lexical idioms such as "sunrise" and "sunset"). Whorf felt there were certain ways of getting out of such language traps: by precise terminology ("earthturn" more precisely describes what happens in a heliocentric solar system), and through the insights of comparative linguistics.
It is the "plainest" English which contains the greatest number of unconscious assumptions about nature....We handle even our plain English with much greater effect if we direct it from a vantage point of multi-lingual awareness. (:224)

The person most nearly free in such respects would be a linguist familiar with very many widely different systems. (:214)
To imply that Whorf's ability to translate is evidence contrary to his "hypothesis" is therefore indefensible, since Whorf was a comparative linguist cognizant of the traps of habitual language by his awareness of alternate language world-views--something quite beyond the average monolingual. Aware of the world-view which language and culture continually and unobtrusively present in forms of prepackaged consciousness--beliefs about the nature of reality (including notions of time and space, causality, matter and energy, subject and object, animacy, etc.)--one has the potential for getting free of language traps. This is the basic premise of the principle of linguistic or semantic relativity. It demands that translations never be simple, never be given in the "plainest" English, but in precise terminology which takes into account the existence of differing world-views.
The other argument advanced by Cole and Scribner, that "the absence or presence of a lexical distinction can be taken as an indicator of a corresponding
perceptual or conceptual distinction", can be shown to be false in at least two ways—one of which, perception, we have already seen. Narrowing this to only lexical distinctions is ludicrous, since Whorf stressed repeatedly in his writing (e.g., :158) that the analyzing and reporting of experience becomes fixed in the language in ways which cut across typical grammatical classifications—including lexical, morphological, syntactic, and other considerations.

This charge against Whorf, and this doctrine of the Whorf Hypothesis, is perhaps the most difficult to understand when one reads Whorf closely.

D. CIRCULARITY OF EVIDENCE

Brown, as we saw, claims that "as the case stands in Whorf's own writings", "he neither collected nor reported any non-linguistic data." Insipid Taylor, discussing Whorf in Introduction to Psycholinguistics (1976:304), reiterates the accusation in a typically deterministic way:

Still other psychologists...point out that there is a circularity in the arguments for linguistic relativity: "the language determined the outlook which determined the verbal behavior—thus the circularity of evidence."

It is conceivable that a cursory reading of Whorf might allow one to miss his important presentations of non-linguistic behavioral data, especially those in his article clearly entitled "The Relation of Habitual Thought and Behavior to Language." In it, Whorf describes his experiences as an insurance company representative (:135):

[A]round a storage of what are called "gasoline drums," behavior will tend to a certain type, that is, great care will be exercised; while around a storage of what are called "empty gasoline drums," it will tend to be different—careless, with little repression of smoking or of tossing cigarette stubs about. Yet the "empty" drums are perhaps the more dangerous, since they contain explosive vapor. Physically the situation is hazardous, but the linguistic analysis according to regular analogy must employ the word "empty," which inevitably suggests lack of hazard.

It is incredible that one must still defend Whorf from this circularity charge, since Fearing stated at the Whorf conference twenty-five years ago (Holier 1954:41):

I would like some further discussion on this question of the difficulties of the observation of
nonlinguistic behavior. Those difficulties are probably very great, but it is also easy to exaggerate them, and I think we tended to when we discussed this earlier. There are examples of this in Whorf; one follows his discussion of time (1952:41):

It is clear how the emphasis on "saving time" which goes with all the above and is very obvious objectification of time, leads to a high valuation of "speed," which shows itself in a great deal of our behavior.

Still another behavioral effect is that the character of monotony and regularity possessed by our image of time as an evenly scaled limitless tape measure persuades us to behave as if that monotony were more true of events than it really is. That is, it helps to routinize us. We tend to select and favor whatever bears out this view, to "play up to" the routine aspects of behavior.

What he is doing here is, in a rough and general way, describing nonlinguistic behavior as correlated with linguistic analysis.

III. CONCLUSIONS AND IMPLICATIONS

We have seen that the four major objections encountered in the literature concerning the so-called Whorf Hypothesis are strawman arguments insofar as they pretend to represent the views of Benjamin Whorf. They reflect, instead, the prejudices and misinterpretations of their authors.

I regret that, because of time limitations, I have not been able to explicate the principle of relativity itself, showing how closely its wording corresponds to statements of Einsteinian relativity (which no critic has yet perceived) [8]: nor have I had time to explore what is probably by far the deepest reason for the rejection of Whorf during the Chomskyan era—the fundamental clash between notions of semantic relativity and the ethnocentric quest for semantic universals. These are topics for future discussion.

Linguistics, as I began, is in a period of confusion again: as it was in the early 1930s when Bloomfield battled Sapir for discipline supremacy, when structuralism won out over mentalism and semantics; as it was in the late 1950s when Whorf's semantic relativity momentum was broken by Chomsky's neostructuralism and notions of universal grammar. Both Bloomfield and Chomsky believed that they could study language as an AUTONOMOUS creature apart from both semantics and culture— that a true split could be made
between linguistics and anthropology; that linguistics was essentially the study of lifeless forms. Sapir and Whorf believed the opposite: that language and culture are two sides of a single coin; that, in Whorf's words, linguistics is essentially the quest of that "golden something" called MEANING, and that its real concern is to light up the thick darkness of language and thereby much of the thought, culture, and outlook upon life of a given community. To do this requires a holistic, gestaltic approach rather than the linear approach more suited to studying monadic forms.

Whorf envisioned linguistics at the epistemological pinnacle of academe when he wrote (:232):

We all know now that the forces studied by physics, chemistry, and biology are powerful and important. People generally do not yet know that the forces studied by linguistics are powerful and important, that its principles control every sort of agreement and understanding among human beings, and that sooner or later it will have to sit as judge while the other sciences bring their results to its court to inquire what they mean.

I've attempted here to clear away the profuse underbrush of fuzzy criticism which has distinctly tainted Whorf's reputation, in order to encourage linguists to examine Whorf in the original. Whorf will probably not teach linguists to be better language technicians. But if one's goal as a linguist is to understand the larger issues of how human language, knowledge, culture, behavior, meaning, and consciousness interact: I, with Hoijer, refer you to his material.

FOOTNOTES

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[1] R. Anttila (1977) has also pointed out this deficiency in the study of language: e.g., "Wegener [1885] threw out the assumption of word-level meaning invariance, and embedded his Sprechsituation into the total Kultursituation." (see also [4] below)

[2] Brown here seems to have missed the point of Whorf's assertions: most human cognition—where this includes thinking but excludes perception or intuitive awareness—is indeed linguistic in nature.
It is not words mumbled, but RAPPORT between words, which enables them to work together at all to any semantic result. It is this rapport that constitutes the real essence of thought insofar as it is linguistic... (emphasis mine).

--indicating that not all thought is linguistically bound. In another potentially damaging statement he says "But in this partnership [between language patterns and cultural norms] the nature of the language is the factor that limits free plasticity and rigidifies channels of development in the more autocratic way." But he qualifies immediately with "This is so because a language is a system....Large systematic outlines can change to something really new only very slowly, while many other cultural innovations are made with comparative quickness." (:156). Notice also in this regard his excellent discussion on Hopi architectural terms (:201) where he distinguishes between things which CAN be said but are not in Hopi (e.g., "my door"), and those which absolutely CANNOT be said at all (e.g., "my room") even were such things in existence in the Hopi world.

[7] despite Stuart Chase's claim (in the Foreword to Carroll's collection of Whorf's writings) that one of Whorf's cardinal hypotheses was that "the structure of language one habitually uses influences the manner in which one understands his environment." (:iv)

Of course, Chase felt Whorf's other cardinal hypothesis--and here is perhaps the basis of the non-translatability charge--was that "all higher levels of thinking are dependent on language." I believe this is a bad interpretation of what Whorf meant. Cf. Jurgen Habermas' recent statement that "Although always bound up in language, reason always transcends particular languages; it lives in language only by destroying the particularities of the languages through which alone it is incarnated." (Dallmayr 1977:375)

[8] Compare with footnote [3] above a widely quoted statement of Einsteinian relativity: "all the phenomena of nature, all the laws of nature, are the same for all systems that move uniformly relative to each other." (Barnett 1957:46)

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SPEECH MINUS SPECTRUM EQUALS TIME
-- OR WHAT THE LEFT HEMISPHERE IS FOR

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It is known to speech scientists that the study of speech, whether from an acoustic, perceptual, or productive standpoint, cannot be complete unless both the temporal and the spectral dimensions are taken into consideration. However, does this mean that subtracting from speech its spectral representation would leave us with its temporal representation? Obviously, from the physical standpoint, such a subtraction is meaningless. Nevertheless, the experiments described below tend to sway us toward the conclusion that, from the point of view of the brain mechanisms specializing in speech perception, the equation "speech-spectrum = time" may acquire a certain significance. What these experiments demonstrate is that the auditory mechanisms responsible for speech perception may be separated into two distinct components: one that processes the speech stimulus in the spectral, and one that processes it in the temporal domain. Moreover, these experiments also strongly suggest that, whereas spectral processing is essentially complete already at some subcortical level, the most likely site for temporal processing of the speech signal lies somewhere in the left cortical hemisphere. The method that enables us to reach these conclusions is that of simultaneous dichotic listening.

Two speech sounds presented simultaneously one to each ear are generally found to interfere with each other's perception. This perceptual interference is clearly manifest: while the sound can be identified perfectly (or almost perfectly) when it is presented separately to each ear, the simultaneous presence of a different speech sound in the other ear greatly impairs the recognition of either stimulus. Often, the observer cannot correctly identify more than 40-60 per cent of the stimuli. However, the accuracy of the perception in the two ears is seldom identical. Kimura (1961) was the first to report that, when using dichotically presented digits, the great majority (about 80 percent) of her right-handed subjects identified the stimulus coming to their right ear more often correctly than the one coming to their left ear. This perceptual asymmetry has been named right-ear advantage (REA) and has been interpreted to reflect a left-hemispheric dominance for the processing of speech sounds. This interpretation, though only inferential, is based on anatomical and physiological evidence showing that the major portion of afferent fibers originating in the cochlea innervate, after multiple synapses, contralateral cortical areas (Rosenzweig, 1951; Hall and Goldstein, 1968). However, such a cross-innervation is by no means absolute: in addition to some non-crossing afferent fibers that originate in the
cochlear nucleus, there are several subcortical (olivary, collicular) and cortical (the cerebral commissures, mainly the corpus callosum) sites at which the two sides of the system are connected (Whitfield, 1967). The fact that the REA for speech sounds is relatively small (typically a 5-15 per cent difference between right- and left-ear recognition scores in normal subjects) is generally attributed to the crossing of auditory information through any one or several of these connections, especially through the corpus callosum. It has been reported (Milner et al., 1968; Sparks and Geschwind, 1968) that split-brain subjects (i.e., patients whose corpus callosum, and often the anterior commissure as well, has been surgically sectioned) show a 100 per cent REA. Thus, while the proof of left-hemispheric dominance for speech perception in normals is at most weak, strong support for this functional asymmetry derives from clinical observations. The most direct evidence is provided by studies on left temporal-lobe damaged patients (Milner, 1967) and on normals whose one hemisphere has become temporarily dysfunctional due to unilateral intracarotid drug (amytal) injection (Wada and Rasmussen, 1960).

The question arises: what does the essence of REA and, by conjecture, of left-hemispheric dominance for speech consist of? Early experiments on this topic uncovered a reliable (albeit small) REA for various pairs of dichotic words and nonsense syllables (Kimura, 1961, 1967). However, because of the ready availability of synthetic speech material and the better stimulus control that it offers, there has been an ever increasing number of studies dealing with ear advantage for various phonetic features in dichotically presented speech. An overview of these studies reveals that appreciable REA can be found only for consonants (Shankweiler and Studdert-Kennedy, 1967; Studdert-Kennedy and Shankweiler, 1970; Haggard and Parkinson, 1971). Initial consonants in CV or CVC syllables exhibit a larger REA than do final consonants (Studdert-Kennedy and Shankweiler, 1970). In initial stop consonants, it is the feature of voicing that produces a greater REA, closely followed by the feature of place-of-articulation ([bilabial], [coronal], [velar]), though the two features combined have been seen to result in an increased ear difference (Shankweiler and Studdert-Kennedy, 1967). Initial fricatives (Darwin, 1975), as well as semivowels and laterals (Haggard, 1971) also produce a REA. On the other hand, neither steady-state vowels (Shankweiler and Studdert-Kennedy, 1967; Haggard and Parkinson, 1971) nor isolated fricative sounds (Darwin, 1975) yield any reliable ear advantage, although vowels placed in the context of a CVC syllable, again, tend to favor the right ear (Weiss and House, 1973). It appears, therefore, that the lateral asymmetry for the perception of speech sounds is essentially related to acoustic features characteristic to consonants -- i.e., to time-varying speech signals.

The role of the left hemisphere in the processing of auditory temporal information is supported by a class of studies in which the stimuli were not speech sounds. Also with regard to the
perception of these special non-speech sounds, direct evidence for hemispheric dominance is provided by subjects with temporal-lobe pathologies. For example, it has been shown that, in left temporal-lobe damaged patients, perception of the temporal order of two sounds (tones or strings of speech-like sounds) is seriously impaired (Efron, 1963; Swisher and Hirsh, 1972; Lackner and Teuber, 1978). Another study on similar patients demonstrated a certain impairment of the temporal fusion threshold (i.e., temporal resolution) of two dichotic clicks (Lackner and Teuber, 1973).

Experiments on normal subjects, using certain specific types of dichotic non-speech stimuli, underline the same conclusion. Thus, a REA has been found for the recognition of dichotic Morse-code signals (Papcun et al., 1973) as well as for that of dichotic tone sequences having rapid frequency transitions (Halperin et al., 1973).

In sum, it is therefore reasonable to conclude that, in normal subjects, the right ear becomes superior to the left in the perception of dichotically presented (i.e., competing) speech as well as non-speech sounds, provided that the relevant dimension is some temporal aspect of the stimulus.

There is, however, also another kind of ear asymmetry: one that has been observed time and again to accompany the perception of non-speech stimuli. Parallel to her studies on laterality effects in the perception of dichotic speech sounds, Kimura (1964) also investigated ear superiority for the perception of musical stimuli. Actually, she observed a left-ear advantage for such sounds and concluded that the right hemisphere was specialized in the processing of non-speech sounds. The idea of such a dichotomy of hemispheric specialization, however, has been challenged by other workers. One series of experiments (Gordon, 1970) showed that among dichotic tests involving the principal elements of music (melody, harmony, rhythm) only dichotic harmonies (i.e., chords) yielded left-ear advantage. Another study (Bever and Chiarelli, 1974) showed that musically skilled listeners were more successful recognizing melodies with their right than with their left ear. However, even this finding was questioned by another experiment (Divenyi and Danner, 1974) which demonstrated that, with sufficient training, any ear difference in the recognition of monaurally presented melodic fragments disappear. Thus, the view that the left hemisphere specializes in speech and language processing, whereas the right in the processing of music and other non-speech sounds, seems to be ill-supported by experimental evidence.

The difference between tone sequences lies in their spectral composition, and so does the difference between two vowels, as well. We have seen that, when presented simultaneously in the two ears, neither melodies nor vowels will reveal any consistent ear advantage. Could the lack of ear superiority in the perception of dichotic vowels and dichotic tone sequences have the same cause, namely, spectral rather than temporal differences between the stimuli? A plausible answer to this question may have been offered by a series studies on a special type of ear asymmetry. This ear
asymmetry may be observed when two tones close in frequency (within approximately one Critical Band, see Zwicker et al., 1957) are simultaneously presented, one to each ear. For almost every listener, the two tones fuse into a single percept having a single pitch which is dominated (to a greater or lesser degree) by the tone presented either to the right or to the left ear (Efron and Yund, 1974, 1976). Actually, only very few individuals experience a perfectly balanced dichotic pitch. Contrary to the 4:1 proportion of subjects exhibiting a REA for dichotic speech sounds, there are about as many right ear dominant as left ear dominant listeners with regard to the pitch of these dichotic complexes. This ear asymmetry has been called ear dominance for pitch (ED). ED has been found to be uncorrelated with either handedness or the ear advantage observed for speech sounds (Yund and Efron, 1975). What has been concluded from these studies is that ED is to be regarded as a consequence of an asymmetry in the processing of spectral information and is likely to be produced by asymmetries in mechanisms located at subcortical levels -- thus different from the sources thought to be responsible for the REA observed for either speech or time-varying non-speech signals. One of these asymmetries may consist of a difference in the sharpness of frequency selectivity (i.e., the tuning curves) in the two ears: the ear with a better frequency resolution will be the dominant one (Divenyi et al., 1977). ED for the relative salience of the two components that form the pitch of a dichotic two-tone complex is so strong that the pitch of the tone coming into the dominant ear will dominate that of the whole complex, even when its intensity is reduced (with respect to the intensity of the tone coming into the non-dominant ear) by sometimes as much as 40 dB. This phenomenon has been called intensity independence (Efron and Yund, 1976); it refers to the rather curious illusion that the dichotic sound may be clearly lateralized toward the non-dominant ear (i.e., the ear receiving the more intense tone), while the pitch of the sound is clearly that of the (less intense) tone coming into the dominant ear. However, the phenomenon exists only as long as the percept of the two tones is fused: when the two dichotic tones acquire two distinct pitches, due to an increased frequency separation or some other physical factor, both ED and intensity independence disappear.

There are two suggestions that follow from these experiments. Firstly, the approximately equal proportion of listeners either left- or right-ear dominant for two dichotic tones indicates that ED for spectral information is an idiosyncratic variable, too important to ignore. Thus, there are two quite possible explanations for the lack of any consistent ear advantage observed for either tone sequences or vowels: (i) Data of left-ear and right-ear dominant subjects have been customarily averaged rather than treated separately. (ii) Stimuli which either do produce binaural fusion (and which, thereby, allow ED to transpire) and stimuli which do not produce such a fusion (and which, thereby, permit the subject to selectively attend to the stimulus in either
ear) have been indiscriminately mixed in most dichotic vowel and
tone sequence experiments. The second suggestion, however, is most
important from the linguistic point of view, for it concerns
consequences of ED for spectrally-bound phonetic features. Because
of the very nature of speech sounds, all phonetic and phonological
features differ in some spectral characteristic. From the
perceptual point of view, spectral processing is of primary
importance for several classes of these features, e.g., vowels,
fricatives, or even stop consonants. If a listener's natural ear
dominance for spectrum extends to spectrally-bound phonetic
features as well, then any ear advantage observed for dichotic
speech sounds may be contaminated by ED. Thus, in subjects having
right ED for spectral information, a REA for speech sounds is
expected to be confounded with their right ED. Conversely, in
subjects who are left-ear dominant for tones, any REA for speech
sounds must be the consequence of other, possibly time-related
asymmetry. Therefore, adequate solution to the problem of ear
advantage for dichotic speech sounds can be found only if, in some
way, ear dominance for spectral information could be dissociated
from any genuinely speech-related ear asymmetry. The objective of
the experiment reported below was to attempt to isolate any
spectrum-bound ear asymmetry that may be present in the ear
advantage for the perception of dichotic speech sounds.

Obviously, a dissociation of the ear superiority for spectral
information processing from REA for speech sounds would be
impossible in subjects right-ear dominant for spectrum. Thus, the
key question of the experiment was whether, and in what conditions,
subjects left-ear dominant for dichotic tones would display a REA.
Accordingly, the experiment consisted of examining the ear
advantage in such subjects for a variety of dichotically presented
speech sounds. However, the paradigm departed from the one most
frequently employed in studies on the dichotic perception of
speech, in that it required the subjects to discriminate dichotic
sounds, rather than to recognize the left and/or right components
in them. Therefore, this paradigm was quite simple and, in
addition, had been previously proven to be a highly sensitive
indicator of ear asymmetry for the pitch of dichotic tones (Efron
and Yund, 1976). The paradigm, illustrated in Fig. 1, was a
version of the standard Two-Alternative Forced-Choice (2AFC)
method. In any given block of trials, the stimulus consisted of
two monaurally discriminable sounds, "A" and "B". In half of the
trials (at random), the right ear was presented with sound "A"
followed (after a 500-msec interval) by sound "B" and,
simultaneously, the left ear with sound "B" followed by sound "A".
In the other half of the trials the order of presentation was
reversed. The subjects' task was to indicate (by pressing one of
two labelled keys) whether the dichotic succession they heard
sounded more like "A"-"B" or "B"-"A". When the intensities of
the two sounds are approximately equal, the two dichotic complexes will
sound identical only for the subject who has no ear dominance for
the particular stimulus property in which sounds "A" and "B"
Figure 1. Schematic diagram of the dichotic stimulus pattern. "A" and "B" are two sounds with duration $t$ (generally 80-110) msec. In each block of trials, sounds "A" and "B" are constant. At any given trial, the two left-right arrangements of the sequence "A-B" and "B-A" (upper and lower halves of the diagram) could appear with equal probability. The subject's response follows each presentation of the dichotic sequence without time constraint. His task is to indicate whether the perceived sequence sounded more like "A-B" or "B-A".
differ: for this subject, the task will be impossible and he will respond at a chance level. On the other hand, when one of the ears is dominant, the subject will be likely to report the stimulus succession presented to that ear more often than that presented to the other. The degree of his ear dominance for a given pair of sounds A and B thus will be reflected by the proportion of his responses corresponding to the stimulus succession in, say, his left ear. According to such a scoring system, a 100-per cent score will signify complete left ear dominance, a zero per cent score complete right ear dominance, and a 50-per cent score no ear dominance at all, with respect to the given pair of sounds A and B in question.

In the experiment, first a group of subjects was screened and, among them, five were selected who displayed a moderate-to-strong left ED for tones. More specifically, the ED scores of these subjects (see the above schema) corresponded to the stimulus succession in the left ear 68 to 100 per cent of the time, when sounds A and B were 100-msec bursts of pure tones with respective frequencies of 1650 and 1750 Hz. In addition, one subject with a moderately strong right ED (18 % left ear and, consequently, 82% right ear responses) was also included as a control. ED scores of the six subjects for the pitch of these two tones presented dichotically is shown in Table 1 (Column 1). In Column 2 of the same table the six subjects' ED scores are presented for a pair of 100-msec single-formant pseudo-vowels, i.e., synthesized periodic sounds produced by exciting a resonator tuned to either 1650-Hz or 1750-Hz (respectively) with a glottal-type waveform. It appears that each subject acquired an ED for this latter pair of sounds toward the same side as that for the pure tones. Next, the same subjects were tested for their ED with regard to five pairs of speech sounds. Each pair of sounds, with one exception, differed in only one phonetic feature. They included two CV pairs and three pairs of steady-state vowels or vowel-like sounds. The CV's were /ga/-/ka/ (differing only in the feature of voicing, i.e., VOT) and /ba/-/ga/ (differing in the feature of place of articulation, i.e., plosive burst spectrum and formant transition trajectories). The vowel pairs were /I/ with a regular and with a high (+140-Hz) first formant (differing in the acoustic parameter most important for the distinction of tongue height), /I/ with a regular and with a low (-400-Hz) second formant (differing in the acoustic parameter most relevant for the distinction of front-back tongue position), and the pair /I/-/ae/ (differing in both of these features). Acoustic parameters of the CV's closely approximated those produced at the Haskins Laboratories and used in the great majority of dichotic speech experiments, whereas the vowels followed the parameters given in the classical study of Peterson and Barney (1952) for a male speaker. The stimuli were synthesized on a laboratory computer, using a digital version of the Haskins Laboratories parallel-resonance analog speech synthesizer (developed by A.M. Engebretson and S. Garfield at Central Institute for the Deaf, St. Louis). The parameters for all dichotic sound pairs were selected
such that they produced a strong binaural fusion, in order to avoid the possibility of the subject selectively attending to the stimulus in either ear. In our stimuli, binaural fusion was facilitated by keeping constant the intonation pattern (i.e., the F0 contour), the time envelope contour, and (in the CV’s) the transition durations and the target vowel. The dichotic sounds were presented at either 80 or 110 msec duration. Such a short duration was chosen with the aim of giving greater emphasis to the initial consonants in the CV syllables.

Results of the experiment are displayed in Columns 3-8 of Table 1. One may see that the right-ear dominant subject (CB) displayed a REA for all speech sound pairs. Subject PM represents the other extreme: she exhibited a left-ear advantage for all pairs of speech sounds and thus falls in the same category as 20 per cent of right-handed individuals who have no REA for speech (Kimura, 1961). Subjects AG, SP, and JW remained left-ear dominant for vowels and vowel-like sounds, as well as for the feature of place-of-articulation, but acquired a right ED, i.e., a REA, for the feature of voicing. In terms of the physical characteristics underlying these phonetic features, these subjects remained left-ear dominant for dichotic speech sound pairs differing only in their spectral composition, whereas they became right-ear dominant for the sound pair between which the principal difference was temporal (VOT). Subject PD's performance closely resembles that of the previous three, with the exception that he became right-ear dominant (in addition to the feature of voicing) also for the vowel sound pairs which differed exclusively or predominantly in their low-frequency formants. However, since this subject did retain his left ED for those vowel sounds which differed only in F2 (Column 6), his results constitute a hint to the effect that low-frequency formants (i.e., the feature [high]) may, in some cases, yield REA, too. To verify this hypothesis, the same subject was tested for four additional vowel pairs: /u/-/U/ (low F1 and low F2), /a/-/Λ/ (high F1 and low-to-medium F2), /Λ/ with a regular and with a high F2 (+210 Hz, the F2 corresponding to that of of /a/), and, finally, /a/ with a regular and with a high F1 (+90 Hz, the F1 corresponding to that of /Λ/).

Results of this experiment are shown in Columns 4-7 of Table 2. For the purpose of comparison, Columns 1-3 of Table 2 repeat subject PD's data on the high front vowels recorded in Columns 4-6 of Table 1. The trend of ear dominance for all vowel pairs indicates that (i) the feature [+high] elicits a switch to REA, whereas the feature [-high] (/a/-/Λ/) does not, (ii) vowels differing only in F2 (i.e., the acoustic feature corresponding to the front-back distinction) does not make subject PD change his left ED, and (iii) vowels differing only in F1 (i.e., the acoustic feature corresponding to the high-low distinction) always result in a switch to right ED. The most interesting aspect of these results is the dichotomy between [+high]-REA and [-high]-no REA. From the phonetic point of view, this dichotomy suggests that, in some subjects at least, the more "consonantal" high vowels could display
TABLE 1

Ear dominance scores (percentage of responses following stimulus in left ear) of six subjects for dichotic tone pairs (Column 2), vowel- and vowel-like sound pairs (Columns 3-6) and CV pairs (Columns 7-8). Scores larger than 50% signify left-ear dominance and smaller than 50% right-ear dominance.

<table>
<thead>
<tr>
<th>Subject</th>
<th>1650 Hz-1650 Hz</th>
<th>1750 Hz-1750 Hz</th>
<th>Stimulus</th>
<th>Pair</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>sine waves</td>
<td>vowels</td>
<td>/I/-/ae/</td>
<td>/I/-/I/</td>
</tr>
<tr>
<td>CB</td>
<td>18</td>
<td>20</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>PM</td>
<td>86</td>
<td>90</td>
<td>65</td>
<td>85</td>
</tr>
<tr>
<td>AG</td>
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<td>57</td>
<td>55</td>
</tr>
<tr>
<td>SP</td>
<td>81</td>
<td>61</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>JW</td>
<td>93</td>
<td>95</td>
<td>65</td>
<td>59</td>
</tr>
<tr>
<td>PD</td>
<td>100</td>
<td>100</td>
<td>27</td>
<td>16</td>
</tr>
</tbody>
</table>


TABLE 2

Ear dominance scores (see Table 1) for various vowel sound pairs. One subject (PD) --- strongly left-ear dominant for tones.

<table>
<thead>
<tr>
<th>Stimulus</th>
<th>Pair</th>
</tr>
</thead>
<tbody>
<tr>
<td>/I/-/ae/</td>
<td>/I/-/I/ with F1</td>
</tr>
<tr>
<td></td>
<td>/u/-/u/ with F2</td>
</tr>
<tr>
<td></td>
<td>/A/-/A/ with F2</td>
</tr>
<tr>
<td></td>
<td>/a/-/a/ with F2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>/I/-/ae/</th>
<th>/I/-/I/</th>
<th>/u/-/u/</th>
<th>/a/-/a/</th>
<th>/A/-/A/</th>
<th>/a/-/a/</th>
</tr>
</thead>
<tbody>
<tr>
<td>/I/-/ae/</td>
<td>27</td>
<td>16</td>
<td>88</td>
<td>40</td>
<td>92</td>
<td>98</td>
</tr>
</tbody>
</table>
a REA -- just as vowels in a CVC environment have been observed to do (Weiss and House, 1973). From the acoustic standpoint, the dichotomy may be explained by the relative intensity of F2 which, in /a/ and /ʌ/, but not in /i/, /i/, /u/ or /ʊ/, is almost as large as that of F1. Thus, in the [-high] vowels, the prominence of F1 is all but overridden by F2. In sum, the rule for this subject seems to be that, whenever the difference between the F1's of the two dichotic vowels is perceptually more salient than that between the two F2's, he acquires a REA, whereas whenever it is the difference between the F2's which is the more likely cue for distinguishing the two vowels, he retains his natural left ear dominance. But the frequency of first-formant peaks is generally equal to or lower than 500 Hz. Since the temporal structure of the waveform (i.e., periodicity) plays a far greater role in the encoding of low frequencies than does the spatial structure (i.e., spectrum, see Moore, 1973), it is quite possible that Subject PD's right-ear dominance for low-formant (i.e., high tongue-position) vowels may also reflect a REA for temporal stimulus attributes.

The conclusion of these results is twofold: (i) Right-ear advantage for speech sounds is, indeed, contaminated by the subject's ear dominance for spectral information which, quite probably, reflects no hemispheric dominance whatsoever. (ii) Subjects who are left-ear dominant for spectral information will remain left-ear dominant for the processing of those phonetic features which are predominantly spectral, whereas they become right-ear dominant for those features which are predominantly temporal. In other words, results of this study suggest that right-ear advantage for speech consists exclusively in an ear superiority for the processing of temporal information. It just happens that speech represents the temporally-complex acoustic stimulus to which man is most exposed and for which a right-ear advantage is the most easily demonstrated in the laboratory. A corollary to this conclusion is that the functional role of the left posterior temporal lobe (the "speech hemisphere") may not be anything else than keeping track of the temporal organization of (spectrally) distinct acoustic events. However, processing of spectral information in auditory stimuli, including that of spectrally-bound phonetic features of speech sounds, has to be completed prior to the processing of their temporal organization. Because the ear advantage for such phonetic features appears to follow a peripherally-anchored ear superiority for spectral information processing, phonetic analysis in the spectral domain must be accomplished at some definitely subcortical level.

In all fairness, the proposition that man may not use his cortex for phonetic analysis per se to the extent which he has been widely believed to do, may sound shocking to some. However, one should keep in mind that, if the role of the cortex were indeed less important for phonetic analysis than it has seemed to be, the brain would become more free to handle all sorts of other, higher level activities -- for example, language processing. Or, as a matter of fact, thinking.
Acknowledgments

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Grammatical Relations and Word Order in Italian Child Discourse
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1. Here an attempt is made to define some aspects of Grammatical Relations of Subject and Object as used by children from 1;6 to 2;6 years in Italian and Veneto dialect. In particular, the relationship between the mastering of some of the basic coding properties of Grammatical Relations (GRs) and their linearization rule (Li 1976; Cole/Sadock 1977) will be discussed.

In Italian and Veneto, the properties characterizing the GRs of Subject and Object within a clause are represented in their formal structure by a clustering of intersecting morphosyntactic rules that refer to features such as person/gender/number/"case", while the basic order is considered SVO.

These coding properties appear to be controlled regularly and systematically by the child, from the very beginning of his linguistic production, in the process of mastering the suffixal Verb conjugation and the related pronominal system. On the other hand, the mastering of these coding properties of GRs does not imply a fixed pattern in their ordering (Bates 1976: 209) as being typical of this stage, nor does it seem to follow those of the adult schemata (Gruppo di Padova 1974; Lonzi 1974, Magno/Fava 1974; Trumper 1976; Antinucci/Cinque 1977). From a first analysis of the rules that motivate variation encountered in different ordering of GRs, it appears that the order of the Subject with respect to the Verb and the Object conforms to more general rules on word order, which have a contextual value and are dependent on the discourse.

2. The study of the acquisition of GRs and word order was first directed towards the demonstration of the innate character of syntax. By assuming the configurational definition of Subject, Object of the Aspect type as a realistic model, research by McNeill (1966a, 1966b, 1970), Slobin (1966), Roepen (1973a, 1973b) tries to demonstrate that the existence of a preferential or fixed order can be explained only by reference to an innate knowledge of syntax. McNeill (1966a: 102), for instance, by assuming the configurational definition of Subject, Object as universal, has tried to demonstrate the existence of basic language-definition universal, reflecting a specific linguistic ability and not necessarily a cognitive ability. The child's innate knowledge of GRs was reflected by the use of fixed order strategy even in languages which permit a relatively flexible ordering rules (children talk base strings even in Russian).

A serious challenge to such proposals made on the grounds of purely syntactic strategy was given by Bowerman (1973a, 1973b) who showed that the evidence used to attribute to the child an understanding of basic GRs and the constituent structure they entail was inconclusive. On the contrary, she affirms, there is evidence of variable word order from the time of the earliest two word utterances. She suggests that the word order is heavily influenced by input (adult's speech to child) and that the children's initial
combinations are based primarily on semantic considerations. A partially similar position is encountered also in Bates (1976:192–211), who, besides, stresses the importance of pragmatics in determining word order in the preoperational stage. Also Bates' interest centers on the verification of the acquisition of Subject and Object. By analyzing the statistical occurrence of the orders of the semantic Subject and Object with respect to the Verb and between them as appeared from the speech of two Italian children, a large use of orders different from the basic SVO order (Bates 1976:183) was discovered, as was a tendency to regularize the orders in the pattern SVO at the end of the period she analyzed. The importance given these two ranges of data, together with not very clear heuristic procedures for identifying Subjects, plus the difficulty of reading data on inflections (Bates 1976: 209; 263) induce her to conclude that the notion of syntactic Subject is acquired relatively later on and it coincides with the mastering of the order SVO. In this paper I will argue that in order to explain some rules of inflection and case marking that appear to be mastered by the child at a very early stage, it seems necessary to assume a framework as sketched in slightly different ways in Relational Grammar, where GRs are in underlying free structures defined in terms of their basic properties and the grammatical processes in which they are involved.

3. Our analysis is based on tape recorded conversations collected from six children (Daniele, Elisabetta, Gabriele, Massimo, Orietta, Paola) following their progress every week for a year, from 1;6 year to 2;6 years. Even if the main interest in this longitudinal study has been the linguistic data given, attention was also paid to the sensorimotor development. Data have been gathered by recording their verbalizations in a nursery school, while they were playing together or with the interviewer (Gianna Tirondola). Notes were usually made after each session and were based on the tape recorded conversation and recollection of the situation at the time of the utterance. The whole corpus consists of about 2,800 utterances.

Control data have been supplied by John Trumper, who has recorded linguistic production of his son Carletto.

The background of Daniele, Elisabetta, Gabriele, Massimo, Orietta and Paola is rather similar: the socioeconomic level of their families is working class: all the fathers are factory workers or small time tradesmen. In four cases the mothers are also factory workers; in the other two cases they are housewives. Parents had received public education up to eleven years but no further. Except for the two children whose mothers are housewives, all the others have been put in the nursery school before reaching seven months, and they spent most of the time there. Due to the poor ratio of staff to children and more generally of qualified teachers in this nursery school (merely one nun), the children were used to playing and interacting verbally most of the time with other children of the same age and it was only during the time they were in the home that they received specific attention.
All the children then were extremely happy about the attention Gianna gave them and they felt free to talk to her: the time given in each session, which permitted spontaneous and unplanned interactions, and the children's desire to have in some way a preferential relationship with her, contribute to characterize their conversations as initiated and partially controlled by the child.

