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PREFACE

This volume marks the tenth anniversary of the founding of the Berkeley Linguistics Society. To celebrate this anniversary, the 1984 conference included a number of invited speakers, as well as our first parasession, a day and a half dedicated to papers on subordination. This volume includes submitted and invited papers from both sessions.

Two groups of people deserve special recognition. First, we thank all who submitted abstracts, as well as the authors whose contributions made the conference and this volume such a success.

Second, we would like to thank the large number of student volunteers whose time and efforts were essential to the organization of the meeting and the production of the volume. These people are too numerous to mention individually, but include those who served on committees judging submitted abstracts, chairs of individual sessions at the meeting, those who helped with registration and book sales, and those who assisted in the editing process. We would like to thank Orin Gensler for compiling the language index, and we also thank the administrative staff of the Berkeley Linguistics Department for their help during the period preceding the conference.

We are pleased to have been able to participate in the tenth annual conference, and dedicate these Proceedings to the many people who have contributed to the success of BLS in its first decade.

Claudia Brugman
Monica Macaulay
ON THE WEIGHTLESSNESS OF SYLLABLE ONSETS
Larry M. Hyman
University of Southern California

The purpose of this paper is to provide a formal account of certain universal properties of syllable onsets which I shall interrelate within an approach to phonological structure first reported in Hyman (1983). In what can be referred to as "weight-tier phonology", I propose that there is a tier of weight units (WU's) or "beats" to which segments and autosegments associate, and out of which syllables may be constructed. An example is given in (1a).

(1) a. \[
\begin{array}{c}
\sigma \\
\text{x x} \\
\text{p h i n}
\end{array}
\]
b. \[
\begin{array}{c}
\sigma \\
\text{O R} \\
\text{C V C} \\
\text{p h i n}
\end{array}
\]
c. \[
\begin{array}{c}
\sigma \\
\text{C V C} \\
\text{p h i n}
\end{array}
\]

In the English word pin the initial consonant-vowel sequence constitutes a single WU (marked by an "x"), and the following consonant /n/ constitutes a second WU. The resulting structure contrasts sharply with the branching syllable representation in (1b) (see Pike and Pike 1947; McCarthy 1979 etc.), which recognizes the onset-rime distinction as the major constituent break within the syllable, or the "flat" syllable structure in (1c) (see Kahn 1976; Clements and Keyser 1983), which, without internal subconstituents, directly assigns the segment slots to the syllable node. Notice also that the x's in my system provide the same function as the C's and V's in three-tiered CV phonology or the X's in theories not recognizing the C/V distinction (Kaye and Lowenstamm 1981; Levin 1983).

Although the arguments for WU's come from a number of sources (see Hyman 1983), I shall be concerned here only with demonstrating that this conception of phonological structure provides the most revealing account of the properties of the so-called syllable onset. These properties are stated in (2) and (3) and hold at the level of "level 1" morphology in the lexical phonology (Kiparsky 1982, Mohanan 1981).

(2) In a CV sequence, where C = [+cons] and V = [-cons], the C obligatorily is an onset linked to the following V in the same syllable (cf. Steriade 1982).

(3) a. Onsets do not contribute to the "weight" of a syllable.
   b. Onsets are not tone-bearing units (TBU's).
   c. Onsets may not be syllabic.

In (2) it is observed that a [+cons][-cons] sequence is assigned by the initial syllabification rules to the onset-rime nodes of the same syllable, as seen in (4a). By some kind of universal principle the representation in (4b) is ruled out, since the C and V belong
(4) a.  
O R
  C V

b. *  
R R
  C V

c. *  
R
  C V

to separate rimes in separate syllables, as is the representation in (4c), where the CV sequence has been erroneously assigned to the rime node, without an onset node having been created. The statement in (2) recognizes that onset-rime structure is highly dependent on the feature [cons], an improvement, I believe, over frameworks that begin with the ad hoc feature [syll].

The generalizations in (3) are crucial in motivating the WU's in weight tier phonology. Starting with (3a), we observe that syllable onsets are "weightless", i.e. they do not contribute to the overall quantity or weight of a syllable. As has been often noted, many languages distinguish between "heavy" and "light" syllables (see Newman 1972; Allen 1973; Hyman 1977 and references cited therein). The two common patterns are summarized in (5).

(5) Type A:  \( C_0V \) vs.  \( C_0VC/C_0VV \) [Latin; Cl. Arabic]  
Type B:  \( C_0V/C_0VC \) vs.  \( C_0VV \) [Mongolian; Huasteco]

In the Type B syllable-weight language, \( C_0V \) and \( C_0VC \) syllables both count as light, while \( C_0VV \) counts as heavy, while in the Type A language only \( C_0V \) counts as light, while both \( C_0VC \) and \( C_0VV \) are heavy. While these and most syllable weight languages refer to the heavy-light distinction for the purpose of stress placement, Newman (1972) has discussed several Chadic languages where tone and morphology depend on syllable weight.

What is important for our purposes is that the onset plays no role in determining whether a given syllable will be heavy or light. Thus, in a Type A language, (6a) would be considered a light syllable even though it contains three onset consonants, while (6b) would be considered a heavy syllable by virtue of its one margin consonant, even though it has no onset.

(6) a.  \( CCCV \) (e.g. [st\( \ddot{r} \)i])  
b.  \( VC \) (e.g. [\( \ddot{t} \)k])

How is the heavy-light distinction to be captured? McCarthy (1979) was the first to suggest that a heavy syllable in the Type A language could be characterized as one containing a branching rime. As seen in (7a),

(7) a.  
O R
  C V

b.  
O R
  C V

c.  
O R
  C V

the rime of a CV syllable would dominate a single vowel slot and hence would not be branching, while in (7b) and (7c) a rime dominating a VC or VV sequence would be branching. The fact that branching is an important factor only in the rime, not in the onset, is simply stipulated, as it is in characterizations involving "projections" (Halle and Vergnaud 1980) or "displays" (Clements and Keyser 1983).
These approaches have not only failed to account for the distinction between Type A and Type B languages, but also have neglected to unite as one formal property the universals of onsets stated in (2) and (3).

The proposal to substitute a weight tier for the CV- or X-tier of other models provides just the account we need. We begin with each segment having one of the representations in (8) and (9).

(8) a. \[ \begin{array}{c}
\text{x} \\
\text{t}
\end{array} \] 

b. \[ \begin{array}{c}
\text{x} \\
\text{t} \\
\text{t}
\end{array} \] 

c. \[ \begin{array}{c}
\text{x} \\
\text{t} \\
\text{s} \\
\text{t}
\end{array} \] 

d. \[ \begin{array}{c}
\text{x} \\
\text{t}
\end{array} \]

(9) a. \[ \begin{array}{c}
\text{x} \\
\text{a}
\end{array} \] 

b. \[ \begin{array}{c}
\text{x} \\
\text{a} \\
\text{a}
\end{array} \] 

c. \[ \begin{array}{c}
\text{x} \\
\text{a} \\
\text{a}
\end{array} \] 

d. \[ \begin{array}{c}
\text{x} \\
\text{a}
\end{array} \] 

e. \[ \begin{array}{c}
\text{a}
\end{array} \]

The (a) representations have one WU per segmental matrix and represent ordinary single consonants and vowels. The (b) representations have two WUs per segmental matrix, capturing the structure of geminate consonants and vowels. (8c) represents a complex consonant segment, in this case an affricate, while (9c) represents a short diphthong. In (8d) we have a consonant matrix without a WU, a floating consonant as it were, while in (9d) we have a vowel matrix without a WU, a floating vowel. These representations may be appropriate to handle segments that alternate with zero such as the liaison consonants, on the one hand, and schwa, on the other hand, both in French.

Starting, then, with such representations in terms of WU's, the first rule of the phonology is the universal onset-creation rule (OCR) in (10).

(10) \[ \begin{array}{c}
\text{[+cons]} \\
\text{[-cons]}
\end{array} \] 

e.g. \[ \begin{array}{c}
\text{x} \\
\text{t} \\
\text{a}
\end{array} \]

[OCR]

In level 1 lexical phonology, whenever there is a CV sequence, the [+cons] matrix associates onto the WU of the following [-cons] matrix, deleting the first WU, as indicated by the circle around the x. Since this universal rule precedes both syllable formation rules and stress- or tone-assignment rules, it is clear that a single consonant onset can never play a role in syllable weight. If only the OCR applies and we then construct syllables out of the WU's, the three syllable shapes in (5) acquire the representations in (11).

(11) a. \[ \begin{array}{c}
\text{t} \\
\text{x} \\
\text{p} \\
\text{a}
\end{array} \] 

b. \[ \begin{array}{c}
\text{t} \\
\text{x} \\
\text{p} \\
\text{a} \\
\text{n}
\end{array} \] 

c. \[ \begin{array}{c}
\text{t} \\
\text{x} \\
\text{p} \\
\text{a} \\
\text{i}
\end{array} \]

We now say that in the Type A language, a heavy syllable is a branching syllable, as in (11b) and (11c), while a light syllable is a non-branching syllable. The x's resulting from the OCR in (11) correspond to the traditional notion of the "mora", which is how syllable weight has been characterized in the pre-generative
literature (e.g. Trubetzkoy 1939/1969).

Concerning the Type B languages, I propose that the language-specific margin-creation rule (MCR) in (12), which is the mirror-image rule of the OCR in (10), removes the WU of the margin consonant:

\[(12) \quad \xrightarrow{-\text{cons}} \quad \xrightarrow{+\text{cons}} \quad [\text{MCR}]\]

This rule will apply to (11b), resulting in a syllable containing a single ternary branching WU. In a Type A language, the weight-sensitive stress or tone rule applies prior to the MCR, and the margin consonant therefore counts in calculating syllable weight. In a Type B language, the weight-sensitive rule applies after the MCR, making the margin consonant unavailable in calculating syllable weight. We thereby account for the difference between the two types of syllable weight languages in a principled way, and we make the correct prediction that no language will treat a CVC syllable as heavy without also treating a CVV syllable as heavy.

Let us see what else follows from this conception of phonological weight. It has been observed that compensatory lengthening is possible only within a rime (see Steriade 1982). Thus, we can have the process in (13a), but not the one in (13b):

\[(13) \quad \hat{V} C \rightarrow V: \quad \text{b.} \quad * C V \rightarrow \hat{V}:\]

The loss of a consonant can result in the lengthening of an adjacent vowel only if that consonant is in the syllable rime. In a theory lacking a weight tier this would have to be stipulated. In the present model it follows automatically from the OCR, as seen in (14).

\[(14) \quad \text{a.} \quad \xrightarrow{\text{a}} \quad \text{b.} \quad \xrightarrow{\text{a}} \]

In both (14a) and (14b) we begin with two WU's, each dominating a single segmental matrix. In the case of (14a) the /g/ deletes and the /a/ extends its association line to the right onto the second WU. The result is compensatory lengthening. In (14b), however, before any consonant-deletion can apply, the OCR must apply, removing the WU of the onset consonant. Now, if the /g/ deletes, the only result can be a short vowel; hence, no compensatory lengthening in (14b).

A related case concerns desyllabification rules such as (15).

\[(15) \quad V V \rightarrow V: G \quad \text{b.} \quad V N \rightarrow V: N\]

Let us first consider the gliding rule in (15a). Paulian (1974) reports the derivations in (16) from Kukuya (Bantu; Congo). Whenever a non-high vowel is followed by the high vowel /i/, the /i/ becomes the corresponding glide [y] with compensatory lengthening of the preceding vowel. This is accomplished by extending the association of the non-high vowel matrix onto the following WU, as in (17a).
(16) /nkéːf/ \rightarrow [ŋké:y] 'drought'
/mù-bóːf/ \rightarrow [mù-bóːy] 'clay'
/ɪlː-báːf/ \rightarrow [ɪlː-báːy] 'lath'

(17) a. \[x \ldots x\] b. \[x \ldots x\]
   \[\hat{a} \hat{i} \hat{o}\] \[\hat{a} \hat{i} \hat{o}\]

The corresponding mirror-image input in (17b) fails, however, to derive a [ŋ] followed by a compensatorily lengthened vowel [aː]. This misderivation can be prevented if we assume that onset creation precedes all level 1 phonological rules. However, the OCR will not apply to (17b), since both segments are [-cons]. I have proposed elsewhere (Hyman 1983) that glides are [+cons], not [-cons] as they have been assumed to be from the days when there was no syllable structure in phonological theory. What we need, then, is a readjustment rule preceding the OCR which will change the high vowel to [+cons] in this context. Then the OCR will apply, guaranteeing that there will be no compensatory lengthening accompanying onset creation.

Let us consider now desyllabification of syllabic consonants. The rule in (15b) changes a vowel followed by a syllabic nasal into a long vowel followed by a non-syllabic nasal. As seen in (18),

(18) a. \[x \ldots x\] b. \[x \ldots x\]
   \[\hat{a} \hat{n} \hat{a}\] \[\hat{n} \hat{a}\]

the representation of a syllabic nasal is simply a nasal segment dominated by a WU of its own. In other words, it is identical to a regular nasal consonant. In order for it to be syllabic on the surface, its WU, i.e. its beat or mora value, must be maintained. In (18a) the extension of the vowel association onto the following WU accomplishes both the compensatory lengthening in question as well as the desyllabification process, as we shall see below. What is crucial is that the representation of the syllabic /n/ in (18b), identical as it is to any single consonant segment, will result in an application of the OCR, and hence, no compensatory lengthening will be possible. The derivation in (19) from Dagur Mongolian (Martin 1961) shows how this will work:

(19) /sain+ini/ \rightarrow [sainini] 'as for the good'

The final nasal of 'good' is normally syllabic, but when followed by a suffix vowel in level 1 morphology, it loses its syllabicity. No compensatory lengthening results. This follows from the OCR. Notice that no other model has made the prediction that desyllabification and onset creation are related in just this way. Finally, WU's provide a particularly suitable means of representing derived syllabic consonants. The derivation in (20), for example, where H = high tone, first applies the OCR, then maps the single H tone onto the one remaining WU, and then deletes the high vowel [i]. Since the nasal left behind is dominated by a WU of its own, it is a syll-
labic nasal. Notice that there is no need to shift the nasal from the onset to the rime as it acquires syllabicity, since the mapping of the tone is on the WU, not on the vowel.

This brings us then to the second point concerning onsets: the fact that they may not be tone-bearing. The normal assumption is that tone will be mapped onto vowels or perhaps onto syllables. It is of course known that many languages have syllabic consonants that also bear tone. We have just seen that such consonants have a WU of their own. Now, if we assume that tone mapping takes place on WU's, then it will never be the case that an onset—which by definition must be followed by a vowel—is assigned a tone on its own. Consider the example [ɔ. tɛɛrəl] 'you pl. run' from Gokana (Cross-River; Nigeria) in (21).

In (21a) the H-L melody of the verb form is mapped onto the V slots of the so-called CV tier. The consonants must be skipped over, as seen. We note that the consonants in question are in fact onsets. In this approach the V slots are said to be "projected" and then the tone melody is mapped onto this projection. In (21b) no such stipulation is necessary: if the OCR applies first, we obtain a verb form with four surviving WU's, as indicated. The H-L melody then maps directly onto these WU's, and there is no need to have phonological projections at all. The OCR will thus not only capture the weightlessness of onsets, but also their tonelessness.

A corroborating example of the role of the OCR in predicting what will vs. will not be a tone-bearing unit (TBU) comes from Kom (Grassfields Bantu; Cameroon). The phrases in (22) are designed to show that Kom permits syllables having both HL and HM contour tones.

In (22a) a HL contour is on the stem of 'wings', while in (22b) a HM is on the stem of 'kolanuts'. (There is also a HL contour on the prefix of 'squirrel' in both examples.) Now consider the two nouns in (23).

The noun 'slave' in (23a) has a HL falling contour on its stem syllable, while the noun 'teeth' in (23b) has a HM falling tone on its stem. Both contours fail to appear in (24), however, where the stem...
syllable is immediately followed by a vowel:

(24) a. ʔ-ko˘s ʔ fâ-cwô 'slave of the squirrel'

   b. ʔ-so˘n ʔ fâ-cwô 'teeth of the squirrel'

Since we saw in (22) and (23) that Kom permits [ Zusammenhangslinie den manuscripts] and HM contour tones, why are these contours lost in (24)? Note that the vowel [ɔ] occurs in open syllable in the two head nouns in (24), after resyllabification takes place across the word boundary. Since the syllables permitting contour tones in (22) are also open, the only difference between the acceptable contour environment in (22) vs. the unacceptable contour environment in (24) is that there has been a re-syllabification in (24).

The representations that immediately precede this resyllabification are given in (25).

(25) a. \[ L \ H \ L \ H \ L \ \ L \ \ a-ko˘s \ a \ fe-cwo \]

   b. \[ L \ H \ L \ H \ H \ L \ L \ \ a-so˘n \ a \ fe-cwo \]

The tonal associations reveal that a H tone spreads onto a following L tone WU. Thus, there are several instances in (25) of a single H autosegment being associated onto two WU's. In these representations I am claiming that there is a stage in the derivation where the second tone of the contour is associated onto the WU of the margin consonant. The relevant portions of (25) are repeated in (26).

(26) a. \[ H \ L \ H \ \ \ x \ x \ x \ \ k \ c \ s \ a \]

   b. \[ H \ L \ H \ H \ \ x \ x \ x \ \ s \ c \ n \ a \]

It is important to note that the M tone is derived in Kom: the first H TBU following a L tone will be pronounced on a M pitch. Thus, in (26a), the /â/ will be M by virtue of the preceding anchored L tone, while in (26b) the H on the margin consonant /â/ will be M because of the preceding floating L, creating the surface HM falling contour. It can be seen from (26) that when the resyllabification process is effected by reapplying the OCR, the WU carrying the second tone of the contour will be deleted, resulting in the forms in (27).

(27) a. \[ H \ L \ H \ \ \ x \ x \ \ k \ c \ s \ a \]

   b. \[ H \ L \ H \ H \ \ x \ x \ \ s \ c \ n \ a \]

The L tone set afloat by the OCR in (27a) will result in the following H tone /â/ being realized on a M pitch (cf. (24a)). In (27b), however, it is only the H tone set afloat that could conceivably be lowered to M, and thus the following /â/ remains H tone to the surface.
What the above derivations show is that the OCR automatically accounts for the flotation of tones which become disassociated from a consonant that changes from being a margin to being an onset. The non-tone-bearing character of the onset need not be stipulated separately from the resyllabification process itself, and hence the weight tier approach provides a very satisfactory account of this non-accidental relationship.

So far it has been shown that the weight tier can account for the universal CV syllable in (2), for the weightlessness of onsets in (3a), and the non-tone-bearing nature of onsets in (3b). I shall demonstrate that WU's also make the correct prediction in (3c) that an onset may not be syllabic in initial syllabification rules. It is first necessary to state how syllability is defined in this system. I reject the notion that there is a feature [syll] and, as we have seen, there is no pre-existing rime or nucleus node in the syllable structure I have assumed in representations such as in (11) above. That the syllable cannot predict syllability is further demonstrated in my earlier work (Hyman 1982, 1983), where it is argued that at least one language, Gokana, does not have syllable structure at all. I propose that syllability be defined as in (28).

(28) a. Each WU defines a "beat" or peak of sonority which can be referred to as "syllability".

   b. This syllability is realized on the most sonorous segment dominated by each such WU.

(28a) clearly states that syllability is defined independently of syllables. (28b) recognizes the need, pointed out by many before me, for a sonority hierarchy which places vowels above consonants, sonorants above obstruents, and so forth.

With the above characterization of syllability we now understand what was said about syllabic consonants in the preceding discussion. By the above definition, a representation such as in (29), as the word pin appears prior to the operation of the OCR,

(29)   x   x   x
       l   l   l
     pʰ   i   n

says that there is a "syllabic [pʰ]", a "syllabic [i]" and a "syllabic [n]", since each segment is the most sonorous dominated by its respective WU. Thus, what the OCR says, in effect, is that a [+cons] segment may not have weight, i.e. syllability, if it is directly followed by a [-cons] segment. On the other hand, a consonant which follows a vowel need not lose its weight, i.e. its syllability, by the language-specific MCR, since we know that syllabic consonants are well-formed in the would-be syllable rime. When a language such as Latin refers to the margin consonant as a "mora", i.e. as having weight, it is in effect treating that consonant as syllabic. If on the surface the consonant in question is not syllabic, then the MCR must apply after the weight-sensitive
rule in question (in this case, after the Latin stress rule).

I have applied this model to various phonological phenomena and have found that in many cases it provides a more elegant statement of the facts of syllabicity than approaches which are wedded to the syllable. I have argued, for example, that epenthesis rules can neatly be constrained as inserting phonetic materials on a single tier only. That is, they take the existing WU's and insert vowel or consonant features to make these WU's "pronounceable". A case in point is the Tamazight dialect of Berber, which has been studied by a number of linguists (see Saib 1976a, b; Guerssel 1978; and, for the most detailed account, Penchoen 1973). The derivations in (30) suggest a rule inserting a schwa in the two environments in (31).

(30) a. /xdm + x/ \rightarrow [xəðməx] 'I work'
b. /t + xdm/ \rightarrow [θəxəðm] 'you sg.f. work'
c. /xdm + n/ \rightarrow [xəðmən] 'they m. work'

(31) a. \emptyset \rightarrow e / C ___ C #
b. \emptyset \rightarrow e / C ___ C C

In the forms in (30), (31a) first inserts a schwa before the word-final consonant, and then (31b) inserts another schwa between the initial and the following two consonants. In (32), however, we note a slightly different story when there is an odd number of consonants:

(32) a. /xdm/ \rightarrow [xıθm] 'work'
b. /n + xdm + m/ \rightarrow [nxəðməm] 'we work'
c. /t + xdm + m/ \rightarrow [θxəðməm] 'you pl.m. work'

The initial consonant in each form is produced with a beat, i.e. with weight. It is clear that we are dealing with a syllabic consonant, though we do not need to commit ourselves to saying that it actually constitutes a syllable. The epenthesis rule that I have proposed (Hyman 1983) is given in (33).

(33)

The boxed schwa is inserted onto a [+cons] WU that is followed by another [+cons] WU that does not branch; i.e. when the second consonant is not itself followed by a V (which would constitute a branching WU). The representations of (30a) and (32a) after the application of rule (33) are seen in (34).

(34) a. \begin{tikzpicture}
        \node (x) at (0,0) {x};
        \node (x1) at (0.5,0) {x};
        \node (x2) at (1,0) {x};
        \node (x3) at (1.5,0) {x};
        \node (x4) at (2,0) {x};
        \node (e) at (1.5,-0.5) {e};
        \node (d) at (2,-0.5) {d};
        \node (m) at (2.5,-0.5) {m};
    \end{tikzpicture}

b. \begin{tikzpicture}
        \node (x) at (0,0) {x};
        \node (x1) at (0.5,0) {x};
        \node (x2) at (1,0) {x};
        \node (x3) at (1.5,0) {x};
        \node (e) at (1.5,-0.5) {e};
        \node (d) at (2,-0.5) {d};
        \node (m) at (2.5,-0.5) {m};
    \end{tikzpicture}

The initial consonant of (34b) has a WU of its own and therefore is interpreted as syllabic; the other [+cons] WU's are removed by the
MCR. There is no need for the syllable and therefore no need to recognize defective syllables in which a voiceless consonant would constitute the nucleus. While syllable-based theories could conceivably treat the voiceless consonant as extrasyllabic, they cannot explain why an extrasyllabic consonant should have weight like a syllabic consonant within a syllable, rather than not have weight, like an onset (universally) or a margin consonant (usually).

The above example is intended to show that the WU approach to the "anchor tier" provides the most promising way of encoding the timing properties of phonological entities. The CV or X-tiers need to be supplemented by principles, conditions, or conventions in order to derive the appropriate outputs, while the WU tier defines the correct set of onset and other properties in a principled way.

The final question which I would like to raise is whether what I have said can be reduced to some kind of functional, phonetic explanation, or whether WU's, the OCR and the MCR are abstract grammatical properties. It has been my intention in developing this model to derive a representation of the phonological output that has the most realistic chance of serving as the input to phonetic realization rules and strategies. I am aware, however, that there are numerous surface examples that render opaque some of the generalizations I have referred to earlier. In particular, languages have syllabic consonants preceding vowels, suggesting the possibility of phonetic syllabic onsets. One need not go further than English to find numerous examples such as the ones in (35).

(35) a. [dɛŋɪtɛ] 'devilish' b. [hɛpənɪŋ] 'happening'

These syllabic consonants are of course derived by low-level rules. Assuming no underlying schwa, these words are represented as in (36).

(36) a. \[ \stackrel{x}{d} \stackrel{x}{ɛ} \stackrel{x}{v} \] \(ɪ\) \(ɛ\) b. \[ \stackrel{x}{h} \stackrel{x}{ɛ} \stackrel{x}{p} \] \(ɪ\) \(ŋ\)

The right bracket separates the "neutral affixes" -ish and -ing from what is present in the level 1 morphology (Kiparsky 1982). As seen, the OCR need not reapply in English to level 2 morphology or to post-lexical CV sequences.\(^8\)

Similar arguments for the universality of the OCR at level 1 can be made from other languages which on the surface have syllabic consonants immediately preceding a vowel. I have provided accounts for such specious OCR violations as those seen from Kpelle (Mande; Liberia) in (37a) and Idoma (Kwa; Nigeria) in (37b) (see Hyman 1983).

(37) a. [\(ŋɛ:\)] 'his mother' b. [\(p'æ\)] 'deceived'

In each case the syllabic consonant is tone-bearing and receives its syllability from a late rule. What this means is that the OCR is obligatory in level 1 lexical morphology, but may be violated on the surface by subsequent, often low-level rules. It is therefore hard to understand how the OCR, not being universally respected, phonetically, could represent a phonetic principle rather than a phonological one.
While this may be true, the concept of WU's has phonetic implications that should be investigated further. It has been suggested that the representation in (38a), if surviving to the surface, could only stand for a syllabic consonant followed by a syllabic vowel:

(38) a.  

[+cons] [-cons]  

b.  

[-cons] [+cons]

The only surface examples known of this kind of representation are those involving sonorant consonants as we have just seen in (35) and (37). In the case of (38b), we have said that this represents a syllabic vowel followed by a syllabic consonant. If this consonant is a sonorant, e.g. a liquid or nasal, this makes sense. But what if it is an obstructed, for example, a stop? What could this mean?

I would like to speculate that if the second WU of (38b) dominates a stop, (38b) represents a "released" consonant. Thus, the released and non-released versions of a word such as bat would be as in (39).

(39) a.  

b ã t

A post-vocalic stop may not be syllabic, but it may be released. I would hypothesize on the basis of the different representations in (39) that a vowel in an English word should be shorter before a non-released consonant, with which it shares a single WU, as in (39b), than before a released consonant, which has its own WU, as in (39a).

Let's push this idea a little further. It is well-known that a non-released consonant is only barely or not at all audible when it follows another consonant, as in words such as as in (40).

(40) apt, sulk, can't, test, ramp, sink, etc.

When the stop in question is unreleased, one must rely on other cues to detect its presence—especially on the shortening of the preceding vowel or vowel-consonant sequence, perhaps also on nasalization in words such as can't and sink. Where a final consonant must of necessity be released, as in the case of a fricative or affricate, the different realizations in (41) represent, respectively, a syllabic fricative, i.e. with a beat of its own, vs. the normal non-syllabic fricative.

(41) a.  

g ã s

b.  

g ã s

English words ending in three or four consonants will generally assign only the first of these to the preceding WU, as seen in (42).

(42) a.  

b.  

t ë s t s
c.  

t ë s s
When the /t/ of tests drops out in casual speech, we obtain (42c), where there is an [s] followed by a second [s] having its own WU and hence constituting a beat of its own.

Thus, in conclusion, while the WU framework adequately accounts for a number of phonological facts about onsets, syllable weight, and syllabicacy in general, it also provides a straightforward way of representing low-level phonetic phenomena that are not neatly accounted for by reference to syllable structure alone. It is hoped that weight tier phonology, in addition to its phonological significance, will provide a meaningful contribution towards the prediction of timing relations between segments in the physical phonetic output. 9

NOTES

1 In (5) "VW" is intended to represent either long or tense vowels, as opposed to corresponding short or lax vowels. There is some question as to a possible weight continuum that would also recognize, among other things, full vs. reduced vowels, and which would place sonorant consonants in between vowels and obstruents in terms of their weight properties. Since this is where they fall in the sonority hierarchy, and since I later relate weight, syllabicacy and sonority (see (28)), this is to be expected.

2 I have recently come to question whether affricates should be represented as two fully specified [+cons] matrices, as indicated in (8c), rather than sequencing only those features that have opposite values, e.g. [-cont][+cont]. The same may be true for short diphthongs.

3 A fifth possibility is for there to be a WU without any segmental material associated with it. This could be used where an adjacent segment lengthens in some morphological environment: the morpheme in question could be represented as a WU to which, e.g. the preceding segmental matrix extends its association.

4 I at first rejected the notion that schwa could be represented as in (9d) in French and represented it as an empty WU in a paper entitled "Syllabicacy without syllables in French". Discussions with Bernard Tranel have made me return to my original position in favor of (9d). The "floating schwa" serves the purpose of blocking the preceding consonant from joining the following consonant as a complex onset. A rule is needed to associate the floating schwa to the preceding [+cons] WU in the appropriate environments.

5 The position I would like to take is that all onsets are created prior to the operation of weight-related phonological rules, if this can be made to work. I have not mentioned elsewhere in this paper (but see Hyman 1983) that we will need onset-adjunction and margin-adjunction rules which also will remove the WU's of consonants joining other WU's as onsets or margins.

6 It is possible, however, to have a derivation such as iə → yia → yaa [yaː:], where there is first glide-insertion and then assimilation as indicated.

7 The generative Berber scholars have transcribed an initial
schwa in forms such as (32). I have verified with Jilali Saib, however, that it is a schwaless syllabic consonant, just as Penchoen (1975) transcribes it. A schwa is, however, present in the single case where contrastive stress is placed on the consonant.

It may be that one will want to have the [+cons] sonorant link also to the WU of the neutral suffix without, however, deleting its own WU as would be required by the level 1 operation of the OCR. There are different low-level realizations of words such as in (36), and it is not clear which of the phonetic transitions should be represented by WU associations and which are simply part of the phonetic component of English.

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On The Structure of Phonetic Categories
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University of California, Berkeley

1. Introduction

In the earliest major statement of a phonetic feature system, Jakobson, Fant & Halle (1951) proposed features which were intended to capture the parameters used by all languages to make phonological distinctions. These features were set up as binary categories, because, it was argued, speakers actually encode and decode speech by making a series of binary decisions about the classification of speech sounds. Chomsky & Halle's later system also contained binary features for much the same reasons (Chomsky & Halle 1968). Ladefoged's 1971 system consisted of primarily binary features with a few multivalued features; he argued that some phonological oppositions (such as vowel height) are not binary. However, in a recent statement, Ladefoged (1980) presented strictly dimensional phonetic features, argued to capture the actual parameters used in speech perception and production, but not necessarily to reflect any kind of phonological or classificatory reality to the speaker or hearer. He further brought into question the whole issue of the psychological status of categorical phonological features, arguing that if they exist at all, they have little to do with these phonetic parameters used in speech production and perception.

These claims about the structure and status of phonological features raise a number of important questions. First, are speech sounds really organized into a categorical system which is in some sense psychologically real, or are speech sounds simply entities made up of some value on a number of phonetic scales or dimensions? Second, if there is such a featural classification system, is it strictly binary? Third, is binary classification really the natural way humans categorize things?

This third question may be the key to the other two. There has been a great deal of recent research examining the structure of natural categories and in particular semantic categories. This research has revealed that such categories have a complex internal structure, and are generally not binary. One way of examining the categorical nature of phonological features would be to use the tools developed for testing the nature of semantic categories. If it is found that phonetic featural categories behave much like semantic categories, then we would not only have useful evidence about how phonetic features are conceptually structured, but we would also feel more confident about claiming them to be psychologically real, in that they could be considered part of a general pattern of human categorization behavior.

In this paper, then, we will first discuss briefly the issues of binariness and review data on the organization of semantic categories. Second, we will present the findings of an experiment designed to look at the structure of phonetic featural categories. And finally we will discuss these results in terms of the issues of binariness and psychological reality raised above.

2. Binariness and the Structure of Semantic Categories

The notion of 'binariness' entails three basic components (see Garner
1970, 1978). The first is that all elements to be categorized must fit into two and only two categories for some particular parameter. The second is that this division is strictly categorical; all elements to be categorized must belong to either one category or its opposite; an element may not belong to both categories, or to neither. The third component we may call 'homogeneity'; this says that within each category every element is as conceptually good a member of that category as every other.

It is clear that the first two of these components are strictly held to by the Jakobson, Fant & Halle and Chomsky & Halle systems: every feature has only two possible values, and every segment for which a feature is relevant must have either a positive or negative value of that feature. The third component is implied by Jakobson's notion of 'bipolarity'; but because there is some variation at the phonetic level within featural categories, proponents of these systems might agree that categories are not strictly homogeneous at the phonetic level.

We will now turn to the question of the structure of semantic categories. Recent research, notably by Eleanor Rosch and her associates at Berkeley (see Rosch 1973, 1978) has demonstrated through a series of experiments that semantic categories have a complex internal structure. Such categories consist of prototypical members, surrounded by members of less and less typicality, with vague boundaries. Prototypical members are those which have the most typical combination of attributes which are associated with the category; they are the members which have the least number of attributes in common with prototypical members of opposing categories at the same taxonomic level of categorization. On the other hand, a peripheral member of one category can also be a member of other categories at the same level of taxonomic abstraction, depending on the context of the categorization. Since the make-up of each category is more or less determined by the cultural practices of the people using the concept, prototypicality will be to some extent determined by the function and importance of category members within the speech community.

Figure 1 illustrates the structure of the semantic category 'vehicle'. (These data were taken from Rosch 1973, and are based on ranking experiments done with American Ss; the numbers in parentheses are mean rank. Since Rosch did not actually list attributes, these have been abstracted from Ss' responses.) A car is clearly the most prototypical 'vehicle' for these Ss, while 'horse' and 'skis' are the least prototypical. 'Car' not only has the most typical confluence of attributes (such as 'it transports you', 'it is a machine', etc.), but also is undoubtedly the most frequently used vehicle for the Ss tested, which adds to its prototypicality. Note that the peripheral members of the category can be considered to be fairly good instances of other categories at the same level of abstraction as 'vehicle'; for example, 'horse' is a good example of 'animal'. But the prototypical vehicle 'car' is unlikely to be considered a good example of any other category. 'Horse' would most likely be considered a 'vehicle' in the context: 'How do I get from here to there?', but an 'animal' when it comes to breeding, for example.

From this example it can be seen that semantic categories are not binary, strictly categorical, or homogeneous. There is quite clearly a good deal of structure within each category, and individual elements can
Figure 1: The internal structure of the semantic category 'vehicle' (adapted from Rosch 1973).

<table>
<thead>
<tr>
<th>Prototypical Members</th>
<th>Peripheral Members</th>
<th>Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>car (1.0)</td>
<td>motor-scooter (2.5)</td>
<td>horse (5.9)</td>
</tr>
<tr>
<td></td>
<td>tricycle (3.5)</td>
<td>skis (5.7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

be members of different categories at the same taxonomic level. Even natural categories which lend themselves to the analysis of having clear opposites more readily than 'vehicle' does (so would be better candidates for binariness) cannot be argued to be strictly binary. For example, with respect to the category 'male vs. female', which is about as binary as a natural category gets, there are certainly some people whose categorization would be unclear, for either biological or social reasons. So it can be seen that binariness is not an inherent property of natural semantic categories.

3. The Experiment

3.1. Design and Procedure

The present experiment was designed to look at the questions of the binariness and internal structure of phonetic featural categories (see Jaeger 1980 for details). The experimental design used was that of concept formation. This standard tool of psychological research is based on the assumption that previously existing or natural categories can be brought to the consciousness of subjects by careful training and feedback techniques, and that subjects should be able to demonstrate through their behavior something about the natural structure of these categories. Non-existent categories, or unnatural categories, should be either extremely difficult or impossible for Ss to learn or to manipulate in any consistent way.

In the current experiment, the phonetic featural categories [anterior], [sonorant], and [voice] were explored. These features were chosen primarily because for each of them there is a phoneme whose category membership is controversial: first, there has been much argument about whether [w] should be [+anterior] or [-anterior], given the fact that it has constrictions at both the lips and the velum. Second, [h] is considered a sonorant in some feature systems, but an obstruct in others. Third, word-initial /b,d,g/ in English have questionable voicing status, given that they are usually phonetically voiceless, but are nevertheless considered part of voiced phonemes. The categories taught were [+anterior], [-anterior], [+sonorant], and [+voice]; the phonemes used in each part of the experiment are shown in Table 1.

There were 28 Ss, all linguistically naive speakers of American English between the ages of 18-39, mainly students and staff at U. C. Berkeley. Each S performed two categorization tasks: they were taught either [+anterior] or [-anterior] and either [+sonorant] or [+voice].
Table 1: Phonemes used in present experiment.

<table>
<thead>
<tr>
<th>A. [anterior]</th>
<th>C. [voice]</th>
</tr>
</thead>
<tbody>
<tr>
<td>positive = /p, b, t, d, f, v, s, z, m, n/</td>
<td>positive = /v, z, m, n, r, w, y/</td>
</tr>
<tr>
<td>negative = /j, k, g, /, y, h/</td>
<td>negative = /p, t, k, f, θ, s, h/</td>
</tr>
<tr>
<td>control = /θ, j/ [+anterior]</td>
<td>control = /l/ [+voice]</td>
</tr>
<tr>
<td></td>
<td>/j/ [-voice]</td>
</tr>
<tr>
<td>test = /w/</td>
<td>test = /b, d, g/</td>
</tr>
</tbody>
</table>

B. [sonorant]

| positive = /r, m, n, w, y/                 |
| negative = /p, t, k, b, d, g, f, θ, j, s, j, dʒ/ |
| control = /l/ [+sonorant] /z/ [-sonorant]   |
| test = /h/                                 |

In addition, 10 Ss participated in the [+voice] task as part of a separate experiment, making a total of 38 Ss.

The basic procedure was as follows. Ss were run individually and were given a full set of instructions before the experiment began. They sat in a sound treated room and listened over headphones to a list of tape-recorded words spoken by a male speaker of standard Midwest American English. The first segment in each word was either a positive or a negative instance of the featural category being taught. Ss were instructed to pay attention to the way the first sounds in the words were pronounced, and in the case of 'sonorant' and 'voice', to attend to the "overall sound quality". After each word, the same voice said 'yes' or 'no', indicating to the S whether the sound just heard had been part of the category or not. Ss were instructed that after they had heard several words and had some idea of what the correct category was, they were to begin responding 'yes' or 'no' to each word, before the feedback voice gave them the correct answer. Their responses were monitored by the experimenter, and if they responded to 15 tokens in a row with two or fewer errors, they were considered to have reached criterion, and were then given a test. (They were required to hear at least 25 words before the test began, to insure that they had heard the full range of exemplars.) The test contained three types of words: 1) Words with the segments taught as being positive or negative instances of the category, half of which continued to be reinforced. 2) Control tokens; these are clear positive or negative exemplars which had not yet been presented to the S; correct categorization of these control tokens was necessary before a S was judged to have formed the category correctly. 3) Test words, whose category membership was in question. After the test was over, the Ss were asked to name the category and discuss their decision-making procedures.

3.2. Results

The general results of the experiment are shown in Table 2. A few remarks can be made about Ss' overall performance; generally, some
Table 2: General results.

<table>
<thead>
<tr>
<th>Category</th>
<th>#Ss</th>
<th>% Ss Formed Category</th>
<th>Average # Trials to Criterion (S.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[+anterior]</td>
<td>14</td>
<td>50</td>
<td>45 (18)</td>
</tr>
<tr>
<td>[-anterior]</td>
<td>14</td>
<td>79</td>
<td>33 (15)</td>
</tr>
<tr>
<td>[+sonorant]</td>
<td>14</td>
<td>50</td>
<td>31 (14)</td>
</tr>
<tr>
<td>[+voice]</td>
<td>24</td>
<td>38</td>
<td>43 (23)</td>
</tr>
</tbody>
</table>

categories were easier to form than others, with [-anterior] having the highest success rate, and [+voice] being the most difficult. The most likely explanation for this is that it is easier for naive Ss to attend consciously to obvious articulatory gestures than to auditory properties of sounds or to less obvious vocal tract movements or configurations. The fact that only 38% of the Ss exposed to the [+voice] category could learn it, indicates that the movement of the vocal cords is extremely difficult for naive speakers to become aware of or to be objective about.

There are several places to look for information about the internal structure of the categories tested here. First, the errors Ss make in categorizing various tokens bears on the prototypicality question, in that it would be expected that there would be fewer errors in categorizing prototypical members, and more errors on peripheral members. Second, the categorization of the test words by individual Ss, and the agreement among Ss on the test words, gives evidence about the binariness question. Third, the names given to the categories by the Ss gives data about which attributes Ss consider to be criterion for category membership.

The results for [+anterior] and [-anterior] are shown in Tables 3 and 4. Comparing the correct and incorrect responses to different members of these categories, it can be seen that the categories [+anterior] and [-anterior] clearly have internal structure, which is based primarily on the expected physical dimension of 'front of the mouth' vs. 'back of the mouth'. The labials and labio-dentals are the most prototypical of the [+anterior] category (that is, they received the most correct responses), while laryngeals, then low back vowels and velars are prototypical of the [-anterior] category. The large number of errors on palatals and alveolars shows that these are peripheral members of the categories; in fact, comments from Ss indicated that the palato-alveolar area was a very unnatural place to make a 'front-back' division of the vocal tract, and in particular, any feature which divides [s] from [ʃ] articulatorily is making a division that goes against speakers' intuitions.

In general each S made a mainly binary decision about the categorization of the test segment; however, different Ss made different decisions about which category the [w] should belong to, apparently determined by which category the S was taught, and which attributes he or she was attending to. For the [+anterior] category, 6 out of 7 Ss responded mainly positively to [w] (90% positive responses), while one S rejected it (100% negative). It appeared that when Ss were attending to the forward movement of lips or tongue they could easily detect the lip
Table 3: Results for [+anterior]\[^2\]

<table>
<thead>
<tr>
<th>Positive Tokens</th>
<th>%Positive Responses</th>
<th>%Negative Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>labials</td>
<td>89</td>
<td>9</td>
</tr>
<tr>
<td>labio-dentals</td>
<td>92</td>
<td>8</td>
</tr>
<tr>
<td>alveolars</td>
<td>73</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td><strong>82</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Negative Tokens</th>
<th>(correct)</th>
</tr>
</thead>
<tbody>
<tr>
<td>palatals</td>
<td>21</td>
</tr>
<tr>
<td>velars</td>
<td>4</td>
</tr>
<tr>
<td>low back vowels</td>
<td>3</td>
</tr>
<tr>
<td>laryngeal</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control Tokens</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[θ, ʃ] (positive)</td>
<td>83</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Tokens</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[w]</td>
<td>77</td>
</tr>
</tbody>
</table>

Table 4: Results for [-anterior]

<table>
<thead>
<tr>
<th>Positive Tokens</th>
<th>%Positive Responses</th>
<th>%Negative Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>laryngeal</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>low back vowels</td>
<td>94</td>
<td>4</td>
</tr>
<tr>
<td>velars</td>
<td>89</td>
<td>9</td>
</tr>
<tr>
<td>palatals</td>
<td>75</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td><strong>88</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Negative Tokens</th>
<th>(correct)</th>
</tr>
</thead>
<tbody>
<tr>
<td>alveolars</td>
<td>6</td>
</tr>
<tr>
<td>labio-dentals</td>
<td>0</td>
</tr>
<tr>
<td>labials</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control Tokens</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[θ, ʃ] (negative)</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Tokens</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[w]</td>
<td>45</td>
</tr>
</tbody>
</table>
rounding involved in the pronunciation of [w]; the one S who rejected it reported feeling her tongue drawn back, and found this sensation more salient than the lip movement. The overall inclusion rate of [w] in the [+anterior] category was 77%. It can be argued from this that [w] is a good exemplar of the category [+anterior], as responses to [w] were similar to responses to phonemes taught as being members of the category.