The families of all children have been living for several generations in Valdagno, a small conservative town in the Veneto, where dialect, a local variety of Venetian dialect, is still largely spoken by wide social strata. At home the parents generally speak dialect, even if they make efforts to speak Italian to them. In the nursery school children often prefer to talk with others in dialect, but with the nun or with Gianna in Italian. The interference between the two systems, Italian and Veneto, is sometimes clearly revealed, an interference which mirrors general problems of diglossia situations (Mioni/Arnuzzo 1977; Mioni/Trumper 1977). In other cases, moreover, the similarity of linguistic structure between Italian and Veneto, together with the fact that the lexicon used by the child is more basic and so more often common to the two languages, does not give enough information to permit the interpretation of a given utterance as either Italian or dialect. These phenomena of interference, particularly problematic in the study of the acquisition of a language, where they cannot be treated as separate systems nor in terms of deviations of one from the other (Labov 1972), require an analysis in terms of a single continuum with code switching between Italian and Veneto.

3. In Italian and in Veneto dialect the coding properties characterizing the Subject within a clause are represented in their formal structure by a clustering of rules that refer to underlying semantic features such as person/gender/number, rules generally called agreement rules: both in Italian and in Veneto the Verb agrees with the Subject in person and number, when used in the finite forms; when used in the past participle forms, number and gender are involved, though not precisely in the same way in both codes (Lepsch 1963). As to Pronouns, both systems admit case.

Italian and Veneto are generally both classified as having SVO basic sentence order; orders different from the basic SVO are explained on the basis of the information structure of the sentence and are considered marked (Gruppo di Padova 1974). Italian may have a rightward movement rule that places "new information" Subject in sentence-final position and a leftward movement rule for the Object, requiring several constraints such as a copying pronoun before the Verb or a special intonation contour (Magno/Fava 1974). In Veneto there are analogous rules for the Object, while Subject movement requires, in certain cases, a dummy pronoun replacement (Trumper 1976).

A careful inspection of our data indicates a large use on the part of the child, from the very beginning of his linguistic production, of the suffixal Verb conjugation and the related pronominal system, which occur respectively in 30% (832 Verbs) and 3% (81 Pronouns) of their utterances. From a detailed analysis of the
structure of children's discourse in their interaction with adults or with other children it appears that children's utterances are not only pragmatically appropriate in various ways (Ervin Tripp/Mitchell Kernan 1977; Freedle 1977) but also grammatically matched with respect to Verb morphology and pronoun system. 85% of Verbs used by the child present either finite Verb morphs or past participle ones, which must refer to person and number or number and gender of the Subject. Pronouns appear firstly in the Italian Subject (full form) and later in the non-Subject case (clitic form), a fact particularly indicative because Subject Pronouns are generally omitted both in Italian and in Veneto.

The systematically significant relations between Verb suffixes and pronominal system appear mainly in the case of finite Verb morphology (see Table 1 for percentages of finite Verbs over total Verb categories (past participle and infinitives)), where the child's ability to cover almost the whole range of morphological endings, mostly in the present tense, and a meaningful part of the pronominal system permits the verification of agreement as a productive set of rules. From the very beginning children use 1st (-o), 2nd (-i), 3rd (∅) singular morphological endings. Later they use plural forms, the 1st plural (-mo) with the different rules for treating thematic vowels in the two codes; the Italian 3rd plural (-no) (in Veneto 3rd singular and plural are neutralized in morphological Verb endings).

Table 1.
Percentages of Finite Verbs (FV)

<table>
<thead>
<tr>
<th>Number of Verbs</th>
<th>100%</th>
<th>90</th>
<th>80</th>
<th>70</th>
<th>60</th>
<th>50</th>
<th>40</th>
<th>30</th>
<th>20</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stages</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Correspondingly, Pronouns appear first in 1st and 2nd person form (firstly in the Subject case and later in the non-Subject); later 3rd person Pronouns also occur. There is a coherently isomorphic relation between Verb morph and case marking of the pronominal system that is characteristic of the utterances where the child re
fers to himself. Self-reference may either be with a 3rd person Verb morph (-ô) and, eventually, the proper name, or with a 1st person Verb morph (-o) and, eventually, 1st person Subject Pronoun. Even when the variation is in the same discourse unit, the relation is respected.

(1) Lele (Gabriele) 2;2 pointing to a child who cries most of the time:
1.1. L: mato quello la/
crazy+m. s. that+m. s. one/
1.2. G: e perché sarebbe matto?
and why (he) is crazy?
1.3. L: gioca mai/ pange/ Lele no pange/
play+3rd s. never/ cry+3rd s./ Lele no cry+3rd s./
1.4. G: qualche volta anche tu piangi/
sometimes even you cry/
1.5. L: pango mai io/
cry+1st s. never I (Subject)/.

In example (1) Lele switches from the use of his proper name (Lele) in 1.3. to personal Pronoun (io) in 1.5. to indicate himself. The alternation Proper Name/ Personal Pronoun corresponds to variation in the flexive verbal system (pange/pango). The same coherently isomorphic relation is characteristic also of utterances where the child refers to the hearer, always indicated by the 2nd person morph.

(2) Lele 1;9 is playing a joke on the nun:
2.1. G: e suor Marcellina cosa dirà?
and what suor Marcellina will say?
2.2. L: (with a puzzled look on his face) tu dici?
you (Subject) say+2nd s.

Note, moreover, that anaphoric descriptions are always in 3rd singular or plural Verb endings. According to Veneto and contrary to Italian morphosyntactic rules, we have on occasions found 3rd singular agreement even when the Subject was plural, as in (3); on the other hand, 3rd person plural morphs always and refer to a plural Subject as in (4).

(3) Massimo 2;2 finally succeeds in finding a toy which does work: a helicopter. He is showing it to Gianna:
3.1. M: .... potrei volare? .... no potrei/angeeti vola/tati no/ vero?
.... could+1st s. cond. fly+inf. ? .... no could+1st s. cond. /little angel (m.) +p. fly+3rd s./children no/ true?

(4) Daniele 2;6 is feeling low because he has had his hair cut. He feels ugly. Running to the mirror:
4.1. D: .... tutto sensa! tati ridono/
.... all+m. s. without! child+p. laugh+3rd p.
This correct use of the set of formal rules concerning Verb agreement - despite the rather different framework of intersecting morphosyntactic categories of Italian and Veneto - and of the case marking system, which characterizes not only finite Verbs but also past participle ones, may be generalized by assuming that child has a productive control over the coding properties of the Subject. These coding properties of the Subject, controlled regularly and systematically by the children from the very beginning of their linguistic production, do not imply a fixed pattern in the order of the Subject which seems, according to Bates, wholly performed by a later stage. For instance, Subject pronouns may follow the Verb, as in 1.3. or they may precede it, as in 2.2.

The same variation characterizes also proper names. Table 2. specifies the curve of the SV order and VS one, where the Subject is a name or a pronoun (SV order includes SV, SVO orders; a VS order includes VS, VOS, VSO).

Table 2.

<table>
<thead>
<tr>
<th>Percentages of Subjects preceding or following the Verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
</tr>
<tr>
<td>90%</td>
</tr>
<tr>
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<td>30%</td>
</tr>
<tr>
<td>20%</td>
</tr>
<tr>
<td>10%</td>
</tr>
</tbody>
</table>

To explain order variations, it has been proposed that at this stage there is a tendency to have first new information and later given, both in utterances where there isn't any preferential order predictable on syntactic basis and phrase elements seem to be juxtaposed on semantic ground (Baroni/Fava/Tirondola 1974) and in utterances where GRs hold (Bates 1976)

(5) Daniele 2;1 is telling Gianna about his holidays in particular about the days he spent with his parents at the seaside. He likes the colours of the sea most of all.

5.1. D: ....nona no mare/ casa a nona/ ....grandmother no sea/ home the grandmother/
(6) Gianna and Orietta 1;8 are looking to a cat on the roof. Orietta pointing out the cat to Gianna:

6.1. O: gato nero/ cat(m.) +s. black+m. s./

6.2. G: che bel gattone! ti piacciono i gatti? what a nice cat! do you like (the) cats?

6.3. O: (gr)afiano i gati? scratch+2rd p. the cat+p.?

(7) Elisabetta 2;3 is desperate because she is unable to learn a poem off by heart. The nun has warned her: Jesus won't give her any gifts. Gianna is consoling her: Jesus doesn't care about poems and she will get some presents. Elisabetta is still not convinced:

7.1. E: .... so neanche poesia/
.... know+1st s. not at all poem/

7.2. G: non ha importanza/
it is not important/

7.3. E: deto no regali/ suora deto no/
said no present+p. /nun said no/

In 5.1. the element mentioned in the first utterance (a nona) is repeated in the last position in the second utterance; analogously, in (6) and (7) the Subject or the Verb are in last position, depending on what element (gato/gatti, deto no) has been previously mentioned, while the elements adding more information are in first position ((gr)afiano, suora). Such a structuring, where the information conveyed seems to add just enough information to frame a context (Cook Gumperz/Gumperz 1974; Leonardi 1977), reflects the effort of the child to contribute actively to the discourse. Very often the word, or words conveying the most information and which are firstly selected by the child are not part of the background child and adult have in common. Child's interest in unit larger then sentences explains the lack, in the utterances relative to the discourse, of the pattern given/new, which mirrors the "strong tendency in continuous discourse to start sentences with old information, i.e., with something already known and to introduce new information towards the end of the sentence" (Kuno 1971: 333) and which seems established in the structure of Italian language.

This interest for the discourse as unit is reflected in the relationship between topic as discourse (Ochs Keenan/Schieffelin 1974) and topic as sentence notion (Sgall et al.1973). The child, who masters the notion of a discourse topic, does not regularly signal the sentence topic in the ongoing discourse, as for the word order. If the topic is the element contextually bound and so it is coincidental with a given element, either it is not expressed at all or it is shunted to the end of the utterance. We came across frequently VOS orders or VSO depending on whether the Subject or the Object is topic and given (a nona, sechielo).

(8) Massimo 2;3 is telling Gianna about the illness he has had, and how nice was the grandmother on that occasion:
8.1. M: ....a nona sempe..../ da Masimo / ....the grandmother always..../ near Masimo /
8.2. G: e non giocavi con la nonna?
and (you) didn't play with the grandmother (did you)?
8.3: M: contava stoie a nona/
tell+past.+3rd s. story+p. the grandmother/
(9) Orietta 2;4 is fighting over a bucket with another
girl. When she succeeded in taking it away, she says
to Gianna:
9.1. O: deso mio/
now mine+m.s. /
9.2. G: Orietta non devi fare così!
Orietta don't do that!
9.3. O: volio io sechielo!
want+1st s. I(Subject) bucket(m.) +s. !

In example(8) the child introduces in the conversation a new
discourse topic, switching from the illness he has had to his grand-
mother. This element is in first position in the first utterance
in line 8.1., but it is not maintained as such in the successive
utterance , whose structure can be described as comment/topic in
that order.

The contextual values that word order in general, and GRs in
particular, has for the child, are reflected also in child utteran-
ces which provide self-corrections in repair phenomena (Schegloff/
/Jefferson/Sacks 1977), where the different pragmatic strategies
that arise and which depend on the different types of initiation
techniques employed by the adult, also determine the ordering of
GRs. This explains the diversity of Subject order in 10.5. and
11.5, which have a similar construction with Verb and Adjective
not referring to the Subject (as appears from the agreement rules).

(10) Ele (Gabriele) 2;2, who played a joke on Gianna, is now
unsure of her feelings. He gives her a kiss, still wanting more
reassurance:
10.1. E: bavo Ele / vero?
good +m. s. Ele/ true?
10.2. G: no no bravo / birichino /
no no good / impish /
10.3. E: biichino/ sempe a mama /
impish+m. s. / always the(f. s.) mummy(f.) /
10.4. G: cosa la mamma?
what the mummy?
10.5. E: dice biichino a mama/
say+3rd s. impish+m. s. the mummy(f.)/
(11) Elisabetta 2;1 is very proud of her new hair cut:
11.1. E. bela così?
nice+f. s. this way?
11.2. G: si / proprio bella /
yes/ really nice/
11.3. E: anche papà/
even daddy/

11.4. G: anche papà bello?
even daddy nice?

11.5. E: (laughing) no:/ papà deto bela!
no:/ daddy(m.) say+past part. m.s. nice+ f.s. !

In (10), where the child is asked to clarify by adding more information, with a construcional device consisting of a partial repeat of the trouble source turn (la mamma) plus a question word (cosa), the structuring is similar to the one just discussed. The already mentioned element (the Subject, in this case), taken for granted by the adult, is in last position. In example 11.5., on the contrary, the Subject, which is in first position, obeys different pragmatic rules: in fact, when elements previously mentioned in the preceding turns are not understood in their relations with the context, they are reintroduced in first position and in many cases may be clearly described as topic/comment in that order. In the cases observed, both the syntactic devices responsible for the mastering of GRs and the pragmatic ones responsible for the ordering rules seem to operate as parallel strategies, with no conflict between them. In other cases of Repairs, however, the redefinition of what the child is talking about seems to imply a rearrangement of constituent order both in pragmatic and syntactic hierarchies: this seems typically the case when semantic relations between referents not correctly identified by adults are involved.

(12) Lele (Daniele) 1;ll sees flies near the window and he gets excited. He calls Gianna and Orietta, who doesn't seem to understand:

12.1. L: Eta/ gada fale / fale lâ / vedi / ecole lâ / Eta/look butterflies/butterflies there/ look/ there they are/
An older boy tells him that are not butterflies ((far) fale) but flies (mo(s)che):

12.2. L: moche:: / bute moche/
fly(f.) +p:: / naughty+f. p. fly+p. /
mangia Lele moche /
eat+3rd s. Lele fly+p. /

12.3. G: tu mangi le mosche?
do you eat (the) flies?

12.4. L: (laughing) no:/ moche mangia!
no:/ fly+p. eat+3rd s.

In 11.2., following the usual way of constructing discourse, Daniele shunts the Subject to the end of the utterance, when it also coincides with the topic of the conversation ('moche' previously confused with 'farfalle'). The ordering rules just described with 'postposition' of the Subject, rules which go in the opposite direction of the adult ordering rules (the Subject is postponed if it is new) and the agreement rules, that in this particular case
do not provide enough information to disambiguate the context, create a misunderstanding. To disambiguate it, Daniele reorders in line 11.4. the elements previously mentioned in 11.2. (mocche, mangia), thus utilizing a strategy which bears only on word order. This choice of a preferential order SV seems to be made in analogous contexts in which we found the choice of a topic/comment ordering. This suggests that, when the child realizes he hasn't been understood, he tries to correct himself and at this point he may reorganize a subpart of his discourse, so turning his attention to units smaller than the discourse, by choosing as a possible strategy the pattern topic/comment and/or the SV order.

5. From the analysis it appears that the child masters that part of the formal system of Italian and Veneto which concerns agreement rules and case marking system, despite the partially different intersecting morphosyntactic rules of the two codes. Such a knowledge may be generalized by operating in a Relational Grammar framework and by assuming that the child has, from the very beginning of his linguistic production, a productive control over the coding properties of the Subject within a clause. However, the order of GRs seems to be a variable depending on the discourse. Either the strategies determining word order are an automatic extension of earlier strategies (Bates 1976: 210; Greenfield/Smith 1976) or they already have specific symbolic features, they are used by the child with a context value: the different pragmatic needs which vary in conversational interaction according to different sequential environments and different pragmatic situations, determine the order of the Subject with respect to Verb and Object. The basic unit at which the word order is mastered is the discourse: child's tendency to advert to units smaller than the discourse are pretty rare. However, in such cases, where there is a tendency to move from a mastering of ordering strategies at the level of discourse to the mastering of ordering strategies at the level of sentence, pragmatic strategies responsible for the word order seem to interact with a syntactic one, the mastering of GRs, in determining by a slow and gradual process the linearization of GRs towards the preferential form SV(O). In this interplay between syntax and pragmatics appears the close relationship between language as a system and its functioning in the process of communication, which makes the discourse a basic variable in the child linguistic system.

Footnotes

This paper is presented here in a first shortened preliminary form. I would like to express my gratitude to John Trumper for his invaluable comments, to Gianna Tirondola, who generously shared both data and interpretations; to Franca Agnoli, who helped me with statistical elaborations. A special thank you to Serena Zovato for her sweet assistance, to Paolo Leonardi and Charlotte Linde.

1 The distinction between topic/comment, given/new, firstly drawn by the structuralist scholars Danes, Firbas, Beneš, has been restated by Halliday (1967) and by the generativists Sagall et al. (1973)
Bibliography


Linguistic Representation of Spatial and Temporal Orientation

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In most languages the lexical resources used for representing orientation along the front/back axis in horizontal space are also used for representing temporal orientation. In certain languages, the lexical items that represent 'front' and 'back,' whose referential functions are anchored in human anatomy itself, are directly used in expressing temporal orientation. In Kikuyu, for example, mbera functions as an equivalent to temporal before as well as spatial in front of, thutha as an equivalent to temporal after as well as spatial behind. In many other languages, however, the lexical items for 'front' and 'back' do not directly function in both domains. The lexical roots found in this basic pair, however, are often extended in quite complex ways into the temporal domain as well as the spatial. In English, for example, spatial in front of and temporal before can be viewed as reflecting the same lexical root, at least from a synchronic vantage point. Moreover, before can function spatially as illustrated in the familiar nursery verse: 'Wasn't that a dainty dish to set before the king?' And behind, the primary resource for expressing spatial orientation, is often used to express temporal orientation: 'We're behind one week in our schedule.' Furthermore, the -ward(s) suffix, expressing a semantic feature analogous to aspectual [-complete], may be joined to either for or back to create a lexical resource for expressing either spatial or temporal orientation:

SPATIAL: 'Would you please move your chair forward just a bit?'
TEMPORAL: 'We have to move the meeting forward a week.'

Hence all languages that anchor time in horizontal space presuppose a line along which either movement or static relationships between fixed points can be measured. It is as if time is pictured as a straight line stretching out into the visual field:

\[ \text{\textbullet} \quad \rightarrow \]

Such a line may be identified as a spatio-temporal line.

In this article, I would like to examine two prototypes used in processing linguistic representation of movement or static relationships between fixed points along this spatio-temporal line. In using one prototype, an orientational field is constructed in which the points are viewed as aligned toward the point from which they are observed:
This prototype will be referred to as the mirror-image prototype (i.e., the face-to-face one). In using the other, an orientational field is constructed in which the points are viewed as aligned with the observer(s) toward some further point:

This prototype will be referred to as the in-tandem prototype.

It will be assumed that these prototypes are derived from two basic perceptual patterns in which physical entities conceived as possessing an intrinsically marked front/back axis are oriented in contrasting ways. These contrasting prototypes may be illustrated by the ways in which human beings relate to each other as well as to non-human objects. For example, in the most basic forms of social experience, one person is ordinarily oriented toward the other, thereby reflecting the mirror-image prototype: people are ordinarily in a face-to-face relation as they eat together, talk together, etc. But there are other social experiences in which persons are aligned with each other toward some further point: marching in line, waiting in line, watching a movie, etc. With respect to the latter set of experiences, it may be noted that a certain dynamic element is introduced, whether or not actual motion is in the field, by virtue of this common orientation toward a further point. With respect to human relations with non-human objects, this dynamic element is particularly important in distinguishing the two kinds of orientational fields. For in static modes of interaction with a physical object possessing an intrinsically marked front/back axis, that object is ordinarily oriented toward the person interacting with it. Consider, for example, the face-to-face relation a person establishes with a clock or a typewriter as he interacts with it. In dynamic modes of interaction, however, a person and an object are ordinarily oriented in concert toward some further point. Consider, for example, the in-tandem relation that a person establishes with a bicycle or a car as he uses it.

Although both prototypes appear to be used in processing spatial or temporal orientation within all languages, there has accumulated strong evidence that they are differentially distributed in the processing of spatial and temporal constructs in different languages. However, it is not only that they are used in contrasting ways by speakers of different languages; they are also used in contrasting ways by speakers of the same language. This latter kind of contrast is particularly evidenced in developmental research (Harris and Strommen, 1972; Kuczaj and Maratsos, 1974; Hill, Donnell, Pearsons, and Aronowitz, in preparation). For example, in Harris and Strommen's research, four-to-seven-year-old children used both prototypes in responding to tasks such as the following:

'Put the red block in front of the green one.'
More than two-thirds of the children made placements on the near side, thus reflecting a mirror-image prototype:

Nearly one-third of the children made placements on the far side, thus reflecting an in-tandem prototype:

However, when a similar task is given to adult speakers of standard English, their responses reflect much greater use of the mirror-image prototype. For example, in a study with more than one hundred graduate students at Columbia University, over ninety percent made use of the mirror-image prototype by identifying a further object as 'behind/in back of' a nearer one, a nearer object as 'in front of' a further one.

It has been shown, however, that adult speakers of other languages tend to use the in-tandem prototype in responding to a similar task. For example, in a study carried out in West Africa, a substantial majority of Djerma and Hausa speakers identified the further object as 'in front of' the nearer one, (using constructs based on gine and gaba, the lexical items representing the front part of the human body), the nearer object as 'in back of/behind' the further one, (using constructs based on banda and saya, the lexical items representing the back part of the human body).

It is important to note, however, that the distribution of these prototypes is considerably less stable in situations where speakers in one linguistic-cultural domain are subject to influences from another. For example, in the western hemisphere native speakers of creolized English and French whose cultural heritage lies in West Africa tend to make considerable use of the in-tandem prototype (Hill, Donnell, Pearsons, and Aronowitz, 1978a; Hill and Vivo, 1978b; Hill, 1978c); and conversely, westernized speakers of Hausa and Djerma tend to make considerable use of the mirror-image prototype (see Hill, 1975b, for the account of a study in which it was found that girls make consistently greater use of the mirror-image prototype than boys on a variety of tasks in a secondary school setting).

Although the use of prototypes by adult speakers of English and adult speakers of Hausa contrast sharply on tasks like the one above, it coincides on other tasks. Consider, for example, the ways in which the two sets of speakers encode the relation between the tree and the stick in a situation like the following:
Both construct an orientational field aligned toward themselves, thus describing the stick as "behind" the tree (bayada is used in Hausa). A Hausa speaker tends to use a mirror-image prototype, whenever the visual field is closed rather than open.

Moreover, there are other situations in which an English speaker as well as a Hausa one tends to use an in-tandem prototype. If an English speaker is in motion, then he tends, like a Hausa speaker, to use the in-tandem prototype. Consider, for example, the following utterance by a person driving a car to a fellow passenger: 'Oh, look at that lovely pine grove there in front of the boulder.' An informal experiment with native speakers of English indicates that the majority visualize the following configuration, thus reflecting use of the in-tandem prototype:

This tendency to use the in-tandem prototype in decoding appears to be considerably strengthened if either up or out precedes in front of. Moreover, an English speaker also tends to use an in-tandem prototype when he perceives motion away from the point where he is located. If, for example, a ball rolling away from him is used as a reference point, then any object located on the far side of the ball tends to be identified as in front of, as illustrated below:

'Is that your bat in front of the ball?'

It may thus be concluded that the two basic prototypes are available to both speakers of Hausa and speakers of English but that they tend to be distributed in contrasting ways. Table I following the notes summarizes the different patterns of distribution that have been outlined here.

Let us now turn to the domain of temporal orientation and consider an analogous pattern of distribution of these prototypes by speakers of English and speakers of Hausa. The domain of temporal orientation, unlike the spatial one, provides examples of linguistic constructs which are necessarily processed the same way by all adult speakers of a language, for a lexical item representing orientation may be used in a construct that identifies a
stable relationship between two points in time. Consider, for example, a construct such as the day after tomorrow in English: all adult speakers of English would agree that this construct identifies a point in time two days later than 'today.' As illustrated by the following diagram, an orientational field is constructed in which the temporal points are viewed as aligned toward the speaker:

\[ \text{Diagram} \]

In effect, the construct is necessarily processed according to a mirror-image prototype. If an in-tandem prototype were used in processing this construct, then it would refer to 'today.' Although human beings do possess a remarkable capacity for inventing indirection in speech, this particular way of referring to the immediate day in which they are located seems to stretch such a capacity beyond its limits.

It is interesting to compare the strategy that a Hausa speaker uses in establishing an orientational relationship between 'tomorrow' and 'the day after tomorrow.' As in many West African languages, the days immediately preceding and following 'today' are lexicalized in Hausa; that is to say, they are each given separate names rather than defined in relation to each other. Hence it is possible to measure the way in which a Hausa speaker conceives of the relation of gobe 'tomorrow' to jibi 'the day after tomorrow' by use of the cloze procedure:

\[ \text{Jibi yana } \underline{\phantom{a}} \text{ da gobe.} \]

If a Hausa speaker were to place gaba 'in front of/before' in the above blank, then he would be using an in-tandem prototype. If he were to place bayda 'in back of/after,' then he would be using a mirror-image prototype. Pilot research indicates that a substantial majority of Hausa speakers select gaba, thus reflecting use of an in-tandem prototype:

\[ \text{Diagram} \]

Hence it would appear that just as Hausa speakers make greater use of an in-tandem prototype in the processing of spatial relations, so they make greater use of this prototype in the processing of temporal relations. Indeed, they even view a later day of the week as gaba da 'in front of/before' an earlier one, an earlier day as bayda da 'in back/of after' a later one. Hence ranar Talata 'Tuesday' is viewed as gaba da ranar Littinin 'Monday,' ranar Littin 'Monday,' as bayda da ranar Talata 'Tuesday.' By way of contrast, an English speaker views Monday as coming before Tuesday, Tuesday
as coming after Monday, thus reflecting the same mirror-image prototype that is basic in his processing of spatial orientation.

It is important to note that both speakers of English and speakers of Hausa process these relations between days of the week as if they had placed themselves at some point just before the week begins. Indeed, it appears that speakers of all languages process relations between points in a temporal field by virtue of such placement. This strategy appears to operate even when the temporal field is located in the past. Consider, for example, a construct such as the day before yesterday. If an English speaker were to process the relation between 'two days earlier' and 'one day earlier' from the vantage point provided by his actual location in time, then he would be using an in-tandem prototype rather than a mirror-image one:

Such switching of prototypes would, however, not be consonant with what is known about linguistic processing of temporal information. If, however, the speaker is viewed as processing the relations from a point immediately preceding the temporal field, then he may be considered as maintaining a consistent prototype:

In effect, he views the temporal field as aligned toward himself, thus reflecting use of the mirror-image prototype.

Furthermore, a Hausa speaker maintains a consistent prototype in processing the temporal relationship between the two points immediately preceding 'today' and the two points immediately following 'today.' By virtue of the same strategy of temporal displacement, he views shekaranjiya 'the day before yesterday' as baya da 'after' jiya 'yesterday,' thus reflecting a consistent use of an in-tandem prototype:

Just as it was earlier posited that a Hausa speaker may use the mirror-image prototype in processing spatial relations when the visual field is 'closed,' so it will now be posited that he may use such a prototype in processing temporal relations when the temporal field is, as it were, closed. When a Hausa speaker identifies, for example, the relation between two events, he sets up an orientational field which is closed and thus makes use of the mirror-image prototype. Consider, for example, the following utterance:
Dauda zai zo bayan Saratu ta fita.
'David will come after Sarah leaves.'

Dauda's coming, the later event, is identified as bayan 'after' Saratu's leaving, the earlier event. Hence a mirror-image prototype is being used:

\[ \text{\includegraphics[width=0.2\textwidth]{mirror-image.png}} \]

This mirror-image prototype is also used in the processing of the relation between two events located in the past. As we have already pointed out, a Hausa speaker processes the relations within a past temporal field as though he were located at a point in time immediately preceding that field. Consider, for example, the following utterance:

Dauda ya zo bayan Saratu ta fita.
'Dauda came after Sarah left.'

As in the previous example, the Hausa speaker may be considered as using a mirror-image prototype for processing this closed field, by virtue of temporal displacement to a point immediately preceding it:

\[ \text{\includegraphics[width=0.2\textwidth]{mirror-image.png}} \]

Just as in processing certain temporal relations a Hausa speaker may use a mirror-image prototype, so an English speaker may, in certain instances, use an in-tandem prototype. It may be recalled that in the domain of spatial orientation 'motion' seems to be a critical feature in inducing the English speaker to switch from a mirror-image prototype to an in-tandem one. By the same token, when an English speaker represents movement from one temporal point to another, he tends to make the same switch. Consider, for example, the following experimental task which was given to students at Columbia University:

'The Commission on Equal Rights had originally scheduled its meeting for March 10th. The meeting has now been moved forward one week.'
This statement appeared in this morning's New York Times. If you had read it, when would you have expected the rescheduled meeting to take place?
(note: the students performed this task on February 9th)
Thirty-six out of fifty students selected March 17th, thus reflecting a dominant pattern of use of an in-tandem prototype.

It may, of course, be argued that, in processing this task, these students used a calendric frame of reference and hence viewed the temporal field as intrinsically oriented. Within the calendric frame of reference, a later date would necessarily be viewed as intrinsically 'forward' in relation to an earlier one. Even if this argument is granted, it is still important to remember certain points. First of all, the mirror-image prototype, as already pointed out, is used in relating calendric units such as Monday, Tuesday, etc. Secondly, nearly a third of the students involved in the experimental task used a mirror-image prototype. Moreover, this mirror-image prototype is often used in everyday communication about rescheduled meetings. For example, I recently received, as a faculty member of the university where I teach, a written communication from the Dean of the Faculty in which he used forward to identify an earlier point in time for a rescheduled meeting:

'In order to accommodate earlier discussion of the budget, we shall be bringing the next scheduled Faculty meeting forward by one week.'

Fortunately, the dean used the verb 'bringing' to mark orientation toward his own location in time. Moreover, in the next paragraph he gave the actual date for which the meeting had been rescheduled. If he had not included these additional bits of information, certain faculty members might well have been two weeks late for the meeting (since beginning this work on temporal orientation, I have been told stories by a number of people about such misunderstandings).

Furthermore, the experiment did provide certain evidence that a calendric frame of reference was not particularly salient in determining which prototype would be used. When the linguistic construct on the calendar was placed after forward one week in the text, the use of the in-tandem prototype was not noticeably strengthened.9

There is, however, an additional factor, one best understood as pragmatic, which I believe strongly influenced the choice of a later date. In general, people assume that any rescheduled event will be moved to a later date rather than an earlier one, as a consequence of the human tendency to run behind schedule and hence to postpone events. This pragmatic factor may account for a certain imbalance in the experimental results when back one week was introduced in place of forward one week. If the in-tandem prototype that dominated the processing of forward one week were used in the processing of back one week, then a majority of the students would have selected an earlier date. The students were, however, evenly split, thus reflecting the strength of the conflict in choosing between the in-tandem prototype for representing movement in time and the pragmatic factor that rescheduled meetings tend to be postponed (the tendency to favor the pragmatic
factor may have been strengthened by the fact that such a choice would be consonant with the use of a mirror-image prototype; as has already been observed, such a prototype is particularly dominant for speakers of English in static domains of spatial and temporal predication). It is interesting to note that a Hausa speaker appears to experience no conflict in using an in-tandem prototype in processing such linguistic representation of movement from one temporal point to another.10

It may thus be concluded that the two basic prototypes are available to both speakers of Hausa and speakers of English in processing temporal orientation as well as spatial orientation. Table II following the notes summarizes the different patterns of distribution for the use of the two prototypes by Hausa speakers and English speakers in the domain of temporal orientation. If Table II is compared to Table I, the one summarizing such patterns in the domain of spatial orientation, then certain analogies can be clearly discerned between the patterns of distribution in the two domains. The Hausa speaker, whether processing spatial or temporal orientation, may be viewed as normatively using the in-tandem prototype, switching to the mirror-image only when the field is closed. An English speaker, on the other hand, may be viewed as normatively using a mirror-image prototype, switching to an in-tandem one only when he himself experiences motion or perceives it within the spatial or temporal field. In effect, an English speaker appears to match quite closely

(1) the mirror-image prototype, largely generated by static patterns of interaction with human and non-human entities possessing intrinsically marked orientation, with static experience of spatial and temporal fields which possess no intrinsically marked orientation;

(2) the in-tandem prototype, largely generated by dynamic patterns of interaction with human or non-human entities possessing intrinsically marked orientation, with the dynamic experience of spatial or temporal fields which possess no intrinsically marked orientation.

The question naturally arises as to why a Hausa speaker tends to use an in-tandem prototype, largely generated by dynamic patterns of interaction, in linguistic representation of a static relationship between objects. An appropriate response to this question would require more space than I am allotted here, but let us briefly consider two lines of inquiry along which such a response might be constructed. First, whenever the spatial or temporal field is experienced as open rather than closed, there may be a natural orientation toward the vanishing point on the horizon, hence providing a kind of incipient dynamism. Secondly, the use of an in-tandem prototype in representing front/back orientation is consonant with the use of this prototype in representing the
orientation along the other horizontal axis, the left/right one. In addition, this in-tandem prototype may also be conceived as operative in representing orientation along the vertical axis (see Hill, 1978c for an extended discussion of the above points).

In concluding this article, let us briefly return to the framework of development research. Since contrasting prototypes are used by adult speakers of any language in the processing of spatial terms such as in front of and behind and temporal ones such as before and after, the task that the child faces in acquiring the adult patterns of distribution for these prototypes in a particular language is formidable. Just as children experience difficulty in acquiring the appropriate adult pattern in processing spatial orientation (as illustrated by development research in children's use of in front of and behind/in back of), so they experience difficulty in acquiring the adult pattern in processing temporal orientation (as illustrated by the research on children's use of before and after [Clark, 1971, 1972; Donaldson and Wales, 1970; Eilers, Oller, and Ellington, 1974; Friedman and Sealy, 1976]). It is hoped that the preceding analysis, based largely on cross-cultural research, might provide a useful framework for understanding some of the difficulties children experience in acquiring the adult use of prototypes in the linguistic processing of temporal orientation.

Notes

I would like to acknowledge that many of the fundamental concepts in this article come from Franklin Horowitz. During the past two years he has generously provided not only provocative ideas, but also useful descriptive terms (e.g., mirror-image and in-tandem), stimulating facts about language, and practical stylistic suggestions. In addition, I would like to thank Eric Larsen for helpful comments on an earlier version of this article.

1 From a diachronic point of view, the word front derives from Latin frons 'forehead,' the word (be)fore from Old English fore/foran, which, in turn, comes from an Indo-European root reflected in Sanskrit pra, Greek pro, and Latin per/pro (all expressing, in some sense, 'forward motion').

2 See Bennett, 1975:91 for further elaboration of this point.

3 The term prototype is used roughly as it is defined by Fillmore in the first volume of this series (1975:123). In presenting the need for using the concepts 'prototype' and 'frame' in semantic analysis, Fillmore makes the following point with respect to human orientation in space:

...we know, without knowing how we know, the prototypic ways in which our bodies enable us to relate to our environment: this is knowledge we might
speak of as part of our body image. Our language provides us with orienting and classifying frames—such as UP/DOWN, FRONT/BACK and LEFT/RIGHT—which we could not understand, or could not easily understand, if we lacked bodies or if we lacked a body image. (1975: 123)

In previous articles, I have focused on the orientational properties ascribed by language to a single reference point along this line, by means of which other points could be located. For example, the propositional base of an utterance such as 'The stick's in front of the rock' has been taken as establishing the rock as the center of an orientational field with respect to which the location of the stick is to be determined. Or to use Talmy's cognitive-semantic categories, the stick is established as a 'FIGURE-object...whose...site is conceived as a variable the particular values of which is the salient issue,' the rock as a 'GROUND object...with respect to which the FIGURE's...site received characterization'(1975:419). There is certain experimental evidence (Harris and Strommen, 1972), however, to suggest that the language user does not simply locate the site of the FIGURE object with reference to the GROUND object; he also ascribes to the FIGURE object the same orientation that he ascribes to the GROUND object. Hence, although language may be viewed as ascribing orientational properties to only the GROUND object, the language user apparently ascribes them to the FIGURE object as well as to the GROUND one.

From the cognitive point of view, orientational properties ascribed to the physical world are more aptly described as derived than intrinsic; for an entity is viewed as possessing intrinsically marked orientation if it is characterized by asymmetrical properties, either formal or functional, which are perceived as analogous to those which express the corresponding orientation in our own bodies. Hence we say that a car possesses an intrinsically marked 'front' because part of its body can be analogized in form to our own front (e.g., its headlights are like our eyes). From a functional point of view, its front, like our own, is the part that characteristically leads as it moves.