For the [-anterior] category, 6 Ss responded mainly negatively to the test words (90% negative responses), 4 Ss responded positively (100% positive), and one S, reporting that she felt both constrictions, split her answers (40% positive, 60% negative); [w] had an overall inclusion rate of 45%. This indicates that even when Ss have their attention drawn to gestures made at the back of the oral cavity, the labial movement can continue to be more salient, perhaps because it is more kinesthetically obvious and easier to objectify.

Ss in the [-anterior] group named the category such things as: "forward vs. back of mouth, shut vs. open mouth, teeth and lips vs. gutteral", and "closed mouth vs. closed throat." The [-anterior] category was described as "sound comes from back of throat vs. front, eg. tongue and teeth; open vs. closed mouth", and "pushing up back or middle of tongue but not front." These characterizations of the categories indicated that the attributes involved included not only the 'front of the mouth vs. back of the mouth' dimension, but also an 'open mouth vs. closed mouth' factor, and an attribute based on which specific articulators and parts of articulators were involved. Clearly, then, the categorization of [w] with respect to the [-anterior] feature is ambiguous across the speech community, and each instance of categorizing it as one or the other was dependent on the specific context of each Ss' experiences, that is, which category they were taught, and which attributes they considered most criterial.

Table 5 shows the results for [+sonorant]. Although there was little variation in responses to the [+sonorant] phonemes (probably due to the small number of exemplar types), there was a great deal of structure apparent in the [-sonorant], or obstructive, category. Not surprisingly, voiceless stops were considered to be the prototypical obstruents, and voiced fricatives the most peripheral obstructs. The attributes involved included continuancy, lack of turbulence, an open vocal tract position, and, for some Ss, voicing. Ss named the category "soft, voice-like, fluid, long, drawn-out vs. gruff, harsh, clearcut, hard, abrupt", and said "the correct ones started in the back of the throat, or had a rattling sound in the back of the throat". However, apparently not all Ss considered voicing necessary, as three out of seven Ss included the test segment [h] in the [+sonorant] category (83% positive responses) while four rejected it (100% negative responses), for an overall inclusion rate of 36%. Those Ss who included it were evidently more attuned to the 'open' or 'flowing' attributes, while those who rejected it considered it not 'soft' or 'vowel-like' enough. Again, the categorization of this speech sound is not strictly binary across the speech community.

The results for the [voice] experiment are shown in Table 6. The structure evident for both the [+voice] and the [-voice] categories shows that besides the actual presence or absence of voicing, continuancy
Table 5: Results for [+sonorant]

<table>
<thead>
<tr>
<th>Positive Tokens</th>
<th>%Positive Responses</th>
<th>%Negative Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>glides</td>
<td>93</td>
<td>4</td>
</tr>
<tr>
<td>nasals</td>
<td>95</td>
<td>5</td>
</tr>
<tr>
<td>[r]</td>
<td>91</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>93</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Negative Tokens</th>
<th>%Positive Responses</th>
<th>%Negative Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>voiced fricatives</td>
<td>23</td>
<td>73</td>
</tr>
<tr>
<td>voiced affricate</td>
<td>17</td>
<td>83</td>
</tr>
<tr>
<td>voiceless affric.</td>
<td>13</td>
<td>87</td>
</tr>
<tr>
<td>voiceless fric.</td>
<td>10</td>
<td>87</td>
</tr>
<tr>
<td>voiced stop</td>
<td>9</td>
<td>88</td>
</tr>
<tr>
<td>voiceless stop</td>
<td>3</td>
<td>94</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
<td><strong>86</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control Tokens</th>
<th>%Positive Responses</th>
<th>%Negative Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>[l] (positive)</td>
<td>86</td>
<td>14</td>
</tr>
<tr>
<td>[z] (negative)</td>
<td>4</td>
<td>93</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Tokens</th>
<th>%Positive Responses</th>
<th>%Negative Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>[h]</td>
<td>36</td>
<td>64</td>
</tr>
</tbody>
</table>

Table 6: Results for [+voice]

<table>
<thead>
<tr>
<th>Positive Tokens</th>
<th>%Positive Responses</th>
<th>%Negative Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>[r]</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>nasals</td>
<td>98</td>
<td>2</td>
</tr>
<tr>
<td>voiced fricatives</td>
<td>91</td>
<td>9</td>
</tr>
<tr>
<td>glides</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>90</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Negative tokens</th>
<th>%Positive Responses</th>
<th>%Negative Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>voiceless fric.</td>
<td>14</td>
<td>84</td>
</tr>
<tr>
<td>voiceless stops</td>
<td>1</td>
<td>99</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>91</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control Tokens</th>
<th>%Positive Responses</th>
<th>%Negative Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>[l] (positive)</td>
<td>74</td>
<td>22</td>
</tr>
<tr>
<td>[f] (negative)</td>
<td>4</td>
<td>96</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Tokens</th>
<th>%Positive Responses</th>
<th>%Negative Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>/b, d, g/</td>
<td>32</td>
<td>68</td>
</tr>
</tbody>
</table>
or duration was considered an important attribute in this category, since
the prototypical voiceless sounds are the stops, and the most peripheral
of the voiced sounds are the glides, which are inherently rather short.
The test tokens, word initial /b,d,g/, were rejected by 6 Ss (91% neg-
ative responses) and included in the category by 2 Ss (89% positive re-
sponses); one S split her responses (56% positive, 44% negative). The
overall percentages were 32% positive responses, 68% negative. Ss various-
ly named the category "a vibration, a rumble, more throat, a soft sound
that could be drawn out, vs. more air, more upper, real short." Although
it is clear from these names the Ss gave to the category that voicing
per se was indeed the most important attribute being attended to, it is
not entirely clear from these results whether the test segments were re-
jected due to their actual lack of voicing or their short duration (or
both). Nevertheless, the same pattern of indeterminancy of boundaries
held for the voicing category.

3.3. Discussion

The main points developed here about the structure of these featural
categories are illustrated in Figure 2. It is clear from the preceding
discussion, and from these diagrams, that phonetic featural categories
have an internal structure extremely similar to that of semantic cate-
gories; it can also be argued that the correct decision with regard to
the categorization of some of the controversial segments, is to consider
them members of both categories, or at least ambiguous as to category
membership.

Let us now return to the questions raised earlier in this discussion,
looking first at the question of binariness. One of the main problems
with binary feature systems is that they force either/or decisions about
every member of a phonological system. In the case of [w], Ohala and
Lorentz (1977) have argued that it is not only phonetically inaccurate
to call [w] primarily a labial or a velar, but it is also phonologically
and cross-linguistically inaccurate, since in some languages [w] pat-
terns phonologically with the labials, in other languages with the velars,
and in some languages it patterns with both labials and velars in dif-
f erent phonological rules. Ohala and Lorentz present phonetic explana-
tions for the specific patternings found. The present experiments have
produced evidence that conceptually [w] may be both a labial and a velar,
indicating that the feature [anterior] is not strictly binary. We can
conclude, then, that in describing a particular language, a linguist may
decide to call [w] [+anterior] or [-anterior] if it behaves as one or
the other in that language, but this should not be taken either as a
statement about the phonetic properties of [w], or as any sort of cross-
linguistic generalization about [w]. In order to achieve phonetic,
cross-linguistic, and conceptual accuracy, [w] must be specified as both
[+anterior] and [-anterior]. The same basic arguments can be made for
[h]; the question of /b,d,g/ is more complex, and will not be analyzed
further here.

Secondly, what does this research have to say about the question of
whether phonetic features exist as categories at all? It could be
objected that since we were asking Ss to make categorical judgments in
Figure 2: The internal structure of phonetic categories.

1. [+]anterior

attributes: Activity in front vs. back of mouth. Closed vs. open mouth. Involvement of teeth, lips, and tongue tip vs. back of the tongue or laryngeal constriction.

2. [+]sonorant

attributes: Continuancy, lack of noise, softness, voicing, open vocal tract.

3. [+]voice

attributes: Vibration in throat, continuancy, lack of noise.
this experiment, they naturally behaved categorically, as a function of the experimental design. However, we would argue that if these categories were non-existent or totally unnatural, Ss would not have been able to form them at all, and especially would not have shown such consistency in responses which revealed the inner structure of the category. Fortunately, the results of this experiment are not the only evidence we have as to the categorical nature of phonetic features. In the first place, one of the original motivating factors for the development of feature systems was the fact that phonological processes operate on classes of sounds which can be most readily explained in terms of such categorical systems. Further, Jaeger (1980) has reviewed data from perceptual confusions, speech errors, short term memory confusions, systematic misarticulations, similarity judgments, and language acquisition, and has found that data drawn from all these sources, which surely reflect speech production and perception processes as well as psychological processes, clearly point to the same sort of categorical behavior as was evident in the present experiment. In fact the categorizations inherent in speech errors and perceptual confusions led Goldstein (1980) to claim that "features describe groupings...in a multidimensional space that remain groupings, even when the space as a whole undergoes some severe transformation." We would argue, then, that a set of strictly dimensional phonetic parameters does not account for the observed behavior of speakers with regard to speech sounds any better than does a strictly binary classification system.

4. Conclusions

The above evidence and arguments support the following conclusions. Speech sounds are conceptually organized into a classification system based on their phonetic properties. This classification is neither strictly binary nor strictly categorical. Featural categories are not determined solely by a single phonetic attribute, but generally include a number of different attributes, some of which are more criterial than others; it is likely that different features covary in natural ways when they have attributes in common. And finally, phonetic featural categories have an internal structure similar to that of other natural categories. This leads us to argue that phonetic features are a categorical systematization that speakers and hearers impose on the otherwise non-discreet processes of speech production and perception, which allows them to reduce particular aspects of speech communication to an orderly, systematic, and manageable process. In this way phonetic features function to organize the world in exactly the same way that semantic categories do, and this similarity of function is reflected in the similarity of internal structure which has been discovered to exist in both semantic and phonetic categories.
Footnotes

1. The figures for the 'positive tokens' and 'negative tokens' include learning session responses made during and after reaching criterion, and all test session responses. Learning and test session responses were combined so that the largest possible number of tokens could be used for the comparison of responses to different phoneme types.

2. A possible third type of response was 'no response'; because of this, some of the positive plus negative percentages do not add up to 100%.

3. A likely reason why the labiodentals, rather than the labials, were the most typical of the [+anterior] category is that for some Ss involvement of teeth or lips was the most criterial attribute, and the labio-dentals involve both, so were clearly members of the category.

References


SIX CATEGORIES OF NASAL EPENTHESIS: THEIR PLACE IN THE EVOLUTION FROM LATIN INTO ROMANCE

Yakov Malkiel
University of California, Berkeley

1. Epenthesis is one of those processes variously called sporadic or spontaneous or saltatory shifts, or even general accidents (G. I. Ascoli), or minor sound laws, which have traditionally received widely varying degrees of attention from tone-setting scholars: It has attracted students of general phonology, like Maurice Grammont, but has not sat well with Leonard Bloomfield, least of all in his 1933 textbook, perhaps on account of its low level of predictability. Like other members of its family of changes, it is not neatly delimited in time and space and hardly qualifies as a criterion in the classification of languages and dialects, in attempts at periodization, and in similar ventures. In short, it involves, at first sight, little more than a sharply-profiled tendency. Having its radix in general phonology, it lends itself in principle to discussion in the framework of universals; but narrower, more sharply focused examinations, such as the one attempted here, also have their share of wisdom, provided one is cautious about generalizing first impressions.

In the field of Romance there has occurred a scattering of attention to nasal epenthesis. The one attempt at a provisional synthesis that comes to mind at once is Hugo Schuchardt's article about 'Nasaleinschub', traceable to the year 1911. There has occurred no follow-up on any sweeping scale; but in scores of historical grammars one finds, usually short, relevant paragraphs, often inconspicuously relegated to the end, and brief discussions flare up in hundreds of entries in etymological dictionaries, which few avant-garde linguists, for unexplained reasons, bother to consult these days.

Although English will not be included in our survey, let me briefly remark that related problems also exist for the Anglicist, in part but not entirely on account of the heavy overlap of Graeco-Latin as well as of medieval and modern Romance with the English lexis. In the analysis of E. *shrink* 'to contract', orig. 'toower, huddle, retreat, recoil', such congeners as Norw. *skrekka, skrydka*, as well as G. *schrecken* 'to be seized by fear', have figured prominently, but the problem here is at the opposite pole of possibilities: At issue is not the addition, but the loss of an inherited nasal in certain branches. Concern with *bonanza* 'exceptionally rich ore pocket', fig.
'something that yields an unexpectedly large profit' leads one via Sp. bonanza 'fair, calm weather at sea' (note the phrase ir en bonanza 'to sail with fair weather' > 'to do well') to a lexical type peculiar to sailors' jargon, *bonákia, initially *bonakia, a witty, mildly superstitious Latin-Romance reinterpretation of Gr. malakia 'softness, gentleness' (from the adj. malakós). The relation of messenger to message, of passenger to passage, of porringer 'bowl for liquid food' to porridge 'pottage or soup', 'soft food made with oatmeal' causes trouble; one may add obs. wharfage 'provision of, charge for use of, a wharf' beside wharfinger 'owner or keeper of a wharf' (which could but need not have been preceded by *wharf-ager, -iger), also harbinger, orig. 'one who provides lodging, host', 'purveyor of lodging, e.g., for an army', 'forerunner', from ME herbergeur, which in turn echoes OFr. herbergeour of remote Gmc. background. The starting point cannot have been scavenger in its relation to scavenge, which latter, as chronology shows, was in fact extracted from the longer word; scavenger happens to be an elaboration on scavager 'officer who took scavage 'toll formerly levied in London on merchant strangers', later 'person employed to keep the streets clean' and thus, in the last analysis, involves another Old French formation in -age. 4 Family names such as Kissinger, Schlesinger applied to immigrants from Central Europe, round out the procession of lexical or onomastic items eventually sucked into the vortex of the newly-emerging suffix or suffixoid -inger [īnge']. The real medieval starting point was, transparently, challenge/challenger, lit. 'calumniator' (via Old French). How should one go about classifying the instances of the epenthetic nasal so far collected? One approach, favored, e.g., by Max L. Wagner in his historical phonology of Sardinian, is to start out from an illustrated catalogue of exact positions of the wedged-in nasal in the given words, while allowing in principle for a variety of causes (1941: 219-27). Such an approach might be adequate in a descriptive monograph; for the historian it beclouds that which is most arresting. Should we then swing to the opposite extreme and aim at setting off chronological layers, including strata due to infiltration of migratory words from other languages, and the like? Given the panchronic character of such a phenomenon, plus the difficulty of dating the genesis of many slangy words or of items of dialectal provenience, this method is inadvisable too. Since etiology, the study of ultimate causation, is at the end of the tunnel for most diachronists, it may be fruitful to gear one's primary classification to the character of each addition to the original body of the word: Is infixation a
grammatical feature in this context, is it due to the conflation of two words, is a manifestation of phonosymbolism involved, can one appeal to the agency of false regression, does one recognize the echoing of a preceding nasal or the anticipation of a following nasal, and - if so - only within the limits of a morpheme or also across morpheme boundaries? - these are some of the obvious questions. In many cases one expects to discover an interplay of two or more isolable factors; patterns of such interplays are definitely worth stating. If there remains a residue of admittedly unexplained changes, then our schema simply bears elaboration or revision.

As Schuchardt saw clearly 73 years ago, it is sufficient, in Romance, to speak of a nasal intercalation; whether, on closer inspection, an [m], an [n], a [ŋ] or a [ɲ] is actually involved depends almost exclusively on the surroundings; essentially, on the specific character of the following consonant. One is tempted to predict that certain consonants which experience has often taught us to expect to behave very similarly to the nasals in miscellaneous positions, namely /r/ and /l/, should also raise issues in apenthes; they actually do so, but on a distinctly more modest scale and, as regards /l/, almost idiotically in Spanish, even though the situation seems to have been radically different in the history of French. The so-called velar insert, as in Sp. It. pongo 'I put', tengo 'I hold, have', and vengo 'I come', is fundamentally a grammatical tool and invites separate analysis, morphological and morphophonemic; it is typologically comparable only to one of the six categories of the nasal insert here under survey. Instances of loss of a nasal in a corresponding word-medial position, as well as those of its intermittent addition word-initially and word-finally, are to come up, at best, for incidental mention only. The exploratory paper will be rounded out by hints as to how familiarity with the nasal insert can serve, at least heuristically, in the discovery of nascent prefixes and suffixes and in the identification of word origins recalcitrant to easy inspection.

2. As the first class (=A) of what, within Romance, deserves to be called an intrusive nasal we can set off certain functionally eroded remnants of a grammatical use of such an insert in Latin, where it served to set off a well-defined aspect, namely - speaking with A. Meillet - the infectum, within certain conjugation classes. This particular use of the nasal infix, which obviously involves a morpheme, is not restricted to Latin, but is shared by several Palaeo-Indo-European languages; its
prehistoric, fascinating as it is, need not concern us here. It was, by definition, initially absent from the perfectum (whether the latter be reduplicative or formed through lengthening of the nuclear vowel or sigmatic) and from the past participle as well. Thus one arrives at such formulas, to cite characteristic "principal parts", as rumpō, rūpī, ruptus, rumpere 'to break', or linquō, liquī, lictus, linquere 'to break', or linguō, liquī, lictus, linquere 'to break', or langō, langō, langū, ãngō, ãngere 'to be broken'; there are several traces of this state of affairs in the learned vocabulary of English: relinquish vs. derelict, tangential vs. tact, etc. Now, within the bounds of Classical Latin one observes isolated instances of the spread of the nasal to the perfectum and the past participle, a process usually taken as proof of the speakers' weakening awareness of the original function of the infix. Thus over against pango, pepī, pāctus, pangere 'to fix, settle' and pingō, pixī, pictus, pingere 'to represent pictorially, paint, embroider', which show different but equally tidy paradigms, the ensemble iungō, iūnxī, iūnctus, iungere 'to join', beside more archaic innum 'yoke', testifies to the internal spread and consequent functional dilution of the nasal. Sometimes the past participle alone is affected by the intrusion, as is shown by pungo, pepī/ pūpū, punctus, pungere 'to prick'; interestingly, the characteristic compounds go farther than the simplex, displaying -pūnxī in the preterite. The mechanism of this inner diffusion has been pieced together thus: from tinguō, tīnxī, tīntus, tinguere 'to wet, moisten' and unguō, unnxī, unctus, unguere, whose nasal was not morphemic and belonged to the radical, variants such as tingō ... -ere, unguō ... -ere could easily have branched off, serving in turn as models for iungō, iūnxī, iūnctus, with what used to be called a parasitic nasal.

In Romance the development went much farther — and at an early date, on circumstantial evidence. Attingere, a compound of tangere, had the past ptc. attāctus, as against Fr. atteint; frangere 'to break' displayed frāctus 'broken' (cf. E. fraction, fracture, also fragment), but It. franto 'broken, shattered, crushed', flanked by frantoio 'oil-press', 'olive-press', frantumare 'to break into small pieces', convey, in the aggregate, a different message; witness also Fr. enfreint 'infringed, transgressed', lit. 'broken' (in reference to a law). Lat. pictus, -a 'painted' clashes with Sp. pinto 'sort of bean', pinta 'spot, mark, sign', pintón 'ripening' (said of a class of grapes), pintijo 'spotted, mottled'; by the same token, ancestral pictūre 'painter' emerges as pintor, and pictūra
'painting' as pintura. Observe further Fr. j'ai peint, peindre, peinture and their echoes in English (where pint, as in pint-sized, and the transparent Hispanism pintado 'guinea fowl' are also worth mentioning). And so is Ptg. pint(ado)inhô 'baby-chick' and untold other derivatives. Occasionally we can lay our fingers on the possible reasons for the diffusion of this kind of nasal insert. There coexisted in Classical Latin the following lexical units at a given cut-off point: pāctu 'agreement'; pectu 'chest, breast'; dēspectu 'contempt' (actually, dē-spectu 'looking down', but apt to be reinterpreted in provincial speech as *dis-pectu); and pictu 'painted'. All four, in Romanized Spain, started moving in the direction of paitu, peitu, with the threat of complete eventual convergence. At the prospect of such a tangle, why wonder that pictu was here and there allowed, for the sake of disambiguation, to advance to *pinctu?  
3. Because it clearly had its roots in Classical Antiquity, Factor or Force B, the phonosymbolic use of the epenthetic nasal, suggestive of something comic, laughter-provoking, deserves to be presented next. Initially this function was restricted to nouns, particularly to adjectives capable of substantival use, and was thus neatly distinguishable from Factor A, by definition confined to verbs. Moreover, the nouns subject to the influence of Factor B had a characteristic structure, being - to begin with - bisyllabic; in fact, displaying the CVCVC schema. Semantically, they referred to physical defects, congenital or acquired deformity, and temporary incapacitation, or odd behavior, including madness and stupidity. Within Latin, there existed other devices to mark off nouns so architected and conveying approximately such a message; e.g., a strong preference for a as the stressed vowel, including the diphthongs āe and āu, witness calvus or glaber 'bald', caecus 'blind', claudus 'limping', laevus 'left-handed', etc. Independently, there was also observable a mild predilection, especially in folk speech, for lengthening the central consonant, so that, when speakers of Latin borrowed Gr. Πλάτως and started favoring it over native plānus 'flat', they gave it the form *plattus, which indeed has survived, after undergoing certain expected changes, in several Romance vernaculars, including Fr. plat. We need not worry about the fact that other stem vowels at no time ceased to be admissible, e.g., u - as in curvus 'bent', luscus 'one-eyed', surdus 'deaf'; or ū - as in imus 'looking askance' = G. scheel; or ū - as in mutus 'dumb, mute'; or the diphthong oe - as in foedus 'ugly'; and we can afford to disregard such compounds and derivatives as fall under the same semantic rubric, e.g.,
longimanus 'long-armed' or crinitus beside comatus 'hairy' (from crinis and coma, respectively). We shall remain alert to the possibility that cases which, from the semantic angle, look promising, could be fraught with etymological uncertainties, which may counsel their eventual omission from the inventory; e.g., It. manco 'weak, defective', 'left-side' (cf., Lat. mancus 'maimed, infirm') and stanco 'tired'.

What, then, would make a perfect case? Let me cite Sp. ronco 'hoarse', flanked by ronquera 'hoarseness', enronque- quecer 'to make or grow hoarse'. Here a solidly established, textually-supported etymon, namely raucus, is indeed available, and the consensus of cognate languages clearly testifies to regular development: It. roco, West.R.-Rom. [rok], O.Fr. rou, Fr.-Prov. (Fribourg, Vaud) rutsu, Prov. rauc, and even near-by Ptg. rouco are uniformly well-behaved, showing the predictable development. Had Spanish evolved similarly, it would have produced *roco; the medie- val and modern form ronco, found instead, exhibits the addition of n, an acoustically crude suggestion to the effect that something is going wrong with the given individual's voice production.

Back to Antiquity: Among the numerous words pertaining to the adjacent domains of anatomy, physiology, and veterinary science that the Romans borrowed from the more sophistica- ted Greeks was στραβός 'squint-eyed', which in Latin yiel- ded strabus and lent itself to figurative use ('envious'; in Cassiodorus: 'perverse'). Several by-forms are on re- cord, among them: (a) strabō, -ōnis, which involves inter- ference by the indigenous Latin nāsō, -ōnis 'long-nosed', 'large-nosed', 'nosey' type; (b) strabōnus, used in Petro- nius' novel - a compromise between strab- and strabōne?; (c) Strabonilla, a diminutive -hypocoristic used as a pro- per name; plus, most interesting to us, (d) strambus, traceable to glosses. Also on record are the two hypocoristics (e) strabulus and (f) strambulus.

Latinists, in a lame effort to justify the ephenthesis here, cite as alleged parallels the two celebrated in- stances of wavering, sabūcus sambūcus 'elder-tree and sabbatum sambatum 'Sabbath'. The parallels invoked hardly constitute easily manageable slices of material in this context. For the appearance of sabbatum sambatum one need not await the rise of Church Latin: The elusive word was already familiar to Ovid and Horace: It clearly goes back to Greek σάββατον and eventually to a Hebrew-Aramaic prototype; the nasal insert (which, I repeat, was a mere possibility in Latin) is also peculiar to OHG sambutzac, which in turn underlies mod. Samstag. The case of sā-, sam-būcus is even more intricate, because
(a) it apparently altogether lacks I.-E. cognates; (b) there
is on record a variant displaying the epenthesis of the
nasal at a different place, namely sābuncus; (c) side by
side with the dendronym, there existed the near-homonym sam-
būca designating (d) a musical instrument, 'a sort of harp'
and (e) a 'war machine used to climb on the wall of a be-
leaguered fortress', a lexical unit assuredly traceable to
Greek (σαμβοκά), where, so Hellenists report, it
must in turn rank as a borrowing; and (d) to revert to the
elder-tree, sābūcus and sambūcus alike have, bewilderingly
enough, both survived into Romance. My own preference
would be for completely disregarding two words marked by
such complex patterns of transmission and to bracket stram-
bus, from στραμβος, with *plattus, from πλαττος, argu-
ing that lengthening the central consonant and inserting a
homorganic nasal before it were two alternative devices of
stressing comicality.

If the joint weight of the vicissitudes of stra(m)bus and
plattus fails to carry conviction, examine the dossier of
gibbus 'hunch-backed'. Strictly, gibbus, peculiar to
Imperial Latin, was preceded by gibber, -a, -um (like
miser, -a, -um 'wretched'), already favored by Varro. In
addition, Latin offered to its speakers, for the designation
of the hunch itself, either gibbus, -i or gibba, -ae. All
the members of the family so far mentioned boasted a leng-
thened /b/ as their central pillar; but, upon approaching
the derivatives, one encounters gibātus (comparable to alā-
tus 'winged', comātus 'hairy') spelled with a single b in
the texts; among its rivals observe gibōsus beside gibō-
sus, involving the abundantal suffix -ōsus (i.e., literal-
ly, 'equipped with a big chunk of a hunch'), plus invariab-
ly gibberōsus, reminiscent in its architecture of tūberō-
sus, from tūber 'lump, bump'. So far, not a single in-
stance of a nasal insert has surfaced in our analysis, and
congeners picked from Sanskrit, Persian, and Germanic (spe-
cifically, Middle High German) show no trace of any,
either. But, as one scrutinizes marginal Latin evidence,
one comes upon gimberōsus in a Late Latin gloss, which
obviously presupposes *gimbus, as Ernout puts it, or -
perhaps more realistically - *gimber, and is echoed by
gembrōsus in an early-7th-century Isidorian text. The
Ernout and Meillet etymological dictionary (1959-60: 274b,
275a) goes one step farther and recognizes both *gibbus
and *gimbus, beside *gibberūtus (displaying a suffix
borrowed from cornūtus 'horned') as legitimate recon-
structions from Romance, filtered by Meyer-Lübke's ety-
mological dictionary. Rum. gheb may even presuppose, so
A. Graur argued, the otherwise unknown var. *gibbus,
which might be an outgrowth of *gibbulus, as pieced to-
gether by S. Pugnariu (1905: §§ 708, 710); cf. pòpus 'pop-
lar tree' alongside *plòppus recognizable through Sp.
chopp, Tusc. pioppo. The u-colored variants (including
the descendants of *gubbus and Ven. gufo) could well have
been influenced by Gr. κυσσός 'hunch', κυσσός 'leaning
forward', or else by Lat. curvus, but *gimbus and *gumbus,
reconstructed from a spectrum of dialect forms recorded in
peninsular Southern Italy, also in Sicily, Sardinia,
Corsica, and as far north as Genoa, betray in unison the
presence of -mb- as a substitute for lengthened -h-, on
textual evidence in a laughter-provoking context. Hence
we are once more dealing here with a semi-submerged in-
stance of expressivity or phonosymbolism.

One more example of phonosymbolic use of the nasal can
be provided here; it places heavy emphasis on the comic
element in a given situation as its sole identifiable goal
at the end of a long journey. The Latin verb for 'burying'
was sepellìo, -ìre - ancient (recorded, e.g., in the Laws
of the Twelve Tables) and Classical; its initial syllable
contains a short vowel and must not be bracketed with the
progressively infrequent suffix ae- suggestive of separa-
tion, as in sècèdere 'to walk away, secede', sèdùcere 'to
move away from the straight path, seduce', sègregare 'to
separate from the flock', and no such simplex as *pelìo
existed or is suspected of ever having existed. Despite
the heavy legal and religious-ritualistic implications of
the verb, it was not discarded with the advent to power of
Christianity; witness its survival in French as ensevelir
beside enterrer, from newly-coined *interràre 'to inter'.
Such coexistence of neologisms and words inherited from
paganism was widespread; observe the survival of fidès
alongside newly-minted *crèdentia for 'faith, belief': Fr.
foi, croyance, etc. In Old Spanish sebolir, sobolir were
not immediately pushed back by the more graphic innovations
soterrar, from *subterràre, and enterrar from already men-
tioned *interràre, either. Now Low Latin shows scattered
traces of a by-form with lengthened l, namely sepellìo,
perhaps initially through contamination with the powerful
family of pellìo, -ère 'to push'; and as the unstressed
front vowels of sepellìre, in the course of the word's trans-
mission into Old Spanish, were being pushed back through
contiguity with the bilabial stop (at first voiceless,
later voiced - witness OsSp. sebolir, sobolir), those
variants that had substituted geminate l for normal-
length l helped speakers to establish a contact with the
descendant of bullìre 'to seethe', namely bollir (or
bollecer) - transparently the cognate of Fr. bouillir.
Bollir was associated with bubbles (to this day Sp. bulllicio means 'bustle, tumult, uproar') — but how could 'burial' and 'boiling, bubbling' be allowed to impinge on each other? Since nothing is a priori impossible in language history, the availability of so- or en-terrar as serious words for 'burying, interring' gave speakers the chance to yank se-, so-bol(l)ir loose from its original semantic domain; to lay to rest any purist's anxiety, intensive-iterative sepultar was imported through learned channels. Freely-drifting se-, so-bol(l)ir lent itself to ticklish associations with 'boiling, bubbling' only in a single real-life context, namely when certain humans, animals, and fish or insects dive, burying themselves in water (sometimes for the sake of self-protection), with many bubbles, upon impact, rising to the surface. And this is what actually happened, as sobollir found itself on its way to sabullir, via vowel dissimilation (much like sacudir 'to shake' in lieu of *socodir, from succutere). But the real-life correlate of 'diving' (i.e., typically, 'splashing water with some noise') had its amusing component, and this comic-situation ingredient was brought out sharply by two supervenient shifts—(a) the change of word-initial g- into g- (z-), at first [s], later, in Castille, [θ], and (b) the - at first optional - insertion of the nasal, word-medially, before the pillar consonant, thus: za(m)bollir. This was a post-medieval process, when the temporary exclusion of verbs from this category of infixation was no longer operative.

4. In Force (C) we encounter, for the first time, a purely phonetic factor generating one nasal from another, pre-existent one. We can distinguish between (a) an echoing effect, through inertia, and (b) an anticipatory event, typologically resemblant to metaphor; (c) a combination of both pressures has also occurred at intervals. A second set of conditions to be considered is the position of the two (or more) nasals — the primary and the secondary ones — not to each other, as before, but within the word or the word-like phrase. Of particular relevancy is the presence or absence of any morphemic boundary between the two. Examples of (a), (b), and (c) include, to start out from a better-known language, the development of nec ūnu 'not one' to OSP. nenguno via neguno: Nenguno has lingered on in the standard, after transmutation into ningún (the raising of the pretonic front vowel having been a trivial side-development before a consonant cluster), or undergoes tendential dissimilation of the coronals in dialect speech (denguno). In any event, we have before us an instance of case (c), with two pre-existent nasals (the n- of nec and the -n- of ūnu), and a third, newly-added in the middle. Since parental /k/ underwent only intervocalic voicing, we have here, in addition, internal proof that the nasal re-
sonance hardened into an $n$ after the voicing of $/k/$ to $/g/$. Nenguino, moreover, illustrates the spread of $/n/$ across an old morpheme boundary. Ptg. *ninguém* 'nobody' $< neque quem$ followed a similar course. To revert to *néc ūnū*: in Portuguese the velar stop was eroded before the nasal resonance had gathered momentum, so *nem* $/nē/ + ū(u)$ produced, through dissimilatory denasalization of the first vowel, *nenhum* $/nēnū/$. Instances of case (1) happen to be very frequent in Spanish. Lat. *macula* 'spot, mark, stain' or 'mesh' (in a net) yielded *mágoa* in Portuguese, but *mancha* in Spanish, with sharp semantic differentiation: once more, chronological inferences are possible, inasmuch as syncopated *mac'la* alone was apt to have yielded a $/c/$, probably via $/matla/$, or $/matla/$, with the spread of the nasal coming later. To exemplify case (2), let me cite ancestral *rēgula* 'rule, ruler' (lit. *straight piece of wood*). A semilearned reflex in Spanish is *regla* 'rule', while a separate word for 'line' was devised through addition of the common derivational suffix $-ōn$ to *regla*; the result must initially have been *reglōn*, speedily overlaid by *renglōn*. The process, upon occasion, is seen affecting learned words: The Latinism *intricātus* 'entangled, embarrassed' has been introduced in its pristine form into English (*intricate*) and Italian (*intricato*), without much thought, on the part of speakers and writers, of *trīcae*, $-ārum$ 'trifles, hindrances, tricks' as the erstwhile head of the family; Spanish displays *intrincado* instead. Not all such innovations are successful: OFr. *mesage* 'message, messenger' (from a type *missāticu*) infiltrated into Spanish, where a by-form it promptly cast off, namely *menage*, quickly ousted the intruder. Conversely, *enderençar* 'to direct', an OSP. by-form of *enderēçar* (from *endīrēctiāre*), which conceivably sprang into existence with some help from *començar* 'to begin [*jointly*]' (cum + initiāre), before long fell into desuetude.

5. As the fourth factor (D) one is tempted to identify a purely lexical force - the speaker's, as it were, latent predisposition both toward isolated lexical blends (or conflations), and toward any sort of more meaningful, less random ordering of units within certain lexical fields. In the course of such associative and contaminative processes the intercalation of a nasal, typically before a medial intervocalic consonant, can easily occur; examples from numerous languages can be adduced by the hundreds. The salient issue, by no means easy to settle, is whether the prospect of such a superadded nasal, in the given position, has or has not demonstrably (or, at least, plausibly) stimulated and/or accelerated the observable fusion or integration in a clearly
circumscribed series.

Let me first provide a few concrete examples. In some instances lexical polarization seems to have been at work, as when, in Proto-French, the existence of the verb prendre 'to take', originally 'to snatch away', descended from prae-hendere, apparently sufficed to cast its semantic opposite, namely reddere 'to give back, return', into the mould of rendre; cf. It. prendere : rendere and Ptg. prender : render, with a somewhat weaker semantic yield attached to it, while mod. Sp. prender : rendir exhibits a secondary attrition of the earlier maximum formal resemblance and OProv. redre in rivalry with rendre exemplifies an incomplete exertion of prender's polarizing power (there are parallels in Catalan and in Rhaeto-Romance). To illustrate the effect of serialization - better still, the opportunities opened up by that process - let me cite the tail section of the list of the names of the months inherited by modern European cultures from a Latin pattern. Observe that September, November, and December rhyme, to the exclusion of interjacent October; and while details vary, the schema of an erratic shape for 'October' prevails in most Western languages, standard German and English included. Certain German dialects, however, allow for two stages of rapprochement of the local word for 'October' to the "big three": mere insertion of the nasal (Oktomer) or the same adjustment, plus equalization of the stressed vowel. In Russian, Sentjabr', Oktjabr', Nojabr', Dekabr' clearly rhyme; so do in German dialect speech September, Oktember, etc. 

The postulated blend need not involve two free forms of complete words: The partners may be an affix and a characteristic segment of a root morpheme, as when descendants of Lat. in- occasionally replace a so-called "dangling" word-initial front vowel, whose survival happens to be endangered in Romance ("Lex Ascoli"). Thus, ancestral *æqual-* 'equal' produced OProv. egal, alongside which - given the ever-present threat of crippling reduction to *gal* - there also arose engal. 

6. For the position of a fifth discrete force (E) one can nominate false restitution, or hypercorrection, an agency which, by definition, can be observed at work best where two (or more) dialects (either regional, or social, or both) happen to overlap. Consider the following situation: The word-medial cluster -ns- in practically all Romance languages and -nf- in Hispano-Romance (the former also word-finally), in lexical units inherited from Latin, tended to produce on the level of folk speech, at first,
lengthened s and f, later just standard-length s and f; e.g., Infåns 'baby (still unable to talk)’ > OFr. enfes; mènse 'month' > It. mese, OFr. meis, mois; mènseg 'table’ > Ptng. mesa, ORom. measë (later masë); spònsu 'betrothed man, bridegroom’ > It. sposo, Fr. époux, OSp. esposo 'fiancé’, later ‘spouse, husband’; tråns ‘beyond’ > OFr. tres (mod. très) ‘very’; also Infante > OSp. yffante 'prince’, Infernù ‘hell’ > OSp. yfflerno (as against Fr. enfant, enfer), with modern infantes, infierno representing belated regressions. Meanwhile, in learned pronunciation -ns-, -nf- remained intact: Contrast Sp. pesar ‘to weigh’ and pensar ‘to think’ (or Fr. peser and penser) as rival products of pënsàre ‘to weigh intensely or repeatedly’. This was fertile soil for reverse spellings and reverse pronunciations, or both: Hispano-Latin documents are replete with examples of occansio 'accident’, from occåsiò 'opportunity’, and of thesaurus ‘treasure’, from Gr.-Lat. thēsaurus; but there is no assurance that speakers actually pronounced these words with an n before the s. One final complication: Since in Hispano-Romance -rs-, as in versu, and -ls-, as in Insulsu 'unsalted’, also tended to be reduced to -(s)s- - witness OSp. viesso, (en)sosso - there emerged the additional risk of new categories of false regressions, redounding in part to the benefit of -ns-. Thus, certain speakers of Aragonese eager to come up with a socially preferable pronunciation of the zoomym for 'bear’ than just os(s)ò would inadvertently say onso rather than aiming for orso.

7. Finally, there may crystallize the ill-defined situation, involving a sixth independent factor, to be known as (F), of given speech communities apparently finding certain medial dyadic consonant clusters so attractive as to tend to expand, for no good reason, an ‘etymological’ -b- into an -mb- by intercalating -m- before it, but also, roughly on a comparable scale of frequency, to widen an etymological -m- into the very same -mb- by intercalating a -b- after it. Speakers can be expected to strike a similarly bidirectional attitude in attempts to increase the incidence of -nd-, etc. In Sardinian, e.g., ancestral ubi 'where' appears either as uibe or as umbe; siliqua 'pod, husk' is either silibba/ tilibba or silimba; for the phytonym 'sorrel’ Sardinian uses lapatsu, an outgrowth of Gr.-Lat. lapathium, but lampattsu is also recorded in the South, a variant with Continental counterparts in Campania, Abruzzi, and Apulia. Our analysis of these forms (an exiguous sample indeed) is corroborated by an approximately equal number of cases.
where the same goal has been reached through intercalation of a -D-. Thus, Lat. *simila* 'finest wheat flour', known also from its Italian reflex *semola*, is ordinarily *simula* in Sardinian, but *simbula* also occurs. Then again, ancestral *glomulu*, lit. 'little ball or clue of yarn' (the counterpart of Sp. *ovillo* from *lovillo* < *globello*) yields in Sardinia either *grômeru* or metathesized *lôrumu*; but *lômburu*, *lômberu* are also plentifully represented. Max L. Wagner has abundantly and reliably documented this phenomenon of large-scale reversibility. Cf. the case of Pt. *tombo*, above.

8. In numerous instances, perhaps in the majority of cases, one may well reckon with multiple causation, i.e., with an interplay of two or more factors. This holds for some of the word biographies already presented with epi-
grammatic brevity, but perhaps, at least, one new example will add a touch of freshness. For 'stumbling' Spanish uses *trobepar* in the standard, while dialect speech on both sides of the Atlantic often if not mostly favors *trompezar*. Medieval texts display instead either *entrepe-
çar* or apheresized *trepçar*. Of these four variants the third is, on philological evidence, the oldest and also the one that lends itself most smoothly to etymologizing. As one confronts the base *interpediâre* one is reminded of the idiom *echarle uno la zancadilla* 'to stick out one's foot and trip someone'. *Trepçar* was arrived at through apheresis: A fairly mobile prefix, namely *en-* < in-, was sloughed off. In the shift from *trepçar* to *trobçar* one witnesses labialization of a weakly-stressed vowel by contiguous /p/. But why *trompezar*, -zar? One is tempted to posit a blend with *trompa* 'snout, face', a con-
filiation which may thus have twisted and enriched the original meaning: 'to fall on one's face'. If this is so, two forces have been at work: Force (B): comic effect, and Force (D): lexical blend. Seeing someone fall on his face ('snout') is an uproariously funny event — for the onlook-
ers.

9. Increased familiarity with the nasal insert in Romance, as its image slowly emerges in diachronic perspective, should be useful in two different contexts.