In actual processing of spatial constructs, intrinsically marked orientation often conflicts with prototypically established orientation. Consider, for example, the following utterance: 'Can you hand me the eraser there in front of the typewriter?' If the typewriter is 'facing to the side,' then the eraser can be located with reference to either the intrinsically marked orientation or the prototypically established orientation. If the latter is used, it is as though a certain normative orientational alignment between the typewriter and the observer (i.e., a face-to-face one) is superimposed upon the actual one.
The details of this cross-cultural research were reported in the first volume of this series (Hill, 1975a). It is important to note that the reliability of this cross-cultural research derives from the stable fields of reference provided by human anatomy for the lexical items for 'front' and 'back' in all languages. For example, English front parallels Kikuyu mbere in referring to the part of the human body with eyes, nose, mouth, and toes; and English back parallels Kikuyu thutha in referring to the opposing part that lacks salient sense-organs.

The morph shekara, prefixed to jiya 'yesterday,' basically means 'to go round.' When shekara is used as an isolated nominal form, it means 'year.' As in other languages, temporal terms in Hausa may be based on a circular image as well as a linear one.

The notion of 'intrinsic orientation' in time seems to derive less from the calendric frame of reference than from the orientation ascribed to the observer within the temporal field. If he is viewed as oriented toward the future, then a later point in time may be conceived as 'intrinsically forward' in relation to an earlier one. If, however, as in some Asiatic languages, he is viewed as oriented toward the past, then an earlier point in time may be conceived as 'intrinsically forward' in relation to a later one.

The above analysis does not deal with two other fundamental kinds of motion which language ascribes to the human experience of time. As analysts such as Kimball (1974) and Bennett (1975) have observed, certain linguistic expressions picture the individual himself as moving through time, others picture time itself as moving through the individual. The contrasting verbs of motion, go and come, can be used to mark both kinds of motion. In French, for example, an individual may view himself as venant 'coming' from a past act (Je viens de manger 'I have just eaten') and as allant 'going' to a future one (Je vais manger 'I'm going to eat'). In effect, the individual views himself as moving through time. By way of contrast, he may picture time as moving through himself in his use of the verbs come and go. In English, for example, the next week may be viewed as the coming week or the week to come and the past week may be viewed as the week gone by (see Traugott, 1975 and 1978 for a detailed analysis, one involving verb tense and aspect, of these contrasting kinds of motion).
### Table I
**Distribution of Contrasting Prototypes Used in the Linguistic Representation of Spatial Orientation**

<table>
<thead>
<tr>
<th>Features of Field</th>
<th>Languages</th>
<th>In-Tandem Prototype</th>
<th>Mirror-Image Prototype</th>
</tr>
</thead>
</table>
| **[Open Field] [Static]** | **HAUSA** | Ice yana gaba da dutse. | [Diagram]  
'The stick's in front of the rock.' | [Diagram]  
The stick's in back of the rock. |
|                   | **ENGLISH** | Ø | [Diagram]  
The stick's in back of the rock. |
| **[Closed Field] [Static]** | **HAUSA** | Ø | [Diagram]  
The stick's in back of the tree. |
|                   | **ENGLISH** | Ø | [Diagram]  
The stick's in back of the tree. |
| **[Open Field] [Dynamic]** | **HAUSA** | Itace yana gaba da dutse. | [Diagram]  
'The tree's in front of the rock.' | [Diagram]  
The tree's (out/up) in front of the rock. |
|                   | **ENGLISH** | [Diagram]  
The tree's (out/up) in front of the rock. | Ø |

### Table II
**Distribution of Contrasting Prototypes Used in the Linguistic Representation of Temporal Orientation**

<table>
<thead>
<tr>
<th>Features of Field</th>
<th>Languages</th>
<th>In-Tandem Prototype</th>
<th>Mirror-Image Prototype</th>
</tr>
</thead>
</table>
| **[Open Field] [Static]** | **HAUSA** | Ranar Talata tana gaba da ranar Littin. | [Diagram]  
'Tuesday is "before" Monday.' | [Diagram]  
Tuesday is after Monday. |
|                   | **ENGLISH** | Ø | [Diagram]  
Tuesday is after Monday. |
| **[Closed Field] [Static]** | **HAUSA** | Ø | [Diagram]  
'David will come after Sarah leaves.' |
|                   | **ENGLISH** | Ø | [Diagram]  
David will come after Sarah leaves. |
| **[Open Field] [Dynamic]** | **HAUSA** | An sa ranar taro nako daya a gaba. | [Diagram]  
'One put the meeting forward one week.' | Ø |
|                   | **ENGLISH** | The meeting was moved forward one week. | Ø |
REFERENCES


The acquisition of Quantifier Dialects by children
David E. Iannucci
University of Utah

Guy Carden (1970, 1973) has argued the existence of so-called quantifier dialects, based on different interpretations of sentences like: "All the kids aren't asleep". The Neg-V dialect interpretation is that not a single kid is asleep; i.e., the scope of negation is the Verb (=Predicate)'(be) asleep': [all the kids] [NEG be asleep]. The Neg-Q dialect interpretation is that some are asleep but some are not; i.e., the scope of negation is the quantifier 'all': [NEG all the kids] [be asleep]. Wm. Labov (1972:193-199) has countered that quantifier dialects are merely artifacts of the fragile nature and manipulability of linguistic intuitions—even to the extent of being mere "artifacts of a [linguistic] theoretical position" (199). Both Carden and Labov have somewhat obscured the issues by not taking serious account of the characteristic intonation patterns associated with this type of syntactic structure. Carden (1973:178) makes brief vague reference to "stress and intonation patterns known to enforce one reading or the other", but the matter is very remote from his basic arguments. Despite their different conclusions, both Labov's and Carden's arguments hinge on variability in the hearer's interpretations of such sentences; however, my own observations of normal speech usage and comprehension surveys with numerous people indicate that if intonation is carefully controlled for in natural ways, that variability can be virtually eradicated. What I find is that there is one particular intonation pattern which is characteristic of this type of syntactic construction and, further, unambiguously yields Neg-Q interpretations in adults. That intonation involves high-rising pitch on the quantifier (which is normally stressed), then falling to level, often rising slightly at sentence end; e.g.:

1) All the kids aren't asleep.

There are, of course, variations on this basic pattern, but the defining variable seems to be the high pitch rise (and concomitant vowel lengthening) on the stressed quantifier (wherever it occurs). Out of context, one can utter these sentences with intonations that are ambiguous, but this is extremely rare in normal speech. One can also utter them with unambiguous Neg-V intonation (and stress)—usually a very deliberate monotone, enhanced greatly by a pause after the NP—but this is also quite rare in normal speech settings. In fact, if we want to get across the Neg-V alternative of the above, we are far more likely to say something like: "None of the kids are asleep". Carden himself observes (1973:175, and 179 fn. 4) that the overall responses of his informants did tend to favor the Neg-Q readings, in a variety of ways, and my guess is that this phenomenon
occurring in an experimental setting may well be caused by the fact that these sentences in normal speech settings are overwhelmingly Neg-Q in their interpretation.

It is interesting to note that, whereas superficial negation of the Verb, of the type dealt with here, is at least potentially ambiguous, superficial negation of the quantifier itself is categorically interpreted as semantically Neg-Q (e.g., "Not all the dogs bite."). The strength of the bond between superficial quantifier negation and Neg-Q meaning is even reflected in quantifier floating. Consider the following sentences, where (3) and (4) represent different degrees of quantifier floating from the more basic structure in (2):

(2) All the dogs don't bite.
(3) The dogs all don't bite.
(4) The dogs don't all bite.

The characteristic Neg-Q intonation is compatible with all three of the above (be sure to keep the quantifier stressed and move the pitch-rise point with the floating quantifier). If, however, we try to impose Neg-V intonation on these sentences, we discover that it is compatible with (2) and (3) but not (4). I suggest that the above-mentioned bond between superficial quantifier negation and Neg-Q meaning may well be in a sense 'extended' to the accidental surface proximity (....'nt all....) of the negative element and the quantifier, caused by quantifier floating in (4). In any case, superficial negation of quantifiers (proximity of NEG to the quantifier) seems to provide none of the problems of superficial negation of verbal constituents.

With all of the above in mind, now consider what the child faces in the acquisition of quantifier negation as it occurs in the kind of sentences under consideration here. If I am correct, when he hears such sentences in his environment, their meanings are overwhelmingly Neg-Q and they are almost always accompanied by some variant of the intonation pattern I have suggested to be characteristic of the construction type. The clear marking of the Neg-Q interpretation by intonation, further, is no trivial matter with regard to consideration of child language acquisition, since we know that children normally latch onto intonation at the very earliest stages of grammatical development. The question now is: how do children handle these quantifier sentences?

My initial observations of how very young children handle these sentences indicated that they were interpreting them quite differently from adults. I have now systematically observed the linguistic development of one child in this regard over a period of 2 2/3 years—from age 3 yrs. 4 mo. to age 6. After the first year of observation, I added several other (roughly) same-aged children (none of their ages differed by more than 8 months), thus observing the additional children over a period of 1 2/3 yrs. The children were checked at four-month intervals to determine the nature and progress of their acquisition of the given
syntactic structure. Although a total of six children were involved, only four were observed at each test interval, due to my changing accessibility to particular children.

The procedure was essentially as follows. The child would hear a sentence of the type under discussion as he was shown two pictures—one that clearly represented a Neg-Q interpretation of the sentence and one that was clearly Neg-V. His task was to choose the picture that best fit what the sentence was about. For example:

"All the faces aren't happy"

The children heard the target sentences with Neg-Q intonation about 75% of the time (frequently very exaggerated). Very deliberate Neg-V intonation was also used to try to manipulate responses, about 25% of the time. After the child made his choice, he was asked to explain why he did so and sometimes even to explain what the target sentence meant. The pictures and sentences were, of course, geared to the interest and level of children at these ages, e.g.: "All the dishes aren't broken", "All the kids aren't running", "All the doors aren't open", "All the monsters aren't mean", "All the clocks aren't round", "All the dogs don't bite", "All the monkeys aren't in the cage", and the like.

The results are best reported not in terms of statistical numbers derived from the children's performance on the comprehension tests, since test success was always interpreted in terms of their subsequent explanations of why they chose a particular picture and (occasionally) what the sentence meant. The possibility of merely tabulating numerical indices of comprehension here is sabotaged by a variety of strategies sometimes taken by the children, which tended to defeat the purpose of the tests—varying from attention span problems to the "am-I-getting-this-right?" syndrome to behavior not unrelated to the "pop-go-weasel" phenomenon reported by Brown and Bellugi (1964:135). The post test-item interview procedure was so revealing that I think it justifies the somewhat impressionistic nature of the interpretation of results.

At the earlier stages—three to (esp. early) four years old—the children, unlike Labov's and Carden's adults, were simply unmanipulable in their interpretations of the sentences—no matter
what the intonation. Further, unlike the adult model characterized above, they were categorical adherents to Neg-V interpretation (even in the presence of exaggerated Neg-Q intonation).

Their own explanations of the choice of pictures were typically paraphrases or brief (invented) narratives describing what was going on in the pictures—both of which were quite revealing as to how they had comprehended the target sentence. As a typical example, the child hears: "All the doors aren't open" with heavy Neg-Q intonation. He sees two pictures—one with three doors open and two closed (Neg-Q), and the other with no doors open (Neg-V). He picks the Neg-V alternative and is asked why he did so. His response: "Because you just said that the doors were all closed". The paraphrase, switching from 'not open' to 'closed', thus removing even the potential for syntactic ambiguity, seems to nicely indicate the clarity of the child's Neg-V interpretation (and such unambiguous paraphrases are fairly frequent in the data). Another child in the same setting, after the same choice, began to construct a little story explaining how the doors all got closed, and at one point even incorporated the original test sentence into his categorically Neg-V narrative. Still another child was confronted with one picture containing two instances of a child shaking hands with and smiling at a little boy, plus a third child punching the same little boy, with a scowl on his face. The other picture had all three children scowling and punching the little boy. The target sentence was: "All the kids don't like JJ". I just happened to use the name JJ because the child I was testing has a friend with that name. Upon hearing the sentence, she promptly ignored the pictures and blurted out: "That's not true—I like JJ". To which I responded: "I didn't say you don't like him; I only said: 'All the kids don't like him' (heavy Neg-Q intonation)". To which she responded: "I don't want to play this game—you won't tell the truth".

As the children progressed beyond four years of age, cracks began to appear in their dogged adherence to Neg-V interpretation. The more they picked up on the possibility of Neg-Q interpretation, the more confusing the tests became. Two children, at approx. five years old, were quite confused by the tests but could give perfect (Neg-Q) explanations of the sentences in isolation (Q: "What does it mean to say 'All of the clocks aren't round'?"; A: "Some of them are round, and the rest are square"). By the age of six or so, all but one of the children had made considerable progress toward the adult model, especially with regard to the disambiguating effect of intonation. The question now remains: why do children at early stages adhere so strongly to Neg-V interpretations, in the face of contradictory data in their adult models?

The answer lies in what Slobin (1973) has called universal operating principles—strategies that children seem to use in confronting the task of first language learning. In discussing the tendency of children to preserve underlying structure by doing such things as avoiding interruption and rearrangement of
linguistic units (199), he seems to have his finger on a principle of broader generality than is implied by the organization of the essay. That principle could be stated as follows: KEEP THE GAP BETWEEN SURFACE AND UNDERLYING STRUCTURES AS NARROW AS POSSIBLE. Put another way: INTERPRET SURFACE STRUCTURES AS IF THEY WERE ONLY MINIMALLY REMOTE FROM UNDERLYING STRUCTURES. Unfortunately, the syntax of natural languages doesn't always cooperate with children's acquisition strategies, and the strategy just cited is certainly no exception. For example, tough movement in English creates a rather radical gap between surface and underlying structures and ought thus to be tough for young children to handle (e.g., [for Sm to see John] is easy → John is easy [to see]). Carol Chomsky (1969) and Richard Cromer (1970) have demonstrated that this is precisely the case and that children typically misinterpret such sentences until 7-8 years old. For example, a sentence like "This doll is easy to see" was often misinterpreted by the children in their studies as if it were "It's easy for this doll to see", thus confusing underlying subject/object relations. My own informal observations indicate that tough movement sentences also cause confusion regarding adjective attribution; e.g., "This game is hard to lose" is interpreted by 3-4 year olds as if the game were hard (games that are hard to lose, of course, are easy games). Slobin (1973:199) explains Chomsky's and Cromer's results by a principle involving the interpretation of deviant word-order as if it were standard—a principle apparently independent of the one causing the avoidance of interruption and rearrangement.

The more general operating principle I have suggested above also explains the child's early Neg-V responses to our quantifier sentences. These sentences superficially negate a verbal element, even though the semantic scope of negation is normally the quantifier (which can be quite sequentially remote from its negator). The adult can attach a Neg-V interpretation, given the proper intonation, but he rarely does. The young child insists on a better surface-to-underlying 'match' and rules out the Neg-Q interpretation in favor of Neg-V, regardless of the normally disambiguating intonation, thus keeping the aforementioned syntactic gap more narrow. But only temporarily so, since any uncooperative syntactic rules of his language must ultimately wear down acquisition strategies as the child's speech approaches the adult's; and he ultimately learns, in this case, that the surface negation of the Verb really has the quantifier in its scope.

We might conclude then that children at these early acquisition stages may well be the only true representatives of a quantifier dialect and, further, they are natural representatives of the one type to which they adhere, given the existence of acquisition strategies of the type discussed here.
References

Generalization of Language Behaviours in a Language Delayed Child

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Although there is general consensus that language acquisition follows a standard sequence of development in normal children (Berry, 1969; Cazden, 1968; Eisenson & Olgilvie, 1968; Ginsburg & Opper, 1969; Lenneberg, 1966; McNeil, 1970; Myklebust, 1957; Slobin, 1970), whether or not such a sequence is applicable to a language delayed population is controversial (Menyuk, 1975). Menyuk (1975) suggests that there exist two major orientations to remediation strategies in language delayed children, the developmental and behavioural positions. The developmental orientation takes the position that normal language acquisition encompasses a sequential pattern of acquisition of language behaviours, a pattern which is generally standard, although with some variations from child to child. For children evidencing a delay in their progression through this hierarchy of language behaviours, the developmentalists recommend early intervention programs. Intervention is advocated as soon as the child is observed to be deviating from normal language acquisition sequences or rates. Remediation, in a developmental framework, involves presenting the child with activities reflecting a normal sequence of development.

The behavioural approach similarly suggests early intervention in language behaviours employing operant conditioning methods and teaching behaviours of functional importance to the individual important for his/her survival, rather than progressing in a developmental sequence. The behaviourists do not assume that effective language learning is established only by progression through sequences observed in normal language development.

The present study attempts to borrow aspects from the developmental and behavioural orientations. An attempt is made to ascertain if there is a differential rate of generalization of language tasks of varying functional levels when language tasks are taught utilizing operant conditioning techniques with a language delayed/behaviour disordered five-year-old boy. Operant conditioning methodologies are taken from the behavioural orientation along with the assumption that language behaviours can be taught through operant conditioning methodologies. The two language tasks of different functional language acquisition levels are chosen based on observed sequences of development for normal children (Singer, 1975). The hypothesis investigated in the present study is that the subject will not generalize the higher level task as consistently or with as great a frequency as the lower level task, supporting the concept of the efficacy of developmental sequencing in
remediation as proposed by a developmental orientation. Generalization of acquired language tasks to other stimulus conditions is one of the most crucial aspects of efficacious language learning. Without this element, the child is extremely limited in his/her communication skills, independence, and functioning. Determining some of the features contributing to increased generalization of learned tasks is a prerequisite to creating a learning environment and strategy most conducive to maximum generalization of learned tasks. The primary question explored in this study is: Is there a differential level of generalization of language abilities with reference to training of language tasks, one at the child's functional language level and the other above this level?

Language delay serves as a generic term for many variations of language behaviours which in some way differ from normative language behaviour. Language delay encompasses both expressive and receptive language development, i.e. production of language and understanding of language. The focus of the present study is on expressive language, but it can not be totally separated from receptive language. Menyuk (1971) stated that language delay usually includes delay in the beginning of acquisition, slowness in the process of acquisition, and cessation of this process prior to attainment of complete adult linguistic competency. Delayed expressive language would usually include late initiation of speech usage, slowness in the acquisition process, and cessation of the acquisition process prior to attaining a normal level of competency. For the purposes of the present study, language delay is defined as a lag in language development of 18 months or more as compared to normal language development, in addition to late initiation of speech usage and slowness in the acquisition process. Menyuk's (1971) final criteria of premature cessation of the language acquisition process is not included in the present study because the focus is on a child still within the acquisition process.

Method

Subject
At the time of the study, the subject was a language delayed/behaviour disordered five-year-old boy. The subject exhibited autistic-like behaviours; hand flapping, rocking, spinning of toys, hand biting, inattention to presented tasks, and tantruming behaviours. Verbalizations consisted primarily of echolalia although the subject did voluntarily use a limited number of nouns, adjectives, and verbs in single and two-word combinations. The subject was enrolled in a university affiliated preschool program for exceptional children at the time of the study and at the initiation of this study he had attended this program for 18 months.

Apparatus
The research was conducted in a university affiliated preschool program for exceptional children. Baseline and treatment
sessions were conducted in an eight by seven foot room, observable through a one-way mirror and sound equipment. Generalization probe sessions occurred in the previously described room and in a second room similar to that used for baseline and treatment sessions. The subject was seated facing the experimenter with a table between them. Training stimuli (drawings) were presented to the subject by being placed on this table.

Procedure

Baseline. The subject was administered the Peabody Picture Vocabulary Test (Dunn, 1959), evidencing a raw score of 21 and a maturational age, M.A., of 2.6 years. A developmental sequence of receptive and expressive language behaviours, the Language Acquisition Sequence (L.A.S.) (Singer, 1975), was also employed. It is derived from sources outlining normal language development (Berry, 1969; Eisenson & Olgilvie, 1968; Lenneberg, 1966; McNeil, 1966; Myklebust, 1957; Schiefelbusch, 1963). It is important to note that the age levels specified for the particular developmental levels are only estimates; and there is much variation, even among a normal population of children, in the rate of development and the ages at which specific levels of development are attained (Cazden, 1968; Schiefelbusch, 1963). The expressive language segment of the L.A.S. was used in the present study as a criterion-referenced test, that is, as a non-standardized assessment tool, used to pinpoint specific competencies and weaknesses of the subject (Alkin, 1974). Within the area of language functioning, there is a lack of adequate standardized tests, particularly for language behaviours appearing early in development. Additionally, for the purpose of the present study, identification of specific areas of competency and weaknesses for the subject was essential in establishing levels of training to be employed. The L.A.S. met these needs.

Observations were made of the subject's language behaviours in structured sessions in the preschool, small group and individual sessions, and in play sessions in the preschool. The subject's level of functioning on expressive language tasks was estimated as being 24.0 to 30.0 months, based on the above described developmental sequence of language behaviours. This is consonant with the subject's M.A. of 2.6 years as evidenced on the Peabody Picture Vocabulary Test (Dunn, 1959).

A language task at the subject's functional level of expressive language development, which the subject did not possess, was determined by presenting the subject with drawings depicting linguistic concepts and simultaneously presenting the question verbally: "What is this?". The pictures called for responses such as "long fork", "short fork", or "dog", "dogs". The subject exhibited a 0% correct response rate on pictures depicting singular and plural objects (a task usually acquired by a normal child of 29 months of age). Using the above method-
ology, an expressive language task above the subject's functional language level, but not in his expressive language repertoire, was determined. This was the use of long/short as an adjective (a task usually acquired at 40 months of age in normal development).

Materials. Stimuli presented to the subject in baseline and treatment sessions were black and white drawings of objects in his naming repertoire although the linguistic concepts depicted were not in his repertoire, i.e. the subject could correctly identify a drawing of a dog with the verbalization "dog" but did not add the plural allomorph /z/ when a drawing of two dogs was presented. Drawings were presented on 4 1/2 by 6 inch white cards.

Training sessions. The subject was trained on the previously described two categories of linguistic tasks not within his expressive language repertoire, one at his functional language level, i.e. plurals, and one above this functional language level, i.e. long/short. Objects presented were within the subject's naming repertoire. Training sessions were 20 minutes long, 10 minutes spent on each linguistic category of tasks. Training sessions occurred three mornings weekly. Order of presentation of the two linguistic concepts was random within a particular training session. Additionally, the order of presentation of drawings within each linguistic category was random. The subject was trained on the language tasks in a 1:1 setting with the experimenter. Operant conditioning methods were employed in these training sessions. Verbal praise, physical contact in the form of hugging and tickling, and smiling by the experimenter were used for all correct verbalizations by the subject in response to presentation of the drawings and the verbal question: "What is this?". Incorrect responses by the subject were followed by a verbal "no" by the experimenter. Shaping procedures and modelling of desired verbalizations with gradual fading of these prompts were also implemented in establishing desired responses. These procedures were similar to those previously outlined by Lovaas (1966) and Risley and Wolf (1967). Verbal prompts to cease inappropriate behaviours such as self-stimulation, self-destruction, and inattention, were employed contingent on these inappropriate behaviours occurring. A time-out procedure was used if after three verbal prompts, the subject still engaged in the above inappropriate behaviours. The time-out procedure consisted of the experimenter leaving the room and returning 30 seconds after the inappropriate behaviour had ceased. Presentation of training stimuli then resumed. Training sessions continued until the subject had reached a criterion rate of 100% correct responses on the two language tasks. The linguistic category of plurals was acquired more quickly than that of long/short by the subject. Training continued on plurals until the subject reached a 100% criterion
performance level on long/short tasks also.

**Generalization probe sessions.** Subsequent to the subject achieving a 100% correct response rate on the two linguistic categories presented in training sessions, the subject was exposed to the generalization probe situations. The following generalization probe conditions were employed:

Condition 1: Presentation of color versions of the original training picture cards with the training teacher (experimenter₁) in the original training room.

Condition 2: Presentation of the original black and white training pictures by an experimenter other than the original trainer (experimenter₂) in a room other than the original training room, but with the same physical characteristics as the original training room.

Condition 3: Presentation of black and white drawings depicting objects not used in the training sessions but with similar concepts as those used in training sessions, i.e. plurals and long/short, by experimenter₁ in the original training room.

All of the stimuli in the generalization probe conditions were based on the two categories of linguistic tasks used in the training sessions.

Additionally, the subject's spontaneous utterances, with reference to the trained expressive linguistic categories, were recorded during group play sessions in the preschool, previous to, during, and subsequent to the language intervention program.

**Recording.** Frequency counts of the subject's correct response rate to presented picture stimuli were made by experimenter₁ during each baseline, training, and generalization probe session. Experimenter₂ served as a second observer in seven of these sessions picked randomly. Observations were also made of the subject's utterances during group play sessions. Experimenter₁ observed 20 play sessions; 2 during baseline, 15 during the training phase, and 3 during the generalization probe phase. Experimenter₂ observed 9 of these sessions.

**Design.** The design employed in the present study is a modification of a single-subject simultaneous-treatment design as described by Browning and Stover (1971) and McCullough, Cornell, McDaniel, and Mueller (1974). The design employed in the present study is as follows:

A BCBCBC...BC D(BC)

A indicating behavioural baseline; BC...FC, treatment conditions or training sessions in random order of presentation; and D(BC), generalization probe.

**Results**

Reliability between experimenter₁ and experimenter₂ was calculated based on their frequency counts of occurrence or non-occurrence of the subject's specific verbalizations with refer-
ence to the linguistic categories of tasks being trained, i.e., plurals, long/short. Agreement between the two experiemnters was 1.00 during baseline, training, and generalization probe sessions. Reliability was also 1.00 for play session observations.

Baseline

The subject's score on the Peabody Picture Vocabulary Test (Dunn, 1959), in conjunction with his performance on the L.A.S., indicated a functional expressive language level of 24 to 30 months. Table 1 lists drawings of objects presented to the subject determined as being within his expressive language naming repertoire.

<table>
<thead>
<tr>
<th>Objects Used for Depiction of Plurals</th>
<th>Objects Used for Depiction of Long/Short</th>
</tr>
</thead>
<tbody>
<tr>
<td>airplane</td>
<td>bed</td>
</tr>
<tr>
<td>*ball</td>
<td>*car</td>
</tr>
<tr>
<td>*bird</td>
<td>*fence</td>
</tr>
<tr>
<td>*book</td>
<td>fish</td>
</tr>
<tr>
<td>*boy</td>
<td>fork</td>
</tr>
<tr>
<td>broom</td>
<td>hamburger</td>
</tr>
<tr>
<td>carrot</td>
<td>hammer</td>
</tr>
<tr>
<td>*cup</td>
<td>house</td>
</tr>
<tr>
<td>*dog</td>
<td>*knife</td>
</tr>
<tr>
<td>drum</td>
<td>lamp</td>
</tr>
<tr>
<td>*flower</td>
<td>*pants</td>
</tr>
<tr>
<td>*guitar</td>
<td>*pencil</td>
</tr>
<tr>
<td>*hand</td>
<td>*scissors</td>
</tr>
<tr>
<td>pig</td>
<td>*snake</td>
</tr>
<tr>
<td>pot</td>
<td>sock</td>
</tr>
<tr>
<td>*shirt</td>
<td>*spoon</td>
</tr>
<tr>
<td>telephone</td>
<td>table</td>
</tr>
<tr>
<td>*tree</td>
<td>*train</td>
</tr>
<tr>
<td>T.V.</td>
<td>wagon</td>
</tr>
</tbody>
</table>

Note. Asterisked items are those used in training sessions; the other items served as untrained stimuli for the generalization probe sessions.

Column 1 items are those used to depict the concepts of plurals. Column 2 items are those used to depict the concept of long/short.
Table 2

Use of Plural and Long/Short Verbalizations in Baseline and Intervention Sessions

<table>
<thead>
<tr>
<th>Linguistic Category</th>
<th>Days</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Baseline (in %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plurals</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Long/Short</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The first two columns of Table 2 illustrate the percentages of the subject's correct responses to drawings depicting the linguistic categories of plurals and long/short during baseline; the first row being representative of plurals; the second row, long/short. A 0% correct response rate was exhibited during baseline by the subject for both linguistic categories.

**Training**

Weekly mean percent of correct response rates for plurals and long/short are shown in the third through seventh columns of Table 2. Table 2 shows the subject exhibiting a correct response rate of 100% for plurals by the third week. Training continued for two more weeks until the correct response rate for long/short was 100%. The subject's correct response rate for plurals (fourth week) decreased to 96%, and in the fifth week, once again was 100%. There was a decline in correct response rates for both plurals and long/short in the second week. Training was interrupted between the first and second weeks for two weeks due to a school vacation.

**Play Sessions**

Throughout baseline, training, and generalization probe sessions, the subject demonstrated no spontaneous usage of plurals or long/short during play sessions.

**Generalization Probes**

Table 3 illustrates the subject's correct response rate to plural and long/short stimuli during generalization probe sessions. The subject demonstrated a higher correct response rate with regard to plurals as opposed to long/short in 2 out of 3 generalization probe conditions. In Condition 1 of the generalization probes, the subject exhibited a 0% correct response rate for both plurals and long/short.
Table 3

Use of Plural and Long/Short Verbalizations in
Generalization Probe Sessions

<table>
<thead>
<tr>
<th>Generalization Probe Conditions (in %)</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linguistic Category</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Plurals</td>
<td>0</td>
<td>100</td>
<td>82</td>
</tr>
<tr>
<td>Long/Short</td>
<td>0</td>
<td>78</td>
<td>20</td>
</tr>
</tbody>
</table>

**Home Observations**

One week subsequent to the completion of the generalization probe phase of the study, the subject's mother was questioned as to any spontaneous verbalizations by the subject with reference to the two trained linguistic categories, plurals and long/short. The mother reported no verbalizations within these categories. Her observations of no verbalizations of the forms plurals and long/short continued for one month. After this time, she began to note that the subject was using plurals appropriately a few times per week. No precise data frequencies were recorded. At three months and six months after the termination of the study, the mother reported appropriate use of plurals increasing, but no use of long/short. Nine months after termination of the study, the mother reported that the subject was continuing to use plurals appropriately and was infrequently beginning to use long/short forms, once every few weeks.

**Discussion**

Data from the training sessions indicates that specific language behaviours can be taught to a language delayed/behaviour disordered child through operant conditioning methodologies. This is consonant with previous findings with reference to schizophrenic children (Lovaas, Berberich, Perloff, & Schaeffer, 1966), autistic children (Hewett, 1965; Risley & Wolf, 1967), mentally retarded children (Guess, 1969; Guess, Sailor, Rutherford, & Baer, 1968; Schumaker & Sherman, 1970; Stremel, 1972), and psychotic children (Salzinger, Feldman, Cowan, & Salzinger, 1965).

The hypothesis examined in the present study, that differential generalization of trained language tasks will occur with reference to the functional expressive language level of a language delayed/behaviour disordered child when one language task is at that child's functional language level and the other task is above that level, was borne out in all but Condition 1 of the generalization probes. More specifically, it was suggested that the subject would exhibit a greater frequency of
correct responses to stimuli presented for the lower level task as opposed to the higher level task. The findings of this study support the hypothesis in Condition 2 where the subject was exposed to untrained picture stimuli by experimenter 1; and Condition 3, presentation of trained picture stimuli by experimenter 2. No differential effect was demonstrated in Condition 1, presentation of color versions of trained stimuli by experimenter 1. Failure to observe this effect in Condition 1 may be explained in that the use of color was sufficiently distracting so that the subject focussed only on the colors and not on the linguistic categories dealt with, i.e. plurals and long/short. Absence of generalization of trained linguistic concepts to spontaneous speech in play sessions can be attributed to lack of similar stimuli with reference to training stimuli. Additionally, more stimulation was available to the subject during play sessions, possibly precluding a focussing of attention on trained linguistic concepts in the play sessions.

Differential rates of generalization in Conditions 2 and 3 of the generalization probes, with greater generalization evidenced with plurals in both conditions, lends strong support to the hypothesis of the present study. It is suggested for normal children that language acquisition progresses in a developmental sequence (Berry, 1969; Cadzen, 1968; Eisenson & Olgilvie, 1968; Ginsburg & Opper, 1969; Lenneberg, 1966; McNeil, 1970; Myklebust, 1957; Slobin, 1970). A developmental approach, with reference to a language delayed population, as outlined by Menyuk (1975), advocated remediation of language behaviours in the sequence observed in normal development. The present study lends support to this position, suggesting that generalization of linguistic concepts is facilitated when those concepts taught are at the specific child's functional language level or stage of development.

A successful remediation method, borrowing aspects from the behaviourist and developmental approaches, as outlined individually by Menyuk (1975), was demonstrated through effective training of linguistic concepts using operant conditioning methodologies. The developmental position received support in this demonstration of differential rates of generalization based on the developmental level of the tasks.

The subject's mother reported differential rates of generalization of the trained linguistic concepts one, three, six, and nine months subsequent to the termination of the study, again supporting the idea that generalization of linguistic concepts is more readily established in tasks at the child's functional level of language development. Appearance of generalization of the higher level language task, long/short, nine months subsequent to the study, may be explained by the process of maturation of the subject with the passage of time. Further language development during these nine months may have brought
the subject closer to a level of development in which the ling-
ugistic concept of long/short could more adequately be acquired.

Remediation of language behaviours in language delayed
children has traditionally fallen within the behaviourist
and developmental frameworks (Menyuk, 1975). It would appear
that an effective intervention strategy might involve a
synthesis of these two orientations, permitting acquisition of
language behaviours and subsequent generalization of those
behaviours; generalization being necessary for communication
in situations other than the training environment. Further
research in this area is suggested including more complete
isolation of important variables in the generalization process.
Replication in studies with other populations of language
delayed children, in terms of disorders and stage of develop-
ment, would be valuable in determining similarities and
differences in acquisition and generalization patterns.

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INTERRUPTIONS AND THE INTERPRETATION OF CONVERSATION

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I. A CONSENSUS OF OPINION

(1) M: Now Mr. B/ what is your view//
B: Well/ I ha- here.../ I have here/
a list of five hundred jobs/ that were/
sent to the area/ in Hunters Point//
M: Sent by whom//

This bit of dialogue is part of a longer encounter between these two persons which I have been examining in order to come to terms with certain issues of the thematic development of discourse. The encounter here is part of a panel discussion aired live on public TV in 1966 in San Francisco two weeks after a riot in Hunters Point. The program was explicitly aimed at consideration of the job situation in the various minority neighborhoods of the city. The interesting thing about this piece of discourse is that it progresses rapidly into a highly charged encounter between the moderator, M, and a group of black men from Hunters Point who eventually walk out of the studio protesting against the way they had been treated. Explicit interpretations of the ongoing course of the program are offered by both these blacks and the moderator which are in considerable conflict with each other. It was my guess that this outcome was a natural outgrowth of the total encounter, example (1) being a very early segment of that. I had concluded that in the slightly longer encounter between M and B of which (1) is a segment (v. example 4), M had in fact treated B rather abruptly and perhaps not with full courtesy. I was much surprised to discover, when I almost haphazardly played only the segment in (1) to about thirty undergraduate and graduate students, that there was a consensus of opinion that M was "interrupting" B, "not giving B a chance to speak," "cutting B off," "being belligerent to B," etc. My favorite characterization of this exchange was that M "sounds like he's gonna fry the guy." These responses were in answer to the very general question, "What do you think is going on between these two people here?" My informants were told only that the segment was part of a televised panel discussion. This informal experiment confirmed my own impressions in an extraordinary and surprising way. I was particularly struck by the fact that on the basis of so much less than the total picture people were able to agree without hesi-
tation about the interpersonal quality of the interaction in (1), arriving immediately at an interpretation that I myself had made only very tentatively and only after lab-
orious consideration of the whole 45 min. tape. Perhaps the most convincing confirmation came from one student who took issue with the charge that M was being "belligerent," offering this reply: Maybe M is acting in the role of an interviewer concerned with getting certain bits of infor-
mation across to an audience. This may well have been M's own view. But whether or not this actually was his inten-
tion, the thing to notice is that this student has offer-
ed what Goffman (1971) calls an "account," in this case one which claims for M that "circumstances were such as to make the act radically different from what it appears to have been (p. 110); i.e., not as an encroachment on B's "territory," but as an attempt to mediate between B and the television audience. The offering of an ac-
count presupposes the possibility of interpreting M's question "Sent by whom?" as a violation, or in Goffman's terms a "virtual offense" which is in need of some remed-
ial work on behalf of the moderator.

One of the more pleasant results of this experiment was that it helped to justify a reeling I had already had that the study of interruptions might be one way of ap-
proaching certain issues of discourse analysis--particu-
larly certain issues of interpretation--without having to view the material of discourse through the lens of some particular methodology, linguistic, semantic or rhetorical, as in the various forms of structural analysis of discourse that have appeared in recent years, e.g. Labov (1972), Van Dijk (1972), Halliday (1976 ), Grimes (1975), Rumelhart (1975), Bandler and Elgin (1975), etc. Much of this work has of course been of considerable value to linguistics, yet it sometimes seems that we have too quickly adopted unexamined assumptions about the essence of human discourse which have made it difficult to see the phenomena of dis-
course in the clear light of day.

II. ON STRUCTURAL APPROACHES TO DISCOURSE. The phenomenom of interruption in conversation is an interesting case in point, particularly with reference to (1). A structural-
syntactic definition of interruptions, growing out of the considerable work on conversational sequencing of Sacks, Schegloff and their associates, has been offered by Schegloff (1973):

By overlap we tend to mean talk by more than a speaker at a time which has involved that a second one to speak given that a first was already speak-
ing, the second one has projected his talk to be-

C
what could have been a completion point of the prior speaker's turn, then we speak of it as an overlap. If it's projected to begin in the middle of a point that in no way a possible completion point for the turn, then we speak of it as an interruption. (My italics.)

Although Schegloff's definitions of overlap and interruption appear to offer the analyst a diagnostic tool with which to isolate certain kinds of 'objects' in talk, there are a number of nagging problems with it. These problems arise as soon as we begin to think in terms of how participants themselves understand particular phenomena as interruptions in the course of talk. One difficulty is that the phrases "in the environment of" and "possible completion point" beg the question of what the environment of a possible completion point might be, and of how we are to determine this in specific cases. But in order to determine whether an instance of a second speaker's turn start is merely an instance of overlap or an actual interruption, we not only have to be able to identify the nearest possible completion point, but have to decide whether that start is inside or outside the environment of that point. It is of course not Schegloff's purpose in the paper cited to discuss these issues, but some discussion is offered by Sacks, Schegloff and Jefferson (1974), where the term "transition-relevance place" is used in lieu of "possible completion point." In that article the question of the relationship between syntactic constructions and transition-relevance place is raised. It is suggested that the construction of turns around transition-relevance places in talk can be "made" both intonationally and syntactically. I believe that an unspoken assumption made by the authors here is that in fact the determination of such discourse entities as "interruptions," "turn-constructional units," and "transition-relevance places" (and their "environments") are fully determined by structures which can be observed to actually occur as physical manifestations in the talk itself, particularly in prosodic and syntactic structures. There appears to be a tendency to assume that the "management" of talk and the interpretations that arise from it are directly related to various kinds of observable constructional "units." I would like to suggest that this is in fact not the case, that the relationship between observed structural regularities in discourse and the actual understandings participants have is considerably more flexible than this. To put it briefly, close examination of specific discourses and comparison of observations of structural regularities with informants' reactions reveals that specific constructions are capable of being understood in apparently contradictory ways in different discourses.
To illustrate this argument we can note that if we apply Schegloff's definition of interruption to examples like (1) above and to (2) below, we will come up with definitions directly opposed to informants' reactions. Thus in (1) there is no overlap and the second speaker, M, appears to make his start within a transition-relevance place, insofar as that place is characterizable in syntactic and sequential terms. In fact, there is a slight pause between the end of B's utterance and the beginning of M's of about .5 secs. Clearly this exchange does not fit Schegloff's definition of interruption, although many of my informants characterized what happens in (1) as just that.

Looking at the matter from a different angle, it is possible to show that Schegloff's definition can predict a case of interruption where in fact participants do not themselves feel an interruption is in order:

(2) B: and y'know, it's surprising to see how much of it is more interrelated than people a-round here are willing to admit. I mean there's a big denial from d--... y'know where they're separate and they do differ-ent things, and we're doin this and there's a y'know we operate in a vacuum

C: [Mhm, yeah you choose the part you want.]

B: And you choose what you want.

Not only did B not feel that C had interrupted here, but she interpreted C's talk as contributing cooperatively to the thematic development of B's own talk. This cooperation is manifested very nicely here by the fact that B picks up on the theme C has uttered and uses it herself as a summation of her prior talk, directing her gaze, as it happens, to C during this time and nodding her head as she does so (as revealed by the videotape of this inter-action). And what is just as important a point, even if we could manage to salvage Schegloff's definitions for (2), as for example by calling it a special case of overlap and redefining in nonsyntactic terms the concept of "transition-relevance place," we still would want to understand how it is that this exchange manages to de-velop so soothingly possibilities of cooperation, whereas in the segment following example (1) (v. ex. 4), cooperation is very much in question.

We might of course point to B's persistence without pause in (2), which seems to indicate she is not inter-rupted in the usual sense of the term. She is not stopped in her course, although she has to share the floor for the moment with C. Also she does not change the flow and rhythmic pattern of her speech as established in the immediately prior utterances. This flow is characterized
by an increased tempo over the prior utterances, a lowered pitch register, and a sequence of tone groups which end in a low-falling tone. In short, B keeps right on going. Noticing these features might allow us to salvage a structural approach, explaining to us C's overlap (or interruption) as being cooperative as a 'function' of these constructions plus others already noted. The only problem with this approach is that it is not hard to find similar examples where the first speaker persists in the same fashion as a second comes in to overlap during what would probably be a non-transitionally relevant place. Example (3) is from an interaction which informants invariably see as highly antagonistic:

(3) A: Well they've got complaints, is that whatcha mean?
C: Complaints [th-
A: [they have] complaints. The white community has complaints]
C: They're not complaints, they're not complaints]
A: community has complaints. The straight colony out in the Haight Ashbury has complaints. The fact that there are complaints from different communities doesn't mean that we have some kind of irreconcilable conflict that must erupt in violence.

I have played this tape to about a dozen informants and found they tended to characterize C as attempting to get the floor from A but without success, apparently because A manages to keep going without pause or change in rhythm and intonational patterning. They interpreted A's persistence as "ignoring what C is saying," as "Not caring what C is trying to say," as "treating C's objection as not important," as acting "as if A had not heard C," etc. As with example (2) what follows the overlap here tends to bear out the interpretations offered. We see A completing an argument by employing the material regarding complaints in several neighborhoods of the city of San Francisco as background for the conclusion that violence is not inevitable. What is worth emphasizing is that while the overlaps and/or interruptions which occur between two speakers in (2) and (3) resemble each other "constructionally," both on the syntactic and prosodic levels, the interpretations people make as to what the quality of the interaction is tend to diverge radically.

I am not suggesting, by the way, that we abandon formal analysis or that constructional regularities
like those already mentioned do not play a role in participants' forming particular understandings in interaction. A study of overlaps and interruptions from a structural viewpoint might reveal some interesting consistencies in talk, and in fact this approach might be considered a necessary supplement to interpretive approaches being advocated here. I am only claiming that we should not expect to be able to move directly from such observations to actual interpretations made by informants and/or participants.

I think it is also clear that a number of regularities do exist on the structural levels of syntax and prosody. I suggest however that in order to treat these regularities as 'more than' constructional patterns, but as interruptions, as cooperative or antagonistic, as mere accidental overlaps, or what have you, we have to in the first place have a non-structurally-based means of identifying occurrences of these in order to know what it is we are dealing with. Perhaps the severest criticism that one can make of the work of Sacks, Scheglof, et al, brilliant as it obviously is, is that they consistently tend to take their own interpretations for granted. Rather than attempting to see constructional 'units' as indicative of particular interpretations and understandings, we ought to ask how it is that these phenomena can come to be seen as phenomena of interruptions, overlaps, etc. This is less a question of the 'recognition' of preexisting 'structures' but rather one of the interpretation of particular configurations of phenomena against a background of shared assumptions. What syntactic or other constructional regularities we do observe cannot be applied in simple and direct fashion as diagnostic tools, but rather are themselves part of what needs to be explained.

What I have been saying in effect is that Scheglof's distinction between 'overlap' and 'interruption' fails because these two categories are of logically different types, and cannot therefore be distinguished by means of a single set of parameters. The term 'overlap' is essentially a descriptive term which the discourse analyst employs for purposes of isolating an observed feature of a discourse. On the other hand, the notion of 'interruption' is basically an interpretive category which participants can make use of to deal with currently prevailing rights and obligations in actual situations. If we see interruption as an interpretation by people of what is going on as regards participants' handling of rights and obligations in talk, then we are constrained to see an interruption as involving one speaker in conflict with another—in varying degrees of intensity. Such a view encourages us to ask, in specific cases,
what is the nature of this conflict and what role does the interpretation 'interruption' play in it?

III. A PHENOMENOLOGICAL VIEW. I will now return to (1), this time expanding it to include the immediately following parts of the talk between M and B, and produce a kind of analysis which will hopefully suggest one way of approaching two very general questions about human discourse which we cannot hope to answer yet but which we might well keep in the backs of our minds whenever we approach a particular piece of discourse: (1) What is the essential nature of human discourse? (2) How is it possible for human discourse to be as it is? I consider these questions to be in some sense the same question, since neither can really be answered separately from the other. Another way of saying this is that, if we really want to illuminate for ourselves the nature of human discourse, we not only have to do a good deal of concrete analysis of the observable phenomena of specific discourses, but we also have to come to terms with our relationship as human beings to the world of discourse.

1. M: Now Mr. B/ what is your view//
2. B: Well/ I ha- here.../ I have here/
3. a list of five hundred jobs/ that were/
4. sent to the area/ in Hunters Point
5. M: Sent by whom//
6. B: Uh/ d-.../ various [ ( )]
7. M: [Are they just posted//
8. B: government/ and uh [ departments]
9. M: [What I was interested]
10. in was/ uh/ where did you hear about them//
11. Are they posted/ or what//
12. B: From a reliable resource/ I should say//
13. I'm not at hand to say/ from where/ or
14. to whom// But...there are five hundred
15. jobs here/ in my hand/ but yet/ before
16. the riot/ uh/ these jobs weren't avail-
17. able/ all of a sudden they are// I would
18. like to know/ uh/ from the the big people
19. from downtown/ why weren't these jobs a-
20. vailable before the riots//

I will not try to provide anything like a full characterization of this segment of talk here, and will unfortunately have to gloss over some very interesting strategic aspects of the interaction, such as B's persistence in the face of M's rather dogged pursuit of his own point. There is some reason to believe that this form of meeting a
challenge from educated whites is a general strategy that blacks may fall back on in such situations. In any case, my focus here will have to be on the issue of how it was possible for my informants to so readily agree not only that M interrupted B here, but also that the interruption had a particular kind of interactional quality. The goal here will be to attempt to retrace some of the paths leading from assumptions of participants and informants to the actual phenomena of this discourse and then to the interpretations that emerged.

In order to begin retracing these paths I will begin with a discussion of the underlying logic of the kinds of judgments about M's treatment of B that have arisen. What beliefs would we have to have—what assumptions, expectations and values—in order to 'reasonably' arrive at the conclusions my informants made?

First of all we have to make certain very general assumptions about M's capacities and about what he ought to be doing. If we say he is being impolite, we presuppose that he ought to be polite. The same sort of implication is involved in the use of terms like "rude," "belligerent," etc. What we are saying then is that M is doing something he should not do, and insofar as we are characterizing him negatively we are assuming he could have done something else. If we assume this we must believe that M is capable of choosing other alternatives which we might loosely call "being polite," and since he does not choose these he has committed an offense against B.

We might also ask just what we mean when we say M is impolite, rude, and so on. Lakoff (1973) has provided a remarkably clear and suggestive account of what we might justifiably call certain aspects of the ontological structure of politeness with her notions of camaraderie, distance and equality. In particular M seems to fail to treat B as an equal. For Lakoff treating others as equals means giving them options. With regard to (1) we might be more specific and say that M is not allowing B his rightful share in taking responsible control of the unfolding of the discourse. It appears in fact that M is pulling the development of the discourse in one way while B is trying to go in a different direction. In lines 12-20 we appear to get a full development of what B had begun in lines 2-4. Part of the evidence for this lies in the fact that in lines 12-15 B reiterates part of what he said before. We can see from this that before being interrupted by M B was leading up to a question which, in the context of the composition of the panel, amounts to a direct challenge to some of those sitting on the panel who in fact might easily be construed as samples of "the big people from downtown," i.e. government and labor officials. (That
we can consider this a challenge might partly be due to our understanding of "big people" in this context as a critical rather than as a descriptive term. Why this construal is possible is an interesting question, although I will not attempt to pursue it here.)

If we can accept B's question as a challenge within the situational framework of a live televised panel discussion on "jobless minorities" in which some panel members are labor and government leaders and some are part of those minorities, then we can begin to appreciate in interactional terms M's questions about where the jobs list came from. Specifically we could probably show without much difficulty that the information M can be seen as asking B to provide would in no special way contribute to B's construction of a challenge here. We would not need to know where the list came from in order to understand the challenge as a challenge. B's concern would in this light appear to be to lay a foundation for making his question in lines 19-20 understandable as a challenge. An essential part of this foundation involves three assertions: (1) I have a list of five hundred jobs; (2) Before the riot these jobs weren't available; (3) Now, after the riot, they are available.

We can thus see two possible lines of thematic development here which are in conflict, M wanting to deal with "sources of information" and B with "making a challenge." In this view the interactional issue here has to do with whether M or B is going to get to lead the discourse down the path of his own projected unfolding. The clash between the two protagonists appears in fact to intensify in lines 6-11, but before examining the issue of what justifies our thinking this, I want to turn back to the opening five lines of (4) and reconsider the question of how it is that a consensus of opinion between my informants was reached as to M's "rudeness," etc. This is not only an issue of how it was possible for some informants to see M's question "Sent by whom?" as an interruption, but is just as crucially a question of how they could agree independently as to the interactional quality of that interruption. I would in fact claim that the two interpretations of M's question as (a) an interruption and (b) rude, are mutually independent. That is neither is either logically or temporally prior to the other, but each mutually supports and justifies the other. I will examine the issue of M's rudeness first and then return to the issue of interruption.

I believe that, as always, a variety of factors contribute to the interpretation of rudeness. I shall attempt to deal with these here in terms of what I would like to call the "concrete logic" of the unfolding situation in lines 1-5. I want to use this term because I do not want
to commit myself beforehand to any separation of the logic of ideas in this discourse and the working out of particular communicational behaviors. So I want to use the term "concrete logic" as a means of pointing to a stage of interactional experience in which observable behaviors taking place in the context of what other behaviors might conceivably have been manifested are not perceived as separable from what is being 'meant' or 'done' by the participants. This emphasis may seem strange to many linguists, but I want to suggest that the linguist's belief that linguistic form is somehow discretely alienated from semantic 'content' is not necessarily shared by ordinary mortals.

As we have already noted, B appears in lines 2-4 to be laying a groundwork for the making of a challenge. Now clearly those informants who heard only lines 1-5 could not readily infer that this was where B was heading. No one volunteered that interpretation at least. Nevertheless I believe it is possible to recognize B's talk there as in fact just what it is, namely the laying of a groundwork for the eventual doing or saying of something, presumably a something which would constitute a reply to M's first question. Notice that I am saying more than that we can tell B is not yet finished, although clearly those informants who saw M as interrupting B must have thought this, or at least taken this as the case. We are also saying here that M's interruption comes at what for B was a crucial place in his discourse, a place in which it is in fact crucial not to interrupt, except for certain special reasons.

There are a couple of reasons why it is important not to interrupt B here. One of these has to do with the understanding that B has in fact laid a groundwork necessary for us to understand the 'something' that is going to emerge out of this ground. Now one of the things about laying a groundwork is that if it is crucial for us to somehow have it 'in mind' (whatever that may mean) in order to understand a later act, then there ought not to be too much temporal gap between laying the groundwork and the doing of the consequent action. To interrupt just when M did is not only to interrupt him before he has finished, but to interrupt him at a critical stage in the working out of his themes. I am not claiming here that the gap might cause us to miss his point, forgetting what was essential in the groundwork, although of course this is possible. I do not believe we can effectively characterize the sense of incompleteness here in the usual cognitive terms of short-term memory, storage and retrieval of information, or attention. Although I cannot pursue this point here, I would suggest in passing that the sense of disturbance here arises out of an understanding or ex-
pection that more is to come. There is an incomplete gestalt here, as if the first three "fate" notes of the opening of Beethoven's Fifth Symphony had been sounded without the fourth being allowed to follow.

Another reason why it is critical for M not to take the floor from B at this point has to do with the framework within which B's discourse begins to unfold. That is, it is M who has in fact asked B to make a contribution, He has addressed him by name & directed a question to him. B has not refused M's direction here, but has accepted the opening M has provided him. He is cooperating with M, following his lead. In a certain sense B has placed himself under M's direction; i.e., one does not have to reply to a question. Now, although by answering one cooperates with the questioner, still an answerer has certain rights. The floor has been turned over to him and insofar as the question is in some sense (which we cannot really yet define) 'serious' then the answerer has rights to keep the floor for a reasonable time in order to provide an answer. But in B's reply to M's first question it is difficult to conceive that an expression of a view has yet been given, which is what was asked for. Thus M has given the floor to B within the particular framework of addressing a serious question and in line 5 taken the floor back again before B has had a chance to supply an answer. One does not usually treat adults this way in our culture. It is almost as if M's question "Sent by whom?" is delivered against an assumption that B is not able in fact to structure his own bit of discourse coherently. I believe that it is just because B's discourse is situated in just this place in the discourse that my informants so readily could see M as rude. It is because B's talk in lines 2-4 partakes simultaneously in two unfolding lines of thematic development, one which looks back in time to the framework set up by M's first question, and one which looks forward in time to the unfolding of a challenge, that I would suggest makes readily available the interpretations my informants made regarding the quality of M's interruption.

I want to point out that while the above argument suggests a background within the unfolding structure of the discourse itself for these interpretations, it is of course not the whole story. While I cannot give all of the story here I do want to mention another important factor which I feel contributes to the rudeness interpretation. This has to do with our judgments as to the kinds of persons M and B seem to be. I asked a few of my informants what they thought of M and B as persons. Two or three people suggested that B sounded ill at ease, was not as well-educated as M, and appeared to be having a hard time saying what he wanted to say. By contrast M appeared to at least have some higher formal education and to be a very
fluent speaker. What I want to suggest is that interpretations of the participants' relative skills at public speaking may well have played a role in making possible the rudeness reading of M's "Sent by whom?" If this is the case it would have to be so in a context of beliefs about how less educated people ought to be treated by more educated ones. In M's case we might say he ought to have been helping B to say whatever he wanted to say, and--given M's fluency--he ought to have been able to do this. Such beliefs of course grow out of large scale assumptions about the nature of racial and class equality in this country. Given such assumptions we might see M's act as more intensively antagonistic than he himself did.

As to why we might see B as relatively nonfluent here, we might mention briefly his self-correction, the awkwardness of the tonal phrasing, as for example breaking the clause "that were sent to the area" into two tone groups, and the relative monotony of the tonal contours (not indicated in the transcriptions here) in which each close with a rise-fall-rise pattern. These features themselves might not give us an impression of nonfluency, but in the context of a panel discussion where efficiency and speed of delivery have a high premium, such features appear to be a handicap, particularly where M is by contrast so visibly on top of things. As a result of this contrast B may be seen as being at a disadvantage, as an underdog who already has enough trouble making his point without having to deal with interference from M.

In the light of our interpretation of the opening lines of (4) as unfolding a clash between two individuals over rights to take the lead in guiding the direction of the discourse, we can see the overlaps, hesitations, repetitions, etc. which occur in the following lines as an intensification, particularly as it appears that M repeats his prior behavior toward B, asking a question which B attempts to answer and then interrupting him in line 7 before B has had a chance to make anything like a full assertion. This exchange also involves intensification in that B is being led farther and farther from the groundwork that has already been set forth. The hesitation of B in line 8 may be seen as a sign of his struggling, not really being able to meet M head on as yet. What I am saying is that it is not surprising to find such structural features in the context of a clash; it would be difficult however to determine that a clash was in progress from observation of these kinds of structural features alone. In order to do so we would have to take for granted many of the assumptions, beliefs and expectations which I have already discussed and treat these as 'given.'

I have argued that the interpretation of M's behavior in asking "Sent by whom?" as rude, etc., is grounded on
assumptions and behaviors which are manifold, such as certain general principles of social conduct, certain rules of politeness, certain assumptions about participants' ability to exert voluntary control and choice over alternative behaviors, etc. Some of the beliefs I have mentioned are probably culturally specific, such as our ideas about underdogs. The interpretations are also based on our familiarity with particular rhetorical patterns, such as the laying of a groundwork to provide the basis for understanding a later speech act. Some of the features we have noted are highly concrete, such as particular prosodic and syntactic patterns. At the same time, some of these structural regularities may be seen as highly abstract insofar as they represent behaviors that could have been performed but were not. Out of the assumption that $M$ is interrupting $B$ in some sense grows the interpretation that he is rude, belligerent, etc. On the other hand, given the belief that $M$ is in fact rude, our assumption that he has interrupted $B$ has the appearance of having been 'verified' by the 'facts'. This is sometimes how practical reasoning works, as Garfinkel (1967) suggests, i.e. as a self-justifying, self-contained and self-perpetuating circular system. In some ways human discourse seems to resemble the cardio-vascular system.

IV. CUES; THE NATURE OF HUMAN DISCOURSE. One of the apparent disadvantages of the phenomenological approach to the interpretation of human discourse is that, compared to the structural approaches oriented toward a body of data out of the inductive-empirical school of science, the phenomenologist's interpretations of discourse will seem less than spectacular. Much more exciting those surprising correlations that structuralist approaches often come up with. The phenomenologist's interpretations often appear to tell us little more than what we already knew. Sometimes one finds phenomenologist writers compensating for this by cultivating a florid prose and a radical thought which is the modern equivalent of the mannerisms of a Sir Thomas Browne (e.g. Lacan 1968; Ricoeur 1970). Phenomenology has of course an answer to this dilemma. That is that the serendipity effect which sometimes accompanies structural-inductive studies is often shortlived. This is because there is a failure to capture for us the essential nature of human discourse, which in fact cannot be 'captured' at all, not if we think of capturing as being able to describe the essence of discourse in the same way we can describe physical entities which are outside of us and independent of our existence. Unfortunately I cannot pretend to be able to characterize adequately the essential nature of
human discourse either, but I would like to focus briefly
on two aspects of discourse with a view toward projecting
toward such a characterization in the future. On the
one hand we need to know more about the interrelation-
ships of the concrete phenomena which actually appear in
discourse, those phenomena which some people have re-
cently begun to treat under the rather general term of
"cue." On the other hand it is important that we learn
to think through the general nature of human discourse in
terms of the relationships that people create between
themselves within the medium of discourse (Within, not
through or by means of) in terms of shared worlds of dis-
course.

A. CUES. Cues are often conceived of in a form-
content, sign-meaning, signifier-signified framework
which presupposes something like a Lockean theory of
meaning in which manifest behaviors, verbal and non-
verbal, are said to 'correspond' in rule-governed ways
to ideas in a conceptual world somehow contained in the
mind. This is an expected bias for those scientists who
feel their main concern should be with empirical vali-
dation of hypothesized consistencies in some observed
body of data. Cues in conversation or other forms of
human discourse would in this view 'convey' or even
'force' a particular 'reading' which is the meaning or
content that cue is associated with independently of its
actual use in specific discourse situations. In fact a
cue's ability to, as it were, 'contain' some piece of a
conceptual world--as if cues were packages containing
bits of information--is what would in this view distin-
guish a particular phenomenon as a cue.

There are of course other possible views of what a
cue might be. One that I find most attractive, in the
light of attempting to reveal something about the onto-
logical structure of understanding in human discourse, is
that offered by certain aspects of gestaltist theories of
the 'field' as a totality of entities in relationship to
each other as perceived by some interested party. The
gestaltist conception offers two advantages in particular:
1. It is not necessary to see a field, such as a
specific piece of discourse, as a self-contained
unit cut off from relationships with the rest of the
world. To do so would be to commit a cardinal sin
against the gestaltist conception of world. This
notion of a field allows us to think of linguistic
knowledge within a framework of our other knowledge
of the world. Or to be more accurate, what as ling-
guists we call linguistic knowledge is actually an ex-
trapolation of a particular kind (as determined part-
ly by the exigencies of an academic discipline) from
the totality of the knowledge, experience, and prac-
tices of human beings situated at every moment within
a historical context. Political, personal, psychological, social etc. realities which engage the interest of human beings at a variety of levels would in this view be most concretely 'manifested' in specific everyday interactional situations; therefore one of the best ways to understand such realities might be through the close study of discourse. I believe this argument was already seen, although from a slightly different angle, by Sapir (1949) when he said:

A further psychological characteristic of language is the fact that while it may be looked upon as a symbolic system which reports or refers to or otherwise substitutes for direct experience, it does not as a matter of actual behavior stand apart from or run parallel to direct experience but completely interpenetrates with it.

2. The gestaltist view encourages us to understand discourse as an unfolding of possibilities through time. This follows from the gestaltist conception of the kinds of relationships that hold between a totality or field and the entities which comprise it. This relationship can be viewed from two angles which complement each other as do the inside and outside of a glove (to borrow an image from Kierkegaard):

a. The entities in the field receive their full definition only in the immediate context and only in terms of that context or totality and their place or relative position within it.

b. The context, the whole in which the entities share only receives its definition in terms of both (1) the relationships between the entities within it and (2) its relationships to the larger context of which it is necessarily a part.

A human discourse would in this view be a development or working out of possibilities intrinsic to discourse, i.e. to 'language' itself. Linguistic and other behavioral phenomena which the social scientist may extrapolate from bodies of data would have to be seen as merely approximations of what actually occurs in concrete situations which we isolate with a view toward understanding both specific examples of discourse and discourse itself. This does not mean—in fact cannot mean—that the writing of rules which will enable to predict the 'function' of any particular phenomenon in terms of both what contexts it can enter into and what 'content' it will have upon entering is a realistic goal. Dreyfus (1972) contrasts these two very different approaches, referring to the latter approach
as making use of 'plans' or rules:

A gestalt determines the meaning of the elements it organizes; a plan or a rule simply organizes independently defined elements. Moreover, just as the elements (the beats) cannot be defined independently of the gestalt, the gestalt (the rhythm) is nothing but the organization of the elements. A plan, on the other hand, can be stated as a rule or program, independently of the elements.

Human discourse can be understood as the unfolding of specific sets of possibilities which are 'revealed' in the evolving relationships of the gestalt of the discourse itself. The phenomena of human communicational behavior share through the development of their interrelationships momentary, apparently evanescent roles in the thematizing or working out of the shared experience of the discourse world for and by the participants. This thematizing involves the participants in a continual unfolding of understandings and interpretations, some of which are mutual, as to their aims, their motives, their feelings, the meanings utterances have to them, the classifications they may make of particular discourse activities, etc., and in general their expectations, values, assumptions. The roles played by the particular behavioral phenomena of the participants--i.e. by linguistic, prosodic, kinesic, postural and other behaviors--can only be understood in terms of this thematizing, in terms of particular situated cases of thematization as the the concrete working out or 'actualizations' of lines of possibility. The goal is less the isolation of apparently recurrent phenomena with a view toward accurate prediction of meanings participants may find in a discourse, than with understanding how such phenomena enter into relationships which are understood by participants in just the ways that they are.

Regarding some of the phenomena of (1) we might note in passing that there is a contrast in register between B's "sent to the area" and M's "Sent by whom?" where the overall pitch register of M's phrase is noticeably lower than B's. If this register difference played a role in supplying a basis for my informants' interpretations, we would clearly want to describe it as a relational phenomenon rather than try to explain it in terms of the occurrence of a particular level of pitch register in M's "Sent by whom?" It is the contrast between two phrases in terms of register that is important; the 'meaning' of what M does needs to be seen in the light of what B has already done in this particular situation. Furthermore, what is crucial is that this relation develops just here in the talk where it is relatively clear that B has not finished. In addition other phenomena may play a role here, such as
M's use of 'whom' and his lack of hesitation relative to B's speech. A little hesitation, recycling, 'stuttering' or the use of a hedge like "I was wondering if you could tell us..." might well have forestalled the sense of impoliteness informants have here. It is important to note that this same configuration of prosodic phenomena might well support a different interpretation had they occurred in a different place. For example if M's question occurred immediately after B's utterance of the word "area," thus overlapping with his "in Hunters Point," M might have seemed even more rude. Or if the content of M's question had been more pertinent to B's making his point, rather than a shift in the direction of thematic development, these phenomena might have been understood as a way of being efficiently cooperative. Again, the point is that we cannot understand discourse phenomena, such as prosodic patterns, unless we are able to relate them to our interpretations of discourse totalities.

B. DISCOURSE AS A SHARED WORLD (CONCLUSION). I see interruptions as special cases of some kind of clash between the worlds of two or more persons within the framework of a human discourse (interruptions need not be verbal). Interruptions can be seen as accidental or deliberate; cooperative or antagonistic; nonserious or serious, etc. The quality and intensity of affect centered around one or a set of interruptions can vary across the whole range of the potential depth of the human capacity for affect. Parameters such as these offer only a rough characterization of certain features of the kind of fundamental and developing understandings centering on those particular manifestations of clashes which we sometimes label "interruptions."

But to talk of "clashes" is not particularly illuminating. An important question is not only what do we mean by the term, but also what can we say about the assumptions, expectations and values that provide a ground out of which clashes may arise? In particular, what do people expect to get out of engaging in discourse? Without pretending to be able to give an adequate answer to this question, I would like to point to what I consider to be an essential feature of human interaction that most discourse analysts (including myself) have tended to overlook. Some of the ethnomethodologists have well emphasized the concept that human discourse is something that is accomplished through the intentionality of persons. No one has yet been able to specify very much of both what is accomplished and how it is. I believe that those types of discourse which involve clashes of various kinds and degrees grow out of a set of expectations that, for the analyst at least, can be seen as arising in the
context of the intentional accomplishment of discourse. I like to think of discourse as not so much an exchange as a shared world that is built up through various modes of mutual response over the course of time in particular interactions. I offer this view as an alternative to the view of discourse as an economic system in which 'members' exchange object-like entities such as turns at talk, parts of adjacency pairs, speech acts, etc. (e.g. Goffman 1971; Sacks, Schegloff and Jefferson 1974). Rather than thinking of discourse on the model of this rather pale visual metaphor one might think of discourse in terms of touch. Though sometimes there is one who touches and one who is touched -- so-called active and passive roles -- the one who touches can be affected not merely by the response of the one touched, but by actually having done the touching as well. The same can be said for the one touched. There is room for varying degrees of reciprocity here and in any case it is much easier to think of touching as a creation of a mutually experienced world of discourse than as an exchange of objects or any other entities. Thus we can see human discourse of whatever form and mode as a shared world because the participants share both in the experience of it (not necessarily in identical ways of course) and in the creation of it. We come into human contact in various situations with certain unspoken assumptions and expectations regarding such issues as, how much we want to participate in the construction of this discourse world; how much responsibility for its construction we want to assume or feel called upon to assume; what value we place on this participation, etc. At least some clashes involve those cases in which some participants sense that they have not been able (or allowed) to share in the creation of the discourse as much as and/or in the ways they would have like to. I believe it to be fundamental for human beings to be concerned with self-responsibility for the articulation of their relations to others, to themselves, to the world.

When interruptions do occur, the understanding participants have of them will be heavily affected by their beliefs of the moment. If there is some reason for one or more participants to believe that he/she is losing some rights toward leading the discourse to some other person, whether one is willing to relinquish these rights gracefully, or whether one finds oneself foaming at the mouth, depends upon 'who' one is at that time. One may interpret the same behavioral phenomena as an interruption in one situation and as an accidental overlap in another. In the same way, in one situation an interruption may be seen as trivial or even cooperative, and in another as belligerent.

I suggest in particular that it is only in the light
of this groundwork of expectation, assumption and value that we can explain examples like (1) as an interruption, while examples like (2), although they may fit a structural definition of interruptions like that offered by Schegloff, are not. That is, the question of interruption in discourse is not so much one of recognition—which implies the somehow 'prior' existence of an object-like entity that the listener or speaker 'recognizes' when it 'appears' in physical form, but rather is it a question of a particular kind of interpretation arising in organized ways out of a background of particular possibilities which are evolving at that moment in the discourse as the participants work out a direction of thematic development and set forth a qualitatively shared world. (Exactly how this sharing is accomplished and to what 'ends' if any is still at present largely a mystery).

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SOME CONVERSATIONAL CONVENTIONS OF BLACK ENGLISH

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This paper discusses conversational conventions of Black English. We are concerned with notions of conversational control and conversational cooperation which are signalled through contextualization cues. These cues act to signal the way in which conversational contribution is to be interpreted. Contextualization cues, which can be verbal or nonverbal, co-occur in clusters and only have meaning within the context, not in isolation (Gumperz 1977). Our work examines miscommunication in inter-ethnic situations concentrating on cues specific to Black English. We have found that breakdowns in conversations involving Blacks and Whites are often attributable to differing interpretations of culture-specific contextualization cues. This analysis of conversational conventions of Black English centers on prosodic cues and formulaic speech used by some Black English speakers.

Conversational conventions are those organizational filters which the listener uses when making the relationship between speaker's intent and meaning. They act as sifts in processing forms of conversational information. Conversational agenda, a necessary presupposition for all conversations, establishes the direction of conversation by which the speaker presents his point of view. It is negotiated between speaker and listener(s) because its agreement is necessary to insure conversational flow. The speaker's rhetorical strategies are crucial at the level of conversational control and conversational cooperation. Conversational control employs strategies which direct and maintain control over the flow of conversation, allows for verbal and nonverbal interaction as well as establishing lines of argumentation which adhere to the conversational agenda. Conversational cooperation requires that the speaker actively elicit the cooperation of the listener(s) in order to successfully maintain the floor and his conversational agenda. At this stage conversational topics and meaning are negotiated and listener's ability to appropriately follow conversational cues is essential to insure conversational control and conversational cooperation. We have found that often in shared familiar surroundings such as the home, with family and friends, conversational conventions are not problematic. However, once conversation moves to broader spheres negotiation of agenda, a matter of conversational conventions, is signalled through formulaic speech, word choice, prosodic cues, phonology, and other speech options. Our work discusses the relationship between linguistic cues and agenda.

Essential to our analysis is an understanding of the function of conversation inference (by this we mean the speaker's
intended meaning). This takes place at two levels, the first examines the message as an interpretative frame, looking for speaker's contextualization cues, which aid as conversational directives. Contextualization cues are dependent upon cultural knowledge. We have found that in order to reach the correct interpretation of some formulaic speech found in Black English requires that the listener have specific cultural knowledge encoded in the formulaic speech.

To illustrate that conversational conventions rely on shared cultural knowledge let us take the following example. In a typical classroom setting the teacher asks D, a question. However, before D can answer C loudly whispers, "if you answer this question correctly you will win a 23 inch color T.V." In order to obtain the proper interpretation of this statement as a joke, C will make a prosodic shift in his voice. This prosodic shift draws upon information specific to the game show frame. The listener must be able to draw upon information of what constitutes a game show, what are its social conventions, and the speaking habits of game show announcers. It is clear that without shared cultural knowledge (i.e., T.V. game shows) the meaning of C's comment would be misinterpreted.

Our work discusses some of the conversational conventions which draw upon cultural knowledge specific to the Black cultural tradition in America. We focus on the interpretation of some conversational conventions shared by some Black English speakers who through prosodic cues and formulaic speech indicate the preferred interpretation of speaker's intent.