For the particularist, the knowledge thus gained throws light on certain obscure prefix and suffix variants and, in conjunction with these, on the prehistory of not a few words etymologically opaque. To supply just a scattering of examples: Much as there exists a hazy prefix *zam-*, which we have connected, in at least one case, with Lat. *sub-*, but which also had a side-link with Gr. *συμ-*, wit-
ness *συμφόνια*, stressed *symphônia* in Graeco-Latin and underlying Sp. *zampoña* 'kind of bagpipe', so there deve-
loped a quasi-prefix *ens- (var. enx-), as in ensalgar 'to raise' from *exaltiare, in imitation of ensanchar 'to widen, broaden' (from ancho) and of ensangostar 'to narrow down' (from angosto), i.e., of contexts where the nasal insert was clearly anticipatory. Much the same (mutatis mutandis) happened with suffixes: If you dissect step by step vejancón 'decrepit from old age', you will recognize the addition, to viejo, of a short suffix chain, its two links being -a- and -ón (cf. vejarrón 'very old man'). But since the wedging-in of an n before the [k] is a source of pleasure for this speech community, vejancón before long did come into existence (unlike inadmissible *vejanrón). I suspect that -anchón and -anzón can be explained in basically much the same way. And, to conclude with an example taken from the etymological laboratory, my guess is that the highly controversial word rinçon 'inside corner, angle formed by the meeting of two walls', known from medieval texts as rençon, with the occasional by-form recón, is essentially borrowed OFr. recoin 'nook, recess', presumably pronounced [rako ninja], which in the last analysis involves Lat. cuneu 'wedge'. It may have been introduced by visitors from France, whether clerics, pilgrims, jugglers, or warriors; the loss of the feature of palatality reminds one of Sp. desdén 'contempt', similarly borrowed from Fr. dédain, OFr. dezéna).

The generalist can avail himself of this stock of information in his concern either with consonant epenthesis in the languages of the world or with the special uses to which nasals seem to lend themselves.

NOTES

1 I would like to thank Orin Gensler, Gary Holland, and Martin Schwartz (among others) for their constructive comments on an earlier, slightly different version of this paper, prepared for oral presentation.

2 Let me mention, in addition, an excellent research paper (unfortunately left unpublished) which Cornelia Rippere, a talented graduate student, wrote under my direction here at Berkeley in the early 'seventies. I wish it could have been broadened into a doctoral dissertation.

3 Only a few random examples can be supplied here. Wiese (1904), who examined the source languages from the vantage of Old Italian, routinely listed a few instances of nasal epenthesis in the sections dealing generally with the provenience of m and n (§§ 25-6). Zauner (1908) reserved a special section (§78: 'Zusatz von Konsonanten') for epenthetic
n, its much rarer counterparts l and r as well as d and t used in Old Spanish to transmute certain newly-formed dyadic into corresponding triadic consonant groups; Meyer-Lübke, in his general introduction into Romance (1909), found a niche for briefly discussing assimilation and dissimilation at a distance, as well as consonantal metathesis (§146-8), but decided against reserving space for epenthesis; later, in coming to grips with French historical grammar (1913), he confined his exemplification of epenthesis to r and l (§235), providing useful bibliographic hints, but skipped the intercalated nasal consonants altogether, except for a fleeting observation in a different context (§41), where he tersely remarked: 'Zusatz von Lauten ist nur in sehr geringem Umfang anzuerkennen .... Was man sonst unter dieser Rubrik anzuführen pflegt, gehört im Grunde alles in die Wortgeschichte'. Outside the German-speaking countries one discovers a similar climate of opinion. Thus, in Spain Menéndez Pidal (1914) provided a number of appropriate examples of epenthetic m/n and r, among them the verb so(n)sar 'to steal' and za(m)burrir 'to dive', as well as the nouns alondra 'lark', almendra 'almond', manzana 'apple', and ponzona 'poison' (§68), but despaired of cutting a swath through the jungle: 'Otras veces, sin razón aparente, se desliza un sonido entre los latinos'. I have deliberately cited here some of the older editions of well-known handbooks, to set off the (expected) originality and independence of thinking of H. Schuchardt (1911: 72-93).

4 For useful chronological and semantic information see several pertinent entries in Onions et al. (1966: 427ab, 635ab, etc.), where certain archaisms - such as ostrager, -inger 'keeper of goshawks' - are also listed and where attention is further drawn to nighti(n)gale (cf. G. Nachtigall) and to popi(n)joy. However, Onions and his team fell short of recognizing challenge (from calumnia, via Old French) in its relation to challenger as the obvious starting point for the entire development.

5 Some ideas, in reference to Indo-Iranian, Greek, Anatolian, Tocharian, Armenian, Italic (predominantly Latin, occasionally Osco-Umbrian), Celtic, Germanic, Baltic, and Slavic, can be gleaned from Jaan Puhvel (1960: 14-40).

6 This dimension might profitably have been added to my earlier inquiries into the disentanglement of clusters of homonyms and near-homonyms (1952: 299-338; 1979: 1-36).

7 To these may be added plancus 'flat-footed', also used as a Roman surname. Mancus and plancus clearly belong to-
gether. Could *stagnum* 'pond, swamp, fen, stagnant water' have been re-interpreted as an adjective (*stagnus*, -a, -um, then *stancus*), thus providing the starting point for It. *stanco* 'tired'?  

I am falling back on the account offered by Ernout and Meillet (1959-60: 655b). For a stimulating counterview and, as usual, a more copious bibliographic underpinning see J.B. Hofmann's revision of A. Walde (1954: 600), where an epistolary comparison, by W. Heraeus, of *strabônus* with OLat. *centuriónus*, *epulónus* is mentioned and E. Schwyzter's characterization of *strombus* ("expressiver Geminatenersatz") is cited. Interestingly, the numerous Romance offshoots of the Latin qualifier all seem to go back to *strombus*, to the virtual exclusion of *strabus*, judging from the evidence collected and tentatively classified by Meyer-Lübke (1930-35: § 8281). Hispano-Romance is only peripherally represented: *zambo* 'knock-kneed', *estrambótic* 'odd, queer, freakish', because the basic designations of 'squinting' in that branch go back to the putative verb *versicáre* 'to turn or twist one's eyes' (from *vertere*): Sp. *bizco* < *viesco*, Ptg. *vesgo*. The straight line of transmission is represented by It. *strambo* 'crooked', 'odd, queer, eccentric'. Note also Sp. *zo(m)po* 'cripple(d)'. On the phonosymbolic evocation in Latin of physical defects, etc. by means of a vocalism see Malkiel (1982: 138-78).

There exists an extensive and fairly recent corpus of literature in Romance scholarship on the names of the days of the week, starting with H. P. Bruppacher's influential doctoral thesis (1948). On *sambat* see, in particular, W. von Wartburg (1949: 10-14), with a working bibliography appended.

The problem of the transmission of *'Sabbath'* has many facets which cannot be examined here in detail. M. Schwartz draws my attention to the (uniquely?) attested spelling *sambatha* in Latin and to relevant epigraphic evidence (see *Thesaurus Linguae Graecae*) for PN Σαμβαθά. His feeling is that the -mb- of *sambatha* and of OHG *sambaztag* should, in all likelihood, be traced "directly or indirectly, to an Aramaic var. *šañbat*, def. *šañbattâ* alongside the attested *šabbat(tā)*, etc.; the transmission into Latin may have taken place via Greek" (there exists indirect evidence for *σάμβατα*).  

Again, there is available a very sizable literature on this dendronym, to which it is impossible to do justice here. See, in addition to the obvious sources (Meyer-Lübke, Ernout and Meillet, Walde and Hofmann), J. Corominas
(1957: 162b, 163a) and V. García de Diego ([1955]: 5870), with references to earlier investigations by Bertoldi, Brüch, Guarnerio, Rohlfs, and Dámaso Alonso. The problem is compounded by certain co-variations in the vernacular outcomes: -b- ~ ŋ ~ -y-; -g- (i.e., [ŋ]) ~ -ę- (i.e., [k]), for which Corominas posits contaminations by the derivational suffix -uccu. The prevalent form in Old Spanish was sa-bugo, which obviously does not underlie mod. saúco, Am.Sp. saúco; the sam-var. are strongly represented in Rhaeto-Romance and elsewhere.

12 Sp. giba and gibo só are transparently learned formations. The standard word for 'hump' is joroba, while corcova seems to run second in appeal. Then again, Fr. bosse stands apart. One thus witnesses an extreme case of lexical diversification, which deserves closer inspection. Italy and the Balkan peninsula emerge as potentially the most fertile ground for any dialectally slanted inquiry into the intrusive nasal within this lexical unit.

13 A closer look at Sp. sa-, san- (sam-), za-, zan- (zam-) is overdue. In addition to words in which this segment is clearly of prefixal origin (e.g., sancochar 'to parboil, related to cocho < p. ptc. coctu 'boiled, cooked'), one encounters others in which it echoes ancestral sanctu 'saint', e.g. sambenitar 'to make infamous, disgrace publicly'. Zaherir 'to censure, blame' (OSp. gaherir) involves metathesized facerir 'to hit the face, slap' < facie(m) ferebre.

14 For summary documentation of this process (sometimes labeled "lexical serialization") see an earlier paper of my own (1957: 106-12).

15 Earlier scholarship (as represented by, e.g., W. Meyer-Lübke) would speak in such instances of "Präfixeinmischung". To be sure, en- was not the only prefix appealed to in such contexts; a witness to the contrary is Cat. eglesia 'church' < Gr.-Lat. e(c)clésia.

16 Insecurity traceable to such sporadic regressions, in part "false", may be behind certain lexical confusions otherwise difficult to account for, as when speakers substituted for *cassar, the ideal outcome of q(u)assāre 'to shake energetically, wear out, break' (cf. Fr. casser) - the iterative-intensive satellite of quatiē, -ēre 'to shake' - the near-homonym cansar, which, judging from It. (s)cansare 'to avoid, elude, shirk', originally served as nautical expression for 'circumnavigating' descended from Greek (kampāre). The verbal abstract Ptg. cansago, OSp. cansacīo, mod. cansancio 'fatigue' clearly perpetuates,
through a semilearned conduit (hence the preservation of the nominative), Class. θ(υ)ασσάτιο.

A similar, but not exactly identical, case of the false restitution (it is, for once, not the nasal itself but its customary partner within a consonant cluster that became the chief beneficiary of epenthesis) can be inferred from the following context. In the West of the Iberian peninsula ancestral -mb- has been preserved to this day, hence ambōs (m.) 'both' and palumba 'wood-pigeon, ring-dove' yielded OPtg. ambo, poomba (mod. pomba); conversely, in the Center parental -mb- has been reduced to m, giving rise to OSp. amos (mod. ambos) is a crass Latinism), Sp. paloma. In border-zones any intervocalic -m-, foreseeably, is in potential danger of being expanded into hypercorrect -mb-, even though the hazard materializes only at intervals. Not surprisingly, a famous Portuguese archive and treasure trove of medieval manuscripts long relegated to an ancient tower has become locally known as the Torre-do-Tombo collection, with tombo standing for tomo 'tome', from Gr.-Lat. tomos, lit. 'part, section' (of some larger work).

17 In addition to za(m)-, zan-, san-, all three marked by vowel dissimilation, one must reckon with a set of less intricately disguised so(m)-, son- variants, as in Sp. som- pesar 'to heft, try the weight of', sonreír 'to smile', sonrojar 'to get stuck in the mud' (said of wheels), son- rojar 'to make blush', sonsacar 'to pilfer'.

18 The starting points must be suffix chains tending to congeal into inseparable units, such as -azón (less common than -onazo, compounded in reverse order) and -achón, as in coll. bonachón 'good-natured, unsuspecting' and frescachón 'bouncing, buxom, brisk'. The next step is the crystallization of -anzón and -anchón, - the transition is signaled by corpa(n)chón 'big body, big carcass'- with some help from apophonic -anchín (as in parlanchín, hablanchín 'chattering'), which in turn draws strength from de-parti- cipal-'antín, as in hablantín 'id.', cf. labrantín 'small farmer', correntín alongside correntón 'gadabout, jolly, full of fun'. The terminal point is marked by (largely dial- ectal) back-formations in -anzo and -ancho. See Hanssen (1913: §§ 282, 382-3).

19 The detailed etymological dissection of rincón (and of camaranchón 'garret, storeroom', [fig.] 'recess' as well) must be postponed until some suitable future occasion. Also awaiting some such opportunity is any point-by-point comparison of the classificatory scheme adopted here with those previously followed by H. Schuchardt and C. Ripper.
REFERENCES


Glides and Vowels in Romanian
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1.1. Introduction
This paper is part of an investigation of the process whereby strings of segments are assigned syllabic structure. The facts considered below concern primarily the distribution of high vowels and glides in Romanian and will be used as evidence in the discussion of the following issues: (a) the relative order of syllabification operations such as the rule creating core CV syllables and the rule responsible for complex onsets; (b) the proper cross-linguistic formulation of the latter process, the Onset rule; (c) the format of rules that change already assigned syllable structures; in particular the format of rules that merge two syllables into one. I need not point out that there is no necessary connection between these aspects of the theory of syllabification: simply, a complete discussion of the Romanian evidence on (a) is impossible without a preliminary answer to the remaining questions.

The question of ordering distinct syllabification operations does not arise in every theory of syllabic parsing. If syllabic parsing is viewed as the matching of complete syllabic templates (like CVCVCC, in languages in which complex codas and onsets exist) against the segmental string, there cannot be any sense in which the CV part of the syllable is derivationally prior to the CCV part. I will refer to such a view of syllabification, advocated or assumed in Kiparsky 1979, Lowenstamm 1981, Cairns and Feinstein 1982, as the template approach. An alternative view, originated by Kahn 1976 and resurrected in Steriade 1982, holds that syllabic organization is the result of a series of structure building rules in the same sense in which metrical organization (foot and word level structures) is the result of an ordered series of rules that build metrical structures. In the context of such a view of syllabic parsing, which I will dub the rule based approach, the issue of ordering syllabification operations can arise. In fact, if simply ordering two syllabification rules provides otherwise unavailable answers to fundamental questions about syllabic parsing, the rule based approach scores an advantage over the template approach.

The present paper is a step in the demonstration that CCV syllables are formed by two distinct and ordered rules in all languages in which they occur:
(1) The CV rule: \( (C)V \rightarrow (C)V, \) where \( C=[-\text{syl}] \) or \([0\text{syl}]\), 
\( V=[+\text{syl}] \) or \([0\text{syl}]\), 
\( O=\text{Onset}, R=\text{Rime};\) operates left-to-right.

(2) The Onset rule: \( C C V \rightarrow C V \) may be subject to 
language-specific adjacency restrictions on the CC clusters it creates and/or 
to the sonority sequencing restrictions.

The results presented below are derived from the assumptions (a) 
that universally the CV rule precedes and, sometimes, bleeds the 
Onset Rule and (b) that universally the CV rule operates from 
left-to-right.

For reasons of space, I will not provide an explicit comparison 
between the analysis of Romanian syllabification available in a 
template-based format and the analysis proposed here. The 
significance of the results presented below for a comparison 
between syllabic parsing models should, however, be obvious 
throughout.

1.2. Glide/vowel alternations in Latin

A pattern of glide/vowel alternations similar but not identical 
to the one found in Romanian is that of Latin. I begin with a 
brief discussion of the Latin system, for two reasons. First, the 
surface distribution of glides and high vowels is closer in Latin 
to that produced by the initial layer of syllabification and more 
transparent than it is in Romanian. Second, the facts of Romanian 
are significant only to the extent that they represent a recurring 
pattern: the similar facts of Latin suggest that they do.

In what follows the term vowel is used for any \([-\text{consonantal}]\) 
segment, regardless of syllabicity; glide is used for \([-\text{syllabic}, 
-\text{consonantal}]\) segments; \([-\text{consonantal}, +\text{syllabic}]\) elements are 
referred to as syllabic vowels or syllabics.

The distribution of Latin high vowels and glides is outlined 
below:

(3)

Glides:

\# \_

\( V \)

iae cur [ye.Kur] 'liver'; venio [we.ni.o:] 'I come';
via [wi.a] 'road'; iungo [yun.go:] 'I join'.

\( \_ V \)

ai o [ay.yo:] 'I say'; ovis [o.wis] 'sheep'; avus
[a.wus] 'grandfather'; avia [a.wi.a]
'grandmother'; huius [huy.yus] 'his'.

Vowels:

elsewhere

mulier [mu.li.er] 'woman'; dies [di.e:s] 'day';
tenuis [te.nu.i.is] 'thin'; mutuus [mu.tu.us]
'mutual'; pius [pi.us] 'pious'; piissimus
\[\text{pi.is.si.mus} 'the most pious'.\]

(4)

Sequences of three high vowels:
\begin{itemize}
\item avius \([a:wi.us]\) 'off the road';
\item huius \([huy.yus]\) 'his';
\item iuvenis \([yu.we.nis]\) 'young'.
\end{itemize}

Several aspects of this system are noteworthy. Latin disallows two types of hiatus: \(V,V,V\), where the medial \(V\) is [+high]; and \(V,V,V\), where the first \(V\) is [+high]. Note that all other types of hiatus are attested: forms like tueor \([tu.e.or]\) 'I consider' indicate that \(V,V,V\) hiatus is tolerated when the medial vowel is not high; and all forms in (3,b) indicate that postconsonantal high vowels cannot be glides, even when they precede a vowel. The second point of interest is that when sequences of several high vowels occur in the string (as in via \(wi.a\), avius \(a:wi.us\)) it is the leftmost eligible high vowel that becomes a glide, in accordance with the distributional rules in (3). It is this Leftmost wins principle that explains why via is not syllabified \(*[u.ya]\) and why avia does not surface as \(*[au.ya]\) or \(*[a.u.ya]\).

The challenge to any theory of syllabic parsing is to have both the peculiar restrictions on hiatus and the Leftmost wins principle follow from general properties of the syllabification mechanism. There is also a further mystery lurking in the vowel/glide distribution outlined: to become aware of its existence we need to look into the Latin onset system.

1.3. Onset inventories

Metrical scansion and stress patterns converge in showing that clusters of obstruent followed by liquid (TL) can form complex onsets in Latin; and that no other consonant sequences can (cf. Devine and Stephens 1977). This type of onset inventory, a common one, can be easily accounted for along the lines suggested by Harris (1983) for Spanish:

(5) Latin Onset Adjacency Condition

On a sonority scale of the form Obstruents \(>\) Nasals \(>\) Liquids any cluster whose members are separated by more than one interval is a possible onset.\(^3\)

The appeal of this account of the Latin onset system stems from the fact that its format is universal. In describing the Latin facts we need to set only two parameters: what features enter in the composition of its sonority scale; and what is the minimal number of sonority intervals that must separate the members of a tautosyllabic cluster.

The analysis of onset types outlined above faces however a serious problem. Latin has glides in onset position. Any sonority scale, no matter how constructed, will rank at least \(\gamma\), if not also
w, as highly as or higher than the liquids. It seems then that
glides should be allowed as second members in any complex onset
whose first member is an obstruent: the TL onsets imply at least
the Ty onsets. Nonetheless Ty onsets as well as most C-glide
sequences cannot be found in Latin. The success of our project to
specify onset inventories by rule, rather than to simply list their
members, depends on our answer to this mystery: why is dies
syllabified [di.e:is] rather than [dye:is]; why is pius syllabified
[pi.us] rather than [pyus]. We may point out that sequences of
C-glide are generally absent from Latin, regardless of whether the
sonority index of C would allow it to form a complex onset with a
following glide; this suggests that the absence of C-glide onsets
is part of a more general phenomenon and does not directly
disconfirm rule (5). But, even if indirectly related to the issue
of onset inventories, the absence of postconsonantal glides in
Latin must be explained before (5) is adopted.

1.4. The rules of syllabification

Our analysis of Latin glide/vowel alternations must answer then
three questions: (a) why are only certain types of hiatus
permitted; (b) what is the nature of the Leftmost wins principle;
(c) why are Ty, Tw onsets absent from Latin.

The answer to these questions is provided by the rules of
syllabification introduced in section 1.1. I assume that a single
class of segments underlies the surface pairs i/y and u/w: this
class is specified as [-consonantal, +high, Osyllabic]. It is the
absence of underlying specifications for [syllabic] that allows
high vowels to occupy either nucleus or onset positions.
[+consonantal] segments are excluded from the nucleus because they
are underlyingly [-syllabic]; non-high vowels, on the other hand,
may occur only in the nucleus because they are underlyingly
[+syllabic]. I adopt below Levin’s (1983) X-notation for the
skeleton units whose associated segments are unspecified for the
feature [syllabic]. I reserve however the C and V notation for
skeleton slots associated to segments specified as [-syllabic] and
[+syllabic] respectively. We can consider now the derivation of a
few interesting cases: avia and uiia will illustrate how the
left-to-right operation of the CV-rule produces the Leftmost wins
effect; avia will also illustrate how intervocalic high vowels
become glides; the derivations of tuor and pius show how the
bleeding order between the CV-rule and the Onset-rule prevents the
occurrence of C-glide onsets.

\[(6) a. \quad \begin{array}{l}
\text{avia} \\
\text{XXV } \end{array} \quad \text{uiia} \\
\text{XXV } (1) \quad \text{uiia} \\
\text{OR } \quad \text{OR (1), 2nd iteration) } \quad \text{OR R} \\
\sigma \quad \sigma \sigma \]
A further step is needed in the derivations of tueor and pius: the final consonant is incorporated into the rime of the last syllable by a Coda Rule which, for present purposes, we can assume as simply a mirror image process to the Onset Rule.

The Onset Rule (2) has been inapplicable in all four derivations above: since (1) will turn any CX sequence into an OR syllable, no C preceding an X remains unaffiliated in the output of (1). Since (2) follows (1) and, like (1), applies to unaffiliated segments only, no CX sequence will undergo (2). More generally, no CX sequence will fail to undergo (1), which accounts for the absence of postconsonantal glides, regardless of syllabic division.

Our analysis of the Latin paradigm does not rule out, as it should not, postconsonantal glides in other languages. Languages other than Latin may have a different distribution of the [0syllabic] specification: in particular, they may have [-consonantal, -syllabic] segments, which Latin lacks. Such segments will be treated by (1) like all other C's and may give rise to CC onsets. An alternative source of postconsonantal glides may be contraction rules of a variety which does not occur in Latin: CiV, CuV sequences may contract, as they do in Sanskrit (Kiparsky 1971) and French (Dell 1973), giving rise to CvV, CvU. One such case will be investigated below. We predict, however, that in languages where contraction rules of this sort operate they will be responsible for the postconsonantal glides but not for the intervocalic and initial prevocalic glides, which derive from the prior operation of (1). It will then be necessary to look for
properties that differentiate, in such languages, "early derived" glides (}\g\{yV, V\{yV) from "late derived" glides (C\{yV). One hint that we are on the right track in making this distinction is provided by the following observation about the co-occurrence of glides and vocalic length in Luganda: as in Latin, the syllabicity of high vowels in Luganda is predictable from context. Prevocally, high vowels surface as glides, elsewhere as syllabics. Postconsonantal glides, however, are systematically followed by long vowels: in contrast, intervocalic and morpheme-initial pre-vocalic glides may be followed by long or short vowels, depending on the lexical item. Significantly, morpheme initial prevocalic glides may be followed by short vowels even when the preceding morpheme ends in a consonant (cf. [musomye] below):

(7) a. /N-kuale/ 'partridge' [gkwale] (K239) /mu-luan-i/ 'fighter' [mulwa:ni] (K132) /Ku-li-a/ 'to eat' [kulya:] (K234) /mi-oio/ 'souls' [myo:yo] (K223) b. /a-ial-a/ 'he spreads out' [ayala] (K128) /a-iodel-a/ 'he talks' [ayodela] (K128) /e-iak-a/ 'it burns' [eyaka] (K128) /ki-eia/ 'drought' [ce:ya] (K225) /mi-oio/ 'souls' [myo:yo] (K223) /lu-ieio/ 'broom' [lwe:yo] (K212) /mu-som-ie/ 'you have read' [musomye] (K25)

(Data from Katamba 1974; parenthesized numbers give the page reference.)

This distribution has suggested to other investigators (Katamba 1974, Clements 1978) that postconsonantal glides derive from a rule of contraction, whose consequence is compensatory lengthening (for details see Clements 1978). But the analysis is not complete unless provisions are made for the glides that do not induce compensatory lengthening (cf. (7.b)). These are not underlying glides, since their occurrence is predictable. The short vowels that may follow them are not shortened vowels, since long vowels can also occur (cf. [\{-yuu\}] 'house' K198). The morpheme-initial and intervocalic glides are the glides derived by the cyclic operation of the CV rule: they do not induce compensatory lengthening because the CV Rule which derives them, unlike Contraction, does not change already assigned syllabic structure and does not create empty V slots. Within each morpheme, then, initial and intervocalic glides pattern differently from post-consonantal glides: this is exactly what the cyclic operation of the CV Rule predicts.

In the pages that follow, we will encounter a similar case: we will see that the Romanian postconsonantal instances of \{x are derived at a later stage in the derivation than the initial and the intervocalic \{x's.
2.1. Romanian syllable structure: a first approximation

Like Latin and Spanish, Romanian defines its onset inventory according to rule (3): possible onsets are restricted to obstruent-liquid clusters. Word-initially, a larger class of clusters occurs, which includes but is not limited to s-stop sequences. Surface rimes consist of single vowels or diphthongs followed optionally by up to two consonants. Word-final clusters consist of codas, which may be followed by any one consonant, which may in turn be followed by a y. Some suitably complex examples of word-final clusters are listed in (8):

\[(8) \quad \text{lemn 'wood', ritm 'rhythm', zu+rl 'hurl-1sg',} \]
\[\text{kaly 'warm-pl', as.terny 'spread-2sg', bi.linguy 'bilingual-pl', terti 'sacrifices', zu+rl 'hurl-2sg'.} \]

The surface distribution of glides and vowels is considerably more complex than in Latin. This paper will deal with only two sources of difference between the patterns of glide/vowel alternations in the two languages: (a) unlike Latin, Romanian has postconsonantal glides in both prevocalic and word-final position; (b) unlike Latin y, Romanian y fails to alternate with w in the expected environments. One aspect of the surface glide/vowel distribution that the two languages share is the absence of initial prevocalic and intervocalic i: in both contexts, like Latin, Romanian exhibits \( \mathbf{y} \):

\[(9) \quad \text{a. } \mathbf{y} \text{u.ni.ye 'June'; } \mathbf{y} \text{u.te 'rapid'; } \mathbf{y} \text{e.se 'exits'.} \]
\[\text{b. } /\text{ra}z\text{boiu}-l/ 'the war'; } /\text{ra}z\text{boi}-re/ \quad /\text{ra}z\text{boi}.yul (\text{cf. } /\text{ra}z\text{boi}-re/) \]
\[\quad /\text{m}+\text{ntui}-\text{am}/ 'I redeemed' \quad /\text{m}+\text{ntui}-\text{re}/ \quad /\text{m}+\text{ntui}-\text{re} \text{re 'redeeming'}; \]
\[\quad /\text{oi}-\text{eru} 'shepherd'; } o.yer (\text{cf. } /\text{oi}-\text{le}/ 'the sheep-pl' \quad \text{oi} \text{.i}.le). \]

Postconsonantal prevocalic i surfaces syllabic in most cases:

\[(10) \quad \text{fi.e 'let be' (cf. fi 'to be'); sa.bi.a 'the sword', sa.bi.i.le 'the swords'; h+r.ti.a 'the paper', h+r.ti.i.le 'the papers'; sf+i.\text{i}.a 'to tear'.} \]

There are, however, seemingly idiosyncratic as well as predictable exceptions to this rule. First, lexical items like mye.re 'honey', fyer.be 'boils', a.mye.re 'noons', fyere 'gall', pye.re 'perishes', byet 'poor' show postconsonantal glides in contrast with the regular behavior of fi.e 'let be', in.fi.e.re 'adoption', a.tro.fi.e.re 'atrophy', a.pro.pl.e.re 'nearness', etc. Significantly, this class of postconsonantal y's occurs only after a labial or labiodental consonant and only before e: we can
therefore account for the *fyē.re : in.fī.ē.re*, *pyē.re : a.pro.pl.ē.re* contrasts by positing a rule of post-labial pre-e *γ*-insertion, which turns underlying */fere/, */pere/ into *fyere*, *pyere*.

Second, there are numerous postconsonantal instances of *γ* before *u*, as in (11):

(11) a. */studi-u/ ‘study’ > *stu.dyu* (cf. */studi-i-le/ ‘the studies’ > *stu.di.i.le*); */propr-i-u/ ‘proper’ > *pro.pryu* (cf. */propr-i-le/ ‘the proper-pl’); */imperi-u/ > *im.pē.ryu* ‘kingdom’ (cf. */imperi-i-le/ > *im péri.i.le* ‘the kingdoms’).

b. */zg+i-i-u/ ‘scratch-1sg’ > *zgf.ryu* (cf. */zg+i-i-am/ ‘scratch-1sg-impf’ > *zgf+i.ām*); */sf+i-i-u/ ‘tear-1sg’ > *sf+i.yu* (cf. */sf+i-am/ ‘tear-1sg-impf’ > *sf+i.ām*); */appr-i-u/ ‘come near-1sg’ > *a.pro.pyu* (cf. */appr-i-am/ > *a.pro.pi.ām*).

c. */kyu.u/ ‘cut classes’ > */uni-une/ ‘union’ > *u.nyu.ne* (cf. */uni/ ‘unite’ > *u.ni*); */krea-ti-une/ ‘creation’ > *kre.a.tyu.ne* (cf. */krea-ti-e/ ‘creation’ > *kre.a.ti.i.e*).

The alternations recorded above suggest a contraction rule whereby a disyllabic sequence Ci.u becomes monosyllabic Cyu. A preliminary statement of this rule appears below:

(12) Contraction

\[ \begin{array}{c}
\sigma & \sigma \\
\hline
 OR & OR \\
\hline
 CX.X & CX.X \\
\hline
 i.u & i.u
\end{array} \]

\text{Condition: } i \text{ is unstressed}

In fact, the only analysis of the Cyu syllables compatible with the model of syllabification presented in section 1.4, requires that a disyllabic pre-contraction stage Ci.u exist, and thus indirectly supports (12): any underlying sequence */Ci.u.../ will be turned into Ci.u by the first syllabification operation, rule (1). We need however to consider the alternative possibility that the Cyu syllables are created in the initial stages of the syllabification process and that no intermediate disyllabic stage exists. As a potential difficulty for our views on syllabification, this alternative analysis merits discussion. At the same time, we need to explain how our proposed Contraction rule is compatible with the fact that minimal pairs Cyu: Ciw exist in Romanian. Nouns like *stydya*, *impēryu*, *potāsyu* ‘potassium’ stand in minimal contrast to nouns like *skatiw* ‘bird’, *sikrīw* ‘coffin’, *pardesīw* ‘overcoat’; a verb like *sfisīyu* ‘tear’ contrasts with *ṣīw* ‘know’. The two issues, disyllabic origin of the postconsonantal *yu* sequences and problematic *i.w* diphthongs, turn out to be related. As we see below, an analysis of the full paradigm lends
support to the syllabification model presented here. We must first however look briefly into the stress pattern of the language.

2.2. Romanian stress

Stress is limited to the last three syllables of the word. Final stress is uncommon in polysyllables and generally restricted to idiosyncratically stressed suffixes. The choice between penult and antepenult stress is in part rule-governed, in part a lexical property. The main generalizations are formulated and illustrated below:

(13)a. V-final forms

(i) antepenult stress: for.fo.ta 'agitation',
    les.pe.de 'stone', re.pe.de 'fast',
    ka.u.ta 'seeks', kum.pa.ra 'buys'.

(ii) penult stress: ce.ta.te 'fortress', a.du.re
    'brings', re.pe.de 'rebukes',
    se.ni.na 'serene', u.či.de 'kills'.

(iii) obligatory penult stress if penult is closed:
    al.bas.tru 'blue', a.prin.de 'lights up',
    as.kün.de 'hides', po.rün.ka 'order'.

b. C-final forms

(i) penult stress: bul.vo 'buffalo',
    ku.trémur 'quake', in.ced 'soft',
    de.sí.gur 'certainly'.

(ii) final stress: va.taf 'supervisor',
    re.zul.tăt 'result', u.suk 'dry-1sg',
    a.dun 'gather-1sg'.

(iii) obligatory final stress if final in -CC(C)#:
    as.fált 'asphalt', as.kült 'listen-1sg',
    deș.tept 'awake', a.da.post 'shelter'.

This paradigm shows considerable similarity to the one described by Harris (1983) for Spanish. Our analysis can be modeled on his. Individual lexical items may have the property of segment extrametricality, which means that the stress rule will ignore the final segment of such items either in determining syllable weight or in actually counting syllables. The stress rule itself can then be given informally as in (14):

14.a. Stress a heavy final syllable.

b. If the final is light, stress the penult.

The stress rule alone accounts for cases (13.a.ii-iii) and (13.b.ii-iii) above: in a.dun and deș.tept, the final is heavy, therefore stressed; in ce.ta.te and a.prin.de, the final is light and clause (b) of (13) takes effect. Extrametricality explains the remaining two classes, (13.a.i) and (13.b.i). In re.pe.de, the final segment e is extrametrical: since onsets are irrelevant for the stress rule, the extrametricality of e eliminates the entire final syllable de from consideration. Stress is then computed on
the remaining string repe(de) and, in the absence of a heavy final, the penult syllable receives stress. In de.sī.gur, segment extrametricality turns the heavy final gur into a light syllable gur(r) and thus justifies the penultimate stress. For classes (13.a.iii) and (13.b.iii) the assumption of extrametricality has no effect on stress placement: this is why these are the only types of strings that do not exhibit lexical variation in the location of stress. Thus as.kun.de could be analyzed either as as.kun. (de), in which case it illustrates clause (a) of the stress rule, or else as as.kun.de, in which case it illustrates clause (b). A form like deš.tępt will be stressed by clause (a), whether one assumes extrametricality (deš.tępt) or not.

2.3. Desyllabification Rules

We have seen in the preceding section that the option of segmental extrametricality accounts for the variation between penult and antepenult stress in words whose last two syllables are light (repe(de) ‘fast’ vs. repēde ‘rebukes’). Consider now the contrasts that we set out to explain: skatiw vs. studyu, pardesiw vs. potąsų. Inspection of a larger selection of skatiw-type nouns reveals that they are invariably stressed on their final syllable:


Our analysis will be that the syllabification contrast between skatiw and studyu is due to an underlying difference in stress pattern. Rule (1) predicts that both types have an initial syllabification that includes hiatus: ska.ti. u, stu. di. u. On such representations, the option of segmental extrametricality turns stu. di. u into stu. di. (u). Rule (14) applies to both types, assigning a de facto antepenult stress to stu. di. (u) and penult stress to ska. ti. u by clause (b). Two desyllabification rules, discussed below, apply now, both subject to the condition that stressed syllables cannot be affected. The first rule, (12) or Contraction, turns Ciu sequences into Cuv syllables. This rule affects stu. di. u; but the stress on ti in ska. ti. u blocks it. The second rule, High Vowel Desyllabification, turns an unstressed word-final high vowel into a glide, subject to the condition that the preceding onset, if any, may not be branching: this rule can apply to ska. ti. u to derive ska. tiw but is blocked, by the branching onset condition, from applying to stu. dyu. We can proceed to motivate this analysis.

Several observations indicate that the factor differentiating skatiw from studyu is stress, not syllable structure. A look at the Inverse Dictionary of the Romanian Academy shows that the 233 forms ending in (orthographic) -Ciu cited there divide into two classes where stress and syllabification correlate: penult stressed -VC Cuv forms and final-stressed -Ciu forms. Intermediate types in -Cuy or -VC Ciuw do not occur and register as ill-formed with native speakers. A further significant fact in this connection is that
monosyllables ending in an -iu sequence are systematically of the Cuw type: the Cuv class of monosyllables is uniformly unattested and judged as ill-formed.

(16) \( {\text{kiw}} \) ‘know-1sg’; \( {\text{plw}} \) ‘fold’; \( {\text{uiw}} \) ‘alive’; \( {\text{fiw}} \) ‘son’; \( {\text{tiw}} \) ‘be-1sg-subj’; \( {\text{tiw}} \) ‘hold-1sg’; \( {\text{ziw}} \) a hydronym.

Finally, the stress of the studyu-class is consistently on the penult: a stress pattern like *pota\( \text{syu} \) is, again, unattested and ungrammatical.

All three facts recorded follow from our proposed analysis. Antepenult stressed forms like *po\( \text{ta,syu} \) do not exist because, at the stage in the derivation when Stress applies, the form is po\( \text{ta,su} \) and cannot be stressed further to the left than the antepenult. *Pota\( \text{syu} \) is then impossible for the same reason that *ra\( \text{az,bo,i,re} \) is: (14) was misapplied. Monosyllables ending in -iu belong exclusively to the skatiw class because they are disyllables when stress applies: viw, for example, originates as /vi-u/, is initially syllabified by (1) as vi\( \text{u} \), stressed on the penult, according to (14.b), and subjected to High Vowel Desyllabification, which produces the surface viw. Extrametricality in cases like this has no visible effect, since both vi\( \text{u} \) and vi\( \text{u} \) will receive initial stress. Ill-formed *vy\( \text{u} \) is also ruled out. The two alternative derivations of *vy\( \text{u} \) are each blocked by one of the assumptions of our analysis: on the one hand, *vy\( \text{u} \) could result from intermediate vi\( \text{u} \), whose stress pattern is deviant; on the other hand, *vy\( \text{u} \) could be derived from vi\( \text{u} \) but only in violation of the condition on rule (12) that requires an unstressed i. Further evidence for this condition comes from forms like ki\( \text{u,ye} \) ‘whoop-3sg’, pi\( \text{u,ye} \) ‘chirp-3sg’, ti\( \text{u,ye} \) ‘buzz-3sg’ from /ki\( \text{ui-e/}, /pi\( \text{ui-e/}, /ti\( \text{ui-e/}, syllabified (see below) ki\( \text{u,ye} \), pi\( \text{u,ye} \), ti\( \text{u,ye} \) and stressed on the antepenult. In these cases as well the stress on the initial i blocks rule (12). Finally, the consistent end-stress of the skatiw-class is explained as follows: forms like *ska\( .\text{tiw} \) could only come from intermediate ska\( .\text{ti,u} \). Such a form should however undergo the obligatory rule of Contraction (12) and become ska\( .\text{tyu} \). *Skatiw is then ill-formed because an obligatory rule has failed to apply in its derivation.

High Vowel Desyllabification (HVD) is illustrated below:

(17) Word-final Word-medial

<table>
<thead>
<tr>
<th>a.</th>
<th>ska( .\text{tiw} )</th>
<th>ska( .\text{ti,u} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>'bird'</td>
<td>ska( .\text{tiy} )</td>
<td>ska( .\text{ti,i,lor} )</td>
</tr>
<tr>
<td>'bird-pl'</td>
<td>fla( .\text{k( \bar{a} )w} )</td>
<td>fla( .\text{k( \bar{a} )ul} )</td>
</tr>
<tr>
<td>'young man'</td>
<td>fla( .\text{k( \bar{a} )y} )</td>
<td>fla( .\text{k( \bar{a} )i,lor} )</td>
</tr>
<tr>
<td>'young man-pl'</td>
<td></td>
<td>'young man-pl-DAT'</td>
</tr>
</tbody>
</table>
b. bi.vol
  'buffalo'
va.taľ
  'supervisor'
lemn
  'wood'
zvīrł
  'hurl-1sg'
kuy
  'nail'
mēn.tuy
  'redeem-1sg'

bī.vo.lul
  'the buffalo'
va.taľ.ful
  'the supervisor'
lemnul
  'the wood'

kū.yul
  'the nail'

c. va.taľy
  'supervisor-pl'
vezy
  'see-2sg'
istmy
  'isthmus-pl'
zvīrly
  'hurl-2sg'
va.taľ.ī.lor
  'supervisor-pl-DAT'
ve.žil
  'see-IMP-him'
išt.mi.ī.ør
  'isthmus-pl-DAT'

d. ā.flu
  'find out-1sg'
a.čru
  'sour'
zim.bru
  'buffalo'
kūs.čru
  'the buffalo'
kuś.čru
  'the in-law'

ēl.ī
  'find out-2sg'
ā.črī
  'sour-pl'
zim.črī
  'buffalo-pl'

ēl.ī.ör
  'sour-pl-DAT'
zim.črī.ī.ør
  'buffalo-pl-DAT'

e. fa.kū
  'do-PERF-3sg'
vor.bi
  'speak-INF'
ku
  'with'
tu
  'you'
šī
  'and'

f. fa.kū.rah
  'do-PERF-3pl'
vor.bi.re
  'speak-INF-NOM'

The left-hand column contains forms that end underlyingly in a high vowel. The morphemes giving rise to alternations are: (a) the
masculine singular y (as in zimbri, vataf from /vataf-u/, flakaw from /flaka-u/); (b) the plural suffix i (as in zimbri, flakaw from /flaka-i/, vatafi from /vataf-i/); (c) the 1st person singular suffix y (as in a,flu, zvr1 from /zvr1-u/); (d) the 2nd singular suffix i (as in afli, zvr1y from /zvr1-i/, vezy from /ved-i/). The right-hand column shows how these forms surface when one more morpheme, a clitic, is added after the high vowel. (17.a) illustrates the case of underlyingly postvocalic high vowels. Word-finally these surface as glides, otherwise as syllabics, with hiatus preserved even in a sequence of identical vowels (skatf/i, lop). (17.b) illustrates the behavior of postconsonantal y: word-finally, it is desyllabified and deleted, word-medially it is preserved. (17.c) shows that final i is desyllabified but, unlike y, does not delete postconsonantly. HVD fails to affect syllabables with branching onsets; the forms in (17.d-e) show this. HVD also fails to desyllabify stressed vowels (17.f), whether their final stress is a lexical idiosyncracy, as in the case of the perfect suffix y and of the infinitive i, or the predictable final stress of monosyllables (ku, tu, x). The facts in (17) indicate that a rule of considerable generality is responsible for the final glides in forms like skatwi. Our account of the skatwi: study contrast was, in part, based on the hypothesis that HVD fails to apply to study because the complex onset dy of the final syllable blocks it. This is exactly what a comparison between forms like afly and zvr1 reveals: both of these contain the 1st singular suffix -u in unstressed word final position. The difference is that y is preceded by an onset sequence f in one case, and by a heterosyllabic cluster rl in the other: /zvr1-u/ is syllabified as zvr1f (cf. surface zvr1, lr 'hurl-INF') and qualifies for HVD; /af/-u/ becomes afly and, like study, stays intact. HVD is formulated below as a rime-adjunction rule that operates in structure-changing fashion. The branching-onset condition is incorporated into the statement of the rule, which applies to syllables whose onset contains at most one segment. Since no adjacency or relative sonority conditions are imposed, the rule freely derives coda clusters like stmy (istmy), rly (zvr1y), etc. The right bracket on the CV tier indicates word-final position. X's are used as variables over skeleton slots.

(18) High Vowel Desyllabification

\[
\begin{array}{c}
\sigma \\
\begin{array}{c}
R \\
\sigma \\
\begin{array}{c}
(X) \\
\begin{array}{c}
(0) \\
\begin{array}{c}
R \\
\begin{array}{c}
X \\
\begin{array}{c}
\begin{array}{c}
X \\
\begin{array}{c}
X \\
\begin{array}{c}
[+\text{high}] \\
\end{array}
\end{array}
\end{array}
\end{array}
\end{array}
\end{array}
\end{array}
\end{array}
\end{array}
\end{array}
\end{array}
\end{array}
\]
We may at this point consider the full derivations of some of the central forms discussed so far. The rules are ordered as follows:

(19) a. Cyclic: CV Rule (1) > Onset Rule (2) > Stress (14) > Contraction (12)

   b. Postcyclic: High Vowel Desyllabification (18)

The underlying forms given below enclose in brackets the word-level cycle, the only constituent with provable cyclic properties. Morphemes lying outside the brackets are clitics added postlexically. Some irrelevant details, such as the status of initial sk-, st- clusters, are left out.