Examples of conversational conventions are obtained by analyzing breakdowns in communication occurring in conversations between Blacks and Whites. We hypothesize what features constitute "culture specific contextualization cues", by identifying these same contextualization cues in the analysis of conversations among Black English speakers who share the same cultural background. Our work reveals the interpational tendencies that a given cue will signal to a listener sharing the same conversational conventions.

Our data consists of two types of contextualization cues which mark conversation, prosodic cues and formulaic speech. In conversational context these cues often appear to be idiosyncratic and rely heavily on style for effect. But what we have found is that at the level of function these cues signal to the listener who shares the same cultural knowledge the appropriate response.

Prosodic features in Black English are characterized with rhythmical stress placement and marked intonation patterns. Our data substantiates three distinct styles of prosodic cues. The first is a shift in pitch register. The second type is the "quotational style", which is marked by a change in voice quality in which the speaker's voice is indicative of some characterization. This is illustrated in the game show example involving the game.
show announcer style. It also provides the speaker with distance from his utterance. These three types of prosodic cues are often characterized by voice tensing and the use of falsetto. Prosodic cues can also be signalled through a marked use of vowel quality and vowel lengthening.

Formulaic speech is metaphoric in nature and occurs in context bound instances. Its meaning draws upon specific cultural knowledge which requires reference information not only to place but also to time. Often it is marked by a "quotational style" in which the speaker's voice quality further enumerates speaker's intent.

As mentioned above, the cues under investigation are related to conventionalized discourse strategies -- ways of planning and negotiating the discourse structure (conversational agenda) over long stretches of conversation. Our examples are therefore whole or partial episodes within a conversation, each episode consisting of a stretch of conversation involving the same participants, the same setting, and the same subject matter. Only by following the direction the discourse takes as a result of the cues being used -- that is, tracing the progression of the discourse from the use of the cue in question up to its ultimate outcome in the episode -- can we provide empirical, internal evidence for the discourse-directing nature of these cues. In cases where a misunderstanding occurs due to the lack of shared communicative conventions, often the discourse is heading in different directions in the minds of the different participants (without either's knowledge that the gap is widening) until the discrepancy is too great and the miscommunication becomes obvious to all, in which case it can be metacommunicated about and resolved. It can also happen that the discrepancy never becomes great enough to be obvious -- that the miscommunicating participants can each interpret the others' conversational contributions in a way consistent with their own idea of what the conversation is about, but each comes away with a different idea of what happened. A third type of miscommunicative episode can be a conscious manipulation of culture-specific conversational conventions by one group of participants to gain conversational control over another group -- "putting them on" or "running a game on them". (A precondition for this type of episode is that those on the same "team" share the same conversational conventions -- and therefore can coordinate their strategies through signals, prosodic and paralinguistic cues, that are invisible to the other "team").

Our first example is one where both the White and Black participants are aware of this third possibility, and where the Black speakers maintain conversational control because of the doubt in the mind of the White participants.

The participants are: G -- a White, middle aged professor, M -- a White graduate student, B -- a Black teenager, W -- a Black teenager,
and several other Blacks who do not speak in this section

Transcription system (adapted from Trim)

TONE GROUPS
/ minor tone group -- pause and/or register shift
// major tone group -- full fall-off

SYLLABLE MARKINGS
' high head (high non-nuclear prominence)
^ low head (low non-nuclear prominence)

NUCLEI
, low rise ^ rise-fall
, high rise
, low fall ^ rise-fall-rise
, high fall _ high level nucleus
v fall-rise _ low level nucleus

PITCH REGISTER SHIFTS
[ shift to higher register
\ shift to lower register

PARENTHESISSES indicate unintelligible part of tape ( )

RATE

c - accelerating
r - slowing down

LOUDNESS
F - Loud
P - Soft

TRANSCRIPT # 1

(1) G: What we talk about
(2) W: Oh you guys pick a subject, any old subject you know
(3) G: Any old subject
(4) A: Any old thang -- A: Are you opposed to -- to the draft.
(5) M: Yeah (laughter)
(6) W: Are you? ................. opposed to the draft
(7) G: Yeah, Well I can be I can afford to be opposed.

(8) W: "Tell me about your 'war life/ Was it 'interestin'// I mean you 'military// service // life. // Was it 'interestin"//

(9) G: Oh, it 'wasn't very 'interestin' / no/

(10) W: "Tell me/ what part of the 'service you go into the army //

(11) G: I was in the army //
(12) W: Well, what war was you in?
(13) G: Second World War
(14) W: "Second - did you -- how you -- where did you go?"
(15) G: I was in Europe
(16) W: "That's the only place"
(17) G: That's the only place
(18) W: "um hum"
(19) G: England, France and Germany
(20) W: O-h:: / \ well ...
(21) G: In those days ~ well ...
(22) W: I mean was you really in action
(23) G: Oh, once or twice
(24) W: Did you "kill anybody"
(25) G: I don't know / I shot a couple of times
(26) W: 'You busy shootin' ^ huh
(27) G: I don't know, I never "saw anybody I killed" -- I saw some dead people
(28) W: ^Yeah/ ah -- Have you ever got shot? (\)
(29) G: No -- I got hurt one day (I member) We were out-out in the morning and I got hurt they put on KP they made me get up at four o'clock and peel potatoes Choppin' potatoes and I chopped off this part of my finger (laughter)
(30) W: ( )
(31) G: That's my "War Wound"
(32) M: It's a french fry
(33) B: That was the first time you tried smokin that weed huh?
(34) W: Hes trippin' - you peelin potatoes

From the very start, W and B are "running a game" on G and M
in a way obvious only to themselves. In line (4), B's pronunciation of "thing" as /θɛŋ/ is in his case an exaggeration of Black English pronunciation -- and in fact is a pronunciation he never uses again, his segmental phonology being much closer to White than to Black English throughout the rest of the tape. This use of the exaggerated Black English form can be seen as a metaphoric switch, indicating to the others his willingness and ability to lead the researchers astray (as in "If they want to hear Black English, I can give them all they want and more.") W then completely takes over the role of interviewer -- switching the interviewer-informant roles around. In line (8) he uses a conventionalized Black prosodic marker on the words "military service life" -- tense voice quality, with a repeated marked intonation pattern and tone group boundaries after each word -- to express dissociation of himself from his actual words, as if marking them "foreign vocabulary" or "things that other people would say". (If one were forced to give a verbal paraphrase of this prosodic marker, perhaps the best one would be "so-called". Its use is analogous to the use of quotation marks in academic papers -- e.g., if a linguist uses the word meaning he can be justifiably asked for a definition of it, but if he writes "meaning" instead, he can avoid responsibility for defining it, and can in fact even express doubt that such a definition exists.)

There then follows a long question and answer session in which W tried to elicit a war story from G. Rhythmically, synchrony starts to break down in this section -- W tends to accelerate at the end of his questions, but G's answers lag behind in speech rate. W seems to be insistent on getting a story, while G is reluctant, (G later reported that he hesitated to say anything because he had no idea what was going on, whether the questions were serious or if he was being made fun of.) W also is indicating prosodically what the most important element of the story should be, using high level pitch and stress on the salient items in each sentence -- "action" in (22), "kill" in (24), "shootin'" in (26), and "shot" in (28) -- that is, a lively, entertaining war story is in order. G finally resolves his dilemma by taking control of the context -- telling a story that is humorous (and therefore entertaining), and through which he gently pokes fun at himself -- thereby ending the ambiguity of serious vs. joke and eliciting confirmation of its joke status in the form of a humorous contribution from each participant (lines 31-34).

This episode is an example of what we mean by the negotiation of interpretive frame. In line (8), W establishes control of the conversation and maintains it in (16) and (22) (he interrupts G to keep G on his subject). W's use of question after question, and his use of prosodic markers to show where his main areas of interest lie, suggest an interview style, where he asks all the questions and G gives all the responses. There is an ambiguity about the interpretive frame, however, since there is an element of joking in the conversation (as perceived by G, and visible in W's
mock surprise in line (20), and, through a black-specific cue, in "military service" in line (8). This conversational strategy of maintaining ambiguity between the joking and serious interpretive frames allows W to maintain conversational control -- until G, by his choice of a story, insists on the joking interpretation, relieving the ambiguity. The joking comments by everyone at the end of the story show that the renegotiation into a joking frame has been accepted by all. (Lack of acceptance here -- that is, continued insistence on a blood-and-guts war story -- would have strained the conversation to the limit, because it would have been total inflexibility in negotiation. Conversational cooperation in natural conversation consists mainly of this willingness to negotiate, rather than dictate, changes in interpretative frame.)

The second sample episode takes place a few minutes after the first, with the same participants:

TRANSCRIPT #2

(1) W: 'Did you agree with the elections?'/

       (laughter)

(2) W: 'Did you agree with the elections?'/You first/

(3) M: 'Me first'/No '/next question/

(4) W: 'Why do you not agree?'/

(5) M: 'Why do I like what?'/

(6) W: 'Why do I Why don't you agree with the elections?'/

(7) M: 'Oh

       (laughter)

(8) M: 'thought it was a joke/

(9) G: huh

(10) M: 'thought it was a joke/joke/ a joke/you know /

(11) W: 'Oh it was a joke/

(12) M: 'yeah/

(13) W: 'Oh 'Oh the whole thing was a joke to you?/

(14) M: 'right/

(15) W: 'I hear you/
(16) G: 'Who'd you vote for?'
(17) W: 'I 'oh, well/ if I just had to
(18) G: 'Yeah if you just had to
(19) M: 'Next time you have to
(20) W: 'Oh falsetto
(21) G: 'Next time around you have to vote
(22) W: 'Well like ah, I ain't had to register from the git go
(23) G: 'um
(24) W: 'I ain't had to register to vote from the begin
(25) G: 'You didn't?
(26) W: 'I mean-- I mean don't don't I have that choice?
(27) G: 'That's right
(28) W: 'Well then --
(29) G: 'So you not gonna vote huh?
(30) G: 'No, for what?
(31) G: ( )
(32) W: 'For what? 'Now either one of 'em git up there you know what they gonna do
(33) B: 'right on
(34) W: 'The dogs gonna git the in you know they 'gon just
(35) W: 'put us lower in the ghetto and throw a little black man
(on)
(36) W: 'TV and make you thank (think) they doin' somethin' for you
(laughter)
(37) W: 'Now you know I'm right about it/ you know I'm right
about it

(38) M: You think Nixon is worse than Humphrey?

(39) W: ah ain't one ain't no better than the other one

(40) M: I think Nixon is worse

(41) ?: ( )

(42) W: 'one ain't man they all terrible

(43) W: Now they make it look like Wallace is a dog, and Nixon is the next dog, and Humphrey is, well

(laughter)

you know, a little bit higher than the other two dogs

(laughter) but he's still a dog.

The second episode begins with W again taking the role of "interviewer", a role made explicit by M's formulaic reply in line (3) "next question". M's use of an interviewee formula foregrounds the interview frame, and W responds by using a grammatically more formal style ("do you not" rather than "don't you") and the quotational style prosodic marker (tense voice quality, exaggerated pitch contours, and rhythmic stress placement in his next question -- that is, he acknowledges M's recognition of the "interview" frame with his use of an "other" voice -- he takes on an interviewer's voice as well as his role. For M, however, this prosodic shift is unexpected and uninterpretable, to the point that he is unable to understand the sentence at all, so that W has to translate it into colloquial speech with unmarked prosody (line 6). In lines 11-15, as in the previous episode, W plays on the ambiguity of inference -- using joking forms, making fun of M (his mock surprise in lines (11) and (13), then suddenly agreeing in line (15).

In lines (16-29), starting with G's question at (16), there is a shift as G and M are asking the questions and W is answering. The tone is now unequivocally joking, as shown by M and G giving false information [in lines (19) and (21)] without intending to be believed. The banter continues until line (30), where a sudden shift occurs. W breaks the previously established rhythmic pattern by starting in line (30) before (29) is finished; furthermore, (30) is much louder than preceding utterances, and he makes an upward pitch register shift. In line (32) W has completed the shift from conversational give-and-take to a more formal "public address" style similar to that used by black preachers and politicians. He signals his change of speech activity with a sharp upward pitch register shift (on the word "now").

That this style shift is a significant use of a black-specific discourse strategy whose meaning is lost on the whites is
clear from the different reactions to W's "sermon". B, who has not spoken previously in this episode, utters the formulaic black-channel response "right on" in line (33), exactly in keeping with Black audience call-response conventions, and his response is timed perfectly to come during W's pause. The formulaic nature of B's interjection, the appropriateness of its timing, and the fact that he chooses this point to enter the conversation all indicate that a shift has occurred to a ritualized speaking style which W and B are drawing on shared cultural knowledge to cooperatively produce.

M, not sharing their communicative conventions, does not realize that W has recontextualized his speech -- that W has indicated that his statements in (32-36) are a proclamation of his convictions and not just a position taken for the sake of argument. In line (37) W indicates that it is his last word on the subject -- yet in (38) and again in (40), M questions and then challenges W's beliefs -- because M has missed the shift of context and is still operating in a debate-like framework. W [in (39) and (42)] refuses to enter a discussion [in (42) he uses the upward pitch register shift as a prosodic marker just as in (32), perhaps as a kind of reference back to the frame established earlier], until in (43) he re-explains the content of (32-36) in less eloquent, more relaxed conversational style.

This again is a case of breakdown of negotiation of interpretive frame because of lack of shared conversational conventions. W's shift in (32) is ratified by B in (33), but M hasn't perceived the shift, and hasn't reacted one way or the other to it. When M finally speaks in (38) he and W are operating under different sets of assumptions as to what is appropriate talk. As in the previous episode, successful negotiation of a resolution finally occurs when one of the participants (in this case W) arrives at a summation that is appropriate in both frames of interpretation -- in M's interpretation as an explanation and justification of W's previous statements (appropriate in debate-like give-and-take speech activity), and in W's interpretation as simply a restatement of what he said earlier (for those who didn't understand the first time).

This brief overview of conversational conventions exemplifies the fact that mutual intelligibility is not solely contingent upon a shared language base, but we have found that shared discourse features are equally important. Discourse features rely on learned conversational conventions which draw on specific cultural knowledge.

Conversational control and cooperation, used in conversational conventions, are signalled through contextualization cues. These cues signal the preferred interpretation of a speaker's utterance through the process of conversational inference. Since the discourse structure of a conversation is being constantly negotiated by the participants through the medium of shared conversational conventions, someone not sharing the conventions
cannot participate in the negotiation and has no control over the direction the conversations takes and in fact may not be able to infer the direction the conversation has taken. The inability to determine through conversational inference whether a conversation is being presented as a serious or humourous matter is problematic. This kind of misinterpretation occurs often in interethnic communication.

The necessity of shared conversational conventions is analogous to the situation of a basketball player -- the goal is ball control and each player depends on his teammates to feed him the ball. If a player does not know the plays (cues) he cannot infer what he should do from the actions of his teammates. This lack of understanding prohibits cooperation and control, and the game grinds to a halt.

We have found a variety of prosodic cues and formulaic speech in Black rhetorical style that, when occurring together in context, convey significant conversational meaning through inference. Black conventions include much greater use of rhythmic stress placement, vowel elongation, pitch register shifts, and different voice qualities than do White conventions. Speakers unfamiliar with the Black conventions interpret them as stylistic and not significant. They are forced to rely solely on the grammatical and semantic information in the speaker's utterance for meaning, missing the wealth of information in prosodic and paralinguistic features that can function to disambiguate the speaker's intent.

Miscommunication from this type of data often leads to social inferences based on relationships about culture, language and society. We believe that this is a major factor in creating and reinforcing racial and ethnic stereotypes. Our work on interethnic communication is a contribution towards the kinds of practical application needed to provide empirical evidence of seeming differences which exist within society today.

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"Bonjour, hello?": Negotiations of Language Choice in Montreal
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Something strange is going on in Montreal. Every encounter between strangers, especially in public places but by no means exclusively, has become a political act. Buying a pair of socks has become problematic, as witnessed by the following article from The Montreal Star of January 26, 1978:

"The other day I walked into a department store and had a conversation which made me feel foolish. It was also frustrating... It's the kind of conversation I have an awful lot nowadays... The conversation always goes something like this:

I walk up to the counter, intent on buying some socks. "Bonjour," says the woman behind the counter, smiling. "Est-ce que je peux vous aider?" "Oui," I smile back. "Je voudrais acheter des bas comme ça." I point to some socks on display in the showcase. "En beige, s'il vous plaît." "Yes, of course, Madame," she responds in English. "What size?" "Er..." I pause, "nine and a half, please."

Our transaction continues smoothly and I thank her and leave the store. But inwardly, the whole time this pleasant bilingual woman is fishing my socks out of the showcase and putting them in a bag and taking the money, I am cursing. Dammit, I want to say. Dammit, lady, why do you always switch to English?... [Does my French sound so terrible that you'd rather not converse in it with me?... Do you] recognize an anglophone... and presume I'd prefer to use my own language?... Could it even be that... you're telling me... that you're a federalist?... (This happened once, in such a conversation. I stopped in a garage... and struggled to explain... that my windshield wipers were conceiled and I wanted to make them functionner. He listened in mild amusement and then said: "You don't have to speak French to me, madame. I'm not a separatist."..."

It used to be that language choice was a fairly clear-cut issue, but socio-political change over the past eighteen years or so has led to the dissolution of old norms. And as that change has not been resolved there have yet to be new ones to replace them. In the place of unconscious, or semi-conscious, use of language in everyday life there is an extreme awareness of language, and a new way of holding conversations which involves the negotiation of language choice in every interaction. That awareness of language comes from the symbolic role it has in political life, and from the social value it has acquired as an obvious characteristic of the social groups involved in shifting relationships. The negotiation is a playing out of a negotiation for position in the community at large. It is made up of implicit and explicit strategies for seeking the kind of information that seems necessary in order for the participants to be able to hold a conversation; and that information is information not only about what a person's mother tongue is, but also what his ethnicity is. The fact that conversation often halts, and that negotiations have often to be made in explicit terms, is evidence, I think, of the necessity of shared social knowledge and norms of language use in order for conversation to take place.
I would like first to take a look at the historical background of the situation, and then at some examples of interaction in public places. The data comes from interaction between clerks and patients, and between doctors and patients in the Out-Patient Department of a hospital in downtown Montreal, and from interaction between a waiter and patrons in a restaurant, also in Montreal. I will then try to interpret some of the patterns in those conversations in the light of the aforesaid background.

Originally, Québec was a French colony. The British acquired it in 1763 as a result of having won the Seven Years' War. The upper classes of New France left and went back to France, leaving behind an agricultural society made up largely of peasants, their seigneurs, and the Catholic Church. The British made little attempt to assimilate them, for reasons which I will not take up here; the result was a French rural labouring class and a British urban Protestant ruling class, engaged, respectively, in agriculture and business. The French, then, maintained their separate identity through physical isolation, the strength of the Church, and sheer numbers: they perpetrated what has come to be called "la revanche du berceau" ("the revenge of the cradle"). At the time of the Industrial Revolution the countryside could no longer support its burgeoning population, and many Canadians moved to urban areas and formed the urban proletariat, a position they have maintained to this day, although more and more they have begun to rise socially and threaten the economic hegemony of the English. This movement began around 1960.

The geographic isolation was maintained in the cities; in Montreal, for example, the east end is French, the west, English, divided down the middle by a buffer zone of immigrant areas dating from at least the turn of the century, and by the downtown financial and commercial area. The geographic isolation is reinforced by a total reduplication of cultural institutions: school commissions are divided into Catholic and Protestant, and within those there are French and English schools (although in fact, of course, the great majority of Catholics are francophone, and the great majority of Protestants are anglophone); there are French and English hospitals, French and English department stores. It was, until recently, rare, in short, for the groups to come into contact. Those who did were usually the francophones who sought work in English enterprises, and as most business was, and still to a large degree is, English-owned, most Québécois had to learn English. It should be noted as well that the position of English was strengthened by two factors: the presence of the English-speaking majority in the rest of Canada (a factor which became salient by the mid-1860s) and the U.S., and the tendency of immigrant groups to assimilate to the English population. This assimilation can be explained by the greater economic opportunities offered to immigrants in the English sector, and by the greater ease of entering the group: French social life tends to be based on the ascribed characteristics of the group members, whereas that of the English is based on achieved ones.

Since about 1960 francophones have become increasingly aware of their unenviable social position, and increasingly able to do something about it. Their strength, however, lies in their solidarity as a group, and it is this very solidarity that, ironically, is being threatened by the very same economic and demographic forces that have enabled them
standard of living, rise in level of education, the decline in influence of the Catholic Church, and the corresponding tendency to have smaller families. But rather than assimilate to the English population, they would like to replace it. But in order to do that they have to maintain their integrity as a separate group. One of the ways that they are attempting to do this is through political action, most particularly through legislation about language use. Specifically, they are trying to legislate the use of French into existence, where it did not exist before, and to assure its continued use in areas where it seems to be losing ground to English. They are also concerned with the form of the language; that is, it has to be purified from the effects of past onslaught from within, and protected from any future damage other languages may do. Much of this legislation is directed towards allophone immigrants (that is, immigrants whose mother tongue is neither French nor English), as they are in a position to control the population balance; the French are reeling from the counter-revenge: "la revanche du bateau" ("the revenge of the boat"). It is felt, at any rate, that it is morally more acceptable to make demands of people who have chosen to live in Quebec than of those who were merely born there. As the present provincial government is committed to a policy of nationalism and separatism such legislation is coming thick and fast, and a process which started slowly in the early 60s is quickening its pace to the point where things are changing daily. The population, too, is changing, as many people are leaving, and few are coming in. Moreover, as everyone's lives are directly affected, everyone has feelings about the situation, and interpersonal relations are perforce drawn into question. The overwhelming feeling is that you just can't take anything for granted anymore.

It is now time to look at a few examples of interaction to see how these events are manifested in everyday life. The hospital in which I did my fieldwork (from June to September, 1977) is an English institution but the majority of the patients in the Out-Patient Department are francophone or allophone. The majority of the doctors are anglophone, the clerks anglophone or allophone. The clerks, however, in order to be hired, must be functionally bilingual in English and French. The question then arises: What language do hospital employees use with each other and with patients? How might we interpret these choices? How do they make them, and what happens when they do? Does the choice ever appear to be problematic? The norms involving how and what to speak to patients appear to be as follows:

1) The hospital is an English one, thus the staff should expect to speak English among themselves, and with the patients.
2) Hospital staff has an obligation to give the best medical care possible, and this means facilitating communication. Politics should not be involved; communication difficulties should be resolved on a one-to-one basis.
3) The languages of work in Quebec are French and English, and all staff, especially clerical staff, should be bilingual. Doctors are usually exempt from this norm, especially if they are older. (Actually, the language of work is now French, but English still has special status.)
4) The language of the majority of the province is French, and thus all communication should be in French, unless it has been established that the interlocutors are anglophone and choose to talk in English. It is possible for one person to hold norms 1, 2, and 3 at the same time.

It is difficult to tell a priori, however, what norms one's interlocutor holds. Furthermore, it is impossible for a clerk to tell what
norms, if any, are held by any patient s/he may speak to; and if this is true, the likelihood is slim that the patients are fully aware of the norms held by the clerks. What prevents anyone, then, from just imposing one's own? At times, of course, this is all one can do, to begin with. But, as I have said, it is not unusual for one person to hold conflicting norms. As well, it is rare that in such a situation people will choose to initiate conflict. A patient who has come seeking medical care is not in a position to impose conditions on how he receives it, unless he is willing to do without. Hospital staff are not in a position to refuse their services, unless they are willing to lose their jobs. How then do they go about the business of talking?

Here is an example in which the only cues interlocutors have about each other are verbal ones: the telephone conversation. Clerks at the Appointments desk sometimes answer the phone in both French and English ("Central Appointments, Bureau de rendez-vous"), but this is felt to be somewhat abrupt and time-consuming, and is replaced by the more polite if monolingual, "Central Booking, may I help you?" Thus:

Clerk: Central Booking, may I help you?
Patient: Oui, allô?
Clerk: Bureau de rendez-vous, est-ce que je peux vous aider?[ This appears to be a calque from the English formula, as it is a word-for-word translation, and is not used in France; I am indebted to John Gumperz for pointing this out ]
Patient: [French]
Clerk: [French]
Patient: [English]
Clerk: [English]
Patient: [French]
Clerk: [French]
Patient: Êtes-vous française ou anglaise? [ARE YOU FRENCH OR ENGLISH?]
Clerk: N'importe, j'suis ni l'une, ni l'autre... [ IT DOESN'T MATTER, I'M NEITHER ONE NOR THE OTHER...]
Patient: Mais... [BUT...]
Clerk: Ça ne fait rien. [ IT DOESN'T MATTER]
Patient: [French] [ Conversation continues in French]

What we have to explain here are the code-switching and the explicit question about the clerk's ethnic identity, and they we must ask what role these play in determining what language will be used.

At all points in the conversation both participants theoretically have the option of using French or English, as they show here that they master both. In the first place, the initial turn need not determine what language will be used. In this case, the obvious conventionalization of the clerk's response may indicate nothing to the patient as to his/her linguistic preference, as the "Englishness" of the institution may determine the telephone-answering behaviour of its staff. Patients often, then, act as though they haven't really heard. By forcing a repetition they may then find out what the clerk really prefers (i.e. does s/he repeat the salutation in English or French?) By saying "Oui, allo?" the patient is doing something analogous to what she would be doing if she said "Hello?" but she is also introducing another factor into the conversational turn-taking: she is saying, "We can't have this conversation until we decide whether to speak English or French".

Alternatively, the patient may ask "Parlez-vous français?"

In this case, the clerk may switch, call a bilingual clerk (theoretical
bilingualism not being the same as functional bilingualism), or say "Oui, un peu" (YES, A LITTLE BIT), expecting, in this last case, that the patient will either switch to English or make an effort to speak simple French, slowly and clearly. This last option, however, often leads to frustration and misunderstanding when the clerk's expectations are not fulfilled. The clerk feels that she is doing her best, and they both, or maybe only the patient, may feel that her best is just not good enough. (It might be noted that some doctors feel that having to deal with such communication difficulties is 'dirty work' that is not part of the job they have taken on, although this is probably more true with allophone patients.) Clerks whose French is passable but not perfect tend to feel that speaking French is, on the one hand, part of their duty to be as helpful and as pleasant as possible, and, on the other, a favour which the patient should appreciate. They are more likely to speak French with a patient who is polite, calm, and presents no problems. If the situation is complicated, if the patient is hostile, senile, or disturbed, or merely insistent about speaking French (which is often interpreted as hostility), or if the clerk is tired and feels the net emotional losses of the interaction are bound to outweigh the net gains, she will try to get someone else to handle it. Thus one clerk once said to me: "Monica, please take [line] 1902. She's French. I understand her, but I'm just too tired." The clerk did, however, want to make it clear to me that she was competent (as she was expected to be). Admitting that you are not perfectly bilingual (for an anglophone) entails loss of face; but speaking French constitutes a favour. However, for a québécois to accept that 'favour' lets the anglophone keep his position of power in the conversation (indicative of his position of power in the community).

The fact that this conversation then continues in French may be explained if we assume that the clerk feels her French is good enough, that the patient has made an implicit request that the conversation be held in French, and the clerk feels it is incumbent upon her to comply with that request. Why, then, does the patient switch to English? Because the clerk's accent was not typically québécois (it should be noted that the speaker may be a fluent, even native speaker of French, but if his accent is not typically québécois, that will engender a switch to English as fast as, if not faster than, an English accent will), or her use of some non-québécois lexical item (such as 'rendez-vous' instead of 'appontement') led the patient to believe that the clerk may not be québécois. And her switch may mean "She speaks English really, and I want to make sure she understands me, so I'd better speak English". It may also, or alternatively mean," We can't have this conversation until I find out whether you are French or English". The clerk may then feel, "Doesn't she think my French is good enough?" If the clerk had persisted in speaking French, which also happens, the motivation would probably have been, "Nice of her to try to make easier for me, but this will be easier and clearer if we do it in French". (The clerk may feel it was genuinely nice, or she may feel it was snide). The fact that switching keeps occurring probably means that the patient is not getting the information she needs, and so finally has to ask explicitly. She still gets no direct answer. How do we interpret the fact that the conversation continues in French? If we take the question to mean "What language do you speak?" we have to explain it as an attempt to speak the language of the clerk. The hesitation afterwards would come from not wanting to have to make a decision, as would the switching, possibly
in an attempt to take back the initial French used, as having been an unconscious slip. If we take the question to mean "What ARE you?" we have to assume that language choice is directly related to ethnicity for this speaker. And we have no way of choosing between the two. The clerk, however, makes a choice as to what the language of the interaction is to be. By doing so she has done two things: 1) she has refused to identify her social group; and 2) she has taken the position of determiner of language away from the patient. The fact that she has done #1 enables her to do #2.

The patient in this last case, unconsciously or not, has identified herself first. Other patients do not. In those cases the clerk is met with silence, and is likely to begin the conversation all over again. Or, if the clerk decides that there is something in the way the patient talks that leads her to believe that he is a speaker of the other language then the tables are turned, but the problems are the same. But all missed turns or unfelicitous turns are interpreted as linguistic difficulty; the problem lies in figuring out whether or not it is politically motivated. Thus:

Clerk: Lombard, Anne-Marie? (in French)
Clerk: C'est bien ça votre nom? [THAT'S CORRECT ISN'T IT? THAT'S YOUR NAME?]
Clerk (pointing to card with name on it): Is this your name?
Patient: Yes.

The conversation continued in English. But the issue can get extremely confused, for example:

Clerk: May I help you?
Patient: Silence.
Clerk: Est-ce que je peux vous aider?
Patient: Confused look.
Clerk: Anglais ou français?
Patient: WHAT?
Clerk: MAY I HELP YOU?
Patient: Oh, yes, yes, I'm sorry, I'm just a little deaf.

Or simply, when one hasn't quite caught what the other person said. A record store employee once asked me something. I didn't hear him and said "Hmmm?" He repeated himself in French. If I were monolingual the conversation might have been rocky. As it was it was just ironic that two anglophones who might just as well have been speaking English, held an entire conversation in French. (It used to be, and still to a certain extent is, the case that bilingual francophones will speak English to each other. The fact that the opposite is occurring simultaneously is more evidence of the extreme state of change in social relations and group identification).

But to return to the explicitly phrased question: there are situations where the one who calls the language of interaction into question does not necessarily want to be the one who determines the language of interaction. For example, three people were in a downtown delicatessen late one night, speaking English among themselves. Two were fluently bilingual, only had only a working knowledge of French.

Waiter: Je reviens dans une minute. [I'LL BE BACK IN A MINUTE]
Pause. Second look.
Waiter: Anglais ou français, English or French?
2 Bilinguals: Ben, les deux...[WELL, BOTH...]
Waiter: En même temps, de la même place? [IS IT ON THE SAME BILL?]
Waiter: (sigh) Ok, ok, I'll be back in a minute. He was trying to do them a favour, and they wouldn't let him. Instead he had to make a choice, and speak French, and identify and assert himself or speak English, and risk offending his customers in case they didn't want to be identified as anglophones (which they probably didn't, or else they might have given him some kind of answer, however indirectly they may have put it.)

The importance of the negotiation is such that when subtler tactics, involving norms of conversational turn-taking, facial gestures, and code-switching, fail to elicit the required information, the question has to be made explicit. Whether it is made in English, French, or both is not necessarily relevant, except that it may be harder to find people with perfect accents in their second language than without. The question has become a conventionalized part of interaction among strangers, and often initiates the interaction. To do so it need not be phrased explicitly: "Bonjour, hello" is a good substitute, unless the other person responds with a smile, in which case, you have to ask "Anglais ou etc."

Patient: Bonjour, English or French, anglais ou français?
Clerk: Czechoslovak (or tchècoslovaque, depending on your point of view)
Patient: Bon, est-ce qu'il y a un endroit où je peux acheter un journal?
Clerk: ??
Patient: Can I buy a newspaper somewhere?
Clerk: Un journal?
Patient: Oui.
Clerk: At the tuck shop, au bout du couloir.

The point about this conversation is that the choice of language did not have to be resolved one way or the other. With experience you learn that it's very hard to tell, when someone asks you if you are English or French, whether or not you are seriously expected to answer the question one way or another. On top of which the way in which it is raised forces one to take sides, something that not everyone is willing to do. All of this only makes conversational inferences harder to make, whereas, one would assume, the explicit question is an attempt to make it easier by bringing it out into the open. Thus the fact that some people promote bilingualism and others oppose it (one PQ member of the National Assembly has said: "They could all be bilingual to-morrow, this wouldn't change the fact that they live and think in English") has led to a curious dance, in which the very same explicit question, and the very same strategies, especially code-switching, might have two or more possible interpretations. Selecting the wrong one can have disastrous effects, viz. I carried on a conversation at work over the phone with a patient in English I went to find his Emergency slip, read his name, and went back to the phone.

Me: St-Pierre, Robert? (in French)
Patient: St. Pierre. Robert. (in English, and he sounded angry)

Thus, the negotiation of language has to do with judgements of personal treatment, that is, how one expects to be treated in such a situation. But such judgements are dependent upon social knowledge, knowledge about group relations and boundaries and ways of signalling them, and knowledge about other social differences, e.g. status differences. For example, a young anglophone doctor interviewed an illiterate male French-
Canadian patient who was about 50 years old, and the patient's female companion in French, although his accent and difficulty with the language were noticeable. When the doctor asked a question that the woman felt was important she would often repeat herself in English. Her interaction with the clerks was entirely in French. There are things about situations and their relative importance that determine such language choices, but there are also things that one expects of clerks that one would never expect of doctors.

This negotiation itself serves to redefine the situations in the light of ongoing social and political change. In the absence of norms, one works at creating new ones. The conventionalization of the negotiating strategies appears to be a way of normalizing relationships, of encoding social information necessary to know how to speak to someone (and which language to speak is but one aspect of this). The negotiation is, then, beyond a negotiation of language choice, a negotiation of interpretive frames in which participants work out a frame upon which they can agree, which enables them to converse, i.e. in which their activity has meaning, is interpretable.

Macro-level events have thus had a direct effect on people's communicative strategies. But by the same token those events are affected by how people work out their relationships to each other, for on the basis of how they are treated in the community people reformulate their feelings about their role in the community, and hence the political role they choose to play. In this way we can see how it is that language can come to have social values attached to it, and equally how those social values affect language use, and hence the very system itself as its use alters through recourse to aspects of the system. The way in which English and French are spoken in Quebec, and the rate at which they change, will be directly affected by these aspects of their use.
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Levels of structure within the paragraph
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In this paper I am concerned with the internal organization of paragraphs in conversation. I first demonstrate that conversations are organized in terms of paragraphs, and then I show how paragraphs are structured internally. The data I adduce to support my claims come from Japanese audio- and video-tape spontaneous conversations and interviews, but I believe the principles operate across a wide variety of languages.

Conversations, as well as other discourse genre [see Longacre (1976) and Hinds (1976c)], are organized in terms of paragraphs, or units of speech which maintain a uniform spatial, temporal, participant, or thematic orientation [see Grimes (1976), Hays (1974), Hinds (1976a), Phillips (1975)]. Conversations progress when a given unit of uniform orientation changes to another unit of uniform orientation. Examples (1) and (2) illustrate this progression.

(1)  K-1. ... gosyuzN to hutari de hima no toki ni doNna koto suru no?
    ... What kind of things do you do with your husband when you have some free time?
  A-2. haikINgu da toka, NN, uti no syuzN ga, anoo, syasiN toru no suki da kara yoku dekakete; atasi wa naNni mo, syatta wa, usiro ni tuite ru desu kara.

Hiking and things like that, mm, my husband, well, he likes to take pictures, so we do that a lot; I don't know anything about cameras and stuff, so I just tag along.

K-3. tada, koo, mite aruku wake, sizeN o?
    So, you just sort of walk and look at nature?
  A-4. soo ne.
    Yes.
  K-5. a so-sosite, kore kara ne, issyoo hawaii ni, koo, sumu wake? sumu wake tte okasii kedo, sumitai wake?

Oh, well, from now on, is it that you will live the rest of your lives in Hawaii? "You will live" is funny, is it that you want to live in Hawaii?

(2)  Y-1. ... kaiwa tte no wa yappari nigate da naa.
    ... In the final analysis, [we're] really bad at [English] conversation.
  H-2. uN, kaiwa mo nigate da si, buNsyoo mo.
    Yeah, [we're] bad at both conversation and sentence structure.
  Y-3. buNsyoo mo. buNpoo demo kitui si, yappari, koo, gogaku wa, koo, naNte iu ka na, haruka, koo, te no todokanai tokoro ni aru tte iu.
Sentence structure too. Grammar isn't too good either. After all, languages are, what should I say, completely outside our grasp.

→ H-4. uN, dakedo, hanasi ni kiku to, hoka no miNzoku tte no wa soNna ni gogaku ni taisite, koo, kyohu-syoo mitai na no nai tte iu desyoo?
Yeah, you know, I've heard that people from other nations don't have a phobia against learning languages.

Y-5. uN, hoka no miNzoku to wa?
What do you mean, people from other nations?

H-6. tatoeba,
For example,

Y-7. zeNsekai, ippaN tte iu koto?
In the world, in general?

H-8. tatoeba, isuraeruziN toka, tyuugokuziN no kakyoo toka sa, nai zya nai? umai tte iwarete ru zya nai?
For example, Israelis, Chinese in Japan, and so on, they don't have phobias. They say they're good at languages.

In (1), the first paragraph topic is "What A and her husband do in their free time". This is a unit of thematic orientation. This topic concludes, and in (1K-5), the second unit of uniform thematic orientation is initiated: "Whether A and her husband would like to live in Hawaii for the rest of their lives". In (2), the first unit of thematic orientation is "The poor language abilities of the Japanese". This changes to the second unit of thematic orientation: "The skill with which other peoples learn languages", in (2H-4).

The reality of the boundary which separates one paragraph from another may be demonstrated by two separate types of evidence. First, following a suggestion made in Schegloff (to appear), self-repair occurs regularly in first sentences in topic-initial turns or in first sentences in topic-shift position. Examine (1K-5) again, the first sentence in topic-shift position in (1). K asks issyoo hawai ni, koo, sumu wake? 'Is it that you will, um, live in Hawaii for the rest of your life?'. She then immediately repairs this question to sumitai wake? 'Is it that you want to live ...'.

As illustrated in (2Y-5), other-repair [Schegloff et al (1977)] can also occur as a result of the first sentence in topic-shift position. In (2H-4), H had used the term hoka no miNzoku 'people from other nations', and Y questions the referent of this term.

The second type of evidence for a boundary between paragraphs is related to the way certain anaphoric phenomena operate. Within a single paragraph, ellipsis, pronominalization, and definitization occur relatively freely in Japanese [see Hinds (to appear), Hinds and Hinds (to appear), and Hinds and Shibatani (1977)]. These processes are illustrated in (3) through (5), respectively.
(3) [THEME SONG]

U-1. utsumi midori no "hutari de hanaseba".
This is Midori Utsumi bringing you "Let's talk together".

[Kagami sung by Peggy Hayama]

U-2. ohayoo gozaimasu. koNyuu no okyakusama kasyu no pegii hayama san desu.
Good morning. This week's guest is Peggy Hayama.

U-3. konoo, ohayoo gozaimasu. ohayoo gozaimasu.
So, well good morning. Good morning.

H-4. hai,
Yes,

U-5. kore moo otonappoi ii uta desu nee.
This is really a good, adult-sounding song.

→ H-6. [ ] teraoka san no uta na no yo.
[It]'s a song by Teraoka.

→ U-7. [ ] naN to iu taitoru desu ka?
What is [its] title?

(4) Y-1. sono hito wa, kekkyoku, betonamuziN datta wake na
N desu ne.
That person was, after all, Vietnamese.

Y-2. sonoo, kekkyoku, ryuugakusei de, kekkyoku, sore de,
motomo kare wa huraNsugo na wake da yo.
So, um, he was an exchange student, and after all,
his native language was French.

(5) A-1. iroiro heN na zikkeN o sita wake.
So they did a lot of strange experiments.

Y-2. ikusuperimeNto sita no?
Did you do your experiment?

A-3. soo soo soo.
Oh yes.

→ A-4. sono zikkeN ga iikageN na zikkeN de sa,
That experiment wasn't a very good experiment,
because,

In (3), the topic at the initial stage in the interview is the song sung by Peggy Hayama. The song is referred to specifically as kore 'this' in (3U-5), and then is referred to by ellipsis in both (3H-6) and (3U-7). In the conversation leading up to (4), Y and H have been talking about Y's chance encounter with a student on his campus. In (4Y-1), the student is identified as a Vietnamese student; and in (4Y-2), this student is referred to by the pronoun kare 'he'. In (5), A and Y are talking about experiments being conducted for a linguistics class they are taking together. In (5Y-2), Y asks A if she has done her own experiment [note, incidentally, that A is referred to in this sentence with ellipsis]; and in (5A-3) this experiment is definitized as sono zikkeN 'that experiment'.

All three of these processes are blocked across paragraph boundaries, although for lack of time I will only illustrate the phenomena with reference to ellipsis. In (6), the two male participants are recorded in the United States, and they have been discussing a hijacking from Japan to North Korea that they have just
read about in a weekly news magazine M has received from Japan.

(6) T-1. yoo suru ni kono haizyakku tte moN wa mokuteki nai N da.
   After all, this hijacking itself doesn't have any purpose.

M-2. un, sore de sa, sore to ne, kekkyoku, kore wa nik-ko to ne, nihon kookuu to no seihu to no ne, nanaka, tunagari tte iu no ga hizyoo ni akiraka ni sareta wake da ne.
   Right, yeah, so, this makes it perfectly clear that JAL, Japan Airlines that is, and the Japanese government have some kind of connection.

T-3. aa, maa, soo ne.
   Well, yeah, it does.

M-4. sono kekka wa ne, nani ga akiraka ni sareta tte iu to ne, nihon e no ne, hikokitiN hikookidai sugoku takai wake yo, amerika to nihon no aida ga.
   The result of that, the thing that becomes so transparent, is that the transportation fee is extremely high, between Japan and America that is.

T-5. aa, sorya takai yo.
   Yeah, that's really expensive.

M-6. sore wa ne, kekkyoku, nikkoo to seihu no musubi-tuki tte iu koto wa ne, sooo iu toko kara mo akiraka ni sarete sa, ima da ni site nedaN ga zensN zeN sagaranai wake da ne.
   The connection between JAL and the Japanese government is getting to be perfectly clear from that kind of thing, why, even now, the fare never gets any lower.

T-7. agatte N zya nai ka, ne!
   I think it's even going up!

M-8. taiheN da ne.
   It's tough.

   Yes it is.

M-10. taiheN na koto desita.
   It's really hard.

→ T-11. kaerenai yo, watasitati.
   It's impossible to return, for us that is.

As was pointed out in reference to (5) above, participants in a Japanese conversation refer to themselves with ellipsis except when a paragraph topic has changed [apparent exceptions to this claim are discussed in Hinds (to appear)]. In this section of conversation, the participants have shifted from a specific hijacking in (6T-1); to how the facts about the hijacking prove the connection between JAL and the Japanese government in (6M-2); to how this
connection is going to cause air fares to rise between Japan and the United States in (6M-4); and finally to the completely separate paragraph topic: "The fact that the participants in the conversation will not be able to afford to return to Japan" in (6T-11).

Of interest here is (6T-11). There is a process in Japanese known as postponing [see Hinds (1976b), Kuno (1973), Muraki (1974), Nishimitsu (1977)]. This process takes a constituent of the sentence and places it after the verb, violating the normal verb final nature of Japanese sentences. The reason this is done, as pointed out in Hinds (1976b:123), 'is to put into a sentence something the speaker did not originally think was necessary; it is put in either for emphasis or to avoid ambiguity'. This is the best type of evidence in natural conversation for a constraint which blocks ellipsis. That is, the speaker first tries to utter the sentence using ellipsis, realizes that he cannot, and so he then belatedly inserts the incorrectly ellipped element into the postposed position. In (6T-11), T attempts to ellpit the personal pronoun *watasitati* 'we'. After stating *kaerenai yo* 'it's impossible to return' he realizes that the paragraph topic has changed and that unless he specifies an agent overtly, M may misinterpret the agent of the verb.

I have devoted considerable space to justifying the claim that paragraph boundaries can be determined and that the paragraph is a coherent unit. The reason I have done this is to lay the background for my remarks about the internal organization of paragraphs. This paragraph internal organization involves a shift from the general paragraph topic to a more detailed subtopic. This delimitation of paragraph topics can occur an indeterminate number of times within a single paragraph, each time delimiting the current topic into successively detailed subtopics. As is the case with paragraph boundaries, subtopic boundaries are also created.

In order to discuss the concept of subtopics and their boundaries most effectively, I will first present a rudimentary system of constraints on what form delimitations can take, and then I will present evidence that these delimitations comprise structural levels within the paragraph.

Paragraph topics are delimited in terms of *perspectives* on the topic. The term perspective should be taken in a loose sense. The perspectives on a paragraph topic are those paradigmatic associations a given participant has as a result of his interaction with his present addressee(s). The two major types of perspectives reflect entities and emotions associated with the topic. In the case of entities, I make a distinction, following Grimes (1976), between animate and inanimate entities, or between participants and props. This distinction, as pointed out by Grimes (1976:43ff), is frequently blurred, but I believe it reflects a basic perceptual dichotomy. In the case of emotions, perspectives take the form of evaluations and agreements. In addition, two final types of perspectives may be mentioned: these are *instantiations* and *generalizations*; an instantiation taking the topic and giving a specific instance, and a generalization discussing the topic in broader terms.

The section of dialogue which appears in (8) is concerned with
the topic cheating on exams [kaNniNgu]. If we give some thought
to the concept of cheating on exams, I believe each of us would
come up with a listing similar to the following. This listing cor-
responds fairly closely to the perspectives from which this topic
could be discussed.

<table>
<thead>
<tr>
<th>PARTICIPANTS</th>
<th>PROPS</th>
<th>EMOTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>the cheater(s)</td>
<td>location</td>
<td>deplorable/</td>
</tr>
</tbody>
</table>
| possible collabor-
|     | (classroom)          | acceptable     |
|     | test paper           | necessary      |
| a monitor        | device for           | unnecessary    |
| innocent bystanders| cheating            |                |
|                  | motivation           |                |

(8) H-1. uN, dakara, kaNniNgu ni tuite wa ne, iroiro---
    Yeah, well, about cheating, there are lots--

H-2. ore ima made itido mo yatta koto nakatta keredomo
    ne.
    I had never cheated even once before this, but

H-3. kono mae no sikeN de ne, anoo, tonari no gotoo ni
    sa, -ko-tira tto miro tte itte yokosita N da yo.
    On the test before this, um, Goto who was next to
    me, um, he said 'Look' and he passed his test
    over to me.

H-4. ore ga kurusinnde ru no mite sa.
    He saw that I was suffering.

H-5. sore de, kono mae minakattara okorareta no.
    And, you know, on the test before I didn't look
    so he got mad at me.

H-6. de, konndo wa mita wake da.
    So this time I looked.

H-7. sositara sore de tasukatta wake da na.
    So it really helped.

H-8. naN toka, kore de,
    So, you know, this

K-9. kaketa to,
    So you answered the questions.

H-10. uN, kaketa tte iu ka.
    Yes, answered the questions.

H-11. maa, ka ni naru teido wa ne, huka ni naranai teido
    ni wa kaketa to.
    Well, I got a C rather than an F.

H-12. de, hidokatta ne, ano kaNniNgu wa, moo, hizyoo ni,
    sikeNzyoo de.
    Well, it was terrible, that cheating, really, in
    the exam room.

K-13. soo ne, kyoosi ni yoru kedo.
    Yeah, but it depends on the teacher.

K-14. koo, hitori de kite mae no hoo de pokeetto suwatte
    ru yoo da to yappari, koo, naNtonaku yaranakya.
    If he sits down in front, well, you just have to.
The topic of cheating on exams is established in (8H-1). In (8H-2), H initiates an instantiation of this topic; an anecdote about a personal experience with cheating he has had. In (8H-3) H sets this anecdote in its temporal location ['kono mae no sikeN 'the test before this']. He also introduces another participant besides himself: Goto, and a prop: Goto's test paper. In (8H-4) he gives a motivation for Goto's action and this motivation is elaborated in (8H-5) [for comments on elaborations, see Hinds (1976a)]. In (8H-6), H explains that he cheated this time and in (8H-7) he elaborates on this to say that the cheating helped him. K picks up the conversational ball in (8K-9) when H stumbles in (8H-8). In (8H-10), H echoes K's statement and in (8H-11) he elaborates this comment slightly. In (8H-12) this perspective is summed up with a comment that the cheating was awful. In (8K-13) a second perspective which concerns cheating from the perspective of one of the participants, the monitor, is introduced. (8K-14) explains why the decision to cheat or not depends on the monitor [see once again Hinds (1976a) for comments on explanations].

This section of the conversation breaks naturally into two perspectives, the first being an anecdote about H's personal experience and the second being a look at cheating from the perspective of the monitor. The diagram in (9) gives a very rough indication of the structural properties of this section of conversation.

(9)  

\[
\text{TOPIC ESTABLISHED: cheating on exams (8H-1)}
\]

\[
\text{INTRODUCTION (8H-2) MOTIVATION (8H-4) OUTCOME (8H-6) FLOUNDERING RESULT (8H-8) EVALUATION (8H-11) (8H-12)}
\]

\[
\text{PARTICIPANT: TEACHER (8K-13) (8K-14)}
\]

The first perspective actually has many of the salient characteristics of a narrative [see especially Kintsch and van Dijk (1975), Labov and Waletsky (1967), Meyer (1975), Rumelhart (1975), and Thorndyke (1977) for details]. The major deviation is the constituent termed floundering, and this of course concerns a mix-up in successful turn-taking behavior [see Duncan (1972)]. The second
perspective is concerned with what happens depending on the monitor. Both of these perspectives are concerned with the same general topic: Cheating.

Although they share this similar concern, a boundary, somewhat attenuated to be sure, has been established between these two perspectives. Reference to the subject of (8K-14) is with ellipsis. According to the principle discussed in reference to (6), the antecedent for an instance of ellipsis must be within the same paragraph. Because the antecedent of the subject in (8K-14) is unambiguously the teacher, this principle must be modified to state that the antecedent of an instance of ellipsis must be within the same perspective. Despite the fact that within the same paragraph there are three possible antecedents mentioned recently (H, Goto, and the teacher), the fact that only the teacher is a possible antecedent demonstrates the existence of a perspective boundary.

The same type of repair mechanisms that operate in first-sentence in topic initial position operates on perspective boundaries as well. In (10), the paragraph topic is Tokyo. As in (8), a set of participants, props, and emotions could be formulated to correspond to an individual’s cognitive map of the topic. The fact that both participants are from Tokyo, and are in Tokyo at the time of taping, influences the perspective from which they discuss this topic.

(10) H-1. ...tookyoo tte no wa geNzitu ni bokura no seikatu no naka desyyoo.

...Tokyo is a reality for us.

H-2. de, maa, koo, keti ga tuku wa ne.

Well, anyway, they say a lot of mean things.

H-3. anoo, tatoeba, koo, osaka no hito ga sa,

...tookyoo no udoN wa naNda, to ne, makkuRokute

kuenee zya nee ka to ka sa.

Um, for example, people from Osaka say that Tokyo noodles are awful, 'They're black and they ain't no good' and stuff like that.

Evidence from self-repair is evident in (10H-3). There are two instances of hesitation phenomena, both of which have been underlined. Quite clearly H is having the same difficulties introducing this perspective on Tokyo as he would have trying to initiate a completely new paragraph topic [cf. (1K-5) in which similar hesitation phenomena occur].

Evidence from other-repair for the existence of perspective boundaries may be found as well. In (11), there are in fact several successive delimitations of the paragraph topic: where T lives in Tokyo. The paragraph topic has already been established prior to this section of dialogue. In (11H-1) and (11T-2), the participants discuss this topic from the perspective of where T’s home is. In (11H-3) and (11T-4) they determine that T lives in an apartment. In (11H-5) through (11T-8) details about the apartment are discussed. The first perspective is the living room [(11H-5) and (11T-6)]; the second is the kitchen [(11H-7) and (11T-8)]. In (11H-9) a third perspective on the apartment, the toilet, is introduced. At this
point, the toilet is discussed from two different perspectives: whether it is a community toilet [(11H-9) through (11H-11)], and whether it is a flush toilet [(11H-12) and (11T-13)]. This section of dialogue is diagrammed in (12) to display its structure more clearly.

(11) H-1. tookyoo no doko desu ka?
Where in Tokyo?
T-2. setagaya desu.
Setagaya.
H-3. ha, soko wa do-apaato desu ka 'tomo gesyuku desu ka?
Oh, that place, wh-is it an apartment, or a room?
T-4. apaato de.
It's an apartment.
H-5. aaa, rokuzyoo hitoma toka to.
Oh, a six-mat room, huh?
T-6. rokuzyoo hitoma ne.
Yeah.
H-7. kittiN nasi de toka.
No kitchen, huh?
T-8. kittiN wa ne, kittiN to ieru hodo no moN de wa nai
N da kedo ne, suiziba to, sore kara ato koNro to
ne, tuite te.
No, the kitchen, well, it's not really what you
could call a kitchen, but there's a place to
cook, and there's a hot plate.
H-9. otearaai soto?
The toilet's outside?
T-10. aa, soo, kyooodoo ne.
Yeah, it's a community toilet.
H-11. kyooodoo de.
Oh, a community toilet.
H-12. suiseN no yatu?
Is it a flush toilet?
No, it's like, you know, one where it goes plop.
→ H-14. de, ima wa?
And now?
T-15. ima wa ne, anoo ...
Now, well, ...
H-16. suNde ru tokoro doko?
Where are you living?

The expression in (11H-14) is commonly used to change either paragraphs or perspectives, and so is ambiguous in this case. T realizes this but is unable to comprehend what H wishes to change to. (11T-15) reflects this confusion. In actual fact, as shown by (11H-16), H is asking T where he is living now, an entirely different paragraph topic. Of significance here is the fact that H could have been changing perspectives in two, and only two, other ways and still maintain anything like a normal conversation. These two other ways would take the forms presented in (13).
These questions correspond to each of the levels of structure between the paragraph topic and the sentence. Thus, with this example we see fairly straightforward evidence, not only for a perspective boundary from other-repairs, but also for the existence of levels of structure within the paragraph: levels I term segments, details, and subdetails.

As a final statement I would like to point out that the existence of these levels of structure and the potential ambiguities created at boundaries may be exploited for various reasons. In (14) H has been interviewing W. They are currently discussing W's taste in music. All of H's questions are written on a piece of paper which she keeps in front of her. When she initiates a new topic, she looks at the piece of paper, uses a hesitation expression, and then asks her question. This is the pattern which has developed in the preceding section of interview.

(14) H-1. ...yappari piano ga itiban suki? sore tomo, ookesutora toka?
   ...Um, do you like the piano best? Or an orchestra?
W-2. baloriN demo naNdemo ii. ookesutora demo.
The violin is OK, anything is OK. Even orchestra.
→ H-3. a, dare ga suki? [AFTER LOOKING AT PAPER]
   Um, who do you like?
W-4. dare ga suki?
   Who do I like?
H-5. anoo, ongakka N naka de.
   I mean, among musicians.
In (14H-1) and (14W-2), they are discussing the type of music W likes. In (14H-3), H consciously looks down at the piece of paper, then leans forward conspiratorily and asks her question. Following the previous pattern of this interview of jumping from topic to topic, W believes that the topic is changing from her taste in music to her love life. She reflects this surprise in (14W-4). H, in all innocence, repairs her question to indicate that she did not intend to change the paragraph topic, despite all of her outward manifestations of that, but that she meant merely to change the paragraph perspective from what kind of music W likes to what musicians W likes.

Footnotes

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1 Preliminary work of my own on English and Korean suggests that the principles apply. Work by Susan Phillips on the Warm Springs Reservation may force a modification of these principles.

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MULTILINGUALISM IN ITS SOCIAL CONTEXT
IN ABORIGINAL NORTH AMERICA

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Multilingualism is still an understudied phenomenon, particularly so for less complex societies, such as those found aboriginally in North America. It is a phenomenon worth studying in its own right, as a sociological phenomenon; and also worth studying as a linguistic phenomenon, since it can shed light on certain aspects of language change, and since it can probably be seen as the mechanism most important for the spread of linguistic areal features.

Two aspects of the problem, which I will label the psycholinguistic and sociolinguistic, are not neatly divided from each other, but are rather polar end points of a continuum. The psycholinguistic study of multilingualism is concerned with such things as how the linguistic rules of two or more languages are learned and stored in the head of one person, and how the rules are sometimes merged or collapsed, leading to linguistic interference. I'll not consider this topic, as I see no reason to believe that people of different cultures and societies have their heads put together differently; that is, the psychological mechanisms involved should be the same among people of different societies.

The study of multilingualism in its social context is concerned with how the society promotes, retards, or otherwise influences multilingualism. In this case, there is every reason to believe that the nature of the society is important.

North America contained a rich variety of speech community types at the pre-state level of social organization. Unfortunately, their study must be limited to the interpretation of imperfect data collected at earlier times by untrained observers, and to extrapolations from the present-day situations. But this imperfect approach is worthwhile, since simpler societies are, all over the world, either disappearing or being transformed. Four areas are considered here, ranging from band societies in the Great Basin, tribal societies in California and the Pueblo Southwest, to weakly stratified societies in the Southeast.

Since productivity in the Great Basin is very low, population density was also very low. It was populated by nomadic hunting and gathering peoples. The largest permanent political unit was the family, with larger units being temporary and variable (Steward 1938). Most of the inhabitants spoke one or another closely related Numic language; the single exception, the Washo, centered around Lake Tahoe and present-day Reno, belongs to the Hokan family.

The Basin was not an area of high bilingualism, principally because there was not a great deal of language diversity. In the
heart of the Shoshoni speaking territory, for example, it was possible to go over 100 miles in any direction without leaving the Shoshoni speaking area, though the dialect would be different. But along the border areas, intermarriage led to whole populations being bilingual. For example, there was a strip up to 100 miles wide between the Shoshoni and Northern Paiute speaking populations that was bilingual. The bilingualism in this case was facilitated by the close linguistic relation between these two Numic languages, a fact recognized by the Numic speakers themselves. There is today, and probably was also in aboriginal times, a good deal of passive bilingualism between the closely related Numic languages (Miller, ms. [b]). But we also find that there was considerable bilingualism along the border of the unrelated Northern Paiute and Washo languages; there were groups that Downs (1965:5) labeled "half Paiute". In these transitional border cases, language did not signal cultural differences, and thus was not available as a symbol for cultural identity.

In addition to bilingualism, there was and still is a certain amount of bidialectalism. Travel and intermarriage often led to bidialectalism, but it did not guarantee it (Miller 1970).

The prevailing attitude toward language is casual. The ability to speak more than one language is admired, but not highly valued. Learning another language takes place if you are exposed to it, and this fact is not considered particularly eventful. No one language or dialect is considered more prestigious. Nor is the other fellow's language depreciated; it is considered different, nothing more and nothing less.

California contrasted with the Basin in a number of regards. First it was an area of considerable linguistic diversity, perhaps with the greatest linguistic diversity in the world ( Sapir and Swadesh 1946). Second, it had a very high population density for hunting and gathering groups. Third, the rich and varied resources of California made it possible for a group to exploit a relatively small area, without the need for a wide ranging nomadic circuit. And fourth, this led to fairly stable villages often with well marked societal boundaries between them (Kroeber 1953 [1925]).

With this situation, it is not surprising to find that the area of greatest degree of multilingualism was California. Some of our best information on the aboriginal situation is provided by Powers (1877), a newspaper man during the last century. We find that the Karok and Yurok "usually learn each others language, and two of them will sit and patter gossip for hours, each speaking in his own tongue" (1877:44); "among the tribes surrounding the Hupa I found many Indians speaking three, four, five, or more languages, always including Hupa, and generally English" (1877:73); Powers further reports that most of the Pomo knew more than one Pomo language, and that boys were often sent to neighboring villages "to acquire the dialects there in vogue" (1877:150); and he also
tells of a Wappo that was said to have known 14 Indian languages and dialects (1877:198). Waterman says of the Yurok that "Inter-marriage between tribes especially near the tribal frontier, was so common that the Yurok, I presume like the Hupa and other tribes, are often bilingual. Marrying close at home, on the other hand, was looked upon as evidence of sloth and lack of spirit" (1920:224).

Not only was multilingualism common, but further it appears that it was valued. Apparently individuals sometimes went to some trouble to learn other languages. There is a hint that in some areas a particular language sometimes held a favored position; notice the comment above about Hupa. Further, with better defined societal boundaries, language could, and did, serve as a symbol for cultural identity.

The Pueblo region of northern New Mexico and Arizona displays linguistic diversity, but it cannot match California. There are today about 20 villages, speaking six languages: Hopi, Zuni, Keres, and three Tanoan languages, Tiwa, Tewa, and Towa. The Pueblo Indians live in settled farming villages, and have led a similar existence for well over a thousand years. Each pueblo consists of a single village, or a central village with satellite villages; each pueblo is a socially, politically, and ceremonially autonomous unit. Populations range from a few hundred to three or four thousand; earlier, the upper limit was probably much lower. In spite of almost 400 years of European contact, the Pueblos have been able to maintain their social and cultural identity, though there have been changes and influences from European societies.

Today most Pueblo dwellers are bilingual in their native language and English, and a considerable though increasingly smaller number also know Spanish. The most notable example of bilingualism between two Indian languages involves the few hundred Hano, who dwell among their numerically larger neighbors, the Hopi. The Hano are Tewa speakers who fled the Rio Grande region during the Spanish occupation. According to legend, the Hano were given the right to learn Hopi, while the Hopi were denied the right to learn Hano. And in fact, most Hano do know Hopi, and very few Hopi know Hano (Dozier 1954:292). Also, Navajo is known by a few people at Hopi and Zuni (Dozier 1954:297, 300; Stephen 1936:xxxvii).

It is, after almost four centuries of European contact, difficult to assess the degree of aboriginal bilingualism. The two examples cited above represent post contact phenomena, since the Hano are recent migrants to Hopi territory, and until this century the Navajo were an insignificant group in the Southwest. One example of a Tewa woman who learned the language of her Santo Domingo husband is mentioned by White (1935:80), and it is striking that the Santo Domingos found this case notable. Since neither Spanish nor English was available in Pre-Columbian times to mediate inter-pueblo contact, it is likely that bilingualism
was somewhat greater than today. But it is unlikely that it was ever a common phenomenon, because of the lack of extensive inter-marriage, and because of the high level of ethnocentrism. If a neighboring pueblo has similar customs, or speaks a different dialect, or different but related language, it is assumed that the neighbor borrowed them, corrupting them in the process (White 1935:28-29). Such attitudes do not enhance the learning of the other fellow's language, but they do enhance the use of language as a symbol for self-identity.

The Creek Confederacy was located in the southeast, originally in and near Georgia, but they moved to Alabama soon after European contact, and remained there until their removal to the Indian Territory in Oklahoma in 1832. Creek was the dominant language, but other languages were represented: Alabama, Koasati, Hitchiti, Mikasuki, and Apalachee which are, like Creek, Muskogean languages; and there were also non-Muskogean languages: Natchez, Yuchi, and Shawnee. The towns were organized into a loose confederacy, with the Creek, along with their language, being the dominant group. Multilingualism was particularly high among the politically active men, with Creek being the most common second language (Haas 1945). While bilingualism was more common with men than with women, it was certainly not restricted to men (Swanton 1922:314).

The high level of bilingualism sometimes led to a town replacing their language with a foreign one. While most cases of language shift was to Creek, there were cases of replacement by other languages (Swanton 1922:12-31, 215). The shifting was probably an ongoing process, at various stages of development in various towns in the Confederacy. Thus the Yuchi, who seem to have been recent additions, reflected a more foreign culture, and a lower level of bilingualism with Creek (Speck 1909; Foreman 1930:120-121).

We have no information on the social context in which second language learning took place. Intermarriage may have been important, but clearly other factors must have been at work to account for the greater degree of multilingualism among men than women. Nor is there information about the attitude toward multilingualism, but the high level of multilingualism suggests that it was highly regarded.

The factors that influence the degree of multilingualism include (1) degree of linguistic diversity, (2) beliefs about learning a second language, whether it is considered hard or easy, and whether it is valued or not, and (3) the usefulness of learning a particular second language. Obviously, diversity is necessary for multilingualism, as is illustrated in the Basin by the relative lack of diversity and of multilingualism. But diversity is not enough, as the contrast between the Pueblo area and Creek Confederacy illustrates. One might expect that beliefs
about ease of learning, and the valuing of multilingualism, would go hand in hand, and probably they often do, but the Basin illustrates that it is possible to believe that it is easy to learn a second language, and still not value it highly. I suspect that usefulness is the least important factor, and is probably only a factor in stratified societies, as discussed below.

Societal level also plays a part, not so much in the degree of multilingualism, but rather in its expression. In our sample, it is only in the Creek Confederacy that we have what Gumperz (1962:34) has called societal bilingualism. In this case, all members or a segment of them speak a particular second language, to serve a particular purpose. In this case, most of the men found it useful to learn Creek, so that they could take part in the political life of the Confederacy. Contrasted with societal bilingualism is individual bilingualism, in which certain individuals learn certain second languages because of quirks in their personal history. This type of bilingualism is represented in all four of our sample cases, but reached a very high level in California. It appears to be the case that individual bilingualism is more common in unstratified and weakly stratified societies, namely the sort found in aboriginal North America, with a tendency toward decreasing frequency in more highly stratified societies. And societal bilingualism seems to be limited to stratified societies, such as those in the Creek Confederacy, and probably is still of greater frequency in more highly stratified societies.

Both types of bilingualism, individual and societal, can remain stable over long periods of time. In other cases, it is the first step toward language replacement. Individual bilingualism normally does not lead to replacement, but if levels are high, it is possible, as a number of cases in California and the Northwest Coast show (Boas 1891:584; Boas and Goddard 1924:40; Gayton 1948:56; McClellan 1955:58; Powers 1877:87; Rigsby 1969:73-75). Language shifts in these cases are never on a large scale, and are normally limited to a single village, but the effects over a long period of time can be cumulative, as Jacobs (1937) has shown. Language replacement is more common with societal bilingualism, and the Creek case cited above is an example. But the more striking cases, such as the widespread expansion of Latin, Arabic, and Aztec, are probably limited to societies more complex and more highly stratified than those typical of the Creek Confederacy.

Taking a look at the other end of the continuum, we find that in band societies, as represented by the Basin, sharp boundaries are typically lacking, since there is no political unit larger than the family. In place of larger units, there is a network of relationships over a wide area. Sometimes, when two very different cultural types of band societies adjoin, there is a sharp boundary (Northern Athabascan and Eskimo seem to be an example), but extended contact can blur such boundaries, as the Washo and
Northern Paiute demonstrate. In tribal societies, such as found in California and the Pueblo area, and in weakly stratified societies, such as in the Southeast, the boundaries of the speech communities are usually more sharply defined, and this in turn leads to the possibility (but not necessity) of greater linguistic diversity. And with greater diversity comes the possibility (but, again, not the necessity) of greater multilingualism.

A final note, concerning areal features. It is no accident that California, an area of considerable diversity and multilingualism, is also an area in which areal features are easily identified (Jacobs 1954; Bauman and Silver ms.; Langdon and Silver ms.). Contrast this with the Pueblos. Though the diversity is not as great as in California, nevertheless it is considerable. But the multilingualism appeared to be low, and here areal features are difficult to identify.

Notes

1 Much of the material in this paper is drawn from my "Ethnography of Speaking" (Miller ms. [a]) paper which, God Willing, will appear shortly.

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Language and Speakers in the Courtroom

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I. Introduction
Speakers approach any speech situation with some body of relevant knowledge, or set of expectations, about the participant roles, purpose and topic involved. Since this knowledge is often incomplete, speakers must frequently evolve definitions of these situational variables across time, based on the ongoing interaction. In other words, the expectations speakers bring to a particular situation serve as the starting point of a dynamic process in which these expectations are evaluated and modified.

One important characteristic of discourse which emerges as a function of roles, purpose and topic is that of language style or register (Anderson 1977). As speakers define and modify their expectations about the courtroom situation, the degree to which they utilize the (in this case, lexical and syntactic) features or courtroom register or legalese will vary. The aim of the present study is to show some of the ways in which uncertain expectations about the immediate situation and reactions to the topic of discussion interact to produce this variation.

II. Background
A useful and appropriate way of analyzing the data at hand is that termed by Hymes (1962) as "The Ethnography of Speaking". This approach is concerned primarily "with patterns and functions of speaking, patterns and functions that organize the use of language in the conduct of social life" (Bauman and Sherzer 1975). Particularly important here is the notion of the speech event. This is defined by Bauman and Sherzer as "the point at which speakers and means come together in use". The speech event to be discussed here is "the interview", specifically, an interrogation of prospective jurors by the judge who will be presiding at the trial.

A speech event may be viewed in terms of four "semantic features" (Bauman and Sherzer 1975). These are: topic, purpose, role structure and integrity. With respect to the juror interview, these may be defined as: topic: events leading up to, including and following the participation of Patricia Hearst in the robbery of the San Francisco Hibernia Bank, purpose: to determine whether the juror being interviewed is biased with respect to the guilt or innocence of the defendant, role structure: the judge poses questions concerning the events of the case and the prospective juror answers them. This relationship is never reversed unless the juror requests clarification of a previous question, integrity: the interview takes place in the courtroom, begins with the judge's statement of topics to be covered during the interview and ends with a decision on the part of the
attorneys to approve or deny placement of the interviewee on the jury panel.

An additional concern in the ethnography of speaking is with "the general patterns of expectation and activity" as influential factors in a speech event. This notion of "patterns of expectation" has received a great deal of attention recently by researchers in linguistics, psychology and artificial intelligence, who have coined such terms as "schema", "frame" and "script" in their attempts to make sense of this phenomenon (for a summary of this research, see Tannen 1977b). What is important here is that human activity in general and linguistic activity in particular, be it production or comprehension, influence, and are influenced by, structures of expectation.

Studies in this area have focused on expectations as they operate in the comprehension of texts (e.g. Shanck and Abelson 1975, Bransford et al 1972, Fillmore 1975) and in the production of narratives (e.g. Labov 1972, Bowditch 1976, Tannen 1977a). However, little linguistic analysis has been done with respect to discourse which occurs in situations where there is uncertainty of expectations. The courtroom situation is one with which most adult speakers have had little or no direct experience. Hence, they are often less competent communicators than they would be in speech situations with which they are more familiar. This paper deals with some of the ways speakers communicate this uncertainty about the rules governing language use in the courtroom.

III. Data Base

The corpus of data from which this evidence is taken consists of the published transcripts of the interviews of prospective jurors for the bank robbery trial of Patricia Hearst. Fifty-six people were interviewed for the twelve positions on the jury panel and the four alternate positions. Only the transcripts for those people who were selected for these sixteen positions are used in the present study because they form a relatively homogeneous sample (for more detailed biographical information, see appendix).

IV. Lexical and Syntactic Features of Courtroom Register

The variation in register alluded to in section I has certain lexical and syntactic realizations which are particularly clear-cut in the courtroom situation examined in the present study. The occurrence of these forms stems primarily from the fact that prospective jurors regard the interview situation as an unfamiliar and formal context and thus attempt to maintain distance from both the hearer (the judge) and the topic of discussion. They are concerned principally with 1) appearing knowledgeable about the immediate situation, 2) appearing knowledgeable about the case, and 3) not appearing to misrepresent the facts. These concerns are manifested, respectively, in the jurors' use of a) legal terminology (i.e. explicitly legal jargon and elaborate forms of common expressions), b) apologies (i.e. explanations and justifications), and c) hedges. A
fourth feature to be examined is the use of proper names in referring to the defendant. These forms reflect variations in speakers' use of courtroom register as well as their reactions to the actual events which they are being asked about.