(20) [skati-u] [studi-u] [kui-u] [skati-u]-l [studi-u]-l

(1) ska.ti.u studi.u ku.yu ska.ti.u studi.u
(2) n/a n/a n/a n/a n/a
(14) ska.ti.u studi.(u) ků.yu ska.ti.(u) studi.(u)
(12) n/a study.u n/a n/a n/a

Postcyclic
(18) ska.ti.w n/a kuyw n/a n/a

Surface
ska.ti.w study.u kuy ska.ti.u study.u

The mismatch between kuyw and the actual surface form, kuy, seems to indicate that one more rule is needed: the elimination of postconsonantal w's resulting from HVD. We will return to this question.

2.4. Early and late y's

The preceding section has presented the basis for our analysis of Cyu syllables. We have observed that several arguments based on the contrast between -Cy_u and -Ciw establish the fact that both types of finals are derived by stress-dependent rules. This completes our demonstration that the postconsonantal, prevocalic glides of the language are not the result of the initial syllabification: they are either the result of a glide insertion rule (in cases like pyere, fyere) or the result of Contraction.

The model of syllabification adopted here predicts, however, not only a late derivational origin for postconsonantal glides but also an early one for initial prevocalic and intervocalic glides: since the latter category is derived by the first rule of syllabification, rule (1), one expects that subsequent processes, like stress assignment, will have no access to representations in which these segments are anything other than onset glides. We investigate this prediction here.

Consider the forms in (21)

(21) verbs
/m+n.tui-u/ m+n.tuy
/plei-u/ play
/redeem-1sg/ plane

nouns
Both classes of forms in (21) contain an underlying final sequence Viu. The predicted initial syllabification is m+n.tu.yu, pi.u.yu, pla.yu, ma.la.yu, etc. The verbs are recessively stressed, with the final (underlying) syllable counted as extrametrical: hence intermediate forms should be m+n.tu.yu, pi.u.yu, etc. The nouns of this form happen not to make use of extrametricality. Stress should then produce intermediate ma.lá.yu, ku.Kú.yu, hol.te.yu, forms which surface intact when the definite article is added: ma.lá.yul, hol.te.yul, ku.Kú.yul. HVD should then derive verbs like m+n.tu.yuw, nouns like ma.lá.yuw, whose final u is eventually deleted. Thus even though intermediate yu sequences must be assumed in forms like m+ntuy and holtey, rule (12) has not been invoked in these derivations. The same remark holds for the surface yu sequences of holteyul, malayul, kukuyul: these are not the result of Contraction.

Suppose now that, contrary to our hypothesis, all sequences in yu derive from Contraction. Given that Contraction follows Stress, the input representations to Stress should be uncontracted m+n.tu.i.yu, ki.u.i.yu, hol.te.i.yu, ma.la.i.yu, etc. Stress has two options now: it may count the final u as extrametrical and derive intermediate:

(22) min.tú.i.u, ki.u.i.u, hol.te.i.yu, ma.lá.i.u

or it may derive, without extrametricality, forms like:

(23) min.tu.i.i.u, ki.u.i.u, hol.te.i.yu, ma.la.i.i.u.

The surface counterparts of (22) should be *m+n.tú.y, *ki.u'y, hol.te'y, ma.lá'y. Those of (23) should be *m+n.tu.iu, *kyu.iu, *hol.te.iu, *ma.la.iu. One obvious problem for such an analysis is that it cannot sanction the stress pattern of the verbal forms: m+ntuy can be derived from m+n.tu.i.yu only by assuming an illegitimate application of (14). A less obvious but equally damning difficulty is the prediction that forms like *hol.te.iu, *ma.la.iu, *ku.ku.iu will occur. Another look at the Inverse Dictionary reveals that all forms recorded there as ending in orthographic -ViV are archaic pronunciations corresponding in the contemporary language to -Vy, as in ma.láy: no forms like *ma.la.iu exist now or can be attributed to earlier stages of the language. The [-iu] finals occur only after consonants. A third problem is that, alongside forms like yu.te 'fast', yu.da 'Judas' one should also expect *i.u.te, *i.u.da from antepenult-stressed forms whose stressed i blocks Contraction.
The conclusion is then that postvocalic and initial yu sequences are derived before rather than after the application of the stress rule (14). The natural hypothesis is that they are derived by the same rule which accounts more generally for the absence of initial prevocalic or intervocalic i: rule (1). In contrast, the earliest syllabified stage recoverable for Ciu sequences is hiatus Ci.u.

Using stress and the more general observation that stressed syllables are never desyllabified in Romanian, we can make similar observations for other sequences involving i. Thus postvocalic i loses its syllabicity in forms like nay.ba 'devil', puy.ka 'young hen', kfy.ne 'dog' but not in a.i.do.ma 'entirely similar', ga.r.na 'hen', ru.i.na 'ruin', where it carries stress. We can analyze forms like puy.ka as instances of (intermediate) antepenult stress and thus reduce the apparent syllabification contrast between puy.ka and ru.i.na to the familiar difference between segmental extrametricality and lack thereof: pu.i.(ka) vs. ru.i.na. This analysis would permit us to recover another type of hiatus predicted by (1): the hiatus underlying surface UyC sequences. In contrast, no initial prevocalic or intervocalic i's ever surface as syllabics: there are no forms like *o.i.rer, *la.i.et next to o.yer 'shepherd' from /oi-er-u/, la.yet 'long-haired' from /lai-et-u/; there are also no forms like *l.a.ta next to vs.ta 'look'. Such gaps can only be interpreted as effects of rule (1).

2.5. Latin and Romanian Y

It was mentioned in section 1.2. that in Latin intervocalic and initial prevocalic u, like i, surfaces as a glide. In sequences of the form UuiU or #uiU, where, in principle, either high vowel could become a glide it is the leftmost one that does: hence a.wi.a, wi.a.

None of these rules holds for Romanian: initial prevocalic w is not found, intervocalic w occurs only when the second vowel is a and is provably epenthetic, as for intervocalic or initial sequences of ui, those are syllabified as shown below:

(24) a. ki.u. 'whoop-INF'; pi.u.i 'chirp-INF'
b. ki.u.xe 'whoops', pi.u.xe 'chirps' from /kiui-e/, /piui-e/.

The Latin syllabification of such forms would have to be ki.wi, pi.wi, ki.wi.e, pi.wi.e. The Latin syllabification of forms like yu.ta 'forget-3sg' would have to be wi.ta.

All these facts can be uniformly accounted for on the assumption that Romanian Y is an underlying [+syllabic] segment, like the non-high vowels. The left-to-right iteration of (1) in ki.ye would proceed as follows:

(25)

\[
\begin{array}{cccc}
\text{Kiuiie} & \text{Kiuiie} & \text{Kiuiie} & \text{Kiuiie} \\
\text{CXUXV} & \text{CXUXV} & \text{CXUXV} & \text{CXUXV} \\
\text{OR} & \text{OR} & \text{OR} & \text{OR} \\
\text{Y} & \text{Y} & \text{Y} & \text{Y} \\
\end{array}
\]
The idea that Romanian \( u \) is underlyingly syllabic rather than unspecified can also account for the hitherto unexplained fact that HVD may create postconsonantal \( y' \)s but not \( w' \)s. We have operated so far on the tacit understanding that segments unspecified for syllabicity are realized as syllabic in rime-initial position, as non-syllabic elsewhere. The postconsonantal \( y' \)s created by HVD are thus in the elsewhere category. An explicit assumption has been that of the two segments paired off by the CV rule (1) the first may not be [+syllabic], the second may not be [-syllabic]. This provision is however insufficient in its present form. We note that syllabic mergers of the type effected by HVD and Contraction never result in placing [+syllabic] segments in onset or coda position. Thus, while contractions of \( Ci.V \) sequences to \( CyV \) do occur in languages where other alternations establish the [0syllabic] specification of \( i \), such contractions are not found in languages which, like Attic Greek, have exclusively [+syllabic] \( i' \)s. For the same reason, the syllabic mergers of hiatus sequences like \( ae, ao, ea, oa \), when attested, never position the first vowel in the onset of the resulting syllable. The same principle seems to be at work in all these cases, whether syllabification or resyllabification processes are involved:

\( (26) \) [+syllabic] segments cannot occur except in rime-initial position or immediately preceded by a rime-initial segment.

Principle (26) can now supersede the segmental conditions on rule (1). It can also explain the disappearance of postconsonantal \( w \), in forms like \( kuv \) derived by HVD from \( ku.yu, min.tuy \) from \( min.tu.yu, bi.vol \) from \( bi.vo.lu \): HVD cannot incorporate the final \( u \), a syllabic segment into the coda of the preceding syllable.

Notes

1. In general, the synchronic grammar of Classical Latin provides few examples of intervocalic \( y \), all of them geminated, as in \( [ay.yo:] \). I assume that a separate gemination rule is responsible for this phenomenon.
2. I am ignoring here, for the sake of brevity, a number of complications. See Devine and Stephens 1977 for the relevant facts.
3. An investigation of the properties of sonority scales necessary for such statements, along with more complex examples, is found in Steriade 1982.
4. I am grateful to Larry Hyman for pointing out to me the relevance of the Luganda facts.
5. The decision to consider definite articles like \( -l \) 'the-sg' as clitics rather than cyclic affixes is based on two sets of facts: (a) the failure of these morphemes to affect stress, as seen when one compares \( stûdyu \) with \( stûdyul \) 'the study', \( stû.dî.i.le \) 'the studies' or \( stû.dî.i.lor \) 'to the studies'; (b) the fact that the actual location of the definite
articles is the result of a syntactic rule which positions an underlyingly NP-initial determiner after the first NP constituent, noun or adjective: compare bivolul bun ‘the good buffalo’ (lit. ‘buffalo-the good’) with the alternative bunul bivol ‘id.’ (lit. ‘good-the buffalo’).

6. Note the related form o.i.ta ‘little sheep’ from /oi-ta/, showing regular stressed i.

7. For example, the definite form of feminine nouns like zi ‘day’ is zi.wa from /zi-a/, where /-a/ is the feminine form of the definite article.

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CLOSED SYLLABLE ADJUSTMENT AND THE REPRESENTATION OF SCHWA IN FRENCH

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Introduction
Closed Syllable adjustment (CSA) commonly refers to a process of French neutralizing /e e e/ to [ɛ] under certain conditions, in particular in word-final closed syllables. (1a) illustrates the e/ɛ alternation and (1b) the e/ɛ alternation.

(1) (a) hôtelier [otɛlje] hôtel [otɛl]
genevois [ʒenevwa] Genève [ʒenev]
acheter [aʃte] achète [aʃet]
crever [krɛve] crève [krɛv]

(b) agrégation [agregasjɔ] agreg [agreq]
bénéfice [benefis] bénéf [benef]
élementaire [eleməteɾ] élem [elem]
cédre [sede] cèdre [scd]

Much attention has been devoted to CSA recently, in particular with regard to the domain of application of the process. Little has been said, however, about the focus of CSA, apart from assuming without discussion that schwa and the mid front unrounded vowels /e/ and /ɛ/ form a natural class and thus fulfill a necessary condition for viewing CSA as a single rule. The position advocated in this paper is that, given the special nature of French schwa, it is in fact impossible to unify the focus of CSA within a coherent theory of phonology, and that two separate processes must therefore be recognized: e-adjustment and e-adjustment. Evidence of a functional nature from within the language is also adduced to suggest the separate existence of these two processes in the grammar, independently of formal considerations.

The focus of CSA and the representation of schwa
The proposal to collapse e-adjustment and e-adjustment into CSA was originally made by Dell (1973, 1980) on the basis that the two rules yield the same output in identical environments and have the same ordering relations with the other rules of the grammar (1980: 194). Assuming for the sake of discussion that these necessary conditions are indeed met, the challenge remains to group together into a natural class the focuses of the two rules (/e/ and /e/). My general point in this section is that any such attempt is theoretically problematic.

Let us first review very briefly the well-known puzzle regarding French schwa. This mystery vowel can phonetically appear as [œ], [ɛ], or zero, as shown in the examples of (2):
(2) (a) geler  [ʒe.lɛ]  
   il gèle  [ilʒɛl]  
   il a gelé  [iləʒɛl]  

(b) lever  [lɛʁe]  
   il lève  [ilɛv]  
   il a levé  [ilaʁe]  

(c) il secoue  [ilʁɔku]  
   tu secoues  [tyʁku]  

Phonologically, however, it can be neither /œ/, nor /ɛ/, nor zero, because as the examples in (3) demonstrate, underlying /œ/ cannot surface as [ɛ] or be deleted (see 3a), underlying /ɛ/ cannot surface as [œ] or be deleted (see 3b), and the possible presence of a schwa between two consonants cannot be predicted (compare 3c with 2c):

(3) (a) gueuler  [ɡœ.lɛ]  (underlying /œ/)  
   il gueule  [ilɡɛl]  *[ilʁɛl]  
   il a gueulé  [ilʁe.lɛ]  *[ilʁe.lɛ]  

(b) rêver  [ʁe.ɾɛ]  (underlying /ɛ/)  
   il rêve  [ilʁe.ɾɛ]  
   il a rêvé  [ilʁe.ɾɛ]  *[ilʁe.ɾɛ]  

(c) il skie  [ilɔski]  (underlying /ski/)  
   tu skies  [tyʁski]  

In sum, it appears that schwa must be something underlyingly, but something different than any of the other vowel phonemes of French.

Against this background on the special nature of French schwa, let us now consider the types of underlying representations that have been proposed for it and discuss how they each fare with respect to the issue of the existence of a single rule of CSA. In Les règles et les sons (1973), Dell did not attempt to propose a precise underlying representation for schwa; he simply used the cover symbol "E" to represent the conjunction of /a/ and /e/, thereby bypassing the problem at hand. In the English version of his book (1980), however, he adopted Dell and Selkirk's (1978) proposal to have schwa specified as the unrounded back counterpart of closed /o/, as shown in (4):4

(4) i y u  
   e φ ə o  i.e. /æ/ =  
   eœ œ æ œ  

This move allows /æ/ and /œ/ to form a natural class by themselves, as shown in (5):

(5) /æ e/ = [-high, -low, -round]  

but only at the expense of setting up a purely imaginary
underlying segment for which the feature specification [+back] in particular represents the archetypal arbitrary use of phonological features denounced by Kiparsky 1968.

A conceivable alternative is to represent schwa with the features of a regular phoneme of French, but with an additional overt diacritic mark providing the required distinction. The standard proposal along these lines has been to assume that schwa is a specially marked low mid front rounded vowel underlyingly, as shown in (6) (see for instance Morin 1978):

\[(6) \text{schwa} = \overset{\text{\textbackslash}}{\text{\textalpha}}/\]

The basic reason for this particular choice is that \([\text{\textalpha}]\) seems to be the normal surface realization of schwa when nothing untoward happens to it, such as deletion or CSA. This representation of schwa may therefore be viewed as less arbitrary than the previous one, even though it resorts to the unsatisfactory use of diacritic features also criticized by Kiparsky 1968. For our immediate purposes, the important point here is that the representation of schwa as \(\overset{\text{\textalpha}}{\text{\textalpha}}/\) automatically excludes any possibility of grouping \(\overset{\text{\textalpha}}{\text{\textalpha}}/\) and \(\text{\textalpha}/\) into an appropriately exclusive natural class.5

More recently, with the development of nonlinear phonology, it has become possible to view French schwa under a totally different light by regarding it as some sort of underlying empty vowel. Thus Anderson (1982: 550–2) considers schwa to be an empty syllabic nucleus, and Withgott (1982: 87) defines it as a V-position on the skeleton tier with no associated features on the melody tier. What I would like to argue next is that although the concept of schwa as an empty vowel brings genuine insights into the phonology of this odd vowel, it still does not allow e-adjustment and e-adjustment to be collapsed into one rule, contrary to Anderson's recent proposal.

To begin with, let us outline how essential properties of French schwa may fall out naturally within the general framework of nonlinear phonology. First, in any analysis, schwa must be somehow set apart from all the other vowels in the system. This is accomplished here not by resorting to arbitrary phonological or diacritic features, but by exploiting an already available property of the theory, namely the relative independence of the various tiers found in phonological representations. Thus, schwa corresponds to an unfilled V-node. Second, this type of representation makes it possible to capture at once that the presence of a schwa is not necessarily predictable, but that its ultimate phonetic realizations are all always rule-governed. The unpredictability of the presence of a schwa is encoded in the underlying presence of a V-position on the skeleton tier. The predictability of the phonetics of schwa can be captured by means of context-sensitive realization rules specifying the features of V on the melody tier. If no rules apply, then empty V can perhaps be automatically assumed to be unrealized phonetically.6 Third, an explanation seems available for why instances of vowel insertion
in French, such as those illustrated in (7) (see Tranel 1981: 286-91), are schwas rather than some other vowel or vowels:

(7) film noir \([film(\text{œ})nwar]\)
contact pénible \([kɔtakt(\text{œ})penibl]\)
avec rien \([avɛk(\text{œ})rjɛ]\)
quel hasard \([kɛl(\text{œ})azɛr]\)

Assuming that the unmarked insertion rule simply places a \(V\) on the skeleton tier in the appropriate position, nothing can distinguish a derived empty \(V\) from an underlying empty \(V\), and the same realization rules are predicted to operate in both cases.\(^7\)

Fourth, the fact that schwa never occurs in word-initial position can be readily explained. It follows from the form of French grammar and a universal principle independently proposed by both Dell 1980 and Kiparsky 1982. The realization rules for empty \(V\) always involve the presence of preceding or following consonants. Thus, the phonetic realization [\(\text{œ}\)] is governed by the presence of at least one preceding consonant, and the phonetic realization [\(\text{ɛ}\)] is governed by the presence of at least one consonant closing the syllable. Suppose we had words beginning with an empty \(V\). If this empty \(V\) were in an open syllable, it would never be realized phonetically. If it were in a closed syllable, it would always surface as [\(\text{ɛ}\)]. In the first case, there would be no reason to postulate an empty \(V\) word-initially, and in the second case there would be no reason to postulate anything but an underlying initial mid front unrounded vowel. In effect, the postulation of word-initial empty vowels would unnecessarily increase the overall complexity of French grammar, by making lexical representations of words longer and derivations less direct, with no compensatory gain. Given the realization rules for French schwa, universal considerations of simplicity rule out word-initial empty \(V\), in accord with Dell's "principle of the simplest representation" (1980: 178-80) or Kiparsky's "Derivational Simplicity Criterion" (1982: 57-8).\(^8\)

Let us now return to the question of CSA. Taking maximum advantage of the representation of French schwa as an empty vowel, Anderson 1982 proposes that \(\text{œ}\)-adjustment and \(\text{e}\)-adjustment be collapsed into CSA by means of the parenthesis notation, as shown in (8):

(8) (a)

\[
\begin{array}{c}
\$ \\
\hline \\
O \\
\hline \\
R \\
\hline \\
N \\
\hline \\
M \\
\hline \\
X \\
\hline \\
Y \\
\end{array}
\]

\(\varepsilon / X \quad \varepsilon / C \quad \varepsilon / Y\)

(b) (i) \(\varepsilon \rightarrow \varepsilon / \ldots\)
(ii) \(\emptyset \rightarrow \varepsilon / \ldots\)
(8a) is interpreted by Anderson "as a schema abbreviating two rules, one in which the parenthesized material is present, as in [8b1], and one in which it is absent, as in [8b11]" (553). Although Anderson's schema seemingly resolves ingeniously and elegantly the problem of the conflation of a-adjustment and e-adjustment, closer inspection of his proposal reveals that it actually involves the problematic use of an unnecessary abbreviatory device.

Observe that in principle the concept of an empty node in phonology serves to distinguish a node whose phonetic realizations are totally predictable, from all other nodes of the same category, which must receive at least some idiosyncratic feature specifications. But Anderson's use of the parenthesis notation in effect permits an empty segment to be collapsed with any segment or set of segments dominated by the same node. Thus, in the case at hand, it actually allows schwa to be collapsed with any vowel or set of vowels of French, when the initial intent of the empty representation is precisely to set schwa apart. The notion of empty node and Anderson's use of the parenthesis notation thus function at cross-purposes in the theory, since their conjunction results in the contradictory claims that schwa is at the same time distinct and non-distinct from any other French vowel or set of French vowels. The simplest way to eliminate this basic incompatibility is to exclude from the theory one of the two formalisms: empty nodes or the parenthesis notation. The prohibition of empty nodes would presumably require a special statement complicating the theory; it would also seem to prevent the possibility of an incisive treatment of French schwa. On the other hand, Anderson's parenthesis notation, inherited from linear phonology, is precisely of the type made unnecessary by metrical phonology on independent grounds. As "a device for abbreviating a set of elementary rules" (Kenstowicz and Kisseberth 1979: 352), the parenthesis notation was essentially motivated by stress phenomena (Chomsky and Halle 1968). As Hayes 1981 showed, however, its raison d'être, together with inherent problems, disappears completely under a metrical approach to stress rules. This outcome is particularly welcome in the case under discussion, because the unavailability of the parenthesis notation in the theory automatically rules out the potential for a theory-internal contradiction among formal devices. Also ruled out, however, is the possibility to collapse a-adjustment and e-adjustment into a single rule of CSA.

Whether one adopts a linear or a nonlinear framework, the formal unification of the focus of CSA seems prohibited by well-motivated theoretical considerations. Given the maverick character of French schwa, it should come as no surprise that it fiercely resists formal attempts to lump it together with other vowels. I believe that one should in principle be rather suspicious of apparently successful ways of collapsing schwa with other vowels in the system.
Even if ø-adjustment and e-adjustment must consequently be kept separate in the grammar, this does not mean that they should be regarded as completely non-interacting. In fact, ø-adjustment can be viewed as a process feeding e-adjustment. That is, in the appropriate contexts, ø-adjustment will specify empty V as a mid front unrounded vowel undetermined between /e/ and /ɛ/. Then, e-adjustment will take both underlying and derived mid front unrounded vowels and turn them into [ɛ], most transparently in word-final closed syllables, and perhaps in other environments as well. Elsewhere, mid front unrounded vowels will be specified as [e], unless they were already lexically marked as /ɛ/.

Other clues to the separation of ø-adjustment and e-adjustment

Given the formal separation of ø-adjustment and e-adjustment, one would expect to be able to find in the language some tangible signs of autonomy on the part of the two processes. My goal in this section is to assemble a few clues of this nature.

Observe that under the two-process analysis, the application of ø-adjustment has the potential to lead phonetically either to [ɛ] (if e-adjustment subsequently applies) or to [e] (if the elsewhere rule applies instead). Are there any cases in the language where we do find phonetic [e] from underlying /ø/? The examples given in (9) may be relevant:

(9) (a) éléver [ɛlve]  (b) élévation [elevasjɔ]
rebelle [rebɛl]  rebellion [rebɛljɔ]
remédier [remedje]  irrémédiable [iremedjabl]
secrétier [sekrɛte]  sécrétion [sekresjɔ]
tenace [tɛnas]  ténacité [tenasite]

We see here that in the words of (9b), the addition of an affix from a specific class often referred to as "learned" apparently triggers the application of the process of ø-adjustment. Because the environment for e-adjustment is not met, [ɛ] rather than [ɛ] surfaces phonetically. The context for the application of ø-adjustment in (9) seems of course quite different than the context for the application of ø-adjustment in (1a), and it might therefore be argued, as was indeed done by Dell (1980: 183), that two altogether different rules operate in (9) and (1a). What this view fails to capture, however, is the fact that both cases of ø-adjustment result in the surface occurrence of a mid front unrounded vowel. By saying, on the other hand, that there is in the phonology of French a single process of ø-adjustment (which may occur in a variety of contexts), one accounts for what would otherwise be a purely accidental state of affairs. If valid, this generalization would reinforce our contention that ø-adjustment and e-adjustment are separate entities in the grammar, since it would show that ø-adjustment may operate independently of e-adjustment.

The autonomy of ø-adjustment and e-adjustment is also revealed, perhaps less controversially, by the drastically different
functions which the two processes perform in the grammar of French. *e-*adjustment is one of the rules determining whether schwa is going to be realized phonetically. *e-*adjustment, on the other hand, is one of the rules governing height values for mid vowels; other rules of this type include for instance the raising of the mid rounded vowels /œ/ and /ø/ in word-final position, examples of which are given in (10):

(10) (a) dégueulasse [dəgœləsɛ] dégueu [dəɡœ]
    éboueur [ebœœʁ] boueux [bœœj]
(b) automobile [ɔtomɔbɛl] auto [ɔto]
    idiote [idjo] idiot [idʒo]

e-adjustment thus has a phonotactic function which clearly separates it from *e-*adjustment. This difference may be made more obvious by considering the different types of ungrammaticality which result when failure to apply one or the other rule occurs. The non-application of *e-*adjustment does not in itself yield phonotactically ungrammatical strings: for instance, instead of [aʃɛt] for achète, one would get [aʃɛt] or [aʃt], which are phonetically possible words in French.  However, if *e-*adjustment fails to be applied, then the outputs are phonotactically ungrammatical; in particular, any word ending in a closed syllable containing [e] is actually an impossible word in the type of French considered here. Thus, in a sense, *e-*adjustment can be bypassed, but not *e-*adjustment. A related indication of this difference between the two rules is the fact that children often fail to apply *e-*adjustment (see 11a), whereas to my knowledge they never fail to apply *e-*adjustment (see 11b).

(11) (a) je jete [ʒœzɛt] (instead of je jette [ʒəzɛt])
    on la leve [ɔlaləv] (instead of on la leve [ɔlalɛv])
(b) je cède [ʒœsed] [ʒœsed]
    on la règle [ɔlareɡl] [ɔlareɡl]

These phonotactic and developmental observations find a natural source of explanation in the separate existence of *e-*adjustment and *e-*adjustment. Under the CSA solution, they would remain completely mysterious.

**Conclusion**

Recent studies in French phonology have generally taken CSA to be a single rule affecting both /œ/ and /ø/. My purpose in this paper has been to argue that two separate processes must in fact be recognized: *e-*adjustment and *e-*adjustment. The evidence in favor of this analysis comes from two different quarters. First and foremost, formal and theoretical considerations appear to show that it is impossible to collapse the focuses of *e-*adjustment and *e-*adjustment. Substantively, this finding relates to the well-known unique nature of schwa among French vowels. Secondly, internal to the language, telltale signs do seem to indicate that the two
processes each have an autonomous existence in the grammar; in particular, they may apply independently of each other and they fulfill thoroughly different roles in the language.

Notes
1. See Tranel 1983 for references and discussion.
2. In Dell's account, which is couched in a linear framework, the environments for e-adjustment and e-adjustment are not only identical, they are also extremely complex, which increases the desirability of the one-rule hypothesis. Given a nonlinear framework, however, it has been argued that Dell's complex environments can be stated succinctly (see for instance Anderson 1982, Basbøll 1978, Selkirk 1978). The one-rule hypothesis is correspondingly less compelling, since it is expected that separate processes will share natural contexts.
4. At the expense of observational adequacy, only one type of /a/ is recognized in this system, in order to avoid the problem of having to account for four degrees of height with the two features [high] and [low]. See Walker 1975a for a discussion of this question.
5. Note that if schwa were represented as /ê/, e-adjustment and e-adjustment could then be collapsed, since /a/ and /e/ would presumably form a natural class (namely /e/). However, I do not believe that there is any substantive motivation for representing schwa as /ê/; to my knowledge, such a representation has in fact never been proposed.
6. See Withgott (1982: Chapter 3) for an incisive detailed account of this sort within the framework of Lexical Phonology.
7. Actually, it seems that a derived empty V will only surface as [æ], and never as [ɛ]. This follows from the fact that V-insertion can never take place in the proper environment for [ɛ] to be generated. Specifically, V-insertion is an intermorphemic process and the generation of [ɛ] is fundamentally intramorphemic. Also, V-insertion necessarily creates an open syllable and the generation of [ɛ] requires a closed syllable. There is perhaps one case which might be interpreted, at least historically, as an instance of V-insertion surfacing as [ɛ], namely when in the present tense the first person singular subject clitic je is postposed to a first group verb whose stem ends in a consonant (e.g. chanté-je [ʃətɛʒ]). This surface phonetic representation might be derived from /ʃətɛʒ/ by V-insertion followed by the formation of [ɛ] in a closed syllable. The evidence indicates, however, that this construction has long been restructured with a final /ɛʒ/ (see for instance Harmer 1979: 52–4; Morin 1978: 123).
8. Dell proposed his principle to eliminate cases of "systematic ambiguity" in phonological representations: "In the case where several phonological representations of the same morpheme are possible, all things being equal, the one closest to the phonetic
representations of the morpheme in question is chosen" (179). This principle in effect allows the phonological rules to constrain phonological representations ("induced restrictions"), and thus avoids "having to represent the same generalization in two different parts of the grammar: first in the form of a phonological rule and secondly in the form of a morpheme structure rule" (180). Kiparsky's principle states that "Among alternative maximally simple grammars select that which has the shortest derivations" (57). Introduced in order to account for "the favored status of lexical phonological rules", this principle accomplishes the same work as Dell's in eliminating unnecessarily complex phonological representations. Both principles are the expression of a very basic simplicity criterion and do not seem to be subject to the type of controversy that has surrounded the implementation of generative phonology's traditional evaluation measure.

9. Naturally, schwa belongs to the set of all French vowels. This is recognized at the skeleton tier, where like all the other French vowels, schwa is V.

10. As Kenstowicz and Kisseberth 1979 also point out, a second function of the parenthesis notation is as "a means of indicating irrelevant intervening material" (352). It is clear that in the case of CSA, the material placed in parentheses in Anderson's schema is not "irrelevant", since it defines one of the instances of application of the process. At any rate, nonlinear phonology in principle renders this type of parenthesis notation otiose as well, since irrelevant material presumably does not belong to the same autosegmental tier or to the same projection as the relevant material.

11. This proposal follows a brief suggestion made by Cornulier (1977: 156-7, note 6) and is consonant with the spirit, if not the letter, of Withgott's 1982 approach. Withgott assumes that by the time her rule of CSA applies, schwa (i.e. empty V) has been specified as [−high, −back] (119-20). However, the rule responsible for this partial specification ("Penultimate Schwa Specification") applies "before a final foot and following at least two consonants" (94); it will therefore not specify all the schwas that need to be specified in order to undergo Withgott's CSA (e.g. the stem schwa of /aʃv+t+V/ for achète [aʃɛt]).

12. I follow here Kiparsky's 1982 approach to phonological lexical matrices, i.e. "Predictable feature specifications are left unspecified in lexical entries and are filled in by the system of universal and language-particular rules of lexical phonology" (53).

13. Note that the absence of such evidence would not necessarily be an argument against the distinctness of θ-adjustment and e-adjustment, at least as long as the general argument presented in the previous section holds.


15. When the non-application of θ-adjustment does yield phonotactically ungrammatical words, it is for independent reasons
having to do with possible vowel distributions and possible consonant clusters. For example, some speakers might object to [aʃɛt] because one normally finds [ø] rather than [œ] before word-final [t] (meute [mœt] * [møt]); no speaker would allow [ʒt] as a word (cf. [ʒɛt] jette) because there would be no vowel in the word; and no speaker would accept [fœs] as a word (cf. [fœsɛ] chancelle) since words cannot end in such a consonant cluster.

16. Word-internally, [e] may appear in a closed syllable, but for independent reasons (see Tranel 1982).

17. The sources for (11a) are personal data and Damourette & Pichon (page 78).

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1. Introduction

The first systematic account of constraints on extraction rules[1] is found in Ross (1967). Ross shows how movement is impossible out of structures like relative clauses, embedded WH-questions, sentential subjects, and coordinate structures, and proposes a set of constraints, known as island constraints, to account for these facts. Some examples are the following.

(1) CNPC:
   a. *The hat which I believed [NP the claim [S, that [S Otto was wearing __]]] is red.
   b. *Who does Phineas know [NP a girl [S, who [S is working with __]]]?  

(2) WH-Island Constraint:
   a. *What does the faculty wonder [S, who [S ___ will win __]]?
   b. *To whom did John ask [S, which book [S Mary had given ____]]?

(3) Sentential Subject Constraint:
   a. *The hat [S, which [S that I brought ___] seemed strange to the nurse] was a fedora.
   b. *What would [S for me to give up ___] be a pity?

(4) Coordinate Structure Constraint:
   a. *The nurse [S, who [S ___ polished her trombone] and [S the plumber computed my tax]] was a blonde.
   b. *What sofa [S will he put the chair between [NP some table and ___]]?

Research in generative grammar in the 70's moved toward the goal of a more explanatory theory in formulating conditions of greater generality while limiting the number and power of transformational rules. The theory now incorporates a single movement rule, Move Alpha, and a universal bounding constraint on the rule, subjacency. Subjacency forbids the crossing of more than one clausal or noun phrase boundary in any one move (see, e.g., Chomsky 1977), and its operation is assumed to derive the island effects described by Ross. The examples in (1) to (3) all exhibit the effect of subjacency.[2]

In recent years, another refinement of the account of islands has been suggested: the Empty Category Principle (ECP) of government-binding theory (Chomsky 1979, 1981). The ECP has appeared in a number of formulations, and some versions, those explicitly requiring a structurally defined link between
antecedent and trace, as in Kayne (1981), suggest that subadjacency can be reduced to the ECP. However, this position is controversial, and arguments can always be found distinguishing the effects of the two. This paper supports the distinction between the ECP and subadjacency, and also suggests that subadjacency can be separated from the issue of islands and their relation to movement rules.

2. Belauan Extraction

2.1. The Data

Consider the following examples of extraction from Belauan, a Western Austronesian language spoken in the Caroline Islands. Belauan is a VOS language with very productive extraction processes (coindexing indicates the two linked positions):[4]

(5)

a. a Mary₁ [₃ S a kluku₁ [₃ S, el kno₁ [₃ S ngoltoir er a John ___₁]]
   R-clear COMP R-3s-Im-love P
   'Mary, (it's) clear that ___ loves John'
   (It's clear that Mary loves John)

b. a buku₂ [₃ S a kudengeli [₃ NP a redil [₃ S, el [₃ S lulduruklii ___₂]
   book IR-1s-Pf-know-3s woman Comp IR-3-Pf-send-3s
   [el mo er a delak]])]
   Comp to P mother-my
   'The book, I know the woman who sent ___ to my mother'
   (I know the woman who sent the book to my mother)

c. ngngera₂ [₃ S a logengeli [₃ S, el te'aj
   what IR-3-Pf-know-3s Comp who
   [₃ S a mo rulliı ___₂ ___₂]]
   R-Fut R-Pf-do-3s
   'What does John know who will do ___?'

d. [₃ NP til'a el buku₂ [₃ AdvP u'ei er 'om'iuii ___₁ ___₁ [e besak ___]]
   this L book before P IR-2-Pf-read-3s Prt IR-give-1s
   'This book, before you read, give (it) to me'

(5) exhibits topicalization, relativization, and WH-questioning (the same extraction process appears to be responsible for all these structures). A number of presumed islands are violated in (5), as indicated by the English glosses: a, a sentential subject; b, a relative clause; c, a WH-island; and d, an adverbial external to VP (cf. Chomsky 1981, p. 317, n. 22). These sentences are in no way ungrammatical or marginal in Belauan.

It has been argued (e.g. Chomsky 1979) that the Subjacency Condition has adjustable parameters, in that a language may choose which of S', S, and NP it will treat as bounding nodes. Thus Rizzi
(1982), showing that Italian disallows extraction from relative clauses but allows extraction from embedded questions, argues that S is not a bounding node for Italian. In the same vein, Chomsky (1981) suggests that S' may be ignored for subjacency purposes when governed by verbs like believe and say ("bridge verbs"). In other words, the parameters for subjacency may be fixed in different ways in different languages, or for different constructions. Some such account might be suggested for the data in (5). However, attempts to adjust subjacency restrictions to fit the Belauan data would not only greatly weaken the explanatory power of subjacency, but would miss the fact that Belauan ignores all island constraints,[5] and make a unified account of this fact impossible.

2.2. The base-generation hypothesis

An alternative account of the data in (5) may be available, however: these structures may be base-generated. That is, we hypothesize that in Belauan, all extraction structures are generated with the antecedent in COMP and the trace in NP argument position. (Note, then, that the term "extraction" is being used to refer to unbounded dependencies, but not to imply a movement analysis.) Since subjacency is assumed to be a condition on movement, we would in fact expect no constraints on extraction, no island effects, in non-movement sentences. Of course, we would need more evidence than the island violations at (5) to establish the base-generation hypothesis, especially in view of the fact that, in all other respects, these data conform to the structural specifications of unbounded dependencies formed by movement.

In fact, Belauan grammar does have other evidence for base generation. Unbounded dependencies with resumptive pronouns are very common in Belauan. I have described these data elsewhere (Georgopoulos 1983, 1984a), and will just briefly summarize the facts here. First, extraction of most NPs — subjects, direct objects, some indirect objects and some possessors — leaves a gap, but extraction of prepositional objects always leaves a resumptive pronoun. This complementarity of gap and resumptive pronoun is illustrated in (6) through (8).

(6)a. ngomes er a bilis a ngalek
    R-3s-Im-see P dog child
    'The child is looking at the dog'

    b. a ngalek [a omes er a bilis]__i
       child R-Im-see P dog
    c. a bilis [a lomes er ngii a ngalek]
       dog IR-3-Im-see P 3s child
(7a) akmedengelii a 'ad [el [mil'erar a buk er a 'ekabil ___i]]
R-1s-Pf-know-3s man Comp R-Pf-buy book P girl
'I know the man who bought the girl's book'

b. akulmes er a blai [el [lulnga er a ngikel er ngii a bulk]]
R-1s-IM-see P house Comp IR-3-IM-eat P fish P 3s boy
'I saw the house that the boy was eating the fish in'

(8a) ngte'a [a sensei er kau ___i]
who teacher P 2s
'Who is your teacher?'

b. ngte'a [a lulekodir ___i a rubak]
who IR-3-Pf-kill old-man
'Who did the old man kill?'

c. ngngera [a lurrul er ngii a Droteo]
what IR-3-IM-do P 3s
'What did Droteo do?'

d. ngker [a lebilskau a buk er ngii a Toki]
where IR-3-Pf-give-2s book P 3s
'Where did Toki give you the book?'

So, as a first step toward arguing that all Belauan extraction is base-generated, we observe in sentences like (6) - (8) that resumptive pronouns result from regular and productive syntactic processes, that they are parallel to gaps in all types of extraction (including relative clauses; cf. Chomsky 1982), and that they are not used to "save" islands, as they are in English, but only satisfy a constraint against gaps in PP.

Second, compare the data in (5) with the data in (9); just as (5) showed island extractions with a gap, (9) shows island extractions with a resumptive pronoun. The crucial difference to note is that the extraction sites in (9) all follow the preposition er, Belauan's only preposition:

(9a) [a buk [a kudengelii a 'ad [el lulme'ar er ngii]]]
book IR-1s-Pf-know man Comp IR-IM-buy P 3s
'The book, I know the man who bought (it)'

b. [a stoang [a luleker er a delal a bulk [el kmo ngmo er ngii]]]
store IR-3-IM-ask P mother-my boy Comp R-3s-go P 3s
'The store, the boy asked his mother if she's going (to it)'

c. [a John [a 'emolt [el [loltoir er ngii a Mary]]]
R-clear Comp IR-3-IM-love P 3s
'John, it's clear that Mary loves (him)'
Taking (5) and (9) together, we see that there are two possible types of extraction structure: one with a gap, and one with a resumptive pronoun. A similar situation has been described for Hebrew (Chomsky 1977) and for Irish (McCloskey 1979), for example. In the Hebrew and Irish cases, however, the gap structures obey island constraints, while the resumptive pronouns allow island violations.[7] This is also the case with resumptive pronouns in English, although their use is marginal. Resumptive pronouns, in other words, have been found to have syntactic properties very different from those of gaps. In all these languages, the sentences with gaps are analyzed as movement structures, and those with resumptive pronouns as base-generated.

We might make the same distinction for the sentences in (5) and (9), and say that Belauan has two extraction strategies. However, in Belauan, not even the sentences with gaps ((5)) obey island constraints, so the basis for this distinction is absent. Since they do not give evidence of having been produced by movement, we may conclude that they, like those in (9), are base-generated.[8] The simplest and most general conclusion overall, then, is that all Belauan extraction is base-generated.

2.3. A supporting argument

Further support of this hypothesis is found in coordination. Belauan obeys Ross' Coordinate Structure Constraint[9] and allows Across-the-Board exceptions, as I have shown elsewhere (Georgopoulos 1983, 1984a). But in view of the parallelism of resumptive pronoun and gap demonstrated in the examples so far, we might predict that the two might be combined in the same coordinate structure. This prediction is verified in sentences like (10).

(10)a. akmedengelii a bilaši₁ el [lebil'erar ___₁ a Cisco]  
   R-1s-Pf-know-3s boat Comp IR-3-Pf-buy-3s
   e [a Joseph a milingesereber er ngii₁]  
   and R-Pst-Im-paint P 3s
   'I know which boat Cisco bought and Joseph painted'

b. ngngera₁ [kemilnguiu er ngii₁]  
   what R-2s-Im-read P 3s
   e [ulduruklii ___₁ el mo er a Droteo]  
   and Pst-Pf-send-3s L go P
   'What were you reading and (then) sent to Droteo?'

In terms of Belauan grammar, since resumptive pronouns and gaps are both legitimate and productive traces of extraction, these sentences are not CSC violations, but rather some NP has been extracted from both conjuncts.
We now have an answer to the problem posed earlier: how are we to account for wholesale island violations in Belauan? The answer is that unbounded dependencies in this language are not formed by movement, and so they are "immune" to subadjacency. Does this mean that, like Dick Dative, Belauan has no subadjacency? Despite all the foregoing, I will argue below that there still is evidence of subadjacency in Belauan. First, though, I should make more explicit the role of agreement morphology.

3. The Role of Agreement

Since the early days of transformational grammar, recoverability of deletion has figured prominently in the discussion of conditions on rules. Chomsky (1964) suggests, for example, that the relativization rule may not delete a "designated element" unless it is "structurally identical to another element of the transformed string" (p. 71); that is, only deletions that are somehow identifiable are permitted. More recently, along with the focus on the properties of empty categories, recoverability of deletion has gained new prominence in what is known as "Taraldsen's generalization" (see Chomsky 1981): the observation that pro-drop possibilities frequently correlate with richness of overt agreement morphology. Languages may, in other words, allow this morphology to fulfill the identifiability requirement for deleted elements.

3.1. Recoverability

Looking back at examples (5) – (10), we see that the data corroborate this observation about agreement morphology. A few remarks about the Belauan verb system should make this clear.

Transitive verbs occur in aspect pairs, perfective and imperfective. Perfective verbs agree in person and number with both the subject and direct object; imperfective verbs agree only with the subject (in person and number), and mark their logical objects with the preposition er.[10] Thus the objects of imperfective verbs are structural prepositional objects. Pronoun objects of perfectives may be null, while pronoun objects of imperfectives must be overt. The data in (5) – (10) show that, in extraction, all subjects and all perfective direct objects are linked to a gap, and all er-objects are linked to a resumptive pronoun.[11] So there is either person and number agreement morphology governing the extraction site, and identifying the extractee, or there is a resumptive pronoun, which may take singular or plural form in all three persons, again copying those features of the extractee. (11) shows the complete paradigm of object agreement; (12) shows a range of resumptive pronouns.
(11) Topic_i [IR-Pst-Pf-V(hit)-AGR ___i (Subject)]

ngak a le'illebedak (a sensei)
kau -au
ngii -ii
kid -id
kemam -emam
kemiu -emiu
tir -eterir

'He/(the teacher) hit me
  you (sg)
  him/her/it
  us (incl)
  us (excl)
  you (pl)
  them

(12)a. ngak_i [a medu' er ngak_i]
   1s    R-Im-know-how P 1s
   'I can take care of myself'

b. kau_i [a kumekdakt er kau_i]
   2s    IR-1s-Im-scare P 2s
   'I'm trying to scare YOU'

c. ngngera_i [kemilngeeld er ngii_i]
   what    R-2s-Im-heat P 3s
   'What did you cook?'

d. a rengaleki_i [a longelebed er tir_i]
   children   IR-3-Im-hit P 3pl
   'He is hitting the children'

e. kid_i [a lullasem [el lomekdakt er kid_i]]
   1pl    IR-3-try Comp IR-2-Im-scare P 1pl
          (incl)                      (incl)
   'They're trying to scare us'

To sum up to this point, Belauan extraction refers to the properties of the lexical category governing an extraction site, and not to the number of bounding nodes between antecedent and anaphor, in determining whether the trace of extraction will be a gap or a resumptive pronoun. The ECP is always satisfied, though subjacency seems not to be. The only condition on extraction so far demonstrated is the recoverability condition.

4. Evidence of Subjacency?

I will now pursue the question, posed at the end of section 2, of whether there is anything left of subjacency once the movement analysis is rejected.
4.1. Agreement and mood

Another feature of Belauan agreement that we can observe in (5) – (10) is a syntactically motivated alternation between realis and irrealis mood morphology (glossed as R and IR, respectively). We restrict our attention now to subject agreement affixes. Stripped to its bare essentials, the rule governing this alternation is the following: extraction of a subject, or part of a subject, correlates with realis morphology, while extraction of a nonsubject is accompanied by irrealis morphology. This generalization is valid for all types of extraction.[12] (There is a minimal pair showing the action of the agreement rule in (6)b and c.) All of these extraction sentences correlate with realis events; there are other, strictly semantic factors which may underlie irrealis structures, and which are not related to extraction.

Let's look at this agreement system more closely. (5)a illustrates subject extraction; the embedded verb oltoir, "love", agrees with the trace of Mary, a topicalized subject, and carries the third person singular realis agreement morpheme. (5)b shows direct object extraction; the embedded verb agrees with redil, "woman", and has an irrealis affix, indicating nonsubject extraction. (5)c is a bit more complicated: the leftmost WH-phrase is a nonsubject, but the clause containing the extraction site is realis. This is because the closest extractee, te'a, "who", is a subject. (I won't go into these apparent "ordering" considerations any further here.) (5)d is similar to (5)b in its agreement pattern.

To see the agreement pattern in relativization, compare (7)a and b (there are no relative pronouns in Belauan). The relative NP in (7)a is a subject, and the relative clause has realis morphology; in (7)b, we have a nonsubject relative NP, inducing irrealis morphology.

Notice, in addition, that the higher clauses in the examples in (5) and (9) also are glossed for mood. Clauses above the one holding the extraction site "agree", so to speak, with the sentential complement that contains the trace, rather than with the trace itself. (5)a is an example of subject extraction from a (sentential) subject: the lowest clause "agrees" with the trace in that it is realis; the predicate adjective in the matrix "agrees" with its sentential complement, which holds the trace, and also is realis.[13] (5)b shows the converse; the extractee is a nonsubject, and so is the sentential complement containing the trace: both clauses are irrealis. In (9)c, agreement in the lower clause reflects extraction of an object NP, while agreement in the higher clause reflects extraction out of a sentential subject.

4.2. Subjacency without islands

What does this pattern of agreement tell us? In effect, each clause between an extracted phrase and its trace contains a
"marker" of the dependency, seen in the form of agreement. To put it a bit more abstractly, each clause is sensitive to the dependency holding across it. This fact would argue for successive cyclicity of movement if movement were involved: like COMP-to-COMP movement, the agreement pattern seems to reflect some kind of locality condition. This is a locality condition that holds even for island extractions. As we have argued against a movement analysis, we must assume that there is an interpretive rule which ensures that antecedent and trace are coreferential, and that it is this rule that is responsible for the locality effects we observe in the data.

In sum, I have argued in this paper that Belauan unbounded dependencies are not formed by movement, and that a base-generation analysis will cover all the data. I have demonstrated that island constraints do not hold in Belauan, but that in spite of this there is strong suggestion of a locality effect very like subjacency. If, in fact, extractability depends on recoverability (in whatever way a language meets this condition), and not on subjacency, then subjacency may simply be a condition on all long-distance grammatical processes, requiring them to operate clause by clause.

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Footnotes

[1] "Extraction" refers to all non-local syntactic dependencies. I use the term for convenience sake, as its general meaning is widely understood; its use does not presuppose any particular analysis.

[2] Assuming, as usual, the prohibition against doubly-filled COMP (see, e.g., Pesetsky 1982).

[3] Belauan has been referred to in the literature as Palauan. However, the people themselves speak and write of the language and country of "Belau", and I propose to adopt this orthography, which reflects more closely the pronunciation of native speakers.

[4] a is a "constituent marker" and is not glossed. Abbreviations are:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
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<tbody>
<tr>
<td>Im</td>
<td>imperfective</td>
</tr>
<tr>
<td>L</td>
<td>linker</td>
</tr>
<tr>
<td>Pf</td>
<td>perfective</td>
</tr>
<tr>
<td>R</td>
<td>realis</td>
</tr>
<tr>
<td>IR</td>
<td>irrealis</td>
</tr>
<tr>
<td>P</td>
<td>preposition</td>
</tr>
<tr>
<td>Prt</td>
<td>particle</td>
</tr>
</tbody>
</table>


[6] The analysis in GB terms is obvious: P is not a proper
governor, so it may not govern an empty category.
[7] The Hebrew facts are a bit more complex; see Chomsky, p. 80.
[9] Demonstrating, incidentally, that the island violations in Belauan all involve structures that were assumed to be ruled out by bounding constraints.
[10] This is a simplified picture. In particular, only specific or human objects are marked with er; plural and non-specific objects have no marker, nor does the verb agree with them. See Josephs (1975). There is also quite widespread irregularity in the agreement system, so that some perfective verbs have no overt object agreement morphology. The details in this note do not affect the discussion in the text.
[11] Possessive NPs have a like complementarity: when the head agrees with the possessor, the latter may be null, and is gap-extractable; when the possessor is marked by er, it must be overt, and is pronoun-extractable. See Georgopoulous (1984a).
[12] The same distinction is found in Equi-type constructions; see Georgopoulous (1984b).
[13] See Chung (1982) for a description of similar facts in Chamorro extraction. This analysis of the Belauan agreement pattern relies heavily on Chung's work.

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Why Morphological Metathesis Rules Are Rare:  
On the Possibility of Historical Explanation in Linguistics  
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As recently as seventy-five years ago, it was widely assumed that  
every explanation for synchronic linguistic phenomena must always be  
historical. Today, it is widely assumed that no explanation for syn-  
chronic phenomena in language can ever be historical. While certain  
types of putative diachronic explanations are indeed invalid, the cur-  ent paper presents evidence that historical explanation in linguistics  
is not only possible, but sometimes even preferable. Specifically, the best account for why morphological metathesis rules are  
rare is the diachronic one that the possible sources potentially re-  
analyzable as such processes are themselves rare; this historical ac-  
count is free of the unwarranted assumptions inherent in the compet-  
ing synchronically based claim that morphological metathesis is rare  
because it is "marked". And a consequence of this conclusion is that  
morphological theory should allow the straightforward expression of  
metathesis rules--which means that a number of current approaches to  
morphology are overly restrictive in this respect, and so inferior  
to other approaches where morphological metathesis can be expressed  
straightforwardly.*

The solely diachronic approach to linguistics dominant into the  
twentieth century was trenchantly expressed by Hermann Paul 1880/  
1886/1889/1920/20-21--here in a revised version of By-  
non's 1977:18-19n.2 translation:

"It has been said ... that a historical analysis is not the only  
possible scientific analysis of a language. This, I must reject.  
What some consider to constitute a non-historical and yet scientific  
analysis of language is in fact no more than an incomplete histori-  
ical one--incomplete ... due partly to the fault of the analyst and  
partly to the fault of the data. As soon as one goes beyond the mere  
statement of individual facts and attempts to comprehend the connec-  
tion[ between them--that is to say], to understand the phenomena...  
[---one enters the realm of history, although perhaps unconsciously.  
...[I]f one compares [morphologically-]related forms and derives them  
from a common basic form[, for example,]... one is making a histori-  
cal observation. Thus, unless one is prepared to enter the realm of  
history, it is quite unjustifiable to claim that related forms are de-  
amed from a common source. Or[, again, if] we ... state that there  
is a phonological alternation between related forms ... [and] wish...  
to explain this[, we] ... are necessarily led to conclude that it is  
the after-effect of a sound-change[---that is to say,] of a histori-  
ical process. ... And so I cannot conceive how one could, with any  
hope of success, think about a language without discovering, at least  
to some extent, how it came to be as it is."

The generative-grammatical reaction to this (type of) view, howev-  
er, has always been that, on the contrary, one can explain linguistic  
phenomena by positing synchronic grammars with particular structures  
in different speakers' heads--grammars whose rules predict, and there-  
fore at least partially explain, numerous facts of language. And the ex-
plation for why these grammars are the way they are is that they re-
result from the interaction of children's innate capacities for lan-
guage acquisition with the synchronic data heard in their environ-
ment. Paul was right, of course, in pointing out that one can always
ask why a particular set of data were uttered in the presence of a
given language-learning child, but this represents a demand for higher-
level explanation of a kind that is problematic and rarely imme-
diately-realizable for any science, even a physical one. Thus, we
now believe that at least synchronic explanation is possible, in lin-
guistics. But, since speakers(' grammars) rarely possess knowledge
of the history of their languages, many linguists have gone to the
opposite extreme from Paul and denied the possibility of any histori-
cal explanation in our field. Paul Kiparsky once (1975:204-205) la-
mented this attitude as follows:
"...[O]ne semi-taboo left over from the days of structuralism...
is that against] historical explanation in linguistics. ...[W]e have
inherited somewhat antihistorical prejudices .... ...[W]e still con-
tinue to consider ... [de Saussure's] distinction between ... two kinds
of linguistics ["synchronic and historical"] as somehow fundamen-
tal. Linguistics, understood either as the study of general proper-
ties of grammars... or [as] the study of how it is possible to learn
a language, becomes a clearly nongenetic science .... This then
suggests[,] in the end[,] that the investigation of linguistic change
is a kind of applied linguistics, a nice thing you can do with a the-
ory of language[,] once you've got it, or else it leads you to the
view... that historical considerations are a source of 'external evi-
dence...' which we can use for the testing of competing linguistic
theories. ...[T]he presently dominant conception of what linguistics
is about ... is ... [that] linguistic theory has no responsibility for
historical explanation. A historical explanation, as far as the pres-
ent theory of linguistics goes, is equivalent to no explanation at all.
One result of this is that ... the field[,] as now construed[,] in-
vites linguists to put things[,] at all costs[,] into ... synchronic
grammar, so that it will be possible to talk about them officially[,] there."

But Kiparsky then went on to argue that historical explanation ac-
tually is possible, in linguistics. Here, I would like to support
this point by providing a historical explanation for why morphologi-
cal metathesis rules are rare. The existence vs. non-existence of
such phenomena is important because most recent and current approach-
es to morphology either are unable to express these processes or else
cannot integrate them with the rest of morphology. By "(pure) mor-
phological metathesis", I mean the marking of some morphosyntactic or se-
manic category on a form (solely) by the metathesis of two or more of
its segments. If we think of morphology in general as the marking of
various combinations of these categories on the forms bearing them,
then metathesis definitely seems parallel to more familiar processes
like suffixation. But few morphological frameworks are able to treat
metathesis and suffixation uniformly, due to the notion of the mor-
pheme that they employ (cf. Janda 1983 and references there).

Thus, the "traditional morpheme" (formerly assumed by many American
structuralists, for example) is a 'unitary, localized linear stretch of
phonological material associated with a discrete portion of the meaning of a linguistic form. And "traditional morphology" treats word structure essentially as morfemology, the concatenation of traditional morphemes. This approach is thus well equipped to handle concatenations like Turkish mūsılumanlaştırtamadıklarınızdanız 'you (familiar plural, or formal singular/plural) were [some/one] of those [people] who(m) we haven't been able to make [someone] cause to become Moslens/a Moslens', which is a string of eleven traditional morphemes. (These are: mūsıluman 'Moslens', -laş 'become', -tir 'cause', -t 'cause', -ama 'not be able', -dık '[relative(ize)er]', -lar 'plural', -ımiz '1st-person-plural possessor[/agreement]', -dan 'of', -di 'past', -niz '2nd-person-plural subject'; cf. Janda 1983:82—both this form and its analysis as here and there are due to Mûrvet Enç.)

A current extension of this approach redefines the traditional morpheme as a "(sub)lexical item" (= an item listed in the lexicon)—cf. Lieber 1980/1981, 1983a, Williams 1981, Selkirk 1982, Strauss 1982a, 1982b, etc. Such "two-dimensional", "syntactic morphology" treats word-structure as essentially "The Syntax of Words"—word-formation proceeds via the lexical insertion of traditional morphemes into quasi-syntactic trees (generated by context-free phrase-structure-type rules governed by X-bar theory—along with feature-percolation conventions, and perhaps also movement-transformations, empty categories and binding, interaction with Logical Form and the Projection-Principle, etc.). Along these lines, an analysis like that of Selkirk 1982 treats words like English ennoblement in the following way (here, with labeled bracketing, but also, equivalently, in the form of a tree-diagram): \[ N_N N_V \_ [ \_ [-1 \_ [Aff[en] \_ [-1[noble] Aff[ment] ] ] ] ] \]

A radically different, non-concatenative approach employs the "prosodic morpheme", which is either a prosodic template (e.g., a CV-skeleton, a syllable- or foot-structure, etc.) or a unitary, localized linear stretch of phonological material (an "auto-segmental tier") associated with one or more positions in a prosodic template [and presumably with a discrete portion of the meaning of a linguistic form]—cf. McCarthy 1979/1982a, 1981, 1982b, 1983a, 1983b, Halle and Vergnaud 1980, Marantz 1982, Yip 1982, Lieber 1983, etc. This "Three-Dimensional", "Prosodic"/"Auto-segmental Morphology" treats word structure as the association of prosodic morphemes with one another (i.e., as the linking of one or more non-template prosodic morphemes with a prosodic morpheme template), mostly via the universal linking conventions of Auto-segmental Phonology. Such a theory can elegantly account for the apparently discontinuous and incomplete (skeletal) morphemes in examples like the Classical Arabic word ktabab 'was registered', as shown in [1] below (here after McCarthy 1982b:192-193):

And [2] above shows how, taking off from proposals of Fordyce 1981-
MS, I have argued (in Janda 1983:86) that the non-linearity of Auto-
segmental Morphology allows one to dispense with so-called "phon(a)es-
themes", like the initial 'nasal' sn- in English sniff, etc., by pos-
iting overlapping morphemes (as also in the case of blends, like Rea-
ganomics, where the segments /an/ are shared by both Reagan and eco-
nomics). Yet, though this theory goes three-dimensional, it still
 treats morphemes as things.

Thus, the most uniformly comprehensive approach to morphology is
one based on the (non-root) "rule-morpheme", where the morpheme is not
a thing but a process, a formal operation performed on a stem (i.e.,
a lexically-listed, or else derived, linguistic form), generally as a
mark of some morphosyntactic or semantic features' (whereas root mor-
phemes, on the other hand, are usually more or less like traditional
morphemes or, sometimes, prosodic morphemes)--cf. Sapir 1921, Mat-
Schmerling 1983, etc. This "Rule-Morphology" (as in Anderson's "Ex-
tended Word-and-Paradigm" Morphology and, to a lesser extent, Kipar-
sky's "Lexical Morphology and Phonology"--plus, perhaps to an even
greater extent, Schmerling's "Montague Morphophonemics") treats word
structure as either the concatenation of stems (= compounding) or else
the application of rule-morphemes to stems. Rule-morphemic operations
include: addition (e.g., affixation), substitution (e.g., Ablaut),
deletion (e.g., truncation), permutation (e.g., metathesis, as will be
demonstrated here presently), introduction or alteration of prosodic
templates, and combinations of any or even all of these. That is,
since morphology is the marking of morphosyntactic and/or semantic
categories on linguistic forms, and since such marking can be effected
by changes that do not add anything(s) to those forms, but only replace,
invert, or subtract, the only uniform way to express all such marking
is in terms of processes, rules--including affixation. In a nutshell:
affixation can be thought of either in terms of things or in terms of
processes, but substitution, deletion, and permutation can be thought
of only as processes. In Rule-Morphology, word structure is thus ex-
pressed formally, not by a single (level of) representation, but by a
derivation that includes: (i) the lexically-listed form of the stem
of a word, (ii) the set of rule-morphemes which have applied to such
a stem, along with their outputs, especially (iii) the surface form of
the word in question. In this way--because it employs the full range
of phonological-type operations and represents word structure in terms
of an entire derivation--Rule-Morphology is much more like the "pho-
nology of words". (For further discussion, cf., again, Janda 1983.)

Such a theory can handle much more easily than any others examples
like the Chickasaw (Muskogean family) non-future negative forms of
verbs, which are obtained from positive stems via three simultaneous
operations: prefixation of k- (in almost all cases), infixation of a
glottal stop before the last consonant, as long as the latter is not
part of a cluster, and replacement of the last vowel with -o. This
rule can (following the Extended Word-and-Paradigm format of Anderson
1977, 1981b/1982) be formulated roughly as follows: [+ Verb, - Future,
'it-is-black' the non-future negative i-klo?so 'it-is-not-black', for example--via simultaneous addition (prefixation and infixation) and substitution. (For further discussion of this rule, see Kempker and Thomas-Flinders 1981, Kempker 1982, and Janda 1982a:144-145, 1983:91.)

Now, Aronoff 1974/1976, who first followed Matthews in adopting this approach systematically for generative analysis, concluded that the full range of rule-morphemic processes could be expressed only with transformational notation (as just illustrated immediately above):

"We have found two classes of rules [(copying--especially reduplication--and infixing)] which are best viewed as W[ord-]F[ormation ] R[ule]s... and which force us to state WFRs in a particular manner... [--]namely[,] as transformations. This... forces us to divide... [each] rule into two parts, a structural description and a structural change. The first part specifies only the base. The second part contains the base and the result of the operation of the WFR amalgamated into one unit" (p. 70).

However, McCarthy 1979/1982a, 1981 later argued that this notation is so powerful as to be able to do literally anything, and so he even went as far as to propose a restriction ruling out its use completely:

"Morphological[-]Rule Constraint (MRC)...[--)all morphological rules are of the form A \rightarrow B/X, where A is a single element or zero[,] and B and X are (possibly null) strings of elements. That is, morphological rules must be context-sensitive rewrite-rules affecting no more than one segment at a time, and no richer type of rule is permitted in... morphology. ...[A] theory that incorporates the MRC strongly generates a smaller class of grammars than a theory without this constraint. Morphological transformations potentially allow any operation on a segmental string. For example, transformational morphological rules can freely move particular segments an unbounded distance within... [a] word, copy all and only the vowels in a word, or reverse strings of finite length. If the segmental representation is further enriched... [with] integral indexing of segments, ... then morphological transformations can perform their arbitrary operations on only the prime[-] or factor-of-twelve[-]numbered segments in... [a] word with no further enrichment of the formalism. ... These examples, although bizarre, are not facetious. ...[A] morphological theory without the MRC allows all of these types [of rules] and[,] in some cases[,] values them more highly than morphological rules that actually occur in some language. A theory with the MRC is therefore significantly more explanatory [and]... more constrained than[,] and consequently superior to[,] a theory that does not...["incorporate..." it[,] all other things being equal" (McCarthy 1981:405-406, after 1979:356-361/1982a).

And, along similar lines, Marantz 1982 proposed a non-transformational analysis of all reduplication in languages, essentially mainly because:

"[the "transformational notation for reduplicative processes"] allows morphological rules to be written that never occur[,] cross-linguistically. ... Given [its] formal apparatus..., one can write many types of morphological rules which are not instantiated in natural languages. For example, although expressible in the transformational
notation..., mirror-image reduplication...[-]rules...are not found in any language" (Marantz 1982:435).

Finally, Donca Steriade has reported (personal communication) that one of the most important considerations underlying the proposal of principles like the MRC was that of preventing morphological rules which metathesize entire morphemes with one another (i.e., switch their relative positions).

Thus, one principal empirical claim embodied in the MRC and the overall theory of Autosegmental Morphology is that natural languages should never have morphological rules like metathesis, which rewrites more than a single segment (or zero) in a string. The motivating background assumption here—to repeat—is that the transformational notation required for the expression of metathesis opens a Pandora's box of implausible-seeming morphological processes, like inversion of entire strings. Now, in fact, at least one such rule reversing the order of all the segments or syllables in a word actually exists. Stuart Davis has called to my attention Conklin's 1956 discussion of the Tagalog speech-disguise "baliktad"—whose very name includes the meaning 'inside-out, upside-down, inverted, or backward (referring to a homogeneous, inanimate, nonhollow entity)'—where:

"...[among] the eight types of structural rearrangement and affixation used in the formation of baliktad words...[are] complete reversal of the phonemic shape of the word base...[and] complete reversal of the syllabic shape of the original form (e.g.[,] 1-2-3 > 3-2-1)...
[, so that] tamalas < salamat 'thanks'..., tidpak < kapitid 'sibling' [(= 1-2-3-4-5-6-7 7-6-5-4-3-2-1 and 1-2-3 3-2-1, respectively)]" (pp. 136-137).

Of course, this speech-disguise operation is not a morphological rule, or even a normal-language phonological one, but it does show that a string inversion process is not so linguistically implausible. Rather, the most solid counterexamples to the MRC and to Autosegmental Morphology as a thereby restricted "thing-morphemic" (rather than rule-morphemic) theory of word formation come from the rules of morphological metathesis which exist in at least the two languages Clallam and Rotuman.

Clallam (or ['kəjəm], as its speakers call it), is a Straits language within Coast-Salish(an)---cf. Thompson and Thompson 1969, 1971. It was originally "spoken...in a number of villages along the north coast of Washington's Olympic Peninsula...[Unfortunately, o]nly a handful of elders [= "seven"] still speak Clallam fluently" (1969: 215). As regards the phonology of the language, it suffices here to mention that its phonological inventory includes /p, t, (k [only in loanwords]), kw, q, qw, ʔ; p̩, t̩, k̩w, q̩, q̩w; s, š, x̩, X, X̩; c, č; c̩, č̩; (l;) ɮ; å, ɬ; m, n, ɭ; w, j, h; i, e, a, ə, u/ (where I have slightly modified Thompson and Thompson's system of transcription). What it is much more important to mention, for the present purpose, is the Clallam morphosyntactic category of the "actual" aspect, which refers to an "action or state [as being] in effect at a particular moment", like the English -ing-form of a verb; it resembles the Slavic imperfective except that, unlike the latter, it is a marked form (cf. 1969:215). Actual/non-actual "." is the most fundamental aspectual distinction [in Clallam]; it pervades the ... language" (1971:274). Now,
roots of the form CVC... mark actual aspect by infixing a glottal stop after V (often along with other changes); thus, the non-actual of 'wipe' is ʔaʔ-ʔɛ-, while the actual is ʔaʔ-ʔɛ'- (although, in order to occur as words, roots must be suffixed with some such element as -t '[with/by some agent in] control [of the situation]', as in, e.g., non-actual ʔaʔ-t and actual ʔaʔ-ʔɛ'-t).

But roots of the form CCV... (of which there are many) mark actual aspect by metathesis of the second consonant in the root with its first vowel. Thus, examples of non-actual/actual pairs include, respectively: ʔg̃q̃ʔ-/ʔgq̃ʔ- 'restrain', ʔʃ spans/-ʔʃ spans- 'scratch', ʔpkw̃ś̩-/ʔpq̃w̃- 'smoke', ʔt̃c̃-/ʔt̃c̃- 'shatter', ʔkw̃s̩-/ʔkw̃s̩- 'count', ʔst̃-/ʔst̃- 'walk', ʔx̃kw̃g̃-/ʔx̃kw̃g̃- 'drag', ʔc̃w̃g̃-/ʔc̃q̃w̃- 'burn', ʔc̃kw̃-/ʔc̃kw̃- 'sting; shoot', (ʔc̃w̃t̃ > )ʔc̃w̃t̃-/ʔc̃w̃t̃- 'throw' (s → s/ʔc̃); Thompson and Thompson 1969:216, 1971:276 list at least fifteen more such examples. The most straightforward formulation of Clallam Actual Root Internal Metathesis is with the transformational format, as follows: [+ Verb, + Actual]/CCV/ → /1324/. 1324

Now, it is, of course, always possible to reanalyze permutations like metathesis as combinations of copying-insertion with subsequent deletion under-identity (with the copied segment(s)) of the original(s). But, for Clallam, no morphological or phonological rules can be independently motivated to insert a copy of the first root vowel, shift stress to this copy, and/or delete the original, copied vowel; nor is there any motivation for positing two (matching) vowels in roots underlyingly (but cf. Demers 1974 on the closely-related Lummi). Rather, any such alternative to the elegant single morphological transformation of metathesis given above would be both ad hoc and unnecessarily complicated.

As pointed out by Thompson and Thompson 1969:217, though, the most convincing evidence for the basic and unitary status of grammatical metathesis in Clallam comes from another morphological rule similar to the root internal one above. When certain CCV...-roots combine with certain suffixes which attract stress away from a root and thereby cause it to lose its vowel (and so be in the "reduced grade"), actual aspect metathesis is obviously blocked from applying within the root (since the structural description of the above rule requires a vowel there). However, for certain combinations of reduced-grade-root + suffix + suffix, in Clallam, metathesis marking the actual aspect still occurs—namely, between the suffixes. Thus, for example, with the verb ʔkw̃w̃- 'grasp; take hold of' in its reduced grade (ʔkw̃w̃-) plus the stress-attracting suffix -ʔl 'persistent(ly)' and the 'control'-suffix -t, there is the non-actual/actual alternation of, respectively, ʔkw̃w̃-ʔl-t/ʔkw̃w̃-ʔl-t-. This case can be accounted for by the following rule of Clallam Actual Aspect Metathesis of the Suffixes 'Persistent' and 'Control' After Reduced-Grade Roots: [+ Verb, + Actual, + Persistent, + Control]/CCV/ → /132/. (It is perhaps worthwhile to note that, while root internal metathesis in Clallam could be judged to increase ease of articulation, by moving a vowel into the middle of a sequence of two consonants [even up to two obstruents], metathesis of suffixes can create sequences of up to three obstruents.)

The crucial thing about the Clallam suffixal metathesis rule in the actual aspect is that it falsifies McCarthy's Morphological Rule Constraint (MRC; given above)—and not only because it rewrites more than a
single segment in a string as part of a morphological rule, but also because it rewrites (the order of) a string of two entire morphemes as part of such a rule. And, given the latter situation, it is hard-
ly possible to argue that each Clallam root which can appear in the
reduced grade and be followed by the suffixes 'persistent' and 'con-
trol' is listed in the lexicon with an extended stem-"allomorph" rep-
resenting each of the two orders for those suffixes. Instead, the on-
ly available option seems to be that of treating suffixal metathesis
as a general morphological rule of the language. (Actually, even if
one adopted the lexical-listing approach for expressing alternative
suffix orderings, it would still be necessary to posit a metathetical
redundancy rule, in order to capture the generalization that the re-
lation between the two suffix orders is a regular one.) And, since
Clallam clearly has a morphological metathesis rule for its suffixes,
the likelihood is just that much greater that the morphological rule
for marking the actual aspect within roots is also one of metathesis.

A morphological metathesis rule can similarly be motivated for Ro-
tuman, an Eastern Oceanic language (within Austronesian [within Austro-
Taid]) thus completely unrelated to Clallam (cf. Churchward 1940, Biggs
tuman is spoken by at least 3,400 inhabitants of the isolated volcanic
island Rotuma (size: 18 square miles), which is located approximately
250 miles north of Fiji, 300 miles south of Tuvalu, 600 miles west of
Samoa, and over 600 miles east of the Solomon Islands. It is also spoken
by many Rotumans living in Fiji. The phonological inventory of
Rotuman includes /p, t, k, ?, f, s; v; č; m, n, ȳ; l; r; h; i, e, a,
ɔ, u/ (and the transcriptions that follow are given in terms of these,
rather than in any [other] system of orthography or transliteration).

With virtually no exceptions, all members of major lexical classes in
Rotuman have two basic allomorphs, generally called (after Church-
ward 1940) [the forms of] the "complete phase" and the "incomplete
phase" (cf. also Hale 1846, Hocart 1979, Churchward 1929, Haudricourt
plete(-)phase (form) is assumed, on the one hand, by any noun which is
unmodified and definite (or "complete") and/or emphatic, and, on the
other hand, by any verb which is perfective (or "conclusive"/"actual"/
"complete"/"completive") and/or emphatic--this also holds for adject-
tives used as verbs. The incomplete phase is assumed by any major-lexi-
cal-category item in a noun phrase which is not (NP-)final, and by any
final item in a noun phrase which is, overall, indefinite (or "incom-
plete") and non-emphatic; the same holds, mutatis mutandis, for non-
final vs. final items within compound words. The incomplete phase is
also assumed by verbs that are imperfective (or "inconclusive"/"con-
tingent"/"incompleteness"/"non-completive") and non-emphatic (which corre-
sponds to most [uses of] verbs, in Rotuman)--again, this also holds for adjectives used as verbs. What is most striking about all this, though,
is that, for words whose complete phase ends in a ...VCV-sequence where
the first vowel is higher than the last one, the incomplete phase is
formed by metathesis of the final vowel with the consonant preceding
it. Thus, ṣepa 'the-mats' (definite; complete phase) corresponds to
ṣap 'some-mats' (indefinite; incomplete phase)--Rotuman metathesis is ac-
companied by shortening and (probably also) desyllabicization of the penultimate vowel, which also loses its stress to the final one. Additional examples of complete-phase/incomplete-phase pairs in Rotuman include, respectively: aifre/aier 'true', tikɔ/tik 'flesh', ?ifap/?iap 'pigeon', puer/puer 'to rule; decide', uo/uɔ [a kind of sea-bird], fupa/fyap 'to distribute', fora/far 'to tell'. Such forms motivate the rule of Rotuman Incomplete Phase Metathesis given in [3] below (cf. also Cairns 1976):

\[
\begin{array}{c}
\begin{array}{c}
[\text{- Complete Phase}] \\
/X/V \begin{array}{c}
\begin{array}{c}
\text{- low} \\
\text{- high} \\
\text{low}
\end{array}
\end{array}
C/V \begin{array}{c}
\begin{array}{c}
\text{- high} \\
\text{low}
\end{array}
\end{array}

\end{array}
\end{array}
\]

/132/. Condition: \( a \overset{>}{\Rightarrow} b \).

The higher-than condition on the first vowel here may seem a strange one for a metathesis rule, especially one that doesn't even affect the first vowel, but the above formulation in fact allows the simplest overall analysis of Rotuman. And, anyway, morphological rules clearly aren't subject to any requirement of phonetic/phonological naturalness, particularly since phonological rules themselves aren't completely so (cf. Anderson 1980/1981a). Rotuman words whose complete phase forms are anything other than ...V\text{i}CV\text{2} with V\text{i} higher than V\text{2} have incomplete phase forms marked other than by metathesis: ...VV becomes ...VV (with shortening, probably desyllabicization, and stress-shift), and other ...VCV becomes ...VC (with apocope), whereby the remaining vowel is front(ed) (i.e., there is a kind of Umlaut) if the originally final vowel was a front one. Now, some scholars have argued that metathesis takes place even in these other ...VVC-forms (along with subsequent syncope and/or coalescence), but this analysis requires rules of greater complexity than those in the account just sketched. And, in any case, a finding that metathesis takes place in the incomplete-phase forms of all Rotuman words ending in ...VVC would only strengthen the claim that the language in question has an extremely regular morphological metathesis rule. (The alternative--indeed--auto-segmental-morphological accounts of Saito 1981-MS and Besnier 1983-MS, neither of which posits a metathesis rule, not only are both more complex than the present analysis, but also arguably involve a morphologically unmotivated placement of Rotuman vowels and consonants on separate autosegmental tiers and/or the separate "projection" of such vowels and consonants in a way that belies the dependence of what happens to incomplete phase vowels on the relative position(s) of neighboring consonants. I hope to demonstrate this soon in Janda 1984-MS (in preparation), where I will also present four arguments justifying the deriving of Rotuman incomplete phase forms from--roughly--their complete phase counterparts.)

For Rotuman, as for Clãllam, there is no independent motivation for posing a set of other rules designed to avoid the need for metathesis. In particular, writing a rule to copy final vowels in the position between the final consonant and the penultimate vowel in terminal ...VVC sequences unnecessarily complicates other, independently needed rules of the language. And so Rotuman likewise appears to require some kind of morphological metathesis rule--either one like that given above, or else some autosegmental-morphological equivalent where, af-
ter a (new) CV-template is created for the incomplete phase (prior to linking), association lines are allowed (and even required) to cross, in violation of the standardly assumed well-formedness conditions of Autosegmental Phonology and Morphology; e.g., for Rotuman ɾepa 'mat(s)', as in [4] below:

[4]  

Furthermore, it is questionable whether all of the morphosyntactic and semantic categories marked by metathesis in Rotuman (e.g., indefiniteness, imperfectivity, non-finality in a noun-phrase, and non-emphasis) can all legitimately be brought together under the rubric of an apparently diacritic feature like [- Complete Phase]. Rather, it is probable that there are several metathesis rules in Rotuman, each marking a different set of categories in a similar way. Thus, Rotuman--like Clallam--appears to have, not just one, but in fact (at least) two morphological metathesis rules.

In view of these Clallam and Rotuman facts, there seem to be minimally two bona fide cases of morphological metathesis in natural languages. Since the MRC and Autosegmental Morphology respectively require and employ a formalism that does not allow the expression of such processes (unitarily with the rest of morphological marking), they would appear to be overly restrictive, and hence empirically falsified. This does not mean, though, that the autosegmental theory is to be cast aside, but only that it must be incorporated into a larger theory (like Rule-Morphology) which is better suited to describing the variety of morphological processes which are found cross-linguistically. And so autosegmental-morphological devices (like prosodic templates and association conventions for linking segments to them) can and should be employed as (or in conjunction with) rule-morphemic processes. But this all turns, of course, on the acceptance of the Clallam and Rotuman metathesis rules as counterexamples to the MRC and to Autosegmental Morphology as an overall theory of word-formation.

However, the standard response to such cases is to say, not that a theory counterexemplified in this way is wrong, but, in a sense, that the data are wrong. That is, when a recalcitrant phenomenon like morphological metathesis has instantiations in only two of the world's languages, the conclusion usually drawn is that such an infrequent phenomenon is "marked", and so somehow thereby defused as a counterexample. Sometimes, a claim that something is marked is intended to mean that it is outside the bounds of grammar, but still learnable by speakers--albeit with great difficulty. Other times, marked phenomena are placed within grammar, but in a special section, or with a special label--for things which are not preferred and/or can be learned only with great difficulty. In the best case, a claim that some linguistic phenomenon is marked is intended also as a prediction that it will be acquired late by children, or lost early by certain aphasics, or processed more slowly or less successfully by speakers/hearers in psycholinguistic tests, or replaced relatively quickly in linguistic change, or some such thing. (Thus, for example, Lightfoot 1979:77 suggests that "markedness proposals [might] make empirically testable claims ... [about]
language[-]change and [-]acquisition."

But, in the case of Clallam and Rotuman metathesis, there is absolutely no evidence currently available indicating that aphasics or phasic children and adults experience any difficulty whatsoever in producing or understanding the process in question. In fact, for Rotuman, we have the opposite kind of evidence. For one thing, Rotumans apply their incomplete phase metathesis to English loanwords, so that 'the-sugar' is suka, but 'some-sugar' is suak, while 'watch' was heard and borrowed by Rotumans as the incomplete phase, vac, of complete-phase uca. And, for another thing, recent psycholinguistic experiments on morphology reported by Boyce, Browman, and Goldstein 1983 have led them to conclude that "non-concatenative morphology [in general] doesn't cost [listeners any] "efficiency in word recognition" if the process[es at issue are]... regular." But Rotuman metathesis is nothing if not extremely regular.

Thus, in the present case, the only real evidence which suggests that morphological metathesis is marked comes from the fact that it is rare--but the only explanation offered for why it is rare is precisely that it is marked. This is the not-so-rare circularity of markedness. At this juncture, it seems instructive to reflect on the reasoning behind the approach just discussed. Some linguists are apparently appalled by the prospect of employing a notation--like the transformational one--which, if unconstrained, could potentially express bizarre (types of) rules of morphology unattested in the world's languages. Indeed, they are so appalled by this that, in order to rule out unattested (types of) phenomena, they are willing to pay the price of having to claim that certain infrequent but attested morphological rules (like metathesis) are essentially grammatically impossible. Other linguists recognize a qualitative difference between there being absolutely no examples of some (type of) phenomenon and there being even just one example of it, so that they are reluctantly willing to predict the existence of many bizarre, unattested things as long as they can thereby express everything that is attested. These two remarkably different attitudes usually lead to quite distinct choices of notational formalisms--and this can be illustrated graphically, in the particular present case of morphological metathesis, as in [5]:

[5]a. Notation A (e.g., Autosegmental Morphology, including the MRC):

ATTESTED linguistic phenomena | UNATTENDED linguistic phenomena
---------------------------------|----------------------------------
Me- | Metathesis
--- | ---
"UNMARKED" (Actual/ Possible) | "MARKED" (Improbable/Impossible)

b. Notation B (e.g., Rule-Morphology, including the transformational format, but with no MRC or other constraints):

ATTESTED linguistic phenomena | UNATTENDED linguistic phenomena
--------------------------------|----------------------------------
Me- | Metathesis
--- | ---
(Actual/Possible) | (Possible/Probable)

Now, in fact, the second approach discussed and illustrated above ac-
ually can rule out the scarcely imaginable bizarre unattested (types of) phenomena in question, by adopting independent (although perhaps ad hoc) constraints to that effect. Hence, in the present case, the choice really comes down to the following: On the one hand, we can accept the MRC, and hence be forced to employ Autosegmental Morphology, rather than Rule-Morphology and its necessarily concomitant transformational format—with the result that morphological metathesis essentially has to be treated as ungrammatical, along with bizarre, unattested (types of) linguistic phenomena. On the other hand, we can reject the MRC and Autosegmental Morphology (as an overall theory of word-formation), adopt Rule-Morphology's transformational notation and thereby account straightforwardly and elegantly for morphological metathesis, but then also be forced to propose some rather ad hoc constraints in order to rule out bizarre, unattested (types of) phenomena. What must decide this issue, then, is clearly the answer to the question of whether morphological metathesis really is marked.

The evidence from loanword-applicability and regularity of grammatical metathesis in Rotuman certainly seems to go against markedness at least for that language. And the Tagalog speech-disguise facts discussed earlier incontrovertibly show that humans are capable of performing much more complex operations on strings than mere metathesis. Furthermore, McCarthy and Marantz have readily conceded that copying-transformations are a necessary part of Universal Grammar, which means that such processes must be among the set of human cognitive capacities:

"Adapting the proposals of an earlier version of this article...[ = Marantz 1982,] McCarthy (1981[:])...412-413) suggests that reduplicating skeletal affixes should carry a feature [+ reduplication] which 'has the effect of causing automatic copying of all the melodic elements in some morpheme—formally, all the daughters of some M in a particular tier.' This copying[-process may appear to require 'transformational power', but, as McCarthy points out, 'The copying induced by the presence of the feature [+ reduplication] is part of universal grammar, not part of some language—particular reduplication[-]transformation, and[,,] consequently[,] it is irrelevant to the whole problem of restrictiveness..."" (p. 445n.7).

But even more important is the question of whether there exists an explanation other than markedness for why morphological metathesis rules are rare. This is because, if one or more such alternative explanations can be found, then virtually the only evidence supporting the claim of markedness for that type of process will be undercut. And here is where historical considerations enter in. To claim that morphological metathesis rules are marked because they are rare is equivalent to asking why such processes, if they're not marked, aren't more common. But such a question presupposes that all possible (unmarked) morphological rules—in fact, all possible linguistic phenomena in general—should be widely distributed across the languages of the world. However, this would be true only if people were free to think up languages on their own, independently—in which case the odds would indeed be that all (or at least most) grammatical devices cognitively available to speakers would be selected a fair number of times. But speakers don't make up their languages; they mainly acquire them from others, either by successfully inferring others' elements and rules of
grammar from those others' speech-output or else by unintentionally reanalyzing others' grammatical elements and rules, again on the basis of others' speech-output. Hence, unless there were morphological metathesis rules in the first human language or languages—rules which were then passed down, across time, eventually to speakers of Clallam and Rotuman—we must conclude that such processes can have arisen only by way of reanalysis. And it is indeed unreasonable to assume that all possible (types of) linguistic phenomena were present in the first language(s)—especially all possible (types of) morphological rules.

Thus, we must now ask what things could possibly be (and so have been) reanalyzed as morphological metathesis rules. One likely candidate for such a source would be phonological metathesis rules. However, despite Chomsky and Halle's remark in SPE (1968:361) that "... metathesis is a perfectly common phonological process", several large-scale studies of phonological metathesis have shown it to be primarily a sporadic source of sound change, rather than a normal type of synchronic phonological rule accounting for alternations. Ultan 1971, for example, concluded that:

"... metathesis is usually recessive in comparison with other processes...[;] it is prone to greater interference from more dominant ones like... reduction, assimilation, dissimilation, and epenthesis or anaptyxis" (pp. 36-37).