IV.1 Legal Terminology

It is clear from the present data that many speakers have definite ideas about what language style should be used during the interview. The most pervasive evidence of speakers' efforts to appear knowledgeable about the immediate situation, and the judicial system in general, is the use of legal jargon. However, there are also less lexically specific ways in which speakers express these assumptions. For example, they often make a point of articulating their awareness of their responsibilities as prospective jurors. In examples (1) and (2), speakers make explicit their compliance with the judge's order not to engage in any discussions about the case:

(1) J8 Now, over the weekend we were involved in a cocktail party situation where they would have loved to have talked about it, but I had to shut it off.
(2) J12 But I mean, nothing that would be out of line or out of order, even with my wife.

Other speakers are concerned with conveying their confidence in the judicial process:

(3) J15 I have teenaged children and it's important, I think, that they see that justice is done.
(4) J12 My honest answer on that is that I thought for this country, and it behooves me to uphold its laws, and I think everybody is entitled to a fair trial.

Returning now to examples of the more overt use of legal terminology, we find that many speakers make use of the explicitly legal term "allegedly".

(5) J7 I remember somebody-- there was another one of those reports where they allegedly saw her in a van...
(6) J12 I guess the next was-- as far as Miss Hearst, the news media and-- I remember, recall-- was the alleged incident down in Southern California...
(7) J14 ...Steven Weed being involved or allegedly beat up...

In addition to this overt legal jargon is the use of the more formal or elaborate counterpart of a common expression.

(8) J5 ...One was where she was involved in it, of course, and that there was a gentleman, a black-- I know that a black gentleman, they said, was behind her.
(9) J13 Well, only that she was abducted in Berkeley from the apartment of her boyfriend.
(10) J14 Basically, it consisted of her abduction from her Berkeley residence.

In example (8), the speaker refers to one of the members of the SLA as a "gentleman", a rather inappropriate description, given the circumstances. However, this speaker uses the word gentleman instead of man or person in another context as well, since she refers (somewhat more appropriately) to "this gentleman who was the coordinator of the (food) program". Examples (9) and (10) illustrate the frequently occurring substitution of abduction and residence for kidnapping and apartment, as well as the more formal possessed-of-possessor construction.

In several cases, speakers gave alternative descriptions of the same referent or event in responding to the question.

(11) J5 That she was taken to the San Mateo County prison or jail, and that is it.
(12) J3 I have heard her name and I know that she was up for a weapons charge, concealing or holding weapons...
(13) J16 ...Then, a short time later, there was the incident where the house where the SLA were, in fact, residing or living...
(see also example 45)

In each of these cases, it is the more formal term which is given first. This specification of alternatives is one way in which speakers' uncertainty is manifested. In each case, the speaker appears to be unable to decide (or has changed his mind about) which language style is most appropriate.

This uncertainty is further revealed in the cases below where there is a switch from a "legal" style to a more colloquial style of speech. Examples (14) and (15) illustrate a switch from an impersonal construction to one which makes explicit reference to the speaker, and vice versa.

(14) J7 She's supposed to have had-- looked like a machine gun to me.
(15) J3 Not really, because I don't follow it that closely and I don't have, all the facts aren't in.

Example (16) illustrates a switch from a passive to an active construction. This provides an interesting syntactic parallel to examples (11)-(13), in that it also involves the expression of alternative descriptions of an event in which the more formal alternative (in this case, the passive) is encoded first.

(16) J12 ...that resulted in the death of the people in the house where they were and the burning of that house, theoretically or allegedly by tear gas, the tear gas started the fires, I understand, and the house burned.
In example (17), the speaker switches from the active to the passive, although in this case, the event referred to is not the same.

(17) J3 She saw her family and had some other visitors, and she was reported to have lost weight and was maybe sick.

The examples presented in this section illustrate clearly the varying degrees to which speakers make use of courtroom register, as it is manifested in legal terminology. Further, these examples demonstrate how uncertain expectations lead speakers to try out various modes of expression in an attempt to define the situational variables more clearly. Many other instances of the use of legal terminology as it has been discussed here can be seen in the examples which follow.

IV.2 Apologies

Another salient aspect of the data is the frequent occurrence of apologies and explanations concerning the amount of information which the speaker is able to provide. Because the case received such extensive media coverage, speakers often become embarrassed or defensive when they are unable to answer a question, or they make a point of explaining why they cannot provide certain information.

(18) J8 ...I don't remember if it's a picture of her actually in the bank or just a picture of her standing against the wall with a firearm. I'm sorry.
(19) J6 Oh, her boyfriend was with her. I'm sorry.
(20) J12 Q. Was anyone hurt, do you know?
I don't. I hate to be so ignorant, I'm up in that laboratory alone.
(21) J10 I remember hearing about it, but it really does not stick because, well, it had just gone on so long.
(22) J3 I think that maybe the Harrises and Patricia Hearst were supposed to have lived there, but that would be all I remember. You know, I didn't read that much. I didn't read that much.
(23) J9 Well, first of all, I don't remember a lot about it because my son was in the hospital at that time having his appendix out. So I was occupied with that, mostly...

What is ironic about this point of view on the part of the jurors is that the judge and attorneys are primarily concerned with whether or not the interviewees are biased with respect to the guilt or innocence of the defendant. From their point of view, the less a person knows about the case, the better. One of the prospective jurors points this out as well:

(24) J8 I was going to kind of look this up and refresh my memory, but I thought maybe the less I read, the better off I would be.
The occurrence of apologies such as these is motivated by a set of expectations which conflicts with those which underlie the use of legal jargon. That is, the use of legal jargon is a means of distancing oneself from the topic, whereas apologizing or explaining, particularly when it entails a recounting of events in the life of the speaker as in examples (20), (22) and (23), serves to draw the speaker closer to both the hearer and the topic.

IV.3 Hedges

While on the one hand, jurors are aware that they are being questioned solely to determine whether they have a "fixed opinion" concerning the guilt of the defendant, they are also concerned with the accuracy of their statements. It seems that the imperative to "tell the truth, the whole truth and nothing but the truth" causes jurors to shy away from making unqualified claims about what happened. In the examples below, the speakers explicitly signal their desire to avoid appearing to intentionally misrepresent the facts. In examples (25) and (26), the speaker refers directly to his perception and memory of the events (remember, understand, recall) implying that they are possibly unreliable sources of information. In (26) he also supports his claim with reference to the news reports.

(25) J12 As far as I can remember, her boyfriend, as I understand it, as I recall, her boyfriend was with her.
(26) J12 Well, she was taken out of there bodily and, as I understand it, as the news reports came over, she was taken against her will, allegedly against her will, when she was taken out of there.

Examples (27) and (28) illustrate one speaker's way of avoiding exaggeration or misrepresentation of facts.

(27) J4 ...And there was a lot of, I guess there was, supposedly, some shooting.
(28) J4 I think that I remember that, supposedly, he said he had talked to her, but I don't really know.

In (27) the speaker begins by asserting that there was "a lot of" shooting. He then decides to play it safe, first by reference to his own memory of the event (I guess), then by more general or impersonal reference to the remembrance of the event (supposedly), and finally by actually substituting one lexical item for another (some). Very much the same progression occurs in example (28), except that the final disclaimer is more overt (but I don't really know).

Other speakers hedged their assertions by means of the phrase I think/believe:

(29) J16 I believe he was hit on the head, if I recall correctly, and he made his exit of the building over some fence, or something
like that.
(30) J15 They were-- I think they were arrested.
(31) J15 I don't remember anything else except that I think I 
read a list of things that they had found in the apartment.

Example (32) is particularly interesting in that it 
illustrates very clearly the speaker's decision-making process 
concerning how strongly to state her assertion. In the end, 
she decides to avoid any claim to knowledge of the event in 
question.

(32) J3 I don't know if her boyfriend was there or not. I don't 
know. Maybe he was. He was beaten up. Well, I don't remember.

One interesting contrast to this effort to avoid strong 
statements, is one speaker's description of the "shoot-out" in 
Los Angeles between SLA members and the police:

(33) J3 There were a lot of people murdered, and I think, I don't 
know if Cinque was murdered in that or not.

Although the judge views this use of murdered as a "general, 
descriptive term" and the prosecuting attorney characterizes it 
as "probably an unintentional choice of words", one nonetheless 
wonders what assumptions triggered its use.

IV.4 Proper Names Used to Refer to the Defendant

The three features discussed above-- legal terminology, 
apologies and hedges-- arise from the jurors' expectations about 
the immediate situation, that is, the interview. This section 
concerns ways in which speakers' reactions to the topic of 
discussion, i.e. the events of the case, are reflected in the 
discourse. Proper names are one interesting way of examining 
this, since they co-occur with some of the lexical and syntactic 
features discussed earlier.

Before pursuing this topic further, I would like to present 
some examples which convey the sense of involvement many speakers 
appear to have concerning the events in question, because it is 
this feeling of concern for, or reaction to, various events or 
participants which conflicts with the assumption discussed in 
the beginning of section IV that one must maintain distance from 
both the hearer and the topic of discussion in this situation. 
Examples (34)-(37) provide a sampling of the kinds of responses 
which speakers apparently felt it necessary to articulate 
concerning particular events or participants.

(34) J4 I mean, it affected me in the fact that I had gone to 
the University of California...
(35) J6 And I was hoping Patty wouldn't be there because if they 
could have the parents come, they would feel, you know...
(36) J16 For insight to me, I recall this, that the people had 
been living there without any regard to sanitation, because of
the litter.
(37) J9 Mostly that it was just a tragedy, so many people inside that were killed. And my own thoughts, whether Miss Hearst was in there or not.

Another measure of speakers' "emotional distance" from the topic is the use of the demonstratives this and that. As R. Lakoff (1974) points out, their use often signals some type of emotional response to the topic. In (38)-(40), the demonstratives this/these function in this way.

(38) J8 ...And then, that she was like pleading with her parents to go along with these people.
(39) J2 It was some time before they discovered these people.
(40) J4 And I had a little, let's say, from the shoot-out, I had a reaction, but it had nothing to do with Patricia Hearst. It was really more or less with this group of people.

In (41) and (42), the demonstrative that is used to distance the speaker from what he is talking about as a means of conveying a negative view of the individuals and events.

(41) J5 No. After that I kind of just didn't bother to watch the news. Everything was about that, the Harrises and the SLA and all that.
(42) J3 Q. Does the name Field Marshall Cinque--
    Oh, yes.
    Q. Cinque?
    Oh, yeah, that.

Returning now to the use of proper names, the following examples illustrate three of the most clear-cut cases.

(43) J1 ...And I watched the news, you know, really a lot, you know, that day and, in fact, I left the radio on by my bed that whole night just, you know, for fear Patty was in there and they would find her body in the fire.
(44) J6 The SLA group. And we didn't hear from Patty for two or three days, I guess.
(45) J16 I believe I originally heard a, it was either a radio communique or on television, that Patricia Campbell Hearst had been abducted or kidnapped from her place of residence in Berkeley, where she was residing with, I believe his name is Steven Weed...

Looking at the syntactic and semantic environments in which these various forms occur, we find that the name Patty occurs in contexts characterized by the frequent use of hedges (you know, really, just) and also by reference to the speaker's emotional state or personal involvement (for fear, by my bed, we didn't hear from Patty). The reference to "Patricia Campbell Hearst", on the
other hand, occurs in a context in which there are no hedges or references to emotional states. Instead, this context is characterized primarily by the use of legal terminology (abducted or kidnapped, place of residence, residing).

The use of proper names varies not only across speakers but within one speaker's narrative as well. For example, juror #16 later recounts the following, in which reference to "Patty Hearst" and "Patty" occur in discourse contexts very similar to those in (43) and (44).

(46) J16 ...and at this time Patty Hearst, herself, speaking in a much firmer non-drugged type of dialogue, which I recall, but I must note, too, that this dialogue, at the time it didn't seem to my mind, didn't seem anything at all like the dialogue I originally heard from Patty.

Examples (34)-(46) are suggestive of the kinds of things jurors chose to comment on, indicating much more than a disinterested spectator's recall of the events. The fact that speakers choose at various times to encode information which deviates in style and/or content from courtroom register indicates that speakers are evaluating and redefining their expectations as the interaction progresses.

V. Conclusion

I have tried to show in these pages that the expectations with which speakers operate in a given situation should not be viewed as a static set, but rather as a starting point for an ongoing process of definition, evaluation and modification of these expectations. In the situation examined here, the form and function of language is clearly affected by uncertain expectations.

In addition to this goal, an analysis of this type is a step toward the development of a typology of discourse situations based on such factors as role structure, purpose and content (Bauman and Sherzer 1975). This typology complements Keenan's (1977) discourse planning typology in that the latter focuses on the internal factors (i.e. forethought and organization) which influence the encoding of propositions, while the former focuses on the external situational factors which affect language use.

The methodological importance of the present study rests in the nature of the corpus of data used. Transcripts of trial proceedings of various kinds (e.g. criminal proceedings, jury selection, small claims) are a rich and illuminating source of data. Much information can be gleaned from transcripts concerning events which are perhaps less spectacular than those in the present study, but which are certainly equally interesting from a linguistic point of view.
APPENDIX

J1: Marilyn Wentz, 36, Hayward, dental assistant
J2: William Wright, 55, Mill Valley, retired army colonel
J3: Linda Magnani, 24, San Francisco, receptionist
J4: Phillip Crabbe, 35, Oakland, mail carrier
J5: Marion Abe, 30, Burlingame, airline stewardess
J6: Helen Westin, 54, Mill Valley, housewife
J7: Oscar McGregor, 38, Rohnert Park, civilian deckhand for U.S. Army
J8: Charlotte Gonway, early 40's, property owner
J9: Cloveta Royall, 32, Novato, dry cleaning store employee
J10: Beatrice Bowman, 48, San Francisco, housewife
J11: Bruce Braunstein, 32, Napa, potter
J12: Richard Ellis, 54, Hayward, photo technician
J13: Norman Grimm, 44, San Mateo, aircraft technician
J14: Steven Riffel, 23, Hayward, clothing store employee
J15: Mary Neiman, 42, Pleasant Hill, nurse
J16: Robert Anderson, 44, Newark, housing representative for Oakland

These people were characterized as "white" and "middle-class" by the Los Angeles Times, February 5, 1976.
Notes

1. By "courtroom register", I am referring only to the spoken language used by lay people in this situation. Legalese as it is spoken and written by judges and attorneys is comprised of a much different set of linguistic and non-linguistic phenomena.

Bibliography

False Starts Can be True  
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In this paper, I deal with a phenomenon in storytelling in everyday conversation which I call the "true start." Unlike others who have looked at so-called "repairs" in discourse, (Jefferson, in press; Linde, 1975; Shimanoff and Brunak, 1977)\(^1\) I will argue that "true starts" exist and are an unconscious narrative strategy which allows speakers to produce full, "textured" versions of story materials in a social and rhetorical tradition which prefers straightforward, "the facts nothing but the facts" exposition.

These starts which look a great deal like what are normally called "false starts," are not errors in an ordinary sense but serve a strategic function in the conversational and interactional context in which the story is being told.

In storytelling, it often happens that a speaker begins his story, interrupts himself in mid-sentence, introduces background material, often of a descriptive, historical or judgmental sort and then resumes the main storyline by repeating the interrupted sentence and completing it. This is a classical true start situation.

(1) E I mean ... I mean ... did I ever tell you this story about the water? ... I mean the coke? I went i ... I always drink coke, right? [yeah] ... so L is thr ... walking around with this gallon of spring water and I can't understand why she's walking around with this gallon of spring water and she keeps talking she keeps telling these ... vague ... making these vague comments about the restaurants on the New York Thruway and why at least we have this spring water ... and I ... you know I didn't know what she's talking about so we go to this restaurant and I order a coke ... and I ordered some sort of sandwich and I don't think you ever ordered anything

In (1), the sentence beginning I went i ... is broken off and the material about the water etc. is inserted. E resumes the sentence changing tense to the historical present and completes it: so we go into this restaurant, I went i so we go into this restaurant comprise the true start. Sometimes the start is less clear, with the speaker repeating not the entire sentence but only some key semantic material from the interrupted sentence to indicate the resumption of the main story line. (See Appendix for an example of this type of true start. See also, Polanyi, 1977, forthcoming b).

In order to understand why speakers use true starts it is important to understand the constraints a speaker must deal with once s/he has decided to tell a story to social equals in a normal conversational setting.\(^2\) S/he must:
1. Negotiate for room in the conversation
2. Introduce a story in a way that is coherent with the preceding discourse.  
3. Produce a story with a "point" which can be seen as somehow related to the previous discourse.
4. Structure the story conventionally in order to present the expected information in a way which the audience can easily understand.
5. Develop the story fully enough so that the audience understands why the speaker chose to tell them this particular story at this particular moment. Specifically, the speaker must provide enough information to contextualize the events in the story, its relationship to the discourse, and its relationship to them—why the speaker thought it appropriate to tell the story to them in this particular situation.
6. NOT BORE THE AUDIENCE or appear to be taking up too much time telling the story.

Since I am concentrating here on true starts, I will be looking specifically at those constraints which conflict sufficiently so that the speaker may choose to seem to make an error rather than fail to meet all of the interactional and linguistic obligations of being a narrator.

It is important to remember that normal turn taking is suspended during the duration of a narrative. Once the audience has agreed to hear a story, chances are excellent that the speaker will hold the floor until that story is completed. Even if other speakers cut in or interrupt to ask questions or make remarks, the floor will return to the speaker to finish the story. Since by telling his story he is taking up conversational "room" and constraining other people not to talk, the speaker has to perform well and be interesting to listen to or she will here be guilty of an interactional faux pas. Let us take the constraints listed above more or less in order and see how they may conflict with one another.

Once a speaker decides to tell a story in a conversation, s/he must find an opening in the flow of speakers and topics and negotiate for time. The s/he must signal to the listeners that a story has begun. The sentence with which s/he introduces the story must be in some way coherent with the preceding conversation or listeners will not understand why the subject was changed or what is being talked about. This introductory sentence may serve as an "abstract" of the entire story. However since it is the first sentence of what will be an extended discourse its main function is to tie the story with the preceding conversation. For example, the first sentence in (1), (entitled "Eating on the New York Thru-way" and printed in full below) involved potables:

(2) E I mean . . . I mean . . did I ever tell you the story about the water? I mean the coke?
Since the restaurants on the New York Thruway had been the topic of conversation and both coke and water are reasonable items to procure at a restaurant, the speaker effectively assured the audience that the looming story will, in some way, link up with the topic at hand.

Not only the first sentence of a story, but the point of the story must link up in some way with the preceding discourse. Another constraint a storyteller must meet is to ensure that the story being told has a point - some observation, happening or illustration of the ways of the world which justifies to the listeners why they have listened to the story - otherwise, in Labov's wonderful phrase, the listeners will say "so what?" when the story is over, indicating that the storyteller has lost face more or less seriously in the interaction (Labov, 1972). In point of fact stories often have multiple points each of which is evaluated by evaluation devices and which may satisfy different constraints.

American stories are quite strictly structured. The events in the story must be told in the order in which they are presumed to have happened (Labov, 1972). In addition, a speaker must contextualize the events, in time and space and locate the events and situations in the story in relation to the characters; all of these story materials must also be located in time and space relative to the speaker and audience.

Of crucial importance to the reception of the story is the skillful handling of the "evaluation structure" of the story. This structure consists of devices such as repetition, reported speech and thought, build up of suspense through delaying the denouement etc. which allows the speaker to indicate the importance of key events or other story materials (Labov, 1972; Longacre, 1975; Polanyi-Bowditch, 1976; Polanyi, 1977, forthcoming a, b, c).

Speakers are very sensitive to the proper functioning of evaluation in their stories and repair errors of evaluation in syntactically and semantically correct sentences (Polanyi, 1977).

In his seminal essay, "The Transformation of Experience in Narrative Syntax," (1972) Labov presents a model of narrative which claims that a complete narrative has 6 sequentially arranged parts: an abstract, a short summary of the entire story is followed by an orientation section which identifies in some way the persons, places, activities and situation involved in the action. The orientation section is followed by a section of complicating action which is highly evaluated followed by a result and ending with a coda returning the speaker to the present time (Labov, 1972). (The evaluation section is placed between the complicating action and the result in Labov's model. This does not correspond well to data I have seen in which the evaluation is found throughout the story.)

A speaker often would like to develop the orientation section of stories fully before beginning the actual actions of the stories. The orientation section which details crucial "background" material about characters, place, present and past situations and historical
events is often where the actual "story" may be located. The speaker may well be telling the story as a comment on some moral or social issue which is located in the orientation material, or may wish to justify the actions of the plot in terms of important contextual information. Then, too, the desire for a more "textured" exposition may be motivated by the constraint of relevance to the conversational context, since very often the material which satisfies this constraint is found in the orientation section, and can not be expressed except in an extended storytelling manner. Unfortunately, however, story abstracts may not be compelling enough in themselves to assure the audience's sustained interest in the story the speaker is beginning. In addition, an extended orientation section may seem overly long to the audience - who are expecting a "story" with events leading to a climax justifying why the story was told.

It is important to remember that the socially preferred mode of exposition and explanation whether in science, courts of law, or over a couple of beers is straightforward and to the point - saying just enough and not too much is almost a moral virtue. Labov in recent comments on "good" storytellers claims that one of their virtues is that they tell their stories in a "straight forward" way. We all know too of the social stigma attached to being "longwinded" and telling "long drawn out stories which never get to the point." Therefore, the storyteller can be caught between needing to develop the story in a more complex and elaborate fashion - giving a great deal of weight to descriptive material rather than reciting a series of events, and yet wishing to appear to be telling the story in the most economical way possible. (Labov, 15)

There is no easy way out of this predicament for the speaker. To choose to introduce the story by a series of background "observations" may well make the audience restive and they may seize the opportunity to get the floor back, assuming s/he is not, in fact, going to tell a story. What might have been an opportunity to tell a story may then be downgraded (in the frustrated narrator's view) into a normal conversational exchange. Should s/he begin the story with an abstract and then launch into an overly long orientation section, the listeners may also rebel. Having agreed to allow the speaker to tell a story (i.e. recount a series of events about a certain "thing that happened" with a minimal of contextualizing material) they had not given a free hand to take up "story time" giving them the kind of information which the captive audience might prefer to exchange in a conversation in which they have full opportunity to state their opinions about the matter in normal turntaking fashion.

Rather than appear to be taking up too much time telling their listeners things which are not furthering the action of the story and thus delay reinstatement of normal turntaking rules, the speaker may turn to the tacit true start strategy. S/he begins to tell the story, signalling that the story really underway by beginning the event structure (after an abstract perhaps and limited orientation material); then s/he interrupts the flow of speech, often in
midsentence (and often in the midst of a sentence containing an event); puts in as much contextualizing material as necessary and proper and then return to the main story line by taking up the sentence which had been broken off.

The true start signals the beginning and end of a digression and allows the speaker to satisfy two mutually exclusive constraints. In the storyline proper s/he can give a clear, logical, causally arranged and causally connected account of what went on, and yet in the digression, in the section bracketed off from the storyline by the true start markers, s/he can contextualize events as fully as s/he wants and needs to. There too the material which links the story closely with his listeners or with the preceding discourse may be presented.

It is culturally significant that "digressions" in speech are often treated as mistakes or, if carried out "knowingly" are often accompanied by apologies. We allow a fully developed, "textured" storytelling structure in conversation if the speaker apologizes for it or if the speaker seems to be making a mistake and is hurrying to correct it. These strategies may be thought of as diminishing the speaker's responsibility for taking up more time in the interaction than s/he is allowed. It is as if, within limits, only the time the speaker is recounting the main storyline "counts" in the interaction. Since the "true start" seems to be a repair of a mistake, and it is only polite to allow people who have made an error an opportunity to correct it, the speaker using this strategy has not taken up time with storytelling but only with "repair" work—therefore after the repair s/he can go back and take a "normal" or acceptable amount of time to tell the story. This is the power of the true start.

One way to categorize the functioning of the starts in stories is to think of them in terms of PUSH and POP markers—since the "background" material bracketed by the true start can be regarded as a subunit embedded within the main text of the story. We can use these terms borrowed from a similar situation in Computer Science to describe the transitions between the main text and the background. A PUSH is a move from the storyline to the embedded material, and a POP is the resumption of the originally interrupted part of the story.

Other devices besides true starts can also be employed to fulfill a similar PUSH/POP function. So, and well for example, can indicate that the speaker is PUSHING into a digression, moving from the main line of thought into a subsidiary one, and also can indicate POPPING from the digression back to the main story line. We will look briefly at so functioning as such a marker. However, both so and well lack the strategic usefulness of the true start since they are merely connectives and not an admission of an error. (An example of well functioning as a PUSH/POP together with a true start can be found in the example text found in the Appendix.)

So—rather than spend so much time on the abstract and orientation, let's get down to the story! This story was collected at a dinner party. There were five participants and the general topic of discussion was the proposed move of T and his wife K.
Eating on the New York Thruway

E: I mean . . . I mean . . . Did I ever tell you the story about the water . . . I mean the coke? I went i . . . I always drink coke, right (L: Right) So L is thr . . . walking around with this gallon of spring water and I can't understand why she's walking around with this gallon of spring water. And she keeps talk . . . she keeps telling me these . . . vague . . . making these vague comments about the the restaurants on the New York Thruway and at least we have this spring water. And I don . . . you know, I don't know what she's talking about. So we go to this restaurant . . . and I order a coke . . . and I ordered some sort of sandwich. Now I don't think you ordered anything.

L: I didn't order anything. (E: Right) I sat there making faces.

E: Well, one thing about this restaurant was that every person in it was retarded. (laughter) That's all. I mean the people who worked there. They were, I mean, . . . one after the other of the weirdest looking people I've ever seen (laughter) either they were retarded or they were let out for the day from the mental hospital. I . . . you know . . .

L: They didn't seem to be able to distinguish between washing the floor and making a hamburger

L: Both things were done in the same way (laughter)

E: So this coke appears. . . . I was very thirsty . . . And I went like this . . . straw in . . . took a sip of this coke and (laughing) I started in screaming "I've been poisoned!" (laughter) And L, very calmly, offered me this spring water. (laughter) I mean . . . I have never in my life tasted anything so bad. . . . (laughter) . . . it was it was

T: Whadda they do to that

L: You see, they also can't distinguish between making a coke . . . and wringing out the mop . . . (laughter)

We will go through the functioning of the true start in this story in some detail, with an aim to understand how the material in the "digression" is crucial to a proper understanding of the story and the fulfilling of important interpersonal constraints.

After announcing that she is going to tell a story and that it is going to be "about" water and/or coke, speaker begins immediately to launch into the action of her story. She says, I went i then stops and interpolates a section of explanatory material dealing with her coke drinking habit and that L is walking around with a gallon of spring water making odd remarks. Having stated that she did not understand the meaning of those remarks she POPS back to
the main storyline by recapitulating the true start sentence and finishing: So we go to this restaurant and I order a coke.

That the coke is important we know from the abstract, but that she is a habitual coke drinker we know from the true start. When she announces somewhat later that she felt poisoned by the coke (I started in screaming "I've been poisoned") we know that she is a competent person to judge the worth of cokes since she always drinks them. She could not have told us that she always drinks coke before she began the story since no one particularly cared about her preference in soft drinks and there were several experts present ready to comment on the wretchedness of conditions of the NY Thruway.

More important than the coke information, however, is the portentous information about the mysterious spring water and her muttering companion. That the speaker presents herself as not understanding what was going on is crucially important to the story's reception by the people at whom it is aimed - those people being warned about eating or drinking anything on the NY Thruway.

The speaker is not merely telling her audience "don't eat the food it is prepared by subhumans who can't do the most ordinary things without making a complete mess of it" - she is telling a story tracing her own education about these matters. Before this experience, she did not understand the problem with the NY Thruway much as her audience does not understand now - but she learned through bitter experience and just as they are being taught the facts of life by her, she was helped in her education and eventually saved from poisoning by a friend who had learned previously. Thus in the material in her "digression" marked by the true start markers - speaker manages to educate her listeners without elevating herself in status above them. This kind of interactional work would have been very hard to accomplish in a straightforward exposition of her story materials. The material about the spring water would have been somewhat unmotivated had it been introduced before the story was underway. However, once the story was established as a narrative by mentioning the event I went, the speaker was free to digress and do her other work.

E's resumption of her story and PUSH into the "digression" about the mentally handicapped restaurant employees is prefaced and marked by the word well. This information, opinion, judgement about the mental competence of the Thruway staff is the kind of interesting if slightly hostile and judgmental material people often build stories around. This opinion could not easily have been placed in the orientation section of the narrative preceding the action because it is the kind of remark which can easily backfire and lead to a discussion with the would-be audience instead of the receptive silence one hopes for in telling a story. This information serves to evaluate the crucial action of the story—the sipping of the near-fatal coca-cola, by delaying the event. In addition, the warning to the would-be travelers not to eat in the restaurants because the food is prepared by idiots is most innocuously placed - the message, the warning the story was meant to
convey, is located in what might easily be seen as a digression. Though this story might be taken to be about "water" or "coke" as the speaker claims — this is only an incidental detail of the plot — had an apple pie been poisoned nothing would be significantly altered about the story. The event the story is about is the poisoned sip, yet in the conversation the story as a whole functions as an illustration and a warning.

The functioning of so in this story is also of interest and very closely related to the true starts. So seems to have several closely related functions here. It acts as a connective back to the story after an agreement marker or comment by another speaker which may also be thought of as a kind of POP back into the extended story turn, and thus into the story:

(4) E I always drink coke, right
L right
E So L is thr . . . walking around etc.

(5) L Both things were done in the same way (laughter)
E So this coke appears (POP)

It may mark part of the true start, or, reinforce the true start marking both a PUSH and a POP as in example (6).

(6) E So L is thr . . . walking around  
(PUSH)  
with this gallon of spring water  
e tc.
So we go to this restaurant and I order a coke  
(POP)

It may also act as a POP itself as it does in (5), where it is found independently of any true start phenomenon. I order a coke is the next action after I ordered some sort of sandwich a number of turns back. In the story found as part of the Appendix, "Red Paper Dress," there are similar examples of the functioning of well.

We can also find a few examples of the functioning of so in this story by a different speaker. This story also contains an example of a not quite true start.

(7) J and the way we calculated . . he was due in June . . [mm . . mm] June first [mm . . mm] or June second . . something like that . . and uh, my course was over just right almost exactly the day he was due. I was taking this photography course, and I thought "Well, for my final project, I'll just photograph m . . my birth" [laughter] "my own birth"
L Of course
J A simple kind of thing to do. I thought it'd be kinda neat. And we were taking Lamaze and everybody . . you know . . . in Lamaze you learn how easy it all is and there's no pain at all. [soft laughter] So . . I thought that would be kind of
a novel thing to do . . and uh . . so about June
first or second, indeed right on the dot, I
developed labor pains and went to the hospital . .

Although there is no interruption or overt mistake, speaker repeats the phrase about June 1st or 2nd after her discussion of the photography course and Lamaze attitudes toward childbirth, indicating that this long digression is in fact away from her main thread. Later in the story there is another example of a so which seems clearly to be functioning as a POP marker. After an interjection by another speaker saying:

(8) G You did not have a final project
L replies:
   L I did not have a final project . . . (long
   silence) So . . . they . . . Rocco was with
   me most of the labor, etc. [POP]

So returns the discourse to a discussion of her childbearing experiences which was the general topic of the conversation. Up to this point in her story she had dealt with her pregnancy and her husband's difficulties with the draft. Thus, the so pops the discourse up 2 levels: from a repartee about a narrative to the overall story in which that narrative was embedded.

Halliday and Hasan in their book Cohesion in English (1976) list 7 different cohesive functions of so; this PUSH/POP function of so is not one of them. Because they refuse to admit the importance of units of structure above the sentence, although they do admit they exist, Halliday and Hasan have no way of identifying and dealing with such a discourse function of so. Their reliance on written data and clearly made up examples also makes it unlikely that they would ever encounter this use of so to mark the speaker's movement from one level of structure of a discourse to another.

A second serious criticism of the approach to discourse taken by Halliday and Hasan involves the nature and function of repetition. This true start phenomenon is a powerful cohesive device functioning in narrative discourse. A true start situation with some elements of a sentence repeated later in a discourse should not be analyzed as a repetition of a lexical item or group of lexical items creating cohesion in the text by virtue of the repetition. This is only a comparatively minor aspect of their functioning. Rather, these PUSH/POP markers which indicate movement from main level of structure to an embedded subunit and back again, create cohesion in text by tying together sentences into these sub-units. They signal to the listeners how the speaker intends the hearer to believe one part of his discourse to be related to some other parts.

To sum up, speakers have a great deal of work to do in telling a story within an everyday conversation. There are a number of constraints which must be met if the speaker is to function competently
as a storyteller and participant in a conversation and interactant in the situational context in which that conversation takes place. Some of these constraints may conflict with one another - for instance the need to tie the story with the preceding discourse or give detailed contextualizing information may be at variance with the constraint to state the facts and get to the point of a story. The speakers have at their command some ways of resolving these conflicts, among them the strategy of "true starts" that has been described in this paper. True starts and other PUSH/POP markers in narrative may seem to be repetitions on the surface, however a somewhat closer analysis reveals that they perform text building tasks of a far more important sort than can be discovered by merely noting down the multiple occurrence of identical (or similar) lexical items. An analysis which relies on written data, or "intuited" discourse would not be able to gain access to these features of freely occurring narrative language and an analysis of text functioning which does not admit the crucial role of the discourse unit in determining linguistic surface structure will likewise be unable to cope with the challenge of real language.

NOTES

1Shimanoff and Brunak (1977) describe true starts, as I have called them in this paper, referring to them as "brackets". Their discussion of this phenomenon differs from mine in the very important respect that they see this only as a repair procedure and I see it as a 'PSEUDO-REPAIR.' The force of this paper is to establish such a mistake making strategy as one of the devices a speaker has in at his/her rhetorical and interactional command.

Shimanoff and Brunak do not consider the structure of stories and the information which normally goes into them. Therefore, when faced with a "repair" they take it at face value as an error because they are not looking at the kind of material inserted in light of the material which stories normally do have. It is perfectly sensible to say that a speaker forgot to do something which is more or less optional, but when speakers forget to put in the same sort of important information all the time it is a bit suspicious.

Explanations of the true start phenomenon which do not go beyond stating that the speaker "forgot" do not explain why such material is forgotten or why it is remembered so systematically. I do not deny that speakers may in fact "forget," any more than a psychoanalyst would deny that people "forget." It is very interesting, however, that they remember what they need to remember and in such an orderly way.

While it may well be difficult, if not impossible, to prove that any given instance of any phenomenon is being used strategically; it is, I think, totally impossible to prove that any strategy is being employed tacitly. However, we do have over half a century's work in psychoanalysis and psychotherapy to back up the notion that people do manipulate language and situations in ways which are not consciously accessible.
All of these remarks should be taken to apply only to American English speakers and their motivations and narrative conventions. Furthermore, for the purpose of this analysis we assume that the participants in the conversation are all more or less social equals and that the storytelling is going on in a normal social situation. For example, these remarks will not apply in formal storytelling situations such as folklorists often study. When someone is known as a storyteller, for example, or is invited to tell a story, or has a fixed story which has been told over and over, both the constraints on the production and on the form will be quite different.

Jefferson (in press) deals with negotiating room in the conversation in which to tell a story. I had not read her paper until after delivering this paper in February, 1977 and so did not cite it during the oral presentation.

I would like to thank Bill Simpson for helping me with the phrasing for the PUSH/POP markers as well as for general help and understanding; Deborah Tannen for pushing me to write the abstract; and Henry Thompson for asking the right questions after the talk. And special thanks to my informants who tell such neat stories. Future heartfelt thanks are extended to whomever actually edits and distributes the Sacks' lecture notes. I can not be alone in having tried to get access to a copy for some years. Please whoever .