And Webb's 1976/1977[?] findings are, in this sense, even more negative:

"... I have examined many cases of metathesis cited in the literature ([in ]Webb 1974). Most of the examples were found to be sporadic, with very few or no alternations [supporting them] in the grammar of a particular language. ...[Such c]ases where only a handful of alternations exist... are best handled suppletively. ...[A]t best[,], synchronic examples of systematic metathesis are very rare. The few cases which most strongly suggest metathesis as the correct generalization are questionable on independent grounds. ...[T]he weight of the evidence strongly argues against metathesis as a phonological process. ... Diachronic examples are apparently more numerous[,] but tend... to be restructured. Once restructuring has taken place, there are generally few, if any, alternations which remain. This is not generally true of other phonological rules, ... [which] regularly leave evidence of their prior existence... [in] the form of alternations. ...[In fact, many putative diachronic metathesis[-]rule[s]... may... never ["have"] existed ["as such"] in the synchronic grammar of a particular language" (Webb 1977[?]:87-88; cf. also Passy 1890, Wechsler 1900, Sievers 18761/19015, Lehmann 19621/19732, Pawley 1982-MS, and many others---but also Grammont 19331/19719, Martinet 19551/19642, Semiloff-Zelasko 1973, Silva 1973, Sohn 1980, and some others).

Finally, McCarthy himself has claimed that:

"...there exists a quite limited set of possible metathesis[-]rules, which we could characterize as a preliminary theory of natural metathesis. Although linguistic theory allows full transformational formalism in phonological rules, it is nevertheless subject to this sort of substantive constraint. Therefore, only small subset of the formally possible metathesis[-]rules will actually occur, since many possibilities will be excluded on phonetic grounds. ...[H]owever, it is impossi-
ble to place any such constraints on the phonetic [or phonological] naturalness of morphological rules[, because]... it follows directly from l'arbitraire du signe that phonetically [or phonologically] determined considerations of naturalness have no place in morphological rules[—which helps justify the higher-than condition on the first vowel in Rotuman incomplete phase metathesis, for example, as discussed in connection with [3] above—RDJ]. Therefore, any constraint on ... morphology must be an essentially formal one, like the MRC[—although we have, of course, already seen that the MRC is actually overly restrictive, and also although it may actually be possible to elaborate a set of substantive constraints on morphological rules, after all2]" (McCarthy 1981:406, after 1979:360/1982a).

Furthermore, we cannot assume that all phonological metathesis rules --insofar as these exist--will or even can be morphologized, but only a restricted subset. Therefore, if morphological metathesis rules can arise only due to a restricted phenomenon (= reanalysis) happening to a relatively rare phenomenon (= phonological metathesis), then we can in fact predict that metathesis in morphology should be rare—but without any need to claim concomitantly that such a grammatical process is somehow difficult to learn, use, or comprehend, or that it is otherwise "marked".

Now, actually, there are a few other sources which could have been reanalyzed as morphological metathesis—some, probable, and some, only imaginable. The root-internal metathesis rule in Clallam, for example, could--on the basis of comparative evidence (cf. Thompson and Thompson 1969:217–218 and Demers 1974, plus references there)—be analyzed as having arisen from a situation where a difference in the segmental structure of suffixes had an effect of conditioning differences in stress placement in preceding CVCV...-roots which in turn led to the deletion of different root-vowels in different grammatical categories. (Such a scenario, though, requires the not uncontroversial claim that, at some stage, all bisyllabic roots in a group of Salishan languages had two identical vowels.) Rotuman metathesis, on the other hand, could have resulted from some analogical desire to create consonant final surface forms in the incomplete phrase that would parallel the consonant final forms produced by apocope of the vowel in the encliticized indefiniteness marker =ta (added to the equivalent of complete phase forms)—schematically, ...VCV=ta > ...VCV=t. (The encliticization and apocope just mentioned are described in Churchward 1929, 1940, but not the possibility that Rotuman metathesis arose by analogy to the result of these—viz., that incomplete phase forms come to be consonant final in this way, too. Such an idea is pure speculation on my part, though not, I believe, unfounded.) The important thing in both these cases, however, is that such other possible sources potentially reanalyzable as morphological metathesis are likely to be even rarer than phonological metathesis—which again leads us to expect that morphological metathesis rules should be rare, once more without the invocation of any vague and unsupported notions of markedness. (In view of the absolute rarity of phonological metathesis rules reordering adjacent consonants and vowels in a way parallel to Clallam and Rotuman morphological metathesis, it is in fact likely that both those processes arose via reanaly-
sis of one or more non-metathetical rules, whether exclusively phonological or exclusively morphological or of both types.)

Given this finding, we can conclude that there are no compelling reasons to characterize morphological metathesis as marked, even though it is rare. And so an approach to morphology which can express such a (type of) process straightforwardly and in a manner unified with the rest of word-formation—as Rule-Morphology can—must be adjudged superior to any theory that cannot (like Autosegmental Morphology, especially if it includes the/m an MRC).

But, more importantly, we can also conclude from the above that historical explanation thus belongs to more than the history of linguistics—that it has a possible role to play even in the synchronic study of language. In fact, returning to the topic of the history of linguistics as it was discussed at the outset of this paper, we can note that the real progress which we can demonstrate to have been made during the last seventy-five years is our realization that historical explanation is not the only kind available in linguistics—that, e.g., the synchronic fact of language acquisition also has a crucial explanatory function—and in a way which makes synchrony and diachrony extremely hard to keep separate. In fact, along these lines, it turns out that Hermann Paul was at least partly right, all along—and was even a forerunner of good generative linguistics—because the passage by him quoted earlier goes on to finish (Paul 1880/1886/1889[19205:20-21—in English]/19205:20-21—here in a revised version of Bynon's 1977:18-19n.2 translation):

"The only aspect ... which might conceivably remain as suitable for non-historical investigation[, in language,] might be general considerations regarding individual usages of language...[---]that is to say, the behavior of the individual speaker relative to general usage, which ... include[s] language-acquisition. ...[H]owever, precisely these considerations are to be intimately connected with the analysis of the historical development of language."

And, since Paul's time, such possibilities for diachronic explanation in linguistics—that is, for combined diachronic and synchronic explanation—have been noted and exploited by mavericks like Kiparsky (as in the already cited Kiparsky 1975) and, even earlier, Joseph Greenberg 1966, 1969, 1978, 1979. Indeed, Greenberg spelled out this whole research program in his 1977 LSA presidential address "Rethinking Linguistics Diachronically" (published as Greenberg 1979). The case of the almost missing morphological metathesis rules suggests that there are undoubtedly a lot more explanations out there just waiting to be found if we, too, will only consider rethinking linguistics diachronically.3

FOOTNOTES

* I have profited, in the preparation of this final version of the current paper, from thoughtful comments made during the discussion immediately after its presentation at BLS X by George Bergman and, especially, Donca Steriade. For suggestions, encouragement, and other help provided before, during, and/or after the meeting, I am also grateful to the following people: Jonathan Beck, Catherine Callaghan, Pieter...
Actually, it is quite likely that many types of bizarre, unattested morphological (and general linguistic) phenomena can be ruled out by independent constraints which are anything but ad hoc. In particular, a cursory survey of the psychological literature on the ability of humans to perform various kinds of operations on strings of symbols (verbal or otherwise) suggests that there may exist general cognitive constraints in this area. If this extremely plausible initial finding can be confirmed, then it will be the case that the use of linguistics-specific constraints like the MRC and the notion of Auto-segmental Morphology to rule out the phenomena in question is at best redundant and at worst misguided. For example, if the average person is cognitively unable to perform operations on only the prime-numbered segments in a word (without the use of pencil and paper, and within a reasonably short amount of time), then the use of the MRC to prohibit morphological rules of this type probably represents only a Pyrrhic victory.

The possibility that substantive constraints can also be placed on morphological rules, after all, is suggested by considerations like those discussed in Footnote 3 (immediately above, keyed to a passage in the main text two pages before where this footnote is keyed). Such constraints may well not be so specific in their reference to segmental phonology as those discussed by McCarthy as governing phonological metathesis—but, on the other hand, one could also approach—and constrain—morphological rules in a purely substantive way. Rather than proceed such that anything statable with the transformational format is a possible rule of morphology unless it is ruled out by some explicit constraint (whether morphologically ad hoc or cognitively general), that is, one could just list the attested (types of) morphological rules which are currently known and then simply stipulate that only process-types which are on that list are possible rules of morphology.

It remains to say a final word about the occasionally proposed putative diachronic explanations which are actually invalid that were mentioned in the first paragraph of this paper. What I have in mind here are claims like: "Linguistic situation X is a counterexample to synchronic generalization Y, but X doesn't really count as a counterexample because a common/natural/plausible historical process gave rise to it." The problem in such cases is that children who acquire a language examplifying situation X presumably have no knowledge of the historical developments which led to X (or to any other aspects of their language)—nor do many of them ever gain such knowledge when they later
are adults. Hence, for them (whether as children or as adults), either X is an exception to Y or it isn't. Language-learning children who possess generalization Y (due either to their genetic endowment or to having been exposed to data which force them to it) and then encounter exceptional situation X have a chance to change X so that it will no longer be a counterexample (or, perhaps equivalently, a chance not to learn X at all). If they still acquire X, then it must count as a counterexample—or else lead one to question whether Y is a valid generalization, after all. Thus, a claim of the general type just discussed is indeed diachronic—since it describes how, over time, the data needed to lead a child to a certain linguistic analysis came to be in his or her environment—but it is not really explanatory, since it does not account for why such a child goes ahead and adopts an exceptional situation in the face of a regular generalization which it violates—other than perhaps by saying that the child does so because of what he or she has heard others do/say, which still doesn't make the exceptionality go away. At most, then, claims of the kind here under discussion explain how a counterexample arose, not why it is allowed to continue to exist. In the sense of such claims, everything has a historical explanation—from which it is clear that, not really so paradoxically, diachronic considerations like them actually explain nothing at all.

REFERENCES

[To present here the full five pages of bibliographical references for this paper would have swelled it to a length unfair to the other authors represented in this volume. Consequently, it has—in consultation with the organizers of BLS X and editors of these Proceedings—been decided to omit all of the references here, and to request all those interested in obtaining them to solicit them from the author at the following address: Department of Linguistics Math Building 89, Room 203 University of Arizona Tucson, Arizona 85721 (--telephone (602) 621-6897).]
SOME ASPECTS OF WORD-FORMATION IN A POLYSYNTHETIC LANGUAGE*

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Current models of word-formation (e.g. Allen (1978); Lieber (1980); Williams (1981); Kiparsky (1982, to appear)), although offering interesting insights into various aspects of the word-formation component of languages located typologically in the range from more-or-less isolating to more-or-less agglutinative, fail to account for the morphological and derivational richness of polysynthetic languages such as Greenlandic Eskimo. In this paper I will discuss the general sorts of problems raised by languages with a pervasive and totally productive system of word-derivation for any generally valid theory of word-formation. I will further argue that these problems have largely arisen from a confusion of the 'word', a surface phenomenon, with a level of linguistic analysis, an abstraction over surface regularities.

I will illustrate the basic point by focusing on a few areas where level-ordered morphology, Lieber's feature-percolation conventions, and Williams' notion of internal/external arguments make incorrect predictions about Greenlandic. That is, I will argue that these frameworks are empirically inadequate. I will not, however, conclude that they should therefore be abandoned. Rather I will argue that we need to reevaluate what Bolinger has called "our typewriter-space notions of what words are" (1971:xii) and that we may need to allow for more interaction between morphology and syntax than current, highly modularized frameworks will admit.

Level-Ordered Morphology. Kiparsky (1982, to appear) draws together several lines of investigation that have led to the general notion of level-ordered morphology. As he notes,

The basic insight of level-ordered morphology is that the derivational and inflectional processes of a language can be organized in a series of levels. Each level is associated with a set of phonological rules for which it defines the domain of application. The ordering of levels moreover defines the possible ordering of morphological processes in word-formation (1982:3).

That is, level-ordered morphology predicts a correlation between the order in which meaningful elements may occur within a word and the phonological effects those elements have on the word. In Greenlandic, however, the linear order of the components of the word is determined more by syntactic and semantic considerations than by phonological concerns.

For example, there are a number of suffixes in Greenlandic that truncate a preceding consonant. One such suffix is -lerpoq 'begin to', as illustrated in (1).1
(1) qanik + lerpoq > qanilerpoq
    approach begin to 'begins to approach'

This consonant truncation is generally considered to be morphologically conditioned; the productive pattern is for consonant-final stems to assimilate to the adjacent consonant of a suffix, as illustrated in (2).

(2) qanik + livoq > qanillivoq
    approach become more ___ 'gets closer'

Within the framework of level-ordered morphology, one would like to use the notion of the level-ordered hierarchy to obviate the otherwise unavoidable necessity of identifying truncating suffixes by a morphological feature. Indeed, this situation appears analogous to the in-/un- distinction: in-, affixed at Level One, is subject to various assimilation processes that do not apply at Level Two, the locus of un- attachment. Unfortunately for the theory, truncating suffixes may be attached not only before but also after nontruncating suffixes (illustrated in (3)), thus countering the clear prediction such an analysis makes.

(3) qanik + li(voq) + lerpoq > qanillilerpoq
    approach become more ___ begin to 'begins to get closer'

The examples in (4) indicate the role of semantics (particularly of semantic scope) in determining affix ordering irrespective of the truncating or nontruncating distinction (−ngit is truncating; −gallar is not).

(4) a. tikit + nngit + gallar + voq > tikinnngikkallarpuq
    come not still INDIC-3s
    'he still has not come'

b. tikit + gallar + nngit + voq > tikikkallanngilaq
    'he still hasn't come yet'/'he's a long time coming'
    (Fortescue 1980:268(6) and (7)

Another difficulty for the theory of level-ordered morphology arises from the process of lexicalization in Greenlandic. Complex forms consisting of a base and a completely productive derivational suffix often form collocations whose meaning is not transparently compositional and whose phonology may be irregular. Thus, for example, −rluk and −kulak, completely productive suffixes with straightforward phonology, occur in some lexicalized formations as instantiated in (5).

(5) a. sila + rluk > sialuk 'rain'
    weather bad (cf. sialrluk 'bad weather')

b. angut(i) + kulak > angutikulak/angukulak
    man ugly 'he-goat' (Darden n.d.:3-4)
Although one can certainly opt to list sialuk in the lexicon, it is at least as morphologically transparent as such English forms as depth and ominous, which are held to be Level One formations. Thus we are left with three logical possibilities. First, we might remove Level One from the morphology and simply store such forms in the lexicon. In this case level-ordered morphology is essentially reduced to a distinction between derivational and inflectional morphology. Second, we could posit a basic difference between languages such as English and Greenlandic in terms of where the line between lexicon and word-formation is drawn. That is, that Greenlandic lists "Level One" formations whereas English forms them. The third alternative is to put suffixes such as -rluk in both levels and mark stems for whether they enter into formation with a particular suffix at Level One or Level Two. The problem with this approach is that most, if not all, Greenlandic suffixes are found in at least some such lexicalized or semilexicalized collocations. Thus all 350 or so productive derivational suffixes would have to be double-listed. Furthermore, as illustrated in (5), some stems follow both an unproductive and the productive pattern, with or without a shift in meaning. Thus, the general restrictiveness and predictiveness of the framework is largely undermined by this alternative analysis.

The point of the examples in (3) to (5) is not to say that level-ordered morphology cannot handle the Greenlandic data but rather that this morphological model, which is assumed to directly capture a "general property of languages" (Kiparsky 1982:11), is unrevealing with respect to one particular highly morphological language. Level-ordering simply doesn't buy us anything in Greenlandic. We cannot avoid marking various suffixes in some way for their truncating effect by locating those suffixes in a level where there is a process of truncation, nor can we uniquely assign suffixes to a particular level.

One further phenomenon in Greenlandic has direct implications for the framework of level-ordered morphology. Within this model irregular inflection may be treated as Level One affixation. Thus oxen is formed at Level One and blocks both *oxes and *oxens obligatorily. If ox is further derived—at later levels—its irregular plural is no longer available to it, and it will be inflected regularly at Level Three. Thus, from oxishness we get oxishnesses, not *oxishnessen. It has long been observed that derived forms tend to be regular in inflection even if their base is not, and this analysis accounts for much of the data quite neatly.

Greenlandic has a form tamaq 'all of them' that has a highly irregular inflectional pattern. The usual endings are ∅ or -q for the absolutive and -p for the ergative. But tamaq takes -mik and -asa as nominative and accusative endings. This situation is quite analogous to the oxen case and would presumably be treated in the same way. But if tamaq is further derived, it still requires these irregular inflections. For example, -ngajak, a fully productive suffix, may be affixed to tamaq giving the results in (6).
Furthermore, given the bracket-erasure conventions embraced by adherents of level-ordered morphology, there is no way to enable the irregular inflectional marking on *tamaq to filter to the feature matrix of the derived form. It is not clear that there is any solution to this problem within level-ordered morphology other than allowing global rules. But in addition to the substantial power of global rules, they will only be effective if the internal brackets are still there for them to operate on, which presumably means retaining them in all constructions, not just those involving *tamaq. Hence the attractive restrictiveness of the theory is seriously compromised if not destroyed. Moreover, it won't work to try to list these forms because they are productively derived and therefore, in principle, infinite.\textsuperscript{5}

Lieber's Percolation Conventions. Since Lieber's framework is designed to account for much the same data that level-ordered morphology is based on, both frameworks encounter many of the same difficulties when confronted with Greenlandic. The specific Greenlandic data discussed in relation to each theory represent the most natural rather than necessarily the only arguments of empirical inadequacy. These data also represent the general sorts of phenomena that will need to be taken into account in any general theory of word-formation and the lexicon.

One of the more attractive features of Lieber's framework is its ability to avoid the redundancy of stating phrase-structure rules twice—once in terms of phrase-structure rewrite rules and once in terms of strict subcategorization frames. Lieber's system "contains a single context-free rewrite rule which will generate UNLABELED binary branching tree structures" (1980:47). Labeling and feature percolation conventions, which effectively ensure bracket erasure, fill out these trees as follows:

(7) FEATURE PERCOLATION CONVENTIONS:

I. All features of a stem morpheme including category features percolate to the first non-branching node dominating that morpheme.

II. All features of an affix morpheme including category features percolate to the first branching node dominating that morpheme (ibid.:49(21)).

III. If a branching node fails to obtain features by Convention II, features from the next lowest labeled node are automatically percolated up to the unlabeled branching node (ibid.: 50(25)).

Relation changing and argument adding phenomena in Greenlandic may pose a considerable problem for the percolation convention. Unfortunately, the theory, as developed thus far, is not explicit as to the analysis of such phenomena. In Lieber's
scheme, Convention III is needed to handle prefixes such as counter-, which is analyzed as having no inherent major category label but rather as being "transparent to category," taking its category label from the stem to which it is attached. That is, a tree with no major category is ill-formed, so Convention III applies. Or, in the case of Latin verbs, a verb unmarked for the features [pres] and [perf] is, in Lieber's analysis, incomplete, so Convention III applies. That is, Lieber has a notion of "feature matrices," and Convention III essentially works to ensure "that all 'empty slots' in feature matrices are filled" (ibid.: 56). In Lieber's analysis of Latin verbs, the feature [pass] is handled automatically by Convention II since the passive morpheme happens to be outermost. Thus there is no indication as to whether features indicating passivity, causativity, antipassivity are part of the feature matrix, part of the inherent content of the affix, or something else. In Greenlandic, none of these affixes is word-final, but presumably they must be visible to the syntax since they affect case marking. If these features are considered part of the feature matrix, the unlikely possibility of infinite matrices is raised. That is, the formation of antipassives, causatives, and passives productively interact with and recur on one another to form, in principle, infinite series. (As with English sentences, semantic plausibility and human competence result in practical—though not theoretical—limits.) The examples in (8) illustrate the general point.

(8) a. Kaali Mariamiit illoqartinneqarpoq Karl(ABS) Maria-ABL house-have-cause-PASS-3s 'Karl got a house from Maria'.

b. Kaalip Hansimut atuakkat Nuummut aggioquai Karl-ERG Hans-ALL books(ABS) Nuuk-ALL bring-ask-INDIC-3s/3pl 'Karl asked Hans to take the books to Nuuk.'

Furthermore, such examples are extendable and further derivable. Thus one might extend (8a), for example, to Karl wanted to get a house from Maria.

Assuming infinite feature matrices to be undesirable, we are left with the option of incorporating into the morphology the syntactic apparatus of the theory (Lexical Functional Grammar) in which this morphological framework is embedded. Selkirk (1982) and Lieber (1983) both adopt this strategy to account for English compounding. On this view, argument structure and case assignment may be altered by a lexical rule associated with the derivational ending. Grimshaw and Mester (1983) explicitly analyze Greenlandic complex verbs within the framework of LFG. Without going into all the details, the analysis rests crucially on a highly debatable assumption and a serious weakening of the Functional Uniqueness Principle. The assumption is that Greenlandic is essentially a word-star language, thus enabling one to base-generate any number
of NPs in any order. But word order is more flexible than free, and one gets the proliferation of NPs illustrated in (8b) only in connection with complex, derived verbs. The Functional Uniqueness Principle is severely compromised by the stipulation that oblique grammatical relations are exempt from it. In addition to weakening the theory, this analysis completely obscures the point that, for example, the two allative arguments in (8b) do in fact bear a unique functional relation—but to different elements of a complex verb. (That is, Nuummum is strictly subcategorized by the verb stem, and Hansinut is 'controlled' by the causative affix.) Grimshaw and Mester must weaken the Functional Uniqueness Principle for their analysis of the complex verb in Eskimo, yet this Principle, in its strong form, may be precisely right. Hence the lexical rule strategy may not be tenable.6

The major stumbling blocks for this theory, however, are certain facts of noun-incorporation. A number of verbal affixes in Greenlandic incorporate their noun object, which may be externally modified and possessed. These noun modifiers exhibit number agreement with the noun head, even though that noun "loses" its number under incorporation. The examples in (9) illustrate this construction.

(9) a. qimmeqarpoq
dog-have-INDIC-3s
'He has a dog/dogs'.

(Sadock (1980:306(18))

b. angisuumik qimmeqarpoq
big-NOM-SG-INST
'He has a big dog'.

(ibid.:309(34))

c. angisuumik qimmeqarpoq
big-NOM-PL-INST
'He has big dogs'.

The unmodified form in (9a) is ambiguous as to number; the modified forms in (9b) and (c) are unambiguous. Moreover, one cannot appeal to a semantic principle to account for the agreement facts because, in the case of semantically singular but formally plural nouns, there is plural agreement, thus indicating that this process is a grammatical, not a semantic one. For example, qamutit 'sled, carriage' is formally plural. In many uses it is neutral between notional singularity or plurality, just as when I say My pants are at the cleaners it is unclear whether one or more than one pair of pants is involved. But the number of sleds may of course be clarified by the use of a numeral. As shown in (10), the numeral, even if it is explicitly 'one', must have plural marking.

(10) ataatsinik */ataatsimik qamuteqarpoq
one-PL-INST/ one-SG-INST sled-have-INDIC-3s
'He has one car'.

(ibid.:309(31))
In Lieber's scheme, however, once the feature [+V] has percolated to the branching node dominating the noun-verb string, none of the nominal features of the incorporated element may be percolated up the tree to become visible to the syntax. Further, one cannot simply allow nominal features to percolate (by Convention III) in these constructions and then delete the overt marker of number and case on the incorporated noun since there are some noun-incorporating suffixes, for example, -karpoq, that do attach to inflected objects, as illustrated in (11).

(11) palaspil illuanukarpoq (cf. illuanut 'to his house')
priest-ERG house-3s-ALL-go-INDIC-3s
'He went to the priest's house'. (ibid.:315(61))

So even if it were possible to reformulate Convention III to percolate just the right features (an ad hoc adjustment to the theory in itself), there remains the problem of deleting and expressing just the right features in the surface form. Thus the phenomenon of noun-incorporation appears to pose insurmountable problems for the theoretical framework.

One further point about constructions such as that in (11) is worth mentioning. Underlying most work in word-formation is the assumption that word-formation rules are structure preserving. But the phrase-structure configurations arising as a result of noun-incorporation are not otherwise occurring in the language. In particular, the ergative case occurs only (i) as subject of a formally transitive verb, and (ii) as possessor of an immediately following possessed noun. Likewise, as the configurations of (11) occur only when an object noun has been incorporated and are simply ungrammatical otherwise, the suggestion that the word-formation component of Greenlandic is not structure-preserving is strong, if not inescapable. Moreover, it will be difficult to remove noun-incorporation from the word-formation component without also therebycontroverting other favored underlying assumptions. Recent work in syntax and word-formation has been heavily focused on locating all exceptional and idiosyncratic information in the word-formation component, thus leaving only fully productive, exceptionless phenomena in the syntax. Subject to various pragmatic and syntactic constraints, it is true that incorporating suffixes may incorporate any nominal, simple or derived. But, as noted above, these suffixes do differ in terms of whether or not (and, if so, how much) inflectional material they allow on the surface—this behavior is idiosyncratic. Moreover, as illustrated in (12) (see also (8a)), affixes may incorporate derived nominals—and themselves be further derived. Hence a syntactic analysis means allowing the components to interact. Although I am arguing for this very interactivity, most theorists balk at it.

(12) illorssuaqaruarami
house-big-have-certainly ... but-INDIC-3s
'He certainly has a big house, but ...'
Internal vs External Arguments. Williams (1981) argues that in addition to the argument structure of a lexical item, which he formulates in terms of thematic relations (in the sense of Gruber (1976)) whose surface form is specified by realization rules, there is "one minimal additional element of structure," that is, "the distinction between 'internal' and 'external' arguments" (1981:82). The internal/external distinction is intended to replace, not supplement, grammatical relations. "The notion external argument corresponds in some respects to subject," but is conceived of as "simply a distinguished argument, not a syntactic position, a case, or something else" (ibid.:83).

The real substantive claim of Williams' article is in terms of the restriction he is able to place on possible morphological rules. Specifically, Williams claims that "a morphological rule can affect only the external argument of its input, and that it can affect this external argument in only one of two ways: it can make one of the internal arguments into the external argument, or it can add a new external argument" (ibid.:90). This restriction (coupled with, for example, the requirement that the Actor, if there is one, be external) constrains analysis of many linguistic phenomena. Specifically, verbal passives must be analyzed as morphological and antipassives as syntactic. As shown in (13a) and (b), the antipassive changes case marking but not argument structure—Hansi is both Actor and external argument in both constructions.

(13) a. Hansip illu sanavaa Hans-ERG house(ABS) build-INDIC-3s/3s 'Hans built the house'.
    b. Hansi illumik sanavok Hans(ABS) house-INST build-INDIC-3s 'Hans built a house'.

A question, of course, naturally arises: is it correct to analyze the passive as morphological and the antipassive as syntactic? The passive is morphologically more regular in that the passive suffix -negar is the same for all verbs, whereas Klein¬schmidt (1851) notes several suffixes that do "not change the meaning of the stem in other ways than to relieve it of the transitive suffixes" (p. 73 of Anderson's translation). On the other hand, whereas passivization always requires an overt derivational affix, antipassivization for many verbs is signalled simply by the intransitive inflection on the surface form. Both processes are fully productive: every formal transitive verb has both a passive and an antipassive. Thus both processes are equally syntactic-like in terms of productivity.

Since this discussion is not conclusive, I will simply assume for the moment that passive is lexical and antipassive syntactic and that, as Williams claims, this analysis is the only possible one. But if Williams is right then the syntax and the
word-formation component must interact because passive and anti-passive clearly do interact. The examples in (14) are taken from Inuktitut (a Central Arctic dialect of Eskimo), but similar examples from the Greenlandic dialect can be constructed.

(14) a. nutaraq arnamit titirautimik nanisirqujauvuuq
child(ABS) woman-ABL pencil-INST find-ANTP-tell-PASS-
INDIC-3s
'The child is/was told by a/the woman to find a/the pencil'.
(Johnson 1980:25(53))

b. Piita Maalimik Jaanimit kuniktaurqujivuuq
Peter(ABS) Molly-INST Johnny-ABL kiss-PASS-tell-ANTP-
INDIC-3s
'Peter tells/told Molly to be kissed by Johnny'.
(ibid.:25(57))

These examples do not, of course, exhaust the derivational wealth of Eskimo dialects. They do, however, serve to illustrate the basic point of the interactivity of these processes: the lexical passive and the syntactic antipassive may apply to one another (as well as apply to their own output).

How this interaction is to be formulated remains a question, but that it must occur seems to be required by the data. Looking just at the verbs in (14a) and (b) two possibilities suggest themselves immediately. First, one could conceive of Greenlandic word-formation (and, presumably English sentence-formation) as a grand spiral of (perhaps level-ordered) successive recursions through a cycle of syntax-morphology-phonology coupled by semantic interpretation. Second, one might try to build up these complex Greenlandic forms syntactically in several pieces that are then glued together through the word-formation component. For example, in the formation of the verb in (14b), one might start with 'kiss' and 'tell' in the syntax; 'kiss' would immediately be sent to the word-formation component for passivization whereas 'tell' would remain in the syntax to be antipassivized. The two forms would ultimately join together morphologically and be sent forward for inflection. The problem with the first possibility is that it is difficult to imagine how such a spiral might be constrained. The problem with the second is that the syntax still needs to know that 'kiss' has been passivized (so jaani may be assigned ablative case) so it is not certain that the interaction can be limited to the effect of morphologically joining syntactically constructed elements.

Both these possibilities involve a certain expansion of the interactivity of the linguistic components. And both pose the problem of then restricting that interactivity on principled grounds. I am suggesting that it might be useful to explore a more abstract notion of the 'units' of our inquiry. In particular, it seems inappropriate to equate the surface word with a single linguistically relevant unit that is necessarily the same at
all levels of analysis. Presumably there is agreement among the components in most cases. For example, English woman and Greenlandic arnaq 'woman' constitute a unit for the semantics, syntax, morphology, and phonology. But in Greenlandic at least there does seem to be a distinction among 'contentful' suffixes (such as 'tell', 'want', 'go to'), category-changing suffixes (various nominalizers and verbalizers not discussed here), relation-changing suffixes (such as the passive and antipassive affixes), and inflectional endings. The contentful affixes appear to be semantic, and in some cases also syntactic, units. The relation-changing affixes seem to be units of the syntax. On this view, the surface word is the result of the usually confluent but sometimes competing demands of the several components of the grammar.

Footnotes

* Sincere thanks to Jerry Sadock for much valuable discussion and for prodigious assistance with the Greenlandic examples. Thanks also to Bill Darden and the Linguistic Circle of Chicago for comments and encouragement. Alas, any elements of fiction or fantasy that have crept into this manuscript are my responsibility.

1 References for examples are given within the example itself; the source example numbers are in parentheses after the page number. Where there is no citation, the form has been provided verbally by Jerry Sadock. Some examples have been revised slightly to be consistent with the format and abbreviations employed in the rest of the text.

2 Rischel (1974) illustrates that "attempts to predict the status of suffixes as truncating or non-truncating from phonological or semantic properties are likely to encounter serious difficulties" and therefore "that this property must be indicated as a morphological feature" (1974:197-8). Thus, for example, there are the phonological near minimal pairs -li 'but' (nontruncating) vs. -lik 'provided with' (truncating) and -niq 'the act/state of' (nontruncating) vs. -ni 4th person (truncating). Two suffixes taken from the same semantic domain but differing in this respect are -taaq 'new' (nontruncating) vs. -tuqqaq 'old' (truncating).

3 The terminology here is somewhat misleading. Level-ordered morphology is not committed to the proposition that the output of Level One and Level Two is derived in any dynamic, on-line sense. Indeed, the theory may be viewed as a means of formulating lexical redundancy rules as a component of the grammar (the word-formation component) and of providing these redundancy rules with a theoretical framework that increases the amount of work they are able to do in the grammar. Thus the distinction between these two analytical options is actually greater than that indicated in the text since option two implies that English relates lexical items
through the principles of level-ordering (in the word-formation component) whereas Greenlandic relates them through redundancy rules (in the lexicon).

Although there may be ways of weakening the theory to describe the Greenlandic data (Paul Kiparsky suggested one way at the BLIS Conference), it seems more appropriate to relax the claim for universality of the model than to deprive the framework of its essential restrictiveness.

5 Given the meaning of tamaq the possible forms based on it may not in fact be infinite but only indeterminately large. It remains the case, however, that the set is productively formed with compositional semantics and regular phonology and that the language could enlarge that set if, for example, it acquired a new suffix with appropriate semantics or a new concept that it could name through existing resources.

6 Joan Bresnan noted at the Conference that it is possible within LFG to build up complex functional structures for complex verbs. I have not, however, had an opportunity to evaluate such an analysis.

7 The attachment of derivational affixes to inflected forms is explicitly ruled out by level-ordered morphology as well as by Lieber.

8 Analyses of this construction differ. Some (e.g., Sadock) analyze the affix as -karpoq and the -mu- and -nu- preceding it as the truncated forms of the allative ending (-mut sg and -nut pl). Others (e.g., Fortescue) argue that -mukarpoq and -nukarpoq are allomorphs of a single incorporating affix. A problem with the latter analysis is in terms of capturing the distributional pattern of -mukarpoq and -nukarpoq. At any rate, the 3s marking on illu (to agree with the singular possessor) is clearly inflectional.

9 This area is one in which level-ordered morphology may provide an option for analysis. That is, one could posit post-inflectional levels to deal with suffixes such as -karpoq. But such an approach may result in a potentially infinite number of levels since there appears to be a "clitic cline" in Greenlandic such that affixes grade along a continuum from clearly bound derivational suffix to full word status (Sadock 1983).

10 The one surface exception is that modal notions such as 'want' can be neither passivized nor antipassivized, although, of course, its verb complement can be.

Bibliography


IDENTIFIABILITY AND NULL OBJECTS IN CHAMORRO*
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The idea that richness of agreement correlates with the possibility of having null pronouns has a long history in traditional grammar. Jespersen, for instance, had this to say:

(1) In many languages the distinction between the three persons is found not only in pronouns, but in verbs as well, thus in Latin (amo, amas, amat)...In such languages many sentences have no explicit indication of the subject, and ego amo, tu amas is at first said only when it is necessary or desirable to lay special stress on the idea "I, thou". (1965[1924]: 213)

More recently, the idea has been revived in Government-Binding Theory under the name of 'Taraldsen's generalization', given in rough form in (2):

(2) When there is overt agreement, the subject can be dropped, since the deletion is recoverable. (Chomsky 1981: 241)

The assumption seems to be that only when agreement is (in some unspecified sense) rich enough to identify the features of a null pronoun will the null pronoun in fact be allowed. So as not to have to attribute this idea either to Taraldsen or to Jespersen, I will adopt a term of Jaeggli's (1982) and call it simply the identification hypothesis.

The identification hypothesis encounters a problem in languages like Chinese and Japanese, which have no overt agreement at all yet allow the subjects and objects of finite clauses to be null. However, in a very interesting paper, C.T. James Huang (1983) develops an analysis of Chinese in which the problem apparently dissolves. Huang proposes that most of the null NP's in question are not true pronouns (that is, instances of small pro), but rather variables bound by a topic operator which is itself null. So the S-structure of Lisi likes him very much in Chinese is (3), where _ indicates the null operator and _t, the variable bound by it:

(3) [0_i [Lisi hen xihuan _t]].
   very like
   'Lisi likes him very much.'

As Huang shows, this proposal gives an account of some curious asymmetries in the distribution of null subjects and null objects in Chinese. It also explains why the null NP's are not sanctioned by any agreement, since variables are generally supposed not to be subject to this sort of identification requirement. In short, a
potential counterexample to the identification hypothesis turns out to be benign once one recognizes the existence of other elements in the typology of empty categories.

Huang's proposal raises the possibility that one could try to maintain the identification hypothesis by claiming that the apparent counterexamples to it are always variables, never true pronouns. In this paper I examine some evidence from Chamorro, an Austronesian language, which argues against such a possibility. Chamorro allows a variety of NP positions to be occupied by null pronouns. I first point out that richness of agreement seems to be involved in determining the distribution of null versus overt pronouns, so in this respect the language conforms to the identification hypothesis. I then argue that Chamorro null objects, which are not sanctioned by overt agreement, cannot be variables but rather are instances of small pro. The conclusion to emerge from this is that Huang's approach cannot always be used to save the identification hypothesis. Evidently, the correlation between agreement and null pronouns remains as incompletely true as when the traditional grammarians first observed it.

**Identifiability**

Chamorro is a VSO language. In this language a variety of NP's are sanctioned by person and/or number agreement on a lexical head. For instance, subjects in the realis mood are sanctioned by agreement on the verb:

(4)a. T-um-angis i neni.
   SUBJ(s)-cry the baby
   'The baby cried.'

   b. Ha-yuti' si Rebecca si Juan.
      SUBJ(3s)-drop Unm Unm
      'Rebecca abandoned Juan.'

So are subjects in the irrealis mood (shown in (4c)) and agents of passive (shown in (4d)):

(4)c. Pāra u-fattu i médiku agupa'.
    will SUBJ(3s)-arrive the doctor tomorrow
    'The doctor will arrive tomorrow.'

   d. Kao ch-in-iku si Maria as Juan?
      Q SUBJ(s)-AGT(s)-kiss Unm Ob1
      'Was Maria kissed by Juan?'

Possessors are sanctioned by agreement on the head noun (see Chung 1982b):

(4)e. i kumpliaños-ña i. Impiradót
    the birthday-POSS(3s) the Emperor
    'the Emperor's birthday'
In the morpheme-by-morpheme glosses, parentheses surround the features that are indexed on the head, and capital letters indicate the grammatical function of the sanctioned NP. In (4b), for instance, the verb exhibits third singular agreement with the subject.2

The NP's sanctioned by agreement in (4) may be null rather than overt. I will refer to these empty NP's, symbolized by [e] in the examples below, as null pronouns:

(5)a. T-um-angis [e].
  SUBJ(s)-cry
  '(She) cried.'

b. Ha-yuti' [e] si Juan.
  SUBJ(3s)-drop Unm
  '(She) abandoned Juan.'

c. Pāra u-fattu [e] agupa'.
  will SUBJ(3s)-arrive tomorrow
  '(He) will arrive tomorrow.'

d. Kao ch-in-iku si María [e]?
  Q SUBJ(s)-ACT(s)-kiss Unm
  'Was María kissed (by him)?$'

e. i kumpliaños-ña [e]
  the birthday-POSS(3s)
  '(his) birthday'

Following the identification hypothesis, one could connect the possibility of null pronouns here to the agreement, which (on this view) supplies enough featural content for the pronouns that they need not be realized overtly. While it is hard to support this conjecture directly, the idea that there is something right about it is suggested by the conditions governing when overt pronouns may appear.

In Chamorro, not all NP positions may be occupied by a phonetically realized pronoun. Overt pronouns may occupy positions which are not sanctioned by any agreement, or which are sanctioned by number agreement only. For instance, the subject position of intransitive clauses in the realis mood is sanctioned by number agreement only; this position may be occupied by an overt pronoun, as (6) shows:

(6) Mān-ma'udai (hām).
  SUBJ(p)-ride we
  '(We) rode.'

But overt pronouns may not occupy positions which are sanctioned by both person and number agreement. Thus, the subject position of transitive clauses in the realis mood is sanctioned by person and number agreement, and this position cannot be occupied by an
overt pronoun: ³

(7)a. Ha-fahan (*gui') i leplbu.
     SUBJ(3s)-buy he the book
     '(He) bought the book.'

The same is true for the subject position of irrealis clauses (see (7b)) and for the possessor position (see (7c)): ⁴

(7)b. Pāra bai infan-mattu (*hām) agupa'.
     will SUBJ(1p)-arrive we tomorrow
     '(We) will arrive tomorrow.'

c. i kumpliaños-su (*yu')
     the birthday-POS(1s) I
     '(my) birthday'

As the examples suggest, null pronouns are possible in all the positions where overt pronouns are not allowed.

The agent position of passives introduces a complicating factor here, for it is sanctioned by number agreement alone, but may not be occupied by an overt pronoun according to some speakers:

(8) Kao ch-in-iku si Maria (??nu guiya)?
     Q SUBJ(s)-AGT(s)-kiss Unm Obl him
     'Was Maria kissed (by him)?$'

However, passive agents in Chamorro are invariably third person, first or second persons being simply ungrammatical:

(9)a. *Kao ch-in-iku si Maria nu hagu?
     Q SUBJ(s)-AGT(s)-kiss Unm Obl you
     (Was Maria kissed by you?)

b. *Ma-bisita i bihu nu hāmi.
     SUBJ(s)-AGT(p)-visit the old-man Obl us
     (The old man was visited by us.)

The fact that the person feature for this position is essentially predetermined probably explains why passive agents can pattern with (7), rather than (6), as far as overt pronouns are concerned.

One way of describing these facts would be to suppose that richness of agreement interacts with 'Avoid Pronoun', the GB idea which says that one should never use an overt pronoun where a null one would do (Chomsky 1981: 65). In Chamorro, that is, number agreement by itself is enough to activate the Pro-Drop parameter, thereby allowing null pronouns; the combination of person and number agreement brings the Avoid Pronoun strategy into play. In any event, the facts reveal that completeness of the agreement specification does correlate with the distribution of null versus overt pronouns in Chamorro. In this sense, the language is con-
sistent with the identification hypothesis.

Null Objects
I now turn to the question of null objects.

Chamorro also allows direct objects to be null, as can be seen by comparing (10) with (11). Since direct objects are not sanctioned by agreement, the reference of these null NP's must be recovered from the larger discourse context:

(10)a. In-bisita gui' gi espitát.
   SUBJ(lp)—visit him Loc hospital
   '(We) visited him at the hospital.'

b. Ha-konni' si Dolores i famagu'un gi paingi. Kao
   SUBJ(3s)—take Unm the children last-night Q
   'Dolores took the children last night. Did
   ha-lalatdi i famagu'un?
   SUBJ(3s)—scold the children
   (she) scold the children?'

   SUBJ(lp)—visit Loc hospital
   '(We) visited (him) at the hospital.'

b. Ha-konni' si Dolores i famagu'un gi paingi. Kao
   SUBJ(3s)—take Unm the children last-night Q
   'Dolores took the children last night. Did
   ha-lalatdi [e]?
   SUBJ(3s)—scold
   (she) scold (them)?'

In these and subsequent examples, [e] indicates a null object, null subjects no longer being specifically indicated in the Chamorro material. (Both null subjects and null objects are, however, symbolized via parentheses in the English translations.)

Following Huang (1983), one might propose that the null objects in (11) are not true pronouns, but rather variables bound by an empty operator. And some support for such a view is apparently provided by sentences of the type (12), which --like its Chinese counterpart (see Huang 1983: 10)-- is ungrammatical:

(12) *Ilekaña si António₁ [na ti ha-tattiyi si
    say-SUBJ(3s) Unm that not SUBJ(3s)—follow Unm
    (António₁ said that Juan didn't
    Juan [e]₁ guštu gi kareta].
    there Loc car
    follow (him₁) to the car.)

If null objects are instances of small pro, it seems unclear why
(12) should be ungrammatical. But if null objects were variables,
then the ungrammaticality of (12) would be predicted, since the
sentence would violate the general requirement that a variable must be argument-free in the domain of the operator that binds it (Chomsky 1982: 31). In other words, the badness of (12) would be entirely analogous to that of:

(13) *Who did Antonio say that Juan followed to the car?

This clear picture is, however, clouded by further facts which show that the significance of (12) is somewhat different from what one might have originally thought.

To begin with, sentences of type (12) improve dramatically if the embedded subject is not a lexical NP, but rather a (null) pronoun. Consider:

(14)a. Ha-hähassu ha' si Maria [na in-bisita [e] SUBJ(3s)-remember Emp Unm that SUBJ(1p)-visit 'Maria remembers that (we) visited (her)
        gi espitát].
        Loc hospital
        at the hospital.'

b. Ma'a'ñao edyu na patgun [na bai in-pänak [e] SUBJ(s)-afraid that L child that SUBJ(1p)-spank 'That child is afraid that (we) will spank (him)
        yänggin t-um-angis gui'].
        if SUBJ(s)-cry he
        if he cries.'

Examples like (14) are grammatical for some speakers. Examples like (15), which differ only in that the embedded clause is an adjunct rather than a complement of the matrix verb, are grammatical for all speakers:

(15) Man-mäguf i famagu'um [sa' hu-fa'nu'i [e] SUBJ(p)-happy the children because SUBJ(1s)-show 'The children were happy because (I) showed (them)
        ni gitala].
        Obl guitar
        the guitar.'

Both sorts of examples occur in narrative texts, as (16) shows:

(16)a. Pära u-sangani hit [na todu i tiemup will SUBJ(3s)-tell us that all the time 'She would tell us that all the time
        ha-hähassu [e].'
        SUBJ(3s)-think
        (he) thinks of (us).' (from Cooreman 1982: 30.89)
b. Ti sina ha-asagua esti i otru na taotao [sa' not can SUBJ(3s)-marry this the other L person because '(She) could not marry this other man because ti yâ-na [e_i].
not love-SUBJ(3s)
(she) didn't love (him_i).' (from Cooreman 1982: 10.14)

Since a matrix NP binds the embedded null object in all of these examples, a problem arises if the null object is taken to be a variable: (14-16) ought to violate the same requirement on operator-variable binding that was violated by (12), but they are unexpectedly grammatical. In short, the facts discussed so far do not unequivocally support the view that the null object is a variable rather than a pronoun.

We can take these observations somewhat further by reopening the question of why (12) is ungrammatical. I will first suggest that (12) is bad for a reason that has nothing to do with binding, and then use this reason to construct an argument that the null object is not a variable.

Notice first that sentences with the structure of the embedded clause in (12) —that is, with a null object and a lexical NP subject—are ungrammatical regardless of whether there is another NP present in the syntactic structure to bind the null object. In (17a), for instance, i pâtgun 'the child' does not bind the null object, because it does not c-command it (see fn. 5); the sentence is nonetheless bad on the intended reading. In (17b-c), there is no overt antecedent for the null object at all:

(17a). *[Yânggin t-um-angis tâ'lu i pâtgun_i], pâra
if SUBJ(s)-cry again the child will
(If the child_i cries again, Maria
u-kastiga si Maria [e_i].
SUBJ(3s)-punish Unm
will punish (him_i).)

b. *Pâra u-patmada i lâhi [e].
will SUBJ(3s)-slap the boy
(The boy will slap (her).)

c. *Ha-chalâpun si Maria [e].
SUBJ(3s)-scatter Unm
(Maria dispersed (them).)

But, significantly for us, these sentences do have a grammatical interpretation—one in which the null NP is taken to be the subject and the lexical NP, to be the direct object. So (12) is fine in the reading 'Antonio said that he didn't follow Juan to the car', (17a) is fine in the reading 'If the child cries again, he will punish Maria', and (17b) is grammatical when taken to mean 'She will slap the boy.' (Example (17c) has no grammatical read-
ing, given that 'He/They dispersed Mary' is anomalous.) This is shown below:

(18)a. Ilek-ña si Antonio [na ti ha-tattiyi si say-SUBJ(3s) Unm that not SUBJ(3s)-follow Unm 'Antonio said that (he) didn't follow
   Juan guatu gi kareta].
   there Loc car
   Juan to the car.'

b. [Yänggin t-um-angis tä'lu i pätgun], pāra
   if SUBJ(s)-cry again the child will
   'If the child cries again, (he)
   u-kastiga si Maria.
   SUBJ(3s)-punish Unm
   will punish Maria.'

c. Pāra u-patmada i láhi.
   will SUBJ(3s)-slap the boy
   '(She) will slap the boy.'

Subjects and direct objects in Chamorro are both in the morphologically unmarked case. This, plus the facts just described, suggests that Chamorro has a strategy for parsing clauses which contain a transitive verb but just one overt NP in the unmarked case. The strategy forces the overt NP to be interpreted as the direct object, as can be seen from the preliminary statement below:

(19) In the string V X, where V is transitive and X contains only one NP in the unmarked case, interpret that NP as the direct object of V.

Following Hale, Jeanne, and Platero (1977), who discuss a similar parsing strategy for Navaho, we can assume that (19) takes effect at a point when null subjects and null objects have not yet been located in the string. This means that the NP mentioned in (19) is an overt NP; interpreting it as the direct object has the result that the subject must be null.

We are now ready for the argument. Observe that the parsing strategy rules out examples (12) and (17), which contain null objects, but not the comparable sentences in which the object is a variable bound by a true operator. In (20), for instance, the object is a variable bound by a WH-operator:

(20) Hayi [pāra u-patmada i láhi t₄]?
   who? will SUBJ(3s)-slap the boy
   'Who will the boy slap?'

In (21a), the object is a variable in a relative clause. This example contrasts nicely with (21b), in which the empty NP in the
embedded clause is what I have been calling a null object:6

(21)a. Hu-kariñu [i pätguni ní ha-kastiga SUBJ(1s)-comfort the child COMP SUBJ(3s)-punish 'I comforted the child who my aunt
i tia-hu t_i].
the aunt-POSS(1s)
punished.'

b. *Hu-kariñu i pätguni [änai ha-kastiga SUBJ(1s)-comfort the child when SUBJ(3s)-punish ((I) comforted the child when my aunt
i tia-hu [e_i].
the aunt-POSS(1s)
punished (him_i).)

There are several imaginable ways of describing this situation: for example, one might suppose that the parser establishes the gap-filler relations in so-called unbounded dependencies first, so that by the time (19) takes effect, the variables in (20) and (21a) have been located and count as overt NP's.7 No matter how this is done, though, it is evident that the null objects in (12) and (17) do not act like variables for the purposes of the parsing strategy. The full range of facts connected with (12) thus argues that null objects are not variables in Chamorro.

This conclusion is supported by three further arguments which show null objects patterning differently from variables in some way.

First, null objects do not trigger WH-Agreement, the Chamorro effect whereby a verb comes to agree in grammatical function with a variable dependent on it (see Chung 1982a). In (22a), for instance, the verb displays WH-Agreement with a variable produced by WH-Movement; the morphological realization of the agreement signals that, in this case, the variable is a direct object. Compare (22b), which shows the ordinary form of the verb:

(22)a. Hafañ [f-in-ahan-ña si Antonio t_i]? what? WH(obj)-buy-SUBJ(3s) Unm
'What did Antonio buy?'

b. Ha-fahan si Antonio i āga'.
SUBJ(3s)-buy Unm the bananas
'Antonio bought the bananas.'

WH-Agreement is triggered by all S-structure variables in Chamorro. These include the variables in relative clauses, some of which I have argued elsewhere (Chung 1982a) are the result of a coindexing transformation separate from WH-Movement:
(23)a. Manngi'ni [i āga'í ni f-in-ahan-ña
SUBJ(s)-delicious the bananas COMP WH(obj)-buy-SUBJ(3s)
'The bananas that Antonio bought
si Antonio t_i]].
Unm
were delicious.'

the variables in cleft constructions:

(23)b. Esti na āga'í [f-in-ahan-ña si Antonio t_i].
this L bananas WH(obj)-buy-SUBJ(3s) Unm
'These bananas, Antonio bought.'

and the variables in existential constructions, which are bound
by an empty operator (symbolized 0 below):

(23)c. Guāha [0 [f-in-ahan-ña si Antonio t_i]].
SUBJ(s)-exist WH(obj)-buy-SUBJ(3s) Unm
'There's something that Antonio bought/Antonio bought
something.'

The fact that the null object in (24a) fails to trigger this
effect argues that it is not a variable. Compare (24b), which
shows the ordinary form of the verb:

(24)a. *Kao ni-lalatde-nña [e]?
Q WH(obj)-scold-SUBJ(3s)
( Did (she) scold (them)?)

b. Kao ha-lalatdi [e]?
Q SUBJ(3s)-scold
'Did (she) scold (them) ?'

Second, null objects can occur inside islands. The examples
in (25) show a null object appearing inside an island while the
syntactic antecedent that binds it appears outside. In (25a),
the island is a relative clause:

(25)a. Ha-tattiyi si Rosa í làhí guātu gi [gima' [ni
SUBJ(3s)-follow Unm the boy there Loc house COMP
'Rosa followed the boy_i to the house that
ha-fa'mu'i [e] gi mà'pus na Huebis]].
SUBJ(3s)-show Loc past L Thursday
(she) had shown (him_i) last Thursday.'

In (25b), the island is a free relative:

(25)b. Hu-hāssu si Carmen_i na [maseha manu guātu
SUBJ(1s)-remember Unm that whenever then
'(I) recall about Carmen_i that whenever
In (25c), the island is an indirect question:

(25)c. Ha-faisin:i ma'estro:i lāhi:i [hafa pāra SUBJ(3s)-ask the teacher the boy how? will 'The teacher asked the boy how she kastigu-ña [e]i put i atrasāo]. WH(obl)-punish-SUBJ(3s) because SUBJ(s)-late should punish (him) because (he) was late.'

While some speakers find these sentences somewhat better when the island is an adjunct rather than a complement of the matrix verb, examples of both sorts are found in narrative texts. The contrast between adjuncts and complements here is similar to that noted earlier for sentences (14) and (15).

I have shown elsewhere (Chung 1982a, 1983a) that island constraints --specifically, the Complex NP Constraint and the WH-Island Constraint-- are obeyed by the binding relation that holds between variables and their operators in Chamorro, whether this relation is produced by WH-Movement or by the coindexing transformation that applies in relative clauses. Insensitivity to islands, then, provides another reason for believing that the null objects in (25) are not variables.

Third, null objects do not exhibit strong crossover effects. To see this, consider (26), which contains a relative clause structure like one discussed by Huang (1983: 37) for Chinese:

(26) Guiya [esti na patgun:i [i ma'a'ñao [e]i [na he this L child COMP SUBJ(s)-afraid that 'Here is the child that [e] is afraid that bai in-na'puti [e]i]]]. SUBJ(1p)-hurt we will hurt [e].'

The relative clause in this example contains two coindexed empty categories, one an embedded object and the other a higher subject; one of these categories is presumably a variable, while the other is presumably a pronoun. Now if null objects in Chamorro were variables, then the embedded object in (26) would have to be interpreted as the variable, and the higher subject as the pronoun. The sentence would then exhibit strong crossover, and as such should be ungrammatical. However, if null objects are true pronouns, then it should be possible to construe the higher subject as the variable and the embedded object as the pronoun. The sentence should then be okay, since strong crossover would
not be involved.

In fact, (26) is grammatical, and has the translation given below:

(27) 'Here is the child$_i$ who$_i$ is afraid that we will hurt (him$_i$).'

This strongly suggests that null objects are pronouns rather than variables.

To sum up, Chamorro null objects are ruled out in certain cases by a parsing strategy; they do not trigger WH-Agreement; they occur within islands; and they do not exhibit strong cross-over. In all these respects they contrast not only with variables produced by WH-Movement but also with variables in relative clauses, which are base-generated as empty categories and coindexed later with their head NP's. The fact that null objects differ from the latter type of variable makes a particularly compelling case that they are not variables which are base-generated in place and coindexed later with an empty topic operator, as is suggested by Huang for Chinese. But if this is so, then the functional definition of empty categories (Chomsky 1982) dictates that they must be instances of small pro, because they (i) are governed and (ii) need not have an antecedent which binds them. In other words, null objects in Chamorro are true pronouns.

Conclusion

Chamorro thus poses a rather difficult problem for the identification hypothesis, since it conforms to it as far as null subjects (and some other null NP's) are concerned, but nonetheless displays null object pronouns which are not sanctioned by any agreement. I will not attempt to 'resolve' this problem, for I believe that the ultimate resolution consists of abandoning the identification hypothesis and detaching the Pro-Drop parameter from the notion of rich agreement. While this move may seem to leave some descriptive generalizations unexplained (such as the Chamorro one described in the first part of this paper), it is not clear to me that generalizations of this partial sort can or should be handled within GB. I will therefore conclude, instead, with two remarks of a rather different sort.

First, it has been assumed by virtually everyone that the identification hypothesis constrains null pronouns, but no other empty categories. However, in recent work, Carol Georgopoulos (1983) has observed that there appear to be some languages in which the identification hypothesis constrains variables. These are languages in which variables are realized as null NP's if they are sanctioned by agreement, and as resumptive pronouns otherwise. If Georgopoulos is right, then the identification hypothesis evidently extends to all nonanaphors (that is, small pro and variables), although it is incompletely true for both. This in turn may point out a deeper reason why Huang's approach
is unsuccessful at saving the identification hypothesis for null pronouns. Namely, Huang's approach assumes that variables do not fall under the identification hypothesis—a assumption that is called into question by Georgopoulos' work.

Second, I noted earlier that embedded null objects in Chamorro may be bound by a matrix NP, but the result is better when the clause containing the null object is an adjunct, rather than a complement, of the higher verb. What is interesting is that a similar contrast between adjuncts and complements seems to be involved in determining the distribution of null objects in Chinese and Japanese. (These facts are noted by Huang (1983), who attributes the original observation about Japanese to Kuroda (1965).) The appearance of this contrast in Chamorro, Chinese, and Japanese is extremely suggestive. Specifically, if it is indeed true that null objects are variables in some languages (e.g. Portuguese, perhaps Chinese—see footnote 1) but pronouns in others (e.g. Chamorro), then it may be that the real generalizations holding universally over these NP's have not to do with their place in the typology of empty categories, but rather with the conditions that dictate the range of larger syntactic structures in which they can occur.

Footnotes

*This is a third progress report on anaphora in Chamorro. Thanks to Priscilla Anderson-Cruz, Agnes C. Tabor, and the other Chamorro speakers who contributed to this work. Thanks also to Ann Cooreman for permission to quote from her unpublished Chamorro texts.

1. Huang's claims about Chinese are evidently controversial, and it has also been argued (see Kameyama 1983) that his proposal does not extend directly to Japanese in the way that he suggests. However, work by Raposo (1984) reveals that there is at least one language—European Portuguese—in which null objects have all the earmarks of variables produced by WH-Movement. I therefore take it for granted that a version of Huang's proposal is viable for some languages, though (as I will argue) it is not viable for Chamorro.

2. Agreement in (4a-c) is indicated by an INFLectional morpheme which also signals mood (see Chung 1983a); agreement with the passive agent in (4d) is indicated by a morpheme which also marks the verb as passive.

3. This is a more complete (and accurate) description of facts alluded to in Chung 1982b. There I said that overt pronouns could not occur in positions sanctioned by a phonetically overt 'AGReement', where the term 'AGReement' was limited rather arbitrarily to morphemes signalling both person and number. When the notion of agreement is expanded to include morphemes signalling number alone, the picture emerges as it is described here.

It should be noted that overt pronouns are not allowed in (7) even if they would have an emphatic or contrastive sense; in this
respect Chamorro differs from languages like Latin and Spanish.

4. Exceptionally, some speakers allow an overt first singular or third singular pronoun to occupy the subject position of irrealis intransitive S's to disambiguate the first singular and third singular agreement morphemes, both of which are u-

5. By 'argument-free' I mean not bound by a NP in an argument position, where 'bound' is defined as follows: B is bound by A if B is coindexed with A and c-commanded by A.

Because Chamorro is VSO, the question arises of what sort of structures are relevant for defining c-command relations in this language. Here I assume without supporting evidence that c-command is defined on a hierarchically elaborate structure that includes a VP constituent; see Chung 1983a, 1983b for more discussion.

6. Although sentences of the type (20) and (21a) are both grammatical, (20) is free of certain curious restrictions that seem to hold for (21a): WH-questions of the type (20) occur freely for all speakers, whereas some speakers find some relative clauses of the type (21a) less preferred than the corresponding passives (e.g. 'the child who was punished by my aunt'). I do not understand the restrictions involved here. Note, though, that all speakers find some relative clauses like (21a) grammatical, whereas no speakers accept sentences like (12), (17), or (21b).

7. Perhaps a similar tack might be taken to deal with null inanimate pronouns. Chamorro has no overt pronouns for inanimate entities, inanimate 'it, them' being represented instead by an empty category. As (a) shows, a null NP of this sort may routinely be the direct object of a clause containing a lexical NP subject:

(a) Pāra u-tatmi si nana-hu [e].
will SUBJ(3s)-plant Umm mother-my
'My mother is going to plant (it).' 

Evidently, some extra statement must be made to describe the fact that sentences like (a) escape the parsing strategy.

The contrast between (17b) and (a) might lead one to think that the strategy was basically 'semantic' rather than 'syntactic' in character, in that it operated just in case the single overt NP in a clause could satisfy the selectional restrictions of either the subject or the object. On this view, (a) would be allowed exactly because '(He/It) is going to plant my mother' is deviant. Such a view cannot be right, however, as shown by (17c). In that example 'Maria' can only be understood as the subject of 'disperse', not as the direct object, yet the sentence is still ungrammatical.

Note also that the null inanimate pronouns in Chamorro are not variables, since they pattern like true pronouns for the purposes of the other tests described below in the text.

8. Strikingly, this observation also holds true of subjects of intransitive clauses in the realis mood, which are sanctioned
by number agreement alone (see (6)).

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Transitivity and Ergative Case in Lhasa Tibetan

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In recent years the prototype approach to semantics stemming from the psychological work of Eleanor Rosch has attracted considerable attention from workers in lexical semantics, in particular Lakoff (e.g. 1973) and Fillmore (e.g. 1975, 1982). It is becoming evident that the same theoretical framework provides solutions to many problems of morphosyntax as well. This was demonstrated by Lakoff (1977), who showed that a prototype approach to the semantics of transitivity and agentivity provides explanations for several vexing problems of English syntax and semantics. Hopper and Thompson's epochal paper on transitivity (1980) provides broad cross-linguistic evidence for the validity of Lakoff's suggestions. The present paper is an addition to the growing literature of single-language studies inspired by Hopper and Thompson's paper (cf. Hopper and Thompson 1982) which are providing more detailed data from a wide range of languages demonstrating the utility of the prototype approach to transitivity and agentivity (cf. also DeLancey 1983, 1984, to appear a).

The problem addressed in this paper is the pattern of occurrence of ergative case in Lhasa Tibetan. The assumption underlying the argument is that grammatical morphemes such as case markers have meaning, and that an adequate theory of semantics should be able to characterize the meaning of a morpheme such as Lhasa ergative case. Given this assumption, the distribution of ergative case in Lhasa -- roughly an aspectually split active/stative pattern -- immediately raises problems for traditional types of semantic description. As we will see, several semantic parameters -- number of arguments, volition and control, aspect, and individuation of the object -- are involved in ergative marking, but no one parameter or subset of parameters constitutes a necessary and sufficient condition, i.e. there is no one parameter which characterizes all of the clause types which have an ergative argument. We will see, however, that the range of ergative clause types can be neatly characterized in terms of the transitivity prototype proposed by Lakoff and by Hopper and Thompson.
Transitivity and volitionality

Lhasa, unlike other Tibetan dialects (see note 2), has an "active" type case marking pattern in which volitional subjects of one-argument verbs receive the same ergative case marking as transitive subjects. In Tibetan volitionality is overtly coded in the tense/aspect auxiliary when there is a first person actor, as in exx. 1-6:

1) ṇa-s stag bsad-pa-yin
    I-ERG tiger kill-PERF/VOL
    'I killed a/the tiger.'

2) ṇa-s stag mthog-byuṅ
    I-ERG tiger see-PERF/INVOL
    'I saw a/the tiger.'

3) ṇa-s dkaryol bcag-pa-yin
    I-ERG cup break-PERF/VOL
    'I broke the cup (deliberately).'

4) ṇa-s dkaryol bcag-soṅ
    I-ERG cup break-PERF/INVOL
    'I broke the cup (accidentally).'

5) ṇa-s ṣus-pa-yin
    I-ERG cry-PERF/VOL
    'I cried.'

6) ṇa śi-byuṅ
    I-ERG die-PERF/INVOL
    'I died.'

In examples 1-4, which are transitive in the standard sense of the term, ergative case marking is independent of volitionality; in 5-6, on the other hand, volitionality governs ergative marking. (See Chang and Chang 1980, DeLancey 1982, to appear a, for further examples). This is the typical active case marking pattern; Hopper and Thompson have already noted that this pattern links volitionality with transitivity in the traditional sense. Note that this immediately makes it impossible to describe the meaning of ergative case in terms of a single set of necessary and sufficient conditions; in this data either the presence of two arguments or volitionality is sufficient to require ergative case, but either is dispensable if the other is present. This is thus a straightforward example of Fillmore's (1982) CLIMB-type prototype meaning.
Tense/aspect and ergative marking

Like its close neighbor and distant relative Newari, Lhasa shows a variation on the familiar aspectually split ergative pattern; in two-argument clauses ergative case is obligatory in perfective aspect, but optional (rather than impossible, as in the better-known pattern) in imperfective and future:

7) ɳa-(s) stag bsad-kyi-yin
    I-(ERG) tiger kill-FUT/VOL
    'I'll kill a/the tiger.'

8) *ɳa stag bsad-pa-yin
    I tiger kill-PERF/VOL (cf ex. 1)

(A puzzling exception to this generalization will be described below). This is consistent with Hopper and Thompson's observation that perfective clauses are more highly transitive than non-perfective ones. Of more interest is the relevance of aspect to ergative marking in single-argument clauses. Here ergative case is impossible in non-perfective clauses:

9) ɳa-s Seattle-la phyin-pa-yin
    I-ERG to went-PERF/VOL
    'I went to Seattle.'

10) ɳa Seattle-la 'gro-gi-yin
    I go-FUT/VOL
    'I will go to Seattle.'

11) *ɳa-s Seattle-la 'gro-gi-yin

The simplest interpretation of this difference between one- and two-argument clauses is that, while both volition and traditional transitivity are relevant to the transitive prototype which is marked in Lhasa by ergative case, the presence of two arguments is a stronger determinant, i.e. that the presence of two arguments is sufficient, while volition alone is not sufficient without the support of perfectivity.

Cognate object constructions

The distribution of ergative case in the data presented so far can be described in strictly syntactic terms, but additional data show that a semantic description is necessary. Tibetan has a number of cognate object constructions consisting of a semantically very general verb and a lexically fixed (and often historically deverbal) object. Some examples are
given in 12-18:

12) ṇa habdri cig rgyab-byug
I sneeze a throw-PERF/INVOL
'I sneezed.'

13) ṇa habdri gsum rgyab-byug
I sneeze three throw-PERF/INVOL
'I sneezed three times.'

14) ṇa-s habdri cig rgyab-pa-yin
I-ERG sneeze a throw-PERF/VOL
'I sneezed (deliberately).'

15) ṇa rgyul nag rgyab-byug
I perspiration throw-PERF/INVOL
'I sweated.'

16) *ṇa-s rgyul nag rgyab-pa-yin
I-ERG perspiration throw-PERF/VOL

17) ṇa-s gzas cig btaṅ-pa-yin
I-ERG song a emit-PERF/VOL
'I sang a song.' (= Eng. 'I sang.')</n
18) ṇa-la rmilam de ṣangyar btaṅ-byug
I-DAT dream that again emit-PERF/INVOL
'I had that dream again.'

All of these clauses have two arguments, and the quantifier in 13 and the demonstrative in 18 show that the objects are in fact syntactic arguments, and not lexically incorporated into the verb. Nevertheless 12, 13, 15 and 18 show that ergative case is not automatically selected, and 16 shows that it is not even always possible. That the occurrence of ergative case is not lexically dependent on the verb is shown by the identity of the verb in 12-14 and 15-16, and in 17 and 18.

It is clear from these examples that the determining factor governing ergative case with such constructions is volition, i.e. that with respect to ergative marking these constructions behave like one-argument rather than two-argument verbs. (Note that 14 is possible, while 16 is not, because sneezing, unlike sweating, can be performed (or at least simulated) voluntarily). By the general structure of our argument this shows that these constructions deviate in some way from the transitive prototype. Apparently the deviation is not in the form of indefiniteness or nonreferentiality of the object, i.e. does not fit directly in with the cases discussed by Hopper and Thompson, for the three sneezes of 13 are indubitably
referential, and the recurring dream in 18 is both morphologically and semantically definite. (Moreover, with fully transitive verbs indefinite and non-referential objects have no effect on ergativity). Nevertheless this is evidently a deviation of the same general sort as those discussed by Hopper and Thompson and by Lakoff in connection with less individuated objects. In these cases the term "individuation" seems particularly apt, for the characteristic of cognate objects is that they are not differentiated from the act which "creates" them. An effected object comes into being through a transitive act, but thereupon embarks on an independent existence -- but a sneeze is not the result of an act of sneezing, but the act itself. Hence in many languages these event types are lexicalized as intransitive verbs (Eng. sneeze, sing, dream) rather than collocations of verb + object. (Some at least of these were so lexicalized in earlier stages of Tibetan; the rmi of rmilam 'dream' in ex. 18 is historically a verb 'to dream'. rmilam etymologically means 'dream-road').

Volition and instigation

Note that we have not two but three case marking options in exx. 12-18; the first NP may be in unmarked, ergative, or dative case. We have so far discussed only the opposition between unmarked and ergative NPs, but it is clear that the question of what governs the appearance of dative case is related to our enterprise. Evidently dative, like absolutive, subjects indicate deviations from the transitive prototype. But what is the difference between sneezing and sweating on the one hand, and dreaming on the other, which is reflected in the difference in case marking?

The nature of the events suggests that the distinction may have to do with the perceived instigation of the event. Sneezing and sweating, though involuntary, nevertheless are instigated by the sneezer or sweater; i.e. the energy for the sneeze and the actual perspiration itself both originate with the subject. (Cf. Lakoff's suggestion that the prototypical agent "is the energy source in the action" (1977:244)). It is possible (though of course not necessary) to interpret dreaming otherwise, as being visited upon the dreamer from some exterior source. This distinction seems like a plausible (though again not necessary) interpretation of examples like 19:
19) ṇa-la champa rgyab-byuṃg
   I-DAT cold throw-PERF/INVL
   'I got/have a cold.'

A particularly interesting pair in this context is:

20) ṇa-s debs brlags-soṅ
    I-ERG book lost-PERF/INVL
    'I lost a/the book.'

21) ṇa-la debs rñed-byuṅ
    I-DAT book find-PERF/INVL
    'I found a/the book.'

21, despite its dative subject, clearly cannot be classified with cognate object clauses discussed in the previous section. Both 20 and 21 have the same discrete, referential, and potentially definite object, and both are overtly non-volitional. Nevertheless by the criterion of case-marking they differ in transitivity. Here the notion of instigation captures the difference very neatly: losing something, like sneezing, is caused by the loser, but finding, like dreaming, has an external cause (or, for non-determinists, no cause at all).7

However, if this feature is the correct one to explain these cases, it cannot be interpreted as a simple dichotomous feature (as volition can and must be, since any tense/aspect auxiliary is unambiguously either volitional or non-volitional).8 Clauses with perception verbs, such as ex. 2, offer clear counterexamples to the suggestion just made here concerning the relevance of instigation, since seeing is not instigated by the seer. It is worth noting that in some other dialects of Tibetan verbs of perception and cognition take dative subject, as does the verb 'find' (see e.g. Read 1934). We might explain this apparent anomaly in Lhasa as simply an arbitrary irregularity; given the comparative data from such closely related (and in other respects considerably more conservative) dialects as Balti, we might hypothesize that Lhasa is simply in the process of abandoning dative subject marking for two-argument verbs, and that the shift has affected the verbs of perception but has not yet reached 'find'. I would prefer to be able to describe the verbs of perception and cognition as somehow more closely approximating the transitive prototype than does 'find'. I will tentatively suggest here the possibility that the difference has to do not with a feature present in one case and absent in the other, but with relative degree of instigation, i.e. that while neither 'see' nor 'find' are under the
actor's control in an absolute sense, 'find' is more completely adventurous than 'see'. However, this hypothesis awaits substantiation.

The problem of future volition

Thus far all of our data fits very neatly into a prototype account of the meaning of ergative case; we have identified several semantic parameters which count toward the overall transitivity of a clause, each of which corresponds to transitivity parameters independently identified by Lakoff and Hopper and Thompson, and seen that, roughly speaking, the more of these parameters which are present, the more likely a clause type is to have an ergative argument. I have in my data, however, one set of examples which seem to contradict Hopper and Thompson's Transitivity Hypothesis, and thus to directly conflict with the general conclusion supported by all the rest of the Lhasa data. Recall that ergative marking is optional for two-argument non-perfective clauses; I have argued that the contrast in this respect between two- and one-argument clauses is a reflection of the higher transitivity of two arguments. Thus we should predict that if volition has any effect on the ergative marking of such clauses, it should be that ergative case is obligatory or more likely in volitional clauses, and unacceptable or less likely in nonvolitional ones. In fact the pattern is just the opposite:

22) ṣa-s khong-gi miṅ brjed-soṅ
   I-ERG he-GEN name forget-PERF/INVOL
   'I forgot his name.'

23) *ṣa khoṅ-gi miṅ brjed-soṅ

24) ṣa-s khoṅ-gi miṅ brjed-kyi-red
   I-ERG he-GEN name forget-FUT/INVOL
   'I will forget his name.'

25) *ṣa khoṅ-gi miṅ brjed-kyi-red

26) ṣa-(s) dkaryol bcag-gi-yin
   I-ERG cup break-FUT/VOL
   'I will break the cup (deliberately).' 

27) ṣa-s dkaryol bcag-gi-red
    break-FUT/INVOL
   'I will break the cup (inadvertently).'</n.
   (I.e. I inevitably do such things).

28) *ṣa dkaryol bcag-gi-red

26-28 show quite clearly that the optionality of ergative marking is dependent on the volitionality of the
clause, and that the dependence is in precisely the opposite of the predicted direction. At the moment I do not know what to make of this anomaly; I welcome suggestions.

**A note on diachronic typology**

Comparative Tibeto-Burman data make it clear that the case marking system described here is a fairly recent development within Central Tibetan. Available evidence suggests that the Proto-Tibeto-Burman case marking system was of the well-known person-based split ergative type (Bauman 1979, DeLancey 1981), and that Proto-Tibetan was probably a consistent (unsplit) ergative language like its near relative Gurung. The aspectual split described here occurs in TB only in Lhasa and Sherpa Tibetan and in Newari, and is probably a result of Indic influence. The marking of volitional intransitive agents with ergative case is, so far as I know, found only in Lhasa and in the modern standard language based on it.

Given a prototype analysis of the meaning of Lhasa ergative case, we can describe this change very naturally in semantic terms as parallel to certain well-known types of lexical semantic change. The difference between the Lhasa pattern and the more typical ergative pattern found in Ladakhi Tibetan or Gurung is that the true ergative pattern requires a closer approximation to the transitive prototype to qualify a clause for prototypical transitive morphosyntax. In broader terms, all languages share (at least approximately) the same transitive prototype, but differ in what range of marginal examples they allow to be labelled as belonging to the category. Thus the shift from the Gurung-Ladakhi pattern to that of Lhasa can be described as a change in the meaning of a single morpheme (closely analogous to what is traditionally called widening in lexical semantics) rather than as a fundamental change in morphosyntactic type, a conclusion which is consistent with the rather common (but often criticized, by me as well as others) opinion that ergative and active typology are not as radically different from one another as both of them are from nominative structure.

**Notes**

1) I have discussed some of the data presented here in two other papers, DeLancey 1982, to appear a. While the account given in those papers is quite different from that presented here, the two approaches are in fact quite consistent with one another; however, a discussion of that will have to await another forum.
Some differences in the data between this and my other papers are due to the fact that all of the data here comes from a single informant, who is a monodialectal native speaker of Lhasa Tibetan; most of my other data is from speakers of the Lhasa-based standard koine.

2) I nevertheless persist in referring to "ergative" case for two reasons. First, all of Lhasa Tibetan's neighbors and close relatives are ergative, so the term is standard in comparative work. Secondly, I claim that in fact ergative and active case are minor variations on the same theme; this point is argued (effectively the same point is made in different terms) in DeLancey 1982 and at the end of this paper.

3) "Actor" in the broadest possible sense; clauses with first person patients and goals are marked for non-volitional first person involvement (see DeLancey to appear a).

4) The auxiliaries are discussed in more detail in Jin 1979 and DeLancey to appear b. I do not clearly understand the difference between byun and soq as non-volitional perfective markers, and space limitations forbid a discussion of what I think I do know about them.

5) It has been reported elsewhere in the literature (including in DeLancey 1982) that motion verbs were exceptional in taking volitional auxiliaries but not allowing ergative subject. This is definitely not true for Lhasa proper; I cannot say for certain whether it is true for Standard Tibetan.

6) The -gi- in ex. 9 and the -kyi- in 7 are phonologically conditioned allomorphs.

7) In DeLancey to appear a I used the term "control" for what I here call "instigation". Both terms have been used elsewhere in the literature in ways which conflict with their use here; as we begin to understand this area of semantics there is a desperate need for standardized terminology.

8) This assumes an analysis in which non-first person forms are automatically non-volitional; see DeLancey to appear b.

References


IN DEFENSE OF PRIVATIVE AMBIGUITY

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1. In a series of recent papers, including Kempson (1979, 1980, 1982), Cormack (1980), Kempson & Cormack (1981, 1982), and Burton-Roberts (to appear), Ruth Kempson and her colleagues—henceforth the London School of Parsimony, or LSP—have advanced a major new theory of ambiguity and negation whose structure is as follows:

(1) Russell's familiar ambiguity for negation, as in the stock example (1a), with its logical forms (1b) and (1c) distinguished by scope,
   (1a) The King of France is not bald.
   (1b) INTERNAL: 'The K. of F. is non-bald'
        \[ \exists x (Kx & \forall y (Ky \to y=x) \& \neg Bx) \]
   (1c) EXTERNAL: 'It is not the case that the K. of F. is bald'
        \[ \neg \exists x (Kx & \forall y (Ky \to y=x) \& Bx) \]

is a privative opposition in that one understanding (the internal negation (1b)) entails the other (the external negation (1c)) but not vice versa.

(2) Privative oppositions cannot be demonstrated by linguistic tests to involve a true semantic ambiguity.

(3) Ceteris paribus, an analysis which posits ambiguity is to be rejected in favor of one which does not. (This is Grice's (1978: 119) Modified Occam's Razor Principle, or Ziff's (1960: 44) Occam's Eraser: senses, like other abstract entities, are not to be multiplied beyond necessity.)

(4) Hence, privative ambiguities do not exist; or, if they do,
   (4') The only privative ambiguities which exist are predictable by rule, i.e. those involving marked/unmarked lexical oppositions.
   (4'') The putative ambiguity of negation is not predictable in this way.

(5) Hence (from (1) and either (4) or (4'')) negation is not ambiguous; (1a) does not have separate senses corresponding to the two understandings (1b) and (1c). Negative statements are semantically unspecified, vague, or general as between internal and external understandings.

The last step in the argument leads to a further, highly controversial claim by LSP proponents: if negation is an unambiguous truth-functional operator, the noncontradictory status of sentences like those in (6)

(6)a. Justin didn't eat 3 carrots—he ate 4. (Cormack 1980)
   b. You didn't eat some of the cookies—you ate all of them.
   c. It's not possible that mammals suckle their young, you ignoramus, it's downright necessary. (Burton-Roberts)
   d. Maggie isn't patriotic or quixotic—she's both patriotic and quixotic. (adapted from Gazdar 1979)
e. I'm not happy: I'm ecstatic. (Wilson 1975)
f. It isn't warm--it's (downright) hot.

implies that weak scalar predications like those in (7),

(7a.) Justin ate 3 carrots<1-sided: 'at least 3'
      <2-sided: 'exactly 3'

b. You ate some of the cookies<1-sided: 'some if not all'
      <2-sided: 'some but not all'
c. It's possible mammals suckle<1-sided: 'at least ◊'
      <2-sided: ◊ but not □'
d. Maggie is patriotic or quixotic<1-sided = inclusive or
      <2-sided = exclusive or

e. I'm happy<1-sided: 'happy if not ecstatic'
      <2-sided: 'happy but not ecstatic'
f. It's warm<1-sided: 'at least warm'
      <2-sided: 'warm but not hot'

involving cardinals, some, possible, or, and so on, are all
logically ambiguous between lower-bounded (or--in Aristotle's term--
one-sided) readings and lower- and upper-bounded, two-sided readings
--contrary to the position defended elsewhere by Mill (1867), De
Morgan (1847), Grice (1975), Ducrot (1972), Horn (1972, 1973) and
Gazdar (1979), whereby the two-sided 'exactly' understandings are
derived from the one-sided 'at least' logical forms through con-
versational implicatures derived from the Maxim of Quantity. For
the LSP, there will then be at least as many logically ambiguous
operators as there are natural numbers: that is, infinitely many.
Razor, where is thy sting? Parsimony, where is thy victory? But
this unparsimonious conclusion is only as valid as the argument for
parsimony in (1)-(5) on which it is premised, and I shall try to
show that this argument, hinging on the rejection of privative am-
biguity, is in fact over-Occamistic and empirically flawed.

2. The general constraint on ambiguity Kempson et al. seek to main-
tain is that it not be invoked when one of the available under-
standings entails ("is logically dependent on") the other. The most
detailed account within the LSP of the weakened (4") version of the
anti-privative-ambiguity position is presented in Kempson (1980);
my arguments against this account hold a fortiori against the more
absolutist line (4) defended in other LSP manifestos.

Potential counterexamples to the LSP thesis arise from what I
shall dub 'autohyponymy'. Following Lyons (1977: 9.4), A is a hypo-
nym of B iff the extension of A is (properly) included in that of
B. Hyponymy is thus the lexical counterpart of (unilateral)
semantic entailment: in upward entailing contexts (Ladusaw 1979a,
Barwise & Cooper 1981), any proposition involving A entails the cor-
responding proposition involving B, but not necessarily vice versa.
Thus, in (8), collie is a hyponym of
dog, dog of mammal, mammal of animal,
and so on; the proposition that Fido
is a collie unilaterally entails the

proposition that Fido is a dog.

(8) animal
    mammal
    bird
    dog
    aardvark
    collie
    Samoyed
But some words seem to be autohyponyms—hyponyms of themselves. Dog is the classic example, with two sex-differentiated hyponyms, dog and bitch. If dog represents a true case of polysemy or lexical ambiguity, it provides a prima facie counterexample to the strong form of the claim in (4), since a sentence like (9)

(9) Fido is a dog.
   (i) Fido is a male canis familiaris.
   (ii) Fido is a canis familiaris.

will allow two understandings, (i) and (ii), with the former unilaterally entailing the latter. The noncontradictory status of

(10) That's not a dog, it's a bitch.

—combined with her monoguisnt line on negation—leads Kempson to conclude that dog is indeed polysemous and (9) thus a true instance of privative ambiguity.

Kempson takes dog/bitch and similar pairs as constituting a limiting case of (or principled exception to) her general stance against both privative and nonprivative polysemy:

(11)a. The only cases of polysemy which arise in natural language are those which can be predicted by general rule...Polysemy is not characterized by disjunction in a single lexical item, but is only invoked in cases where the extension of meaning in question can be predicted by rule formulation from individual non-disjunctive lexical items. (Kempson 1980: 14)

She cites the concrete/abstract vacillation for nouns like book and thesis as a nonprivative instance of such rule-governed polysemy. The governing principle for the privative cases is formulated as follows:

(11)b. If a lexical item $L_1$ has as its extension a set $S_1$ which includes the set $S_2$ which a second lexical item $L_2$ has as its extension, and $S_2$ is the only lexically designated subset of the extension of $L_1$ along any one dimension of contrast, then the lexical item $L_1$ may be used to denote that subset of $S_1$ which excludes $S_2$. (Ibid: 15)

This principle is depicted more graphically in (11c);

(11)c. Given $L_1$ extension $\rightarrow$ $L_1$ may be used for $S_1 - S_2$ (complement of $S_2$ wrt $S_1$)

and $L_2$ extension $\rightarrow$ $S_2$

Kempson observes that it can be characterized as

a restatement of the well-known semantic markedness problem: if for some general term, representing a lexical field, there is a gap in the sub-parts of that field...then the gap may be filled by a more specific use of the general term. (Ibid: 15-16)
This position seems plausible in itself, and indeed somewhat akin to functional analyses in recent work on productivity and the lexicon by Aronoff, McCawley, Kiparsky, and others, wherein the meaning, use, or very existence of a given form is affected by the existence and range of a related and more basic or specific entry in the lexicon. Some examples of this mechanism are given in (12),

(12) fury furious *furiosity *cury curious curiosity

where the existence of a simple abstract nominal "blocks" the formation of the corresponding -ity nominal from the -ous adjective (Aronoff 1976: 43ff), and in (13),

(13) pale red vs. pale green, pale blue, pale yellow (cf. pink)
    She made the plate move vs. She moved the plate
    He caused the sheriff to die vs. He killed the sheriff

where the appropriate use of the more productive collocation is restricted by the existence of a more "lexicalized" alternative (McCawley 1978; cf. Horn 1978 for discussion).

Using the test frame of (10)—That's not an L1, it's an L2--Kempson provides additional cases of licensed polysemy, e.g.

(14) L1     L2
    dog    bitch
    cow    bull
    cow    calf
    square rectangle
    line    curve

Thus, the superordinate L1 item cow has one sex lexically specified in its L2 hyponym bull, so it is (correctly) predicted to have a use denoting solely female cows. Similarly, the existence of its L2 hyponym calf, specified for age, serves to limit the domain of application of cow in other contexts to adult bovines. In fact, another well-behaved entry from the same kingdom is animal itself. As Blackburn notes (1983: 495), "If I were talking to a biologist I would probably mean it to include human beings; if I were to use it in talking to a child (or a minister) I would probably not mean it to include human beings."

In fact, though, the phenomenon of autohyponymy proves on closer examination to be less tractable or homogeneous than Kempson's paradigm in (11) allows. In the first place, not all the examples of the class in (14) pattern alike. Zwicky & Sadock (1975: 7-8) point out that while dog may indeed conflate two distinct (if related) lexical items, lion—despite its opposition with lioness—does not. Thus, (15a,b) constitute a minimal pair:

(15a) That (dog) isn't a dog, it's a bitch.
    b. That (lion) isn't a lion, it's a lioness.

Lexicographers are apparently sensitive to this distinction, since they provide separate headings for dog but not for lion. In addition, as Lyons notes (1977: 309), cow is "less unmarked" than
dog: (16a) is distinctly odd if the occupants of the field are all known to be bulls, while (16b) is fine if they are all bitches.

(16)a. Those cows over there...
b. Those dogs over there...

And while female dog (like female lion) is an unexceptional collocation, male cow can only be a "metalinguistic gloss" for bull.