APPENDIX

RED PAPER DRESS

My mother told me this amazing story today. In the beginning of s . . . of her breakdown uh huh when she was crying all the time and when she was first going to the psychiatrist and everything . . . apparently she . . . there would be some days when she would get really hysterical well . . . she and my mother had cl--ean--ed ou-t her room . . . basically of all the st . . . my mother always saves everything so there were all these highschool clothes hanging in the closet [right] they cleaned out almost everything . . . [uh huh] . . . but there were a couple of things left . . . and one of the things that was left . . . was a . . . a dress made out of paper . . . [uh huh] . . . that um . . . Janet and one of her girlfreinds had each sent for one once somewhere . . . it cost a dollar . . . or some-thing [right] I mean so this was hanging in the closet . . . well apparently one morning and this was apparently the worst morning of of . . . her nervous breakdown . . . she woke up . . . some-thing . . . there was s . . . something about going to the dentist or something. I think my mother was probably nagging her which is what my mother does . . . and she . . . had h. hysterical fit as far as I could tell, screamed and cried and hit her head against the wall and did all this stuff . . . well my mother later went up into the room
This is a very difficult text to follow. However it does exemplify the unclear true start apparently she signals the beginning of the true start sentence which is then broken off and replaced with there would be some days when she would get really hysterical... well. So far, this is an ordinary false start/repair. Speaker may actually be PUSHING with the well. The POP is marked by the well and then by the rest of the sentence which picks up the apparently from the initial PUSH sentence and repeats it twice: Apparently one morning and apparently this was the worst morning of her nervous breakdown. That sentence leads to the first real event of the story she woke up however, we are still in a partial PUSH because we are given more characterological information about going to the dentist, the mother's nagging etc. That is finally finished and we POP back to the storyline proper with the re-introducing of the hysterical theme from the original PUSH situation: she had hysterical fit as far as I could tell. Thus we get strong, important semantic material functioning as the PUSH/POP markers, but they are not encoded in nice neat broken off and then resumed sentences.

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A Cross-Cultural Study of Oral Narrative Style
Deborah Tannen
University of California, Berkeley

Since the introduction of the Sapir-Whorf hypothesis at least, linguists, along with psychologists and anthropologists, have tried to understand the relationship between language and cognition and to determine the influence of culture on thought. That differences exist between members of different cultures has long been a basic claim of anthropological linguists. More recently, such differences have been documented in psychological studies of cognitive style (Cole and Scribner, 1974); in ethologically-oriented studies of nonverbal behavior (Hall, 1959); even in studies of facial expressions (Ekman, 1973). However, attempts to locate differences at specific levels of grammar and lexicon have not been entirely successful.

More recently, the focus on discourse analysis has begun to shed light on these as on other linguistic questions. In conversation, for example, the work of cognitive anthropologists and ethnographers of speaking have made available insight into cultural differences in identification of speech activities, and the work of John Gumperz (1977) has shown the mechanisms by which speech activities are carried out. Linguist Robin Lakoff (1978) has suggested that style differences may grow out of differing notions of politeness and communicative strategies which are placed on different points of a directness/indirectness continuum.

At the same time, there has been illuminating research in narrative text-building, both oral and written. Perhaps the most intriguing in this area is Becker's (in press) on Javanese, demonstrating that the very basic text-building constraints are culturally based. Whereas western texts hinge on temporal unity and linear causality, Javanese shadow theater plots hinge on coincidence and are constrained with regard to place rather than time. In other words, events in the shadow play need not be presented in the order in which they occurred, but the play must begin and end in a certain place and pass through a certain other place midway.

In a narrower but also revealing study, Kaplan (1966) examined 700 essays written by foreign students in English and compared them to essays published in those students' native languages. Kaplan concluded that each of the language groups he studied favored a unique, conventionalized rhetorical structure. In Arabic (and other Semitic languages), "paragraph development is based on a complex series of parallel constructions" (p.6); Chinese and Korean writing "is marked by what may be called an approach by indirection" (p.10); and "much greater freedom to digress or to introduce extraneous material is available in French, or in Spanish, than in English" (p.12). All of these rhetorical strategies contrast with the favored American English structure which Kaplan characterizes as a straight line of logical development.

Continuing in this fruitful tradition of discourse analysis, research done in connection with a project directed by Wallace Chafe at the University of California, Berkeley, was designed to
permit systematic analysis of how the same visual/auditory stimulus is transformed into narrative by members of different cultures. A six-minute movie containing sound but no dialogue was made and shown in a dozen countries around the world. In each country, 20 women between the ages of 17 and 28 viewed the film in groups of five and, one by one, told another woman of similar age what they had seen in the film. The present paper will discuss the narratives thus generated by students at the University of California, Berkeley, and at the Hellenic American Union in Athens, Greece.

To say that the stimulus for the narratives was identical -- i.e. the same film -- is not to say that the content of the narratives is the same. Quite the contrary, the question of how the content of the film is transformed into narrative content is at the heart of our investigation. As suggested by previous work such as Becker's, and as supported by data from the present study, there can be no "identical content," since content itself is mediated by cultural and personal differences. Polanyi (in press) reminds us that "what stories can really be about is, to a very significant extent, culturally constrained: stories, whether fictional or non-fictional, formal and oft-told, or spontaneously generated, can have as their point only culturally salient material generally agreed upon by members of the producer's culture to be self-evidently important and true."

Polanyi's observation about the point of a story is related to C. Wright Mills' (1940) notion of "vocabularies of motives." That is, speakers in a culture learn to express motivations, or explanations of any "situated actions," in terms of justifications which they know will be accepted as reasonable by other members of their culture. Just as there are agreed-upon vocabularies of motives, so are there conventionalized ways of organizing events into narratives, of choosing particular elements of the action and setting experienced or seen for inclusion in verbalization -- and indeed in memory.

The ensuing discussion compares narratives told by Greek and American young women in response to the question, "What happened in the movie?" It cannot be assumed that the narratives thus elicited represent "universal" narrative styles in the cultures involved. However, this is not to say that the narratives are not "natural." As Nessa Wolfson wisely argues in a recent essay in Language in Society (1976), "natural" speech is simply speech appropriate to the occasion. While an interview with a stranger in the presence of a tape recorder is a special sort of occasion, it is nonetheless interesting to compare the two sets of narratives which were naturally produced by members of two different cultures on these two occasions.

There are two striking overall differences between the Greek and American narratives about the "pearpicking" film. First, the Americans tended to discuss the film as a film; they used cinematic jargon to comment upon and criticize technical aspects of its production, noting for example that the soundtrack was out of proportion, or that the costumes were unrealistic, or that the colors were not natural. In fact, the sound effects of the film formed the main point, or "coherence principle," for four Americans. Still another
American structured her narrative around repeated contrasts between what she expected to happen as the film progressed and what actually happened instead. Thus the coherence principle of her narrative was the recreation of her experience as a film-viewer. Moreover, the film-viewer perspective was generally maintained throughout the American narratives, as the speakers referred to scene changes, shots, and so on.

In contrast, the Greeks tended to talk directly about the events depicted in the film without mentioning that they occurred in a film. If they did make reference to the film, they did so at the beginning or the end of their narratives, as a way of introducing or concluding their stories, but did not maintain that perspective in the course of narration. Furthermore, if the Greeks speakers made judgments about the film, they commented on its message, saying, for example, that it showed a slice of agricultural life, or that it somehow lacked something in its meaning.

The second major difference is related to the first. The Americans in our study tended to report events as objectively as possible, often describing actions in detail, and in general appearing to be performing a memory task. The Greeks, on the other hand, tended to "interpret" the events; that is, they ascribed motives to the characters, offered explanations of the action, and even made judgments about the characters' behavior. Whereas the Americans seemed to be trying to include as many elements from the film as they could remember, the Greeks seemed to voluntarily omit details that did not contribute to their verbalized interpretations, with the result that the Greek narratives were significantly shorter than the American ones. (The average number of units, which we called "minichunks," for the American narratives was 125, as opposed to 84 for the Greeks. The Americans' narratives ranged from a low of 61 minichunks to a maximum of 256, while the Greeks' ranged from 26 to 150).

These two striking differences -- the tendency to talk about the film as a film vs. talking about the events directly, and the tendency to "report" in detail vs. "interpreting" events, can both be related to the apparently different definitions of the narrative acts being performed. Whereas the Americans in our study focused their critical acumen on the skill of the film-makers and perhaps on the memory task before them, the Greeks brought their critical faculties to bear on the characters in the film and their actions. In short, insofar as any verbal performance is an exercise in presentation-of-self (Goffman, 1959), it seems that our Americans were concerned with presenting themselves as sophisticated movie viewers and able recallers, while the Greeks were concerned with presenting themselves as acute and upright judges of human behavior.

Before we proceed with a more detailed presentation and analysis of these broad and other finer differences, it will be useful to see a typical American and Greek narrative. First, an American one, chosen because it is one of the shortest, even though it is not one of the most film-oriented by any means.
S8: Okay...UH......the movie is basically about UH...UM--...a
number of ...?individuals, ...UH a guy who's picking pears, ...UM--
...and a kid on a bicycle. Basically those are the two...protagonists
in this. ...And...UM...the guy who is picking pears, UM...UM...picks
the pears and puts them in a...in UM...these baskets that he has.
...UH--...And he's picking the pears, and...and UM...along comes a man
with a donkey. UH UH a don UH a goat. ...And he comes along...by...you
know, ...passes him. ...And then this kid comes along with a bicycle.
...And he rips off...one of the ...baskets of...of pears that he has.
...So the ki the the UM...the boy goes along, and he has...UM...he's
riding his bicycle--; a--nd he looks at...a girl, that was coming the
other way, riding a bicycle,...UH he loses his hat, a--nd...there's
a stone in the way, so his bicycle falls over, ...and the pears get
...UM...UM...fall down on the ground. ...U--M...There's some kids,
there are three other boys, ...who are there. ...They help him, ...get
strengthened out, ...put the pears back...in the basket, straighten
out his bicycle, and so forth. ...And he goes on his merry way.
...But then...UM...the boys realize that he's forgotten his hat. ...So
one of the boys whistles to him, and...stops him, and...gives him
his hat back. TSK...And then...UM...the boy with the pears...gives...
the boy who just gave him his hat...UM...three pears to...divide
among his friends. ...A--nd...the--n...the boys-- go--...UM...walking
along, eating their pears. ...And UM...then the man...UH...who was
picking pears, ...comes down from his--...UM...his...ladder, ...where
he's been picking these pears,...and he's going to empty out the ones
that he's just picked. ...And he notices...that...instead of the three
baskets that he had before, ...there are only two. ...And...so...he's
puzzled, ...and...just when he realizes that...one basket is...gone,
...the three boys come along, ...eating their pears. And...you're
left with this...dilemma, ...what does this guy [laugh] you know what
does this guy really think. I guess he thinks that..."I wonder if
those guys ripped off with my pears or what." He just doesn't know.
...He was up in the tree when...the boy on the bicycle ripped off
the UH /?s/...the pears. Okay?

And now here is a Greek narrative, translated into English in a way
that reflects the Greek syntax as closely as possible.

G12: EH From what (I) understood--...(it) was--.... ...(an)
episode, ...(it) happened-- in Mexico. ...(I) suppose, ...(they)
seemed to me (like) Mexicans-- the people, ...and-- mm (it) showed
the--...TSK how a person gathered the pears, ...and-- mm TSK (it)
insisted that-- that which (he) did (he) lived. ...The n-- in other
words-- mm-- ... the (fact) that (he) was cultivating the earth--,
that (he) was gathering these-- ...the harvest, ...was for him
something special. ...(It) was worth something--...TSK (he) lived
that which (he) did, he liked (it). ...(It) showed a scene--
.../mm/ (it) must have been probably the-- mm TSK the agricultural
life--, of that region, ...one who passed with a goat--t--, ... a--
littlechild--... a littlechild with a bicycle, ...who saw the basket,
with the pears, and too-k it, [slight laugh]...and then-- as (he)
was passing, .. (he) met in the field-- a--lso, ...another girl with (a) bicycle, ...and as (he) looked at her (he) didn't pay attention a little, ...and fell the-- fell the basket with the pears, ...and there also were-- mm three other friends of his, ...who--... immediately he--lped--...and this was moreover something which showed how much children-- love each other, ...(they) have solidarity, ...(they) helped him to gather them, ...and-- mm--...and since (he) also forgot his hat, (there) was a lovely scene where (he) gave them the pears...and returned back again. ...In other words--,... generally (I) think that (it) was a scene--,...TSK...of the agricultural life of that region which (it) showed. ... ...That's it.

The abovementioned differences in "framing" of the narrative task influenced every aspect of the verbalizations. Typically, S8 (the American) began, "The movie is basically about...," while G12 (the Greek) did not mention the movie. (An even more typical Greek beginning is simply, "There was a worker..."). In fact, 15 of our 20 Greeks and only 4 of our 20 Americans never mentioned the word "film" or "movie" (Greek tainia or the cognate film) at all. Not only did more Americans use the word "film," but those who did, used it more often than the Greeks who did. Of the 5 Greeks who used the word "film," four used it only once, and the fifth twice. In sharp contrast, 6 Americans made overt reference to the "film" more than three and as many as six times.

Even more revealing than the incidence of the word "film" are allusions to the movie perspective, that is, such terms as "protagonist," "soundtrack," or in Greek use of the verb dheichnei, "(it) shows," when the deleted subject "it" refers to the film. 5 Greeks (and only 1 American) made no allusion to the film at all, while 5 Americans (and no Greek) made more than 10 and as many as 15 such allusions, evidencing considerable attention paid to the film perspective.

Another way that the film-viewer perspective influenced verbalization is in the speakers' choice of verb tense. The Americans in our study showed a strong preference for the present tense, while the Greeks preferred the past. 13 Americans (and 3 Greeks) used the present tense throughout their narratives. 8 Greeks (and 2 Americans) used only the past, and another 6 used a mixture of past and present with the past predominating. Thus a total of 14 Greeks preferred the past tense, while the number of Americans who preferred the present tense increases to 17 when it includes the 4 who began their narratives in the past but then switched to the present and stuck with it to the end. The hypothesis is that the Americans used the "historical present" associated with movies or other works of art which are seen as existing permanently, while the Greeks' use of the past reflects the reporting of events which occurred once.

A close examination of G12's narrative reveals a vast array of verbal devices associated with the process I have dubbed "interpretive," that is, representing the speaker's ideas about the characters and their actions rather than simply reporting events as they occurred in the film. These interpretive devices are similar to elements
Labov (1972) has called "evaluative": they contribute to the effect the speaker wants to convey as her main point. The main point, or coherence principle, of this narrative is that the film portrays an all's-right-with-the-world romantic view of agricultural life. First of all, the speaker's intonation creates this effect: she soothingly elongates many of her vowels, and she strings her clauses together with a combination of lengthened vowels and steady clause-final pitch, giving the entire narrative the sound of a list: a recital of matter-of-fact circumstances rather than novel events. The effect of this intonation is particularly apparent when she tells that the boy took the pears. Nothing in her intonation conveys that anything special is happening; the event fades into the panorama of common-farm-life occurrences. Other speakers nearly unanimously concluded that the boy stole the pears, and they gave this theft prominence in their narratives.

G12 uses another common device very broadly. She omits not only much detail but entire events which would not be consonant with her interpretation. She neglects to mention that the boy fell off his bicycle (another salient event for most speakers), and she omits the entire last scene in which the disconcerted pearcher notices that his basket of pears is missing, just as the three boys walk by him eating pears. G12 prefers to end her narrative with the pleasant image of the three boys helping the one who fell of his bicycle.

Another device found in all our narratives is much more widespread and more extreme in the Greek ones: interpretive naming. By calling the pears "the harvest," G12 invokes an entire "script" which casts the pearpicker as a farmer and, along with her use of the phrase "cultivating the earth," calls up romantic connotations of agricultural life. The greater use of interpretive naming by Greeks can be seen in the fact that 11 of them refer to the pearpicker by a word which attributes an occupation to him (i.e. "worker" or "farmer" while only 3 Americans do this.) Another instance of interpretive naming in G12's narrative is her use of the term "friends" to describe the three boys who appear and help the fallen boy.

Finally, G12 discussed the pearpicker's attitude toward his work as if it had been known to her, and she concerned herself continually with the film's message, observing, for example, that the helping scene serves the purpose of showing "how children love each other." Similarly, her use of the adjective "beautiful" to describe the scene in which the boy gives the others pears, constitutes a judgment about its meaning.

A survey of how the other narratives dealt with the exchange-of-pears scene will further illustrate the differences in the two sets of narratives. S8 was typical of the Americans: "And then the boy with the pears gives the boy who just gave him his hat three pears to divide among his friends." Thus S8 related rather precisely the events which she saw in the film. We have already seen how G12 evaluated the exchange, calling it "lovely." Another Greek subject, G10, rather typically, reported the scene this way: "and then (he) thanked them." G10 did not describe the action at all, but substituted her interpretation of its significance for the action. Twice
as many Americans as Greeks (12 as opposed to 6) reported the exchange of pears without comment. In contrast, 7 Greeks (and only 2 Americans) said that the boy gave the pears in order to thank the other boys for helping him, excluding Gl2 who called the scene "lovely" and another Greek who called the pears "a gift." It seems safe to assume that any of our speakers, if asked, would have said that the boy gave the pears as a gesture of thanks. However, the Greeks more often chose to make that interpretation overt.

Another scene which gives rise to strikingly different verbalizations is the one in which the boy falls off his bicycle. Although the cause of the fall is not made clear in the film, most of our speakers impute causality in their narratives. However, regardless of the way in which they interpreted that causality, most of the Americans (13) mentioned all the elements which appeared in that scene: that the boy saw a girl, that he lost his hat, and that his bike hit a rock. The other 7 Americans mentioned two of these. The Greeks, on the other hand, tended to mention only those elements which they used in their interpretation of why the boy fell. Only 4 Greeks mentioned all three elements, and 9 of them mentioned only one.

The way in which Greeks commit themselves more fully to an interpretation can be seen, moreover, in their discussions of this scene. While the film shows the boy passing a girl on a bike, 4 Greeks and no Americans said that the bikes collided. Two Americans commented: (S6) "and you think 'U?' you know 'are they going to collide,' " and (S24) "and you wonder if there's going to be a collision. But instead they just kind of brush by each other." Again we see a pattern in which Greeks and Americans had similar expectations about events, but these expectations were realized in more extreme form in the Greek narratives.

Interpretation in the Greek narratives became "romantic" in the narrative quoted above. At times this process advanced to the point of philosophizing. Gl6 commented at length about what she perceived as "conflicts" in the film, and Gl1 went on at even greater length about the many "falls" in the film and related this to her own pessimistic philosophy of life. No American commented in this way, and it seems safe to predict that such philosophizing would have appeared very strange to the American interviewer; Gl1's revery does to American observers.

In asking why the Greek and American narratives based on the pearpicking film differ in the ways discussed, we must consider a range of possible influencing factors. For one thing, the situations in which the stories were elicited might have had different social meanings for members of the two cultures. We may safely assume that being the subject of an experiment is an identifiable activity for undergraduates at the University of California, Berkeley, while no such assumption can be made for Greek students at the Hellenic American Union, since psychology, as conceived in American social science, does not exist as a discipline even at the Greek university. Moreover, the question, "What happened in the movie?" though translated from English to Greek, cannot be considered "identical," as the pragmatic effect of these similar words might be very different.
when spoken in the two languages. Differing definitions of the task at hand must necessarily create different verbal strategies, especially in an "interview" situation in which the speaker is trying to satisfy what she perceives as the requirements of the questioner.

Telling about a movie, however, is a practice that all modern city dwellers engage in under a variety of social circumstances. Thus expectations about how this speech activity is done must have influenced the narratives in our study as well. As the popular culture critic Michael Arlen (1974) points out, Americans are media-wise and pride themselves on "an assertively cynical savviness" about behind-the-scenes machinations of movies and TV. There is no evidence that such media-sophistication is valued in Greece. Some insight into the respective modes of talking about films, as well as into the Greek penchant for vocabulary and sentiments that sound "romantic" to Americans, may be seen in the following excerpts from movie reviews in Greek and American newspapers. Commenting on the same film, Sergei Eisenstein's "Strike," the two accounts begin similarly but develop rather differently:

From his first film "The Strike," he developed new principles for building up dramatic action, enhanced the cinema language, and pioneered expressive potentials in sharp cutting and foreshortening. Nowhere is the force of his images felt as remarkably as in his "Ten Days that Shook the World."


Even in his first film, Sergei Michelovitch Eisenstein shows the full maturity of his art, which is at the same time political act and poetry. ...Today...we see again with admiration Eisenstein's images, clear and hard as diamonds, juxtaposed and organized rhythmically in a bursting optical poem, the poem of the betrayed people, who will triumph in the end.

--G. Bakoyiannopoulos, Kathimerini, Apr. 8, 1975, p. 2.

While the American reviewer uses cinematic jargon and discusses Eisenstein's technical accomplishments, the Greek reviewer uses non-specific "poetic" language and makes broad statements of general praise. Certainly repeated exposure to such standardized forms of rhetoric must influence members of a culture.

In an attempt to understand the bases of such contrasting rhetorical conventions, we must consider a number of recent studies: first, Basil Bernstein's (1970) controversial and misused hypothesis about "universalistic" vs. "particularistic" meaning and "elaborated" vs. "restricted" codes -- the latter being a form of speech which does not make contextualization overt. This dichotomy is better explained in the work of Goody and Watt (1962) and David Olson (1976) on the contrast between oral and literate culture. When Greeks do not mention that they are talking about a film, they exhibit a lack of overt contextualization, which is associated with the rhetoric of oral culture. To the extent that Americans are preoccupied with
accuracy of detail and rote memory, they are adhering to the rhetoric of literate culture. This is not to say that modern Greeks are illiterate. Literate culture does not replace oral culture in any society but rather is superimposed on it. As Goody (1977) points out, literate culture becomes associated with formal education, "for schools inevitably place an emphasis on the 'unnatural,' 'unoral,' 'decontextualized' processes of repetition, copying, verbatim memory" (p. 22). There exists then a "gap between the public literate tradition of the school, and the very different and indeed often directly contradictory private oral tradition of the family and peer group" (Goody & Watt, p. 342). It is easy to postulate, then, that the Greeks, as a result of their cultural and historical development, have conventionalized forms and strategies associated with the oral tradition of the family and peer group, while, as Cook-Gumperz and Gumperz (1977) point out, American and perhaps other western European societies have conventionalized literate rhetorical strategies for oral use in many public situations.

The foregoing hypothesis postulates no differences in underlying cognitive processes but in estimations of appropriate forms. This approach is in keeping with Bruner's (1978) analysis, explained in a review of a recently-released study conducted in 1932 by the Russian psychologist Alexander Luria. Examining differences in cognitive style between illiterate and collectivized (i.e. educated) peasants, Luria indicated that his illiterate subjects employed functional and concrete reasoning rather than abstraction. Bruner notes, however, that the peasants' reasoning, though different, is abstract in its own way, and he observes, "Most of what has emerged from studies of Africans, Eskimos, Aborigines, and other groups shows that the same basic mental functions are present in adults of any culture. What differs is the deployment of these functions: what is considered an appropriate strategy suited to the situation and task" (p. 88). This is substantially the conclusion of Cole & Scribner (1974), who assert, "We are unlikely to find cultural differences in basic component cognitive processes" (p. 193) but rather in "functional cognitive systems, which may vary with cultural variations" (p. 194). Yet again, Ekman (1973) concluded that while people from different cultures exhibit the same facial expressions in association with specific emotions, they differ with respect to "display rules," that is, when they deem it fitting to allow others to witness those facial expressions.

The present study, then, contributes to an understanding of cultural differences which, although they probably do not represent differences in cognitive style, nonetheless constitute real differences in habitual ways of talking which consequently create impressions on listeners -- favorable impressions, no doubt, on listeners from the same culture, but possibly unfavorable or confused impressions on listeners from different cultures. It is easy to see how stereotypes may be created and maintained -- so that, for example, Americans might develop the idea that some Greeks are romantic and irrational, while Greeks might come to believe that Americans are cold and lacking in feelings. By locating the roots of potential misjudgments
in conventionalized rhetorical styles, we may contribute -- just a bit -- to improved understanding between members of differing cultural backgrounds.

Notes
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1. The "plot" of the film can be gleaned by reading the American narrative which is transcribed presently.
2. I'm indebted for this term to Charlotte Linde who attributes it to Alton Becker.
3. The "S" before the number refers to a "subject number" of American narratives, while Greek speakers are denoted by a "G" plus number.

The following transcription conventions are used:

... is a measurable pause, more than .1 second. Precise measurements have been made and are available.
.. is a slight break in timing.
. indicates sentence-final intonation.
, indicates clause-final intonation ("more to come")
-- indicates lengthening of the preceding phoneme.
words underlined were spoken with heightened pitch or loudness.
/ / enclose transcriptions which are uncertain.
? is, of course, a glottal stop.

4. The Americans, however, reveal their ethnic consciousness. Whereas only one Greek speaker assigned ethnic identity to the people in the film, calling all of them "Mexican," fully half of our American speakers attributed ethnic identity to the pearpicker, calling him "sort of Latin looking" or "of Spanish or Mexican descent," etc. This is not surprising, considering the appearance of the actor who played the role (although it was unforeseen), together with the expectations of Californians about fruitpicking. It is interesting that the one Greek who picked up on the man's appearance extended this impression to include all the characters rather than noting that the children looked rather "Yankee."

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Appositive Relatives in Discourse

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Much recent work in syntax, especially on the development of syntax from discourse strategies, has been concerned with relative clauses. In this study I was concerned with a sub-type of relative clause in English, the Appositive Relative (AR), more usually known as the non-restrictive relative. Keenan and Comrie (1977) in their work on universals of relative clauses have defined a hierarchy of ease of relativization for the NPs within the relativized clause. Their cross-linguistic definition of RC, however, is necessarily a semantic one and excludes AR from consideration. Keenan (1975) tested the accessibility hierarchy (AH) by looking at the actual frequency of relativization on Subjects, Direct Objects, Oblique NPs, etc. in written English. I was interested in whether the same distribution would be found for AR.

Loetscher (for English) and Sankoff and Brown (New Guinea Tok Pisin) have given some semantic characterization of the kinds of information appearing in appositive relatives. Sankoff and Brown's work (1976) suggests different discourse functions for RCs which might correspond to AR and RR in English. I was also interested, then, in whether ARs were used differently in the discourse than RR as evidenced by the point of embedding to the higher sentence, as well as whether they encoded discourse-new information.

Syntactic models have generally tried to capture the difference between AR and RR by suggesting in various ways looser connection between the main S and AR. Work on subordination and coordination predicts that tightly subordinated structures are more 'difficult' (in a sense to be discussed below) or more 'linguistically complex.' This would seem to predict, counter-intuitively, that AR should be the simpler or 'easier' structure.

I hope to make two points, one, that AR are 'difficult' structures, and two, that their use in discourse modifying definite but not identified NPs is evidence of the strength of the 'rule of conversation' which demands that information sufficient to identify new referents be provided immediately.

"Difficulty"

The work on syntacticization from discourse strategies gives diachronic evidence of subordinate structures developing after coordinate structures (Sankoff for Tok Pisin, Justus' work on development of restrictive form embedded relatives in Hittite). Defining and documenting the conditions under which subordination and coordination are used has been a central problem for many researchers. Psycholinguistic evidence, experimental and
developmental, indicates the relative 'difficulty' of subordinate structures. Subordinate clauses are found to emerge late in child speech cross-linguistically (Jacobson, Sloan, and Clancy). Slobin and Welsh (1973) found difficulty in imitation. Kintsch (1974) reports several experiments with adults using passages with content controlled, some containing subordination, others coordination. The subordinated passages were less accurately recalled.

The work of E.O.Keenan and colleagues on planned and unplanned discourse suggests that early emerging structures and strategies may also be those called upon under conditions which allow or demand less planning, late emerging structures being more frequent when more planning is possible. Kroll (1977) has documented the increase in subordination in speech modalities which allow more processing time, for unplanned and planned written discourse.

By difficult I mean just these findings of late emergence historically and in acquisition, poorer recall and lesser use under conditions which allow less planning or processing time. Between AR and RR however we have not two surface forms for the 'same' semantic implication, but one surface form with two semantic implications (at least), one rather clear and the other very vague. In the diachronic case for subordination and coordination the development from 'easy' to 'difficult' seems natural if stated: "languages develop from 'easier' to more 'difficult' structures." Why should they? As Givon, (1977) has put it this is a loss (from the speaker's point of view) which must be offset by some gain -- probably in 'automatic processing' a narrowing of function which decreases possibilities for interpretation the hearer must choose from. By the measures used in this study AR seem to line up as 'more difficult': they were used rarely absolutely, rarely compared to RR, contained relativizations on the 'easier' positions, were more frequent in more planned discourse. The structure used with a less definite semantic implication behaves as if 'more difficult' suggesting that 'difficulty' is indeed a function of the formal complexity relative to a payoff in automatic processing.

AR and RR characteristics

Formal criteria for distinguishing AR and RR are the presence of a comma intonation or a slowing, (or indication of a break) for AR, and the obligatory use of wh- forms rather than that. Proper nouns such as personal names which by their nature specify a unique definite referent rather than a class of referents, and other definite NPs which are pragmatically known to have only one referent can never have a restricting RC. For most NPs both types of RC are possible modifiers but for (a) and (b) there is no corresponding restrictive:
a) John,  
b) My father,  
c) My brother,  
d) The man,  
e) A man,  

My brother, The man, A man

who sleeps late, is a nightowl.

who sleeps late is probably a nightowl.

Hawkins (1977) discusses many other formal possibilities which distinguish AR from RR such as the occurrence of certain adverbs and of parentheticals. None of these occurred in the corpus however.

RR defined semantically by Keenan is a clause which picks out a specific member of the rest of referents specified by the head NP. Thus -

The Danes who are well-educated are content.

identifies by 'disambiguating' which of the already mentioned set of all Danes the main proposition is claimed to be true of.

The usual definition of AR is negative: they do not restrict the scope of the head NP, they merely add information to the sentence, but what kind of information is very vaguely delimited.

Loetscher (1973) found one use of AR to be for explanatory material, as in the following:

Fido, who escaped from the dean's house last night, was caught in the linguistic department.

He found limitations on the temporal sequencing of two clauses.

John, who poured the drink, handed it to Bill.

*John, who handed the drink to Bill, poured it.

Also material in RR is said to be presupposed, but in AR more asserted.

Sankoff and Brown distinguish identifications from 'characterizations.' Identifications, they say, instruct the hearer "you have a file X, put this in that file," while characterizations instruct the hearer to "open a file on this." They do find that characterizations tend to be used later for identifications. Their data appear to indicate a more frequent use of the developing RC marker (bracketing with a locative particle in) for identifications.

Syntactic models variously reflect the intuition that AR are more independent than RR, by deriving the one from conjoined structures, the other from embedded structures (though Thompson has proposed deriving both from conjoined structures) or by giving AR its own performative verb (Thorne).
Data and Method

The relative clauses discussed in this study came from 2 corpora of spoken English, spontaneous interviews by pairs of undergraduates in a speech class, and planned speeches introducing a classmate, given in front of the same class. Topic and content were controlled to the extent that the planned speeches necessarily incorporated the material gathered in the interviews.

Relative clauses which had both wh- forms and comma intonation or some indication of a break were taken as appositive. Characteristics investigated were internal to RC and external. That is, internally, the NP relativized on in terms of the accessibility hierarchy defined by Keenan, the verb type whether copula or verbal. External refers to the position in the main clause of the element embedded into, that is whether it is the Subject NP, Direct Object, etc.

Results

Traugott (1972) remarks that "AR" are common in written language but they tend not to be used much in speech. Instead a coordination or two separate sentences is used. Indeed, AR are very rare in this corpus, and much more so in relatively unplanned discourse, both absolutely and compared to RR. Only 35 AR occured in total in 250 minutes of speech. The 14 AR in 221 minutes of spontaneous speech were 16% of the RC corpus, the 21 AR in 35 minutes of planned speech formed 70% of the total RCs for that corpus.

Keenan (1975) predicts an order of difficulty favoring relativization on Subject: "there may be some sense in which it is 'easier' or more 'natural' to form RCs on the Subjects (or higher) end of the CH (accessibility hierarchy)." Table 1a shows the results he found from examining a corpus of over 2200 restrictive relatives from written materials. There is a sharp and constant decrease down the AH, but with substantial numbers at the lower positions.

Keenan made the further predication that intuitive judgements of syntactic simplicity would correlate with RCs using relativization on Nps at the high end of the AH. His sources were newspapers, Orwell, Virginia Woolf, and P.F.Strawson (in increasing order of supposed complexity). The intuitively more complex writings did contain more relativizations on lower positions.

Table I

| SU: subject NP, DO:direct object, OBL: indirect object and oblique, L/T: locatives and temporals |
(a) predicted (after Keenan, 1975)

- SU: 46.16%
- DO: 26.7%
- OBL: 14.92%
- GEN: 5.0%

(b) actual

- SU: 63%
- DO: 50%
- OBL: 26%
- GEN: 6%
- (OBL/L/T): 26%
- L/T: 20%


Data from the RR in this corpus (from Van Naarssen, 1977) (Table Ib, cross-hatching) show more relativization on DO, less on SU. (Both OBL and LOC/TEM were included in OBL here, so no comparison can be made). AR do seem more limited to the easier positions, although the number of AR in the sample is very small.

Another analysis suggests that AR are formed on propositions that are simple in the sense of having few NP arguments and therefore few possibilities for relativization. Table II shows the number of AR containing copula and verbal predicates. The verbs were only 36% of the spontaneous data but 50% of the planned.

Table II*

<table>
<thead>
<tr>
<th></th>
<th>Spontaneous %</th>
<th>Planned %</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>COP</td>
<td>64</td>
<td>45</td>
<td>52</td>
</tr>
<tr>
<td>VERB</td>
<td>36</td>
<td>50</td>
<td>44</td>
</tr>
</tbody>
</table>

* The remaining 4% were instances of HAVE, existentials, etc.

Such an analysis is of course not independent of the AH analysis, since propositions with only one argument would necessarily relativize on Subject. Keenan looked in his data for evidence that authors who use simple syntax will promote NPs to subject position. In this corpus there was one use of Passive verb. If there is 'promotion' it would seem to be presyntactic.

The second question in this study concerned where in the sentence AR were found, that is which NP in the higher S was modified, and whether this NP was definite or indefinite, first mention in the discourse or second-mention.

These AR are similar to Sankoff's 'characterizations'; the head NP is a first-mention in the discourse, by a ratio of 5 old: 30 new. Although theoretically AR as well as RR can occur with indefinite NPs, actually they occur on definite NPs, mostly
proper nouns. Of 29 non-sentential appositives, 7 were indefinite, 22 were definite. Table III shows the point of embedding.

Table III

<table>
<thead>
<tr>
<th>Constituent of main clause</th>
<th>Distribution of AR by element embedded under. $S_0$: main S node (for sentential appositives, SU: subject, COMP: Direct obj. predicate nom., indirect obj., OBL: oblique, L/T: locative and temporals.</th>
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</table>

<table>
<thead>
<tr>
<th>Expected (Ø prediction)</th>
<th>Actual</th>
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<tbody>
<tr>
<td>So</td>
<td>7</td>
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<tr>
<td>SU</td>
<td></td>
</tr>
<tr>
<td>COMP</td>
<td>15</td>
</tr>
<tr>
<td>OBL</td>
<td>3</td>
</tr>
<tr>
<td>L/T</td>
<td>4</td>
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</table>

Note that there were no occurrences of AR modifying Subject NPs. All positions embedded to allow the RC to occur sentence-finally, which acquisition studies would suggest is the 'easiest' position in which to add a relative clause. In a larger stretch of speech, however, the finality of sentence-final position is not clear, and AR occur in exactly those positions in which a coordinate proposition could also be used and follow the modified NP immediately:

I have an acting coach in Hollywood, \{ who I go to ... and I go to him. \}

The point about the use of AR in discourse is perhaps that they are not used, that the place appropriate for their use is the place for introduction of new information, which is postverbally insofar as in the discourse the sentence is organized to go from given to new; and this place is just the one which allows the use of a coordinate structure. That AR are used at all is evidence for the strength of the demand, according to the rules of conversation, that referents being introduced into the discourse be immediately identified.

FOOTNOTES

1. Cross-linguistically the function of AR and RR need not coincide in the same structure, though they often seem to. Given a semantic characterization of AR, this will be an interesting question to investigate.

2. Examples:
   $S_0$ : I would clam up, which I don wanna do.
   SU     : ------------------------
   COMP   : I'm taking political science ya know which is totally different
   OBL    : ... depends on the job market, which fer teachers' pretty steep
BIBLIOGRAPHY


Loetscher, Andreas (1973) "On the Role of Nonrestrictive Relative Clause in Discourse," CLS 9


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