Within the human domain, some pairs work the way Kempson would predict, with the prior existence of an \( L_2 \) term restricting the domain of \( L_1 \)—cf. gay vs. lesbian in (17a).

(17) \[ \begin{array}{ll}
  & L_1 & L_2 \\
 a. & gay & lesbian \\
b. & man & woman \\
c. & mankind & womankind \\
d. & chairman & chairwoman \\
e. & poet & poetess \\
\end{array} \]

But while woman is in some generic contexts a 'marked man', these contexts are far more restricted (cf. Lyons 1977: 309). In the remaining oppositions, Kempson's explanation seems to assign the wrong direction of cause and effect even when she gets the right predictions. In (17c-e), it's the prior specialization of the general term \( L_1 \) that has created a perceived need for, and hence conscious innovation of, the corresponding "feminine" \( L_2 \) form. It's not the existence of sex-specific womankind, chairwoman, or poetess which led to the restriction on the extension of mankind, chairman, or poet.

Another crucial variable touched on above is the degree of conventionalization of the functional principle: is the restriction in the denotation of the \( L_1 \) term one of meaning or just use? For me, the rectangle/square example in (14) is a clear instance of use restriction only, if at all (as with \( \text{lion} \) vs. \( \text{lioness} \)). Thus, (18) is somewhat odd for me, and (19) hopeless (except, as Lyons would put it, as a metalinguistic gloss).

(18) (?)That's not a rectangle, it's a square.
(19) ??That rectangle isn't a rectangle, it's a square.

Let me try to clarify the point by comparing this example with a true case of multiple autohyponymy. The ethnographic label Yankee is standardly (i.e. in lexicographic practice; cf. McCawley 1981: 9–10) assigned the related senses in (20), proceeding from the most specific to the most general.

(20) Yankee: a. a native or inhabitant of New England,
    b. or, more widely, of the northern States;
    c. a native or inhabitant of the United States generally; an American.

(Note, incidentally, that the markedness criterion established in (11) is irrelevant here: there is no \( L_2 \) lexical item for a Northerner not from New England, nor any simple label for a noninhabitant of the United States.) Now, how many Yankees are pictured in (21)?
Depending on what question you take me to have asked, you might answer two (in accordance with (20a)), three (as in (20b)), or four (as in (20c)). Indeed, there is an even more restricted sense not acknowledged by the OED (from which (20) is adapted) or by McCawley (1981): the interpretation which yields the answer only one, given that JFK's Irish Catholic heritage disqualifies him as a real Yankee, i.e. one approximating the prototype WASP of the Pepperidge Faehm commercials. (We may need to invoke a Rosch (1977)-style prototype theory in any case to explain why a Vermont farmer or a Maine lobsterman is more of a Yankee than is a Greenwich banker.)

But now, how many rectangles are there in (22)?

(22)

For me, the only possible correct answer is three: squares are rectangles, though we may not always call them so.

The autohyponymy of Yankee is reflected in other ethno- and geographic labels, including those of (23b-e):

(23)a. Yankee: native or inhab. of (\((\text{N.E.})\text{Northern US}\)US)
   b. North American: native or inhab. of (\((\text{USA+Canada})\text{+Mex}\)
      (cf. nordamericano)
   c. American: native or inhab. of (\((\text{USA})\text{Western Hemisphere}\)
      (cf. Org. of American States; American Indian)
   d. New Yorker: native or inhab. of
      (\((\text{Manhattan})\text{New York City}\)New York State)
   e. Roman (or Lat. romanus): native or inhab. of
      (\((\text{city of Rome})\text{Roman Empire}\)

In these cases, there is in general no relevant L₂ to restrict the application of L₁, e.g. no label for 'an inhabitant of New York State and not of New York City' (or 'of one of the "outer" boroughs') which would suitably restrict the use or meaning of L₁ to the Gothamite.

While we can say that the strict sense of dog (or the strict use of rectangle) is the superordinate, including bitches (and squares), there is no unique strict sense of Yankee or New Yorker. For trade name labels which have effectively lost their capital letters and become generics (cf. Mason & Pimm 1982), the strict (or primary) sense is the hyponym, the derived sense the broader:
(24) xerox jello
kleenex vaseline
Scotch tape thermos
good humor hoover (Br. 'vacuum cleaner')

The same is true for the kinship terms of (25):

(25) Fr. parents: a. 'parents' Lat. parentes: a. 'parents'
b. 'kin' b. 'ancestors'
c. 'kin'

Once again, there is no relevant $L_0$ to call on, e.g. no French (or Latin) word specifically designating 'nonparental relatives' which might have motivated the narrow sense of parent(e)s in (25a).

Even more problematical are the next few examples, where the restricted use of $L_1$ in fact duplicates the range of a previously existing $L_2$ form rather than complementing it.

(26) $\begin{align*}
L_1 & \quad L_2 \\
a. \text{temperature} & \quad \text{fever} \\
b. \text{number} & \quad \text{integer} \\
c. \text{color} & \quad \text{hue}
\end{align*}$

The thesis in (11b) would predict that any restricted sense or use of temperature—as in Does the baby have a temperature?—should exclude the range of fever temperatures (for which an $L_2$ term is already available), yet it is exactly this range which is denoted. Number may be used so as to include or exclude the nonintegers (a class for which no simple label exists), but not so as to exclude the integers. And, given the existence of hue (and the more technical chroma), we might expect color to have a restricted use covering just the non-hues—blacks, whites, and grays—rather than one covering all others, as in "color TV", "in color", or the citation in (27):

(27) She arrived on time, wearing a raincoat, a gray skirt, a white sweater. "Don't you have anything that's a color?" Roddy asked. (Laurie Colwin, "Animal Behavior")

So too, in many languages, the standard word for 'woman' does double duty for 'wife', as in the three languages of (28),

(28) $\begin{align*}
L_1 & \quad L_2 \\
\text{German:} & \quad \begin{align*}
\text{Frau} & \quad \text{Gattin} \\
\text{French:} & \quad \text{femme} \quad \text{épouse, femme mariée} \\
\text{Spanish:} & \quad \text{mujer} \quad \text{esposa}
\end{align*}
\end{align*}$

despite the existence of an $L_2$ term specifically designating 'wife' and the absence of simple lexical designators for women not wives.

Among the general predicates which have developed narrowed senses whose designated values are not carved out by the principle in (11) are the intransitive verbs drink and smell. The narrowed sense of drink in (29b) apparently evolved from the general meaning in (29a)
(29) **drink**: a. 'to take liquid into the mouth for swallowing' [(<1000)]
    (OED)
    b. 'to partake of alcoholic beverages' [<1400]

through an implicature which is reasonably nondetachable, as seen in (30), but which has undergone varying degrees of conventionalization in the relevant languages, as partially shown in (31):

(30) **quaff**, imbibe, wet one's whistle (orig., 'take a drink');
    Ger. trinken, Fr. boire, Lat. bibere, potare

(31) he is (vs. has) drunk; drive...to drink; drink; bibulous
    (orig., 'inclined to drink'); liquor (cognate w. liquid);
    Fr. boisson (vs. breuvage); Ger. er ist (vs. hat) getrunken

Notice that the existence of innumerable entries in the sublexicon of booze and intoxication did not result in the development of a narrowed use (or sense) of drink designating 'to partake of non-alcoholic beverages', or in the restriction of liquor to the class of liquids not containing alcohol.

Similarly, the secondary senses acquired by smell and, even more strikingly, by its adjectival offshoot, as seen in (32) and (33),

(32) **smell**: a. 'to give out, send forth, or exhalte an odour;
    to have a smell' (+ PP or AP comp., <1175)
    b. 'spec., to give out an offensive odour;
    to stink' (often with no complement, <1375)

(33) **smelly**: 'having a smell, esp.: malodorous' (W3)
    'emitting a bad smell or smells; stinking' (OED)

did not choose to seek out a peaceful coexistence with the L_2 forms stink and stinking (or stinky, or malodorous), but seem rather to have perversely duplicated their olfactory extensions.

Finally, euphemisms like sleep with and go to the bathroom also involve the evolution of a semantically designated narrowed reading from a more general expression, once again duplicating the previously existing multitude of expressions which they are euphemisms for. Given (11b), we might predict that (34a) should suggest platonic bed-sharing only,

(34)a. John slept with Mary. (or, J & M slept together.)
    b. I have to go to the bathroom. (cf. Morgan 1978)

and (34b) perhaps inspection of plumbing.

We have then not the one well-behaved category of autohyponymy countenanced by Kempson and the LSP, viz. (35a),

(35)a. \[ L_1 \]
    dog/bitch
gay/lesbian
    finger/thumb
?rectg./square

(35)b. \[ L_1 \]
    Yankee, etc. (23)
xerox, etc. (24)
Fr. parents (25)
?drink (29)-(30)

(35)c. \[ \{L_1, L_2\} \]
    temperature/fever (26)
    Frau/Gattin, etc. (28)
    liquor/alcohol (31)
    smell/stink (32)
euphemisms (34)
but an ornery array of disparate cases, including those of (35b) in which there is no relevant $L_2$ term by which the use of $L_1$ could be restricted, and those of (35c) in which there is indeed a previously existing $L_2$ term—yet the autohyponym crowds into the semantic space already occupied by that term rather than discreetly slipping into the space left vacant. The markedness thesis of the LSP sometimes works for us, sometimes against us, and sometimes it just does no work at all.

3. Nor does the situation improve when we leave autohyponymy behind and venture into the realm of structural ambiguity. It is perhaps in the area of scope phenomena that the LSP attack on privative ambiguity makes the strongest claims—on the weakest evidence. Characteristically, the LSP approach (cf. especially Kempson 1979) seeks to solve an extremely intricate semantic issue—the representation of opaque or intensional contexts—by fiat, and without the crucial supporting argumentation. While a particular instantiation of the opaque/transparent opposition may well be privative—like (36a), where the transparent (i) unilaterally entails the opaque (ii)—related cases such as (36b,c) do not involve a privative opposition.

(36a). John is trying to find a unicorn.
   (i) $\exists x(\text{unicorn}(x) \& \text{try}(\text{John}, \text{find}(\text{John}, x)))$
   (ii) $\text{try}(\text{John}, \exists x(\text{unicorn}(x) \& \text{find}(\text{John}, x)))$

b. John would like to marry a girl his parents don’t approve of. (Partee 1970; Reeves 1975; Abbott 1980)

c. Oedipus wanted to marry his mother.

Work by Partee (1970, 1974), Reeves (1975), Abbott (1980), Farkas (1981), Fodor & Sag (1982), and others (cf. the Heny 1981 anthology) has shown that neither the wide-scope, de re, transparent reading nor the narrow-scope, de dicto, opaque reading is consistently more general or weaker than the other, i.e. is unilaterally entailed by it. If we seek a unified treatment of intensional contexts, as Abbott and Farkas have stressed, the arbitrary elimination of dual representations for (36a) merely complicates our task.

Next up is the perennial any question: do the two occurrences of any in (37a,b) represent a difference between existential and universal quantifiers, or between different scope assignments for the same (presumably universal) quantifier?

(37a). I didn’t see anything.

b. Anything can happen.

c. John can’t marry anyone.
   (i) $\forall x -\Diamond M(j,x) \equiv -\exists x\Diamond M(j,x)$
   (ii) $\Diamond M(j,x) \equiv -\forall x\Diamond M(j,x)$

d. He won’t date anybody.

e. Can anyone lift that rock?

f. If anyone can swim the Channel, I can.

Reichenbach (1947), Quine (1960), Klima (1964), Vendler (1967),
Smith (1971), Lakoff (1970), Jackendoff (1972), Horn (1972), LeGrand (1974, 1975), Fauconnier (1978), Hintikka (1977), McCawley (1977), Ladusaw (1979a, b), Carlson (1980, 1981), and Davison (1980) are among the almost transfinite number of linguists and philosophers who have wrestled with this question, and hence with the treatment of the ambiguous (37c-f), with what success I shall not attempt to evaluate. I myself have managed to defend both views within a single dissertation (Horn 1972: §2.35 vs. §3.1), coming to rest on the scopal analyses in (i) and (ii) for disambiguating (37c). Since the former unilaterally entails the latter, this is a privative ambiguity. Indeed, the ambiguity in (37c)—and that in (37d-f) as well—is privative whether or not any is itself a polysemous lexical item. But it's not clear what we have gained by thereby ruling it out, as the LSP requires us to do.

As a number of the aforementioned experts have observed (cf. also Kamp 1978), or manifests the same apparent ambiguity as any in DeMorgan contexts like (38a) and modal contexts like (38b).

\[(38)\text{a. He doesn't eat either meat or fish.}
\begin{align*}
(i) & \text{= He eats neither meat nor fish.} \\
(ii) & \text{= Either he doesn't eat meat or he doesn't eat fish—}
\text{I have forgotten (or won't tell you) which.}
\end{align*}
\]

\[(38)\text{b. Sue or Lou can answer that question.}
\begin{align*}
(i) & \text{= for } x \in \{\text{Sue, Lou}\}, x \text{ can answer that question.}
\text{(i.e. they both can answer it)} \\
(ii) & \text{= Sue can answer it or Lou can answer it—}
\text{I don't know (or won't tell you) which.}
\end{align*}
\]

Assuming again that only the more general readings in (ii) are assigned by the semantics, it's again not clear what happens next.

The privative opposition displayed by conjunctions is of a different sort. For examples like (39),

\[(39)\text{ Sam and Mary had a baby and (they) got married.}
\begin{align*}
(i) & \text{=} \ldots \text{and then... ("asymmetric" conjunction)} \\
(ii) & \text{=} \ldots \text{and also... ("symmetric" conjunction)}
\end{align*}
\]

I have argued—with Grice (1975), Schmerling (1975), and Wilson (1975), and against Cohen (1971), Bar-Lev & Palacas (1980), and McCawley (1981)—that the asymmetric temporal understanding (i) is derived pragmatically from the symmetric understanding (ii) through a conversational implicature arising from the maxim Be Orderly. So far so good, unless Cohen et al. are right and the rest of us are wrong. But related examples like those in (40a),

\[(40)\text{a. I went to the store and bought some beer.}
\begin{align*}
\text{b. The beer which I went to the store and bought...}
\end{align*}
\]

as Ross (1967) and Schmerling (1975) have shown, are semantically and syntactically distinct from true conjunction—note the apparent coordinate structure constraint violation sanctioned in (40b). Yet an LSP-oriented syntax and semantics cannot assign the asymmetric reading directly, since it is unilaterally entailed by the symmetric reading. If my intuitions are correct, (41a) allows a symmetric
understanding (albeit a forced one), while (41b) does not.

(41a) I want you to go and buy yourself a new hat.
   b. I want you to try and find yourself a new hat.

This would result in an asymmetric reading directly assigned to
the latter (as its only interpretation), but not to the former
(where the relevant sense would instead be derived somehow from
the nonsalient but forceable symmetric understanding). This again
seems arbitrary and probably wrong.

But probably the most beloved syntactic ambiguity that would be
struck down mercilessly by the LSP approach is the structural ambi-
guity illustrated by the alternative bracketings of NPs like (42):

(42) old men and women: (a) [old men] and women
       (b) old [men and women]

Note that every member of the set defined in (42b) is a member of
the set corresponding to (42a), but not vice versa. Consider now
(43), (44), and (45), representing (in order) an upward entail-
ing context with a monotone increasing quantifier, a downward entail-
ing context with a monotone decreasing quantifier, and a neutral
context with a non-monotone quantifier (cf. Barwise & Cooper 1981
and Ladusaw 1979a for discussion of these terms).

(43) There were at least 20 old men and women at the party.
(44) There were at most 20 old men and women at the party.
(45) There were exactly 20 old men and women at the party.

In (43), the reading assigned by the (42b) bracketing unilaterally
entails that assigned by (42a). Thus, by general LSP criteria,
only the weaker (a) bracketing is assigned semantically. In (44),
the (a)-bracketed reading unilaterally entails the (b) reading, so
only the latter is directly represented in logical form. Needed,
in addition, are two mirror-image or complementary sets of prag-
matic strengthening rules to derive the nonassigned understanding
in each case. In (45), where neither reading entails the other, both
bracketings must be given semantically, and no additional strength-
ening rules are operative. I suggest that this complication of an
intrinsically simple ambiguity is solely an artifact of the LSP
program and its unwarranted banishment of privative ambiguity.

A further potential problem for this program is that--given the
central role played by entailment in determining the "logical depen-
dence" between readings which results in the privative status of a
given opposition--the assignment of logical form must endure the
thousand unnatural shocks that semantic entailment is heir to. Given
that a tautology is entailed by any proposition, while a contradic-
tion entails all propositions, the putative (and well-established)
ambiguities represented in (46)-(49) are privatively related and
must therefore be eliminated.

(46) You know what you know.
(47) You don't know what you know.
(48) If I went to the bank, I went to the bank.
(49) Anyone who can bear children can bear children.
(46) will be directly assigned only its (weaker) tautologous (free relative) reading, and not the contingent (embedded question) understanding which unilaterally entails it. (47), on the other hand, will get only its embedded question interpretation (= 'You have tacit knowledge'), not its contradictory free relative understanding (= 'There's something you both know and don't know'). In (48) and (49), only the two tautologous readings will be generated in each case; the two contingent "crossed" versions must be somehow derived from them by unknown and otherwise unmotivated devices. Perhaps this embarrassment for the LSP can be handled by refining the notion of entailment; a more natural and general solution, however, would be to let the ambiguities arise, and to predict the privative nature of a given token of each ambiguity on the basis of the semantic and pragmatic context.

Perhaps the strongest potential counterexample to the LSP repudiation of privative ambiguity, ironically, involves not privative ambiguity per se, but rather oppositions between mutually entailing understandings of a single sentence. Kempson (1979: 291) has shown that one oft-cited candidate for this status, (50),

(50) They are visiting relatives.

does not in fact permit two mutually entailings readings, contra G. Lakoff, Morgan (1973), and Fodor & Sag (1980). But, as Abbott (1980) has observed, Kempson's ad hoc refutation does not affect the qualifications of other contenders. Thus, consider (51a-f):

(51)a. A student in the syntax class cheated on the final exam.
   b. I told a story about John.
   c. Someone is renting the apartment.
   d. The baby is too sleepy to nurse.
   e. The wood is too wet to burn.
   f. Someone is interviewing for that position.

Fodor & Sag (1982: 355-6) argue that (51a) "must be assigned two distinct semantic analyses that are associated with the same truth conditions", based on what they take to be a referential/quantificational ambiguity for indefinite NPs. They defend this admittedly "Occam-defying analysis" by citing as a precedent (51b), standardly assigned two syntactically (and presumably semantically) distinct but truth-conditionally identical analyses. 3 (51c), due to Morgan (1973), exhibits two mutually entailings interpretations which are distinguishable at the level of thematic relations: the subject can be lessor or lessee, with the party of the second part unspecified. In (51d), the infant subject can be understood as object of transitive nurse (= 'too sleepy for one to nurse it'; cf. The patient is too heavy to lift) or as subject of intransitive nurse (= 'too sleepy for it to nurse; cf. The patient is too weak to live). The same split arises in other examples with "middle" or "ergative" verbs (cf. Keyser & Roeper 1983), e.g. (51e,f). In all these cases, of course, the appear to a more general reading (from which the specific understanding must be derived via strengthening rules) is ruled out, since each reading is logically dependent on the other.
4. We have seen that privative ambiguities cannot be eliminated by fiat (as in (4)), or confined to a limited lexical subdomain (as in (4')). The range of autohyponymous lexical items is wider and more heterogeneous than the LSP approach allows. On the sentential level, there may be no "more general understanding" to appeal to; when there is, otherwise cogent arguments for assigning two logical forms to a given construction must be rejected a priori when a given ambiguity is neutralized into a privative opposition. Readings vanish, and must be mysteriously reconstituted by ad hoc semantic or pragmatic rules of dubious character.

The real problem, I submit, is that the LSP confuses an epistemic question—can we develop operational criteria for determining whether p is the case?—with an ontological one—is p the case? Privative ambiguities may be methodologically undesirable and empirically elusive, but they are real.

But what if the attack on privative ambiguity is called off? What if we give up Kempson's "proposed restriction that no sentence be assigned two distinct semantic representations if one interpretation is logically dependent on the other" (1980: 16)? There remains, then, no metatheoretical argument for homogenizing negation. I have argued at length in a recent paper (Horn, to appear a) that negation cannot be treated as a unified truth-functional phenomenon. If I am right, the arguments I have given here provide additional support for the Gricean conversationalist line on scalar predicates, and against any ambiguity for the sentences in (7). Indeed, I would argue—contra the London School—that it is only along this line that true parsimony can be reached.

FOOTNOTES

1"[Two understandings] U1 and U2 are PRIVATIVE OPPOSITES with respect to [some semantic feature] F if U1 can be represented as being identical to U2 except that U1 includes some specification for F that is lacking in U2" (Zwicky & Sadock 1975: 6, citing Trubetzkoy). As examples of privative oppositions, Zwicky & Sadock cite parent/mother and dog 'canine'/dog 'male canine', the latter representing for them a true privative ambiguity. Note that the technical term understanding is neutral as between 'sense' and '(mere) use', and that the establishment of a privative opposition between two understandings of a given item is a pretheoretical move with respect to the semantics/pragmatics borderline, whereas a claim of privative ambiguity between two senses of an item requires specific motivation (of a sort often hard to come by; cf. note 2).

2"The logic of privative opposites makes it difficult to distinguish ambiguity from lack of specification whenever a privative opposition is in question" (Zwicky & Sadock 1975: 7). In particular, evidence from the availability of "crossed readings" with identity-of-sense anaphora is irrelevant: "The existence of the more general understanding guarantees that we will get all possible understandings" (Ibid: 23). Atlas (1977: 326–30) challenges this conclusion, and indeed uses identity-of-sense tests to argue against the purported ambiguity of negation, but cf. Blackburn (1983) for a reply.
The defense of such an unparsimonious analysis, Fodor & Sag point out, involves two steps. We must show

(a) that the semantic principles needed to account for the meanings of these sentences will automatically (i.e., unless specifically constrained) assign two semantic representations to the sentence in question;
(b) that the principles for associating truth conditions with sentences on the basis of their semantic representations will automatically (unless specifically constrained) derive identical truth condition specifications from both of the semantic representations assigned to the sentence.

Fodor & Sag's observation (1980: 3) is worth bearing in mind, since it applies (mutatis mutandis) to structural ambiguities involving one-way entailment (i.e. the privative cases discussed earlier) as well as to the mutual entailment cases illustrated in (52).

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*The present paper overlaps with Horn (to appear b), in which some of the issues broached here (particularly those involving the relations between privative ambiguity and negation) are treated more fully.
THE KIND OF/SORT OF CONSTRUCTION

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0. Introduction

In this paper I will attempt to establish two generalizations regarding the hedging words kind of (kinda) and sort of (sorta). First, these words have a syntactic property that cannot be described adequately in terms of the usual primitives and rules of English; rather to specify correctly the distribution of these words we are forced to posit a special syntactic category and a special rule referring to this category. Secondly, the semantic characterization of kind of and sort of requires a similarly sui generis formulation: namely, the particular semantic character of these words is of an inherently metalinguistic nature. Frequently these hedges denote the speaker's attitude toward the denotational aptness of certain other word tokens in the utterance in which the hedge appears; but other metalinguistic purposes may also be served by kind of and sort of. Finally, I will discuss kind of and sort of as instances of a grammatical construction in an attempt to bring some conceptual unity to these apparently disparate facts.

1. Syntax

The hedges kind of and sort of are not to be confused with the corresponding nonconstituent sequences of noun and preposition. In (1)a a noun-preposition sequence occurs, whereas in (1)b we find a hedge.

(1)a A mastodon is a kind of (?an) elephant.

b A mastodon is kind of an elephant.

In the noun-preposition sequence, (1)a, a determiner always precedes the singular noun kind or sort, while with the hedge there is no preceding determiner. In plural noun phrases, the noun kind or sort takes the plural morpheme, while the hedge kind of or sort of shows no indication of plurality; concomitantly in the hedge case the object of of must show plurality while in the former, the noun-preposition case, the object of of need not show plurality and is prohibited from doing so in formal registers. These observations are reflected in the contrast between (2)a, with a noun preposition sequence sort of, and (2)b, with a hedge sort of.
Several kinds of exception to that rule have been pointed out.

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The plural verb agreement in both cases shows that in (2)a kinds is the head of the subject NP while in (2)b exceptions is the head of the subject NP. I have, in fact, found no evidence that the hedges kind of and sort of contain the nouns kind and sort.

More interestingly, it appears that the hedges may occur as preposed modifiers with the maximal projection of any major syntactic category. Examples (3,4,5) are attested. In (3), as in (2), sort of modifies a noun phrase; in (4) kinda modifies an adjective phrase and in (5) kinda modifies a verb phrase.

(3) Crete is sort of an island.

(4) All the papers were kinda really interesting.

(5) I kinda have to get going now--because I have to pick up my car at 5:00.

In the last case, the interlocuter's response was, "If that's the reason, you could have done without the 'kinda'," indicating that the entire verb phrase is in the scope of kinda.

Kinda and sorta may also modify lexical categories or intermediate bar categories. In attested examples (6) and (7), sort of modifies an adjective.

(6) Those of us who grew up in the extremely sort of comforting days of linguistics...

(7) He does very sort of creative things with language and literacy.

In example (8), sorta modifies an N.

(8) Marvin's a sorta self-made straw man.

In the following example, sort of modifies a noun; in the situation in which the example was produced the word cross-registration was used to denote the practice at a conference of attending a session other than that to which one had been assigned.

(9) There's a lot of sort of cross-registration going on around here.
In (10)a,b the hedge forms a constituent with a preposition, in (10)c with a prepositional phrase, in d with an adverb, in e with an adverb phrase, and in f, g, and h with a clause or sentence.

(10)a He distributed the grapes sort of amongst the mangoes.

b while singing kinda in between the notes...

c Sort of all over the world reports kept cropping up.

d She did it very kinda unalteringly.

e It began to shake kinda very jerkily.

f I was wondering sorta how many of the people he thought he could fool how much of the time.

g Kinda twist it over the flange and under the casing.

h in trying kinda to outdo herself...

Examples could be multiplied, but I think the following generalization is established.

(11) The hedges kind of and sort of may occur directly to the left of any category $X^i$, forming with that category a constituent of type $X^i$ (not $X^{i+1}$) where $X \in \{N,V,A,P,ADV,S\}$. 3

What shall we say about the syntactic category of the hedges kind of and sort of themselves and how shall we take account of the generalization given in (11)? We could add to the grammar a category $H$ (for hedge) that contains just the two lexical items under discussion and a rule schema like

(14) $X^i \rightarrow H \ X^i$  ($X \in \{N,V,A,P,ADV,S\}$)

It seems a shame to add both a syntactic category and rule with the power of (14) on account of two measly lexical items, but I am unable to think of a less undesirable alternative. 4

Secondly, just as the hedges kind of and sort of need to be distinguished from the phonologically identical noun-preposition sequences, they need also to be distinguished from the likewise phonologically identical scalar adverbs meaning approximately "slightly, a little, somewhat." Preceding an adjective such as schizophrenic or an adverb like hastily, it is impossible to tell a hedge (kinda/sorta) from an adverb (kinda/sorta) out of context and sometimes hard to distinguish them in context. But in other environments the distinction surfaces unambiguously. The clearest of
these environments is exemplified in the attested sentence

(15) Chomsky has a very sort of classical theory of syntax.  

Several grammatical processes show that a phrase like (16)a with the hedge sort of has a structure distinct from that of a phrase like (16)b with the scalar adverb slightly.

(16)a a very sort of classical theory

b a very slightly worn tire

In the former, very sort of is not a constituent while in the latter very slightly is: only the adverb phrase constituents, but not the adverb-hedge, nonconstituent sequence can be conjoined, stylistically extraposed, occur with a parenthetical conjunction like but only or in fact, or be referred to by an anaphoric adverb like correspondingly or proportionately.

These contrasts are illustrated in (17), (18), (19), and (20).

(17)a a very slightly but unevenly worn tire

b *a very sort of but \{engagingly surprisingly\} classical theory

(18)a That tire is worn very slightly.

b *That theory is classical very sort of.

(19)a The tire is worn, but only very slightly.

b *The theory is classical, \{but only in fact\} very sort of.

(20)a That [very slightly] worn tire is [proportionately] discounted.

b *That [very sort of] classical theory is [correspondingly] admired.

We have established a syntactic distinction between the hedges kinda/sorta and the adverbs of the same phonological shape in the environment INTENSIFYING ADVERB ADJECTIVE; in that context kinda and sorta do not have the same syntax as deintensifying adverbs like slightly or somewhat. We saw earlier that the hedges can also modify nominal, prepositional, and clausal elements, environments where adverbs do not occur. We have not yet shown that when kinda or sorta modifies an adjectival or adverbial element that it is ambiguous between a hedge construction, following rule (14), and a familiar adjectival phrase or adverb phrase construction where the (scalar) adverbs kinda and sorta may appear. That is, sentences like (21)a and
(22)a appear to have distinct hedge and adverbial readings—as indicated in the b and c versions. But can we show that this notional distinction arises from a syntactic ambiguity, thus validating rule (14) for these contexts?

(21)a John is sorta schizophrenic.
   b John is what you might call schizophrenic.
   c John is slightly schizophrenic.

(22)a Mary left kinda hastily.
   b Mary left what you might call hastily.
   c Mary left somewhat hastily.

The answer is Yes. If the discourse context is such that an adverb is required as in (23), we find that kinda or sorta may appear alone but not preceded by very. On the other hand, if the pragmatics of the context does not impose the requirement of an adverb of intensity, the sequence very kinda/sorta may occur, where kinda/sorta is a hedge inserted by rule (14).

(23) Ann: How classical is the theory?
   a Bob: Véry classical.
   b Bob: Sórta classical.
   c *Bob: Very sorta classical.

Compare

(24) Ann: What is the theory like?
   a Bob: Vèry clássical.
   b Bob: Sórta clássical.
   c Bob: Vèry sorta clássical.

We can tell that sorta may be the hedge in (24)b because sorta is possible in (24)c, in which sorta has to be a hedge because the adverb phrase *very sorta is impossible, as can be seen from (23)c where the context calls for an adverbial of intensity. On the other hand, in (23)b sorta has to be an adverb of intensity. Thus sorta (and kinda) can occur either as adverbs or as hedges before an adjective or adverb. That is, (21) and (22) are syntactically ambiguous.
To summarize the syntax of the hedges *kinda* and *sorta*, these words are to be distinguished both from the two-word, nonconstituent sequences consisting of a noun followed by a preposition and from the scalar adverbs of the same phonological shape. The syntactic privileges of occurrence of the hedges entirely subsume those of the adverbs if we take the non-ambiguity of phrases like (16)a and the stars on expressions like (23)c to reflect semantic filtering rather than syntactic ill-formedness. In any case, the hedges have much broader syntactic privileges of occurrence, as indicated in generalization (11) and rule (14). It appears that the hedges *kinda* and *sorta* constitute a syntactic category of their own, reflected in rule (14).

2. Semantics

We turn now to the meaning of the hedges *kind of* and *sort of*. As far as I have been able to discover, these two items mean exactly the same thing, though of course there may remain subtleties that have escaped me. In the introduction to this paper the claim was made that this meaning is inherently metalinguistic. By this I meant that the rock-bottom literal meaning of these words is metalinguistic, that what we have to do with here is not a conveyed meaning that is parasitical upon a more basic denotation of the familiar type.

As suggested in several of the glosses given above, I believe the hedges *sort of* and *kind of* serve, when they are in construction with a phrase $X$, to express a reservation or apology on the speaker's part for attempting to denote with the linguistic object $X$ what $X$ is in fact being used to pick out in the utterance. Impressionistically, the most common occasion on which this problem arises occurs when the speaker can't think of the *not just*. An apparently straightforward example of this type is (9) (repeated).

(9) There's a lot of sort of cross-registration going on around here.

As far as I know, and apparently as far as the speaker knew—which is more to the point—there is no brief and accurate English expression that denotes attendance at a session of a conference other than the one to which one has been assigned instead of the one to which one has been assigned. We would not, of course, want to say that our description of this kind of occasion is part of our description of the meaning of *sort of* and *kind of*. Rather this is just one kind of occasion on which speakers express hesitancy about the aptness of the words they have employed in their utterance.

Let us for convenience christen this gloss of the hedges *kinda* and *sorta* the "as it were" gloss. (I wish to do this without taking a position on whether or not the English expression *as it were* has exactly the same semantic value as *kinda* and *sorta.*) What evidence can be adduced for the claim that this particular gloss for *kinda/ sorta* is correct, and thus for the more general claim that these are
inherently metalinguistic lexical items? The evidence is of two
general kinds: evidence internal to the sentences and utterances
containing the hedges and external evidence, derived from the tes-
timony of the utterers of these sentences regarding what they
meant by what they said.

Let us take internal evidence first. If we consider (9) in
its context which, I tell you now, did in fact include a lot of
people attending sessions other than the ones they had been as-
signed to, it is clear that sort of functions here to signal the
fact that the word cross-registration is being used to denote an
activity that is not part of the normal denotation of cross-
registration.

Nominal expressions like (9) and like (3) (repeated)

(3) Crete is sort of an island.

are generally hard to construe as scalar predicates and therefore
often present prima facie evidence for a metalinguistic gloss of
an accompanying kinda or sorta. In uttering (3), the speaker did
not intend that Crete is a peninsula. (We will return to what the
speaker of (3) may have had in mind.)

Non-nominal X's can also give internal evidence for a meta-
linguistic gloss of an accompanying kind of or sort of. The fol-
lowing example is from a newspaper.7

(25) With a number of disappointing program changes, pianist-
composer B_____'s Friday recital sort of imploded. The form
of the event collapsed with those shifts.

Recitals, not being physical objects, cannot literally implode.
Clearly the author has in mind not gradual, slight or partial in-
ward physical collapse, but rather metaphorical collapse, with sort
of stuck in as a metalinguistic apology for the fancy metaphor.

Considering external evidence, the following is typical of a
number of recorded brief interviews. Upon hearing a speaker say

(6) Those of us who grew up in the extremely sort of comforting
days of linguistics...

the linguist asked, "Why did you say'sort of'?" To which the
speaker replied, "I was in doubt whether 'comforting' was the word
I wanted to use."

While in all these cases the evidence indicates that we are
dealing with a metalinguistic literal meaning, it is not clear that
the "as it were" gloss is applicable in every case. For example,
with regard to the Crete sentence (3), the context was that the
speaker had been asked why the ancient Attic Greeks hated the
Cretans. We have no direct testimony regarding the speaker's mo-
tivation for putting the sort of hedge in the reply, but noting that
the word island does not denote a scalar predicate and that Crete is
an island, we see that there cannot be any problem here about the
denotation of the word used not agreeing precisely with the in-
tended denotatum. We may speculate that the speaker may have had
in mind some complex of ideas involving geographical separation
leading to cultural separation and hence to enmity, or something
of the sort. But speculation in that direction is beside the point.
A speculation that is to the point, as well as plausible, is that
sort of functions here as a hedge on the speech act in the sense of
being offered as an apology for producing a declarative sentence
with Crete as the subject in answer to a question about Crete and
which therefore appears to be an answer to the question just posed—
but which isn't really an answer to the question. If we look again
briefly at example

(5) I kinda have to get going now—because I have to pick up my
car at 5:00.

we see something similar. Consider again the addressee's response:

(26) If that's the reason, you could have done without the "kinda."

Again we note that there is nothing problematic about the denota-
tion of the phrase have to get going now. But the addressee seems
to have taken the function of kinda as an apology for giving a
reason to terminate the conversation. Since the speaker of (5) was
me, I know that he intended it that way as well. It appears that
kinda and sorta can be used, not only to mark a speaker's sense of
inaptness of his words to what he is talking about, but also of in-
appropriateness of the act he performs in using them.

3. Pragmatics

Taking as established the claim that kinda and sorta have in-
erently metalinguistic meaning, we now consider the question
whether this construction also has certain pragmatic properties as-
associated with it directly. We have noted casually that utterances
containing tokens of kinda and sorta may have certain pragmatic
forces of warning or apology connected with them. We now address
the question whether these pragmatic forces are, in Grice's terms
(1978), conventional or conversational. That is, is the pragmatic
force a part of the conventional signification of these linguistic
objects, or are these forces derived anew on each occasion of ut-
terance by general principles of conversational inference, i.e., in-
ferred from the fact that a sentence having the conventional meaning
that this one does was uttered in this context. It has been argued
by Fillmore, Kay, and O'Connor (1983) that many grammatical con-
structions have pragmatic forces associated with them conventionally.
One example is the construction that underlies a sentence like Watch
me drop this said when assisting one's host with a precariously ba-
lanced tray of glasses (Fillmore 1979). Another is a sentence like
Him be a doctor?! (See Akmajian 1982). Fillmore, Kay, and O'Connor argue that it is part of the conventional signification of sentences like (27), which employ the conjunction *let alone*, that they are usable only in a context in which the proposition that Jenkins achieved the rank of General has been posed, and that in such contexts they simultaneously answer to the maxim of relevance in asserting that Jenkins didn't achieve that rank and to the maxim of quantity in asserting that Jenkins didn't reach the lower rank of first lieutenant.

(27) Jenkins didn't make first lieutenant, let alone general.

Returning now to sentences with *kinda* or *sorta*, if we consider only the "as it were" gloss (i.e., the signal that what is to follow is not the *mot juste*) a case might be made for claiming this to be part of the standard, truth-conditional meaning of the utterance. I think this would be a hard claim to develop convincingly, but something might be attempted along the lines of expanding the notion of context of utterance, say, as specified by Kaplan (1977, 1978), to include the speaker's actual words, so that metalinguistic adjustments might become part of the possible-worlds model. (See Sag 1981 for an expansion of the notion of Kaplan-context to provide a model theoretic approach to contextually specified intensions of a non-metalinguistic kind.) Such a formulation, if it could be pulled off, might in effect have the speaker of (6) assert literally and simultaneously both the proposition that certain days were comforting and the proposition that the intended denotatum of the word *comforting* in the expression of the present proposition is not properly a part of the conventional denotation of the word *comforting*. Or perhaps not. It is not entirely clear to me what the formal objective of such an analysis would be and it is entirely obscure to me what technical machinery would be required. In any case, the idea would be that the addressee is literally apprised that there is something a little off in the utterance—as if the speaker had actually said, "the extremely comforting days—I'm not sure I just used the word 'comforting' in a standard way—of linguistics..."

Fortunately, or unfortunately, depending on your point of view, we are invited not to pursue this line of argument any further by reconsidering the utterances (3), (5), and (8) (repeated).

(3) Crete is sorta an island.

(5) I kinda have to get going now—because I have to pick up my car at 5:00.

(8) Marvin's a sorta self-made straw man.

In all of these cases, we noted that the "as it were" gloss doesn't apply. Crete literally is an island and the speaker of (5) literally had to get going. There is no denotational mismatch to be
signaled in either case, so we cannot suppose the addressee infers conversationally a force of warning or apology from a literal statement about failed denotation. In (8) on the other hand, we have a play on words. Sorta cannot signal here that what self-made straw man is intended to denote in this utterance is not part of the conventional denotation of self-made straw man, because self-made straw man has no conventional denotation. The following example similarly involves a play on words.

(28) The Daily Cal is kinda overpriced.

(To get the force of the example, one should know that The Daily Californian is a newspaper that is distributed free.) It is not clear to me in (28) the extent to which kinda functions straightforwardly to indicate that overpriced here is being asked to denote something outside of its usual denotation—that is, according to the "as it were" gloss—as against functioning to characterize in some way the unusual sort of speech act being performed in uttering this sentence. It appears that sort of and kinda in (3), (5), (8), and perhaps (27) function to signal conventionally that there is something defective in the speech act being performed.

But can any defect of a speech act be signaled by sorta and kinda or do constraints exist? In the paper I presented at this conference last year I argued that loosely speaking and technically are metalinguistic hedges with conventional pragmatic import, noting however, that not every defect in an act of assertion could be signaled by them. For example, the use of uninterpretable indexicals or failure to answer a question cannot be palliated by the hedge loosely speaking. These constraints on loosely speaking are indicated by the stars on (29)a and (30)a (from Kay (1983)).

(29)a *Jack and John were running and loosely speaking he fell down.

   b *Jack and John were running and kinda he fell down.

(30)a Ann: When did Mary get her car tuned up?
   *Bob: Loosely speaking because the engine was knocking.

   b Ann: When did Mary get her car tuned up?
   *Bob: Sorta because the engine was knocking.

The b versions with kinda or sorta are hardly any better, suggesting that these same constraints apply to kinda/sorta as well. Are there utterances that permit kinda/sorta but not, say, loosely speaking? For me there are, as indicated by the fact that (31)a,b are for me pragmatically inappropriate in the contexts in which the corresponding sentences with kinda/sorta (3 and 5) are appropriate, but I am aware that there is great variation in acceptability judgment in the area of pragmatic appropriateness.
(31) a #Crete is \{loosely speaking\} an island.
   b #\{Loosely speaking\} I've got to get going now...

I'm afraid I haven't any more to say on the substance of the conventional pragmatic import of kinda and sorta except to suggest that while loosely speaking and technically appear to convey that the speaker has clearly in mind the defect in his speech about which he is warning, kinda and sorta seem to convey the opposite idea, that the speaker is not prepared to specify the precise nature of the defect pointed to by the hedge. Thus if I say

(32) He is loosely speaking schizophrenic

I signal that I am ready with a straightforward answer to the question

(33) What do you mean, "loosely speaking"?

while if I say

(34) He is (very) sort of schizophrenic

the sort of seems to amount to a verbal shrug of helplessness—a signal not only that schizophrenic is not the mot juste but that I can't do any better. Other than the observation that loosely speaking and technically are characteristic of formal, and specifically academic, registers while kinda and sorta are colloquial, I have no supportive evidence for this claim and so abandon it as an unabashed conjecture.

4. Grammatical constructions

Fillmore, Kay, and O'Connor (1983) have proposed that the minimal unit of a speaker's grammatical knowledge is the construction, a bundle that comprises, in the general case, lexical, syntactic, semantic, and pragmatic information. (For a related approach that shares this overall orientation, see G. Lakoff 1984.) On this view the paired syntactic-semantic rules of a Montague-type grammar, e.g., GPSG, or any of the interpreted logical languages on which these approaches to natural language are patterned, are seen as grammatical constructions that are, in a way, degenerate, in that they comprise syntactic and semantic information but lack lexical and pragmatic information. On the construction-based view, the generalizations that can be drawn about syntax and semantics, abstracted away from information about lexicon and pragmatics, necessarily limit themselves to a proper subset of the tacit knowledge of syntax and semantics possessed by the native speaker, real or ideal. There seems little doubt that the phenomena treated in such isolating
approaches are real and that the insights provided by these methods are genuine: every language appears to possess grammatical constructions that don't involve conventional pragmatic forces and that also don't involve lexical information beyond membership of words in one of a finite, and in fact quite small, set of syntactic categories. But to assume, as is common in formal linguistics as currently practiced, that the boundary of this subset of constructions is the boundary of the language faculty, may be in the current state of our knowledge premature. If natural languages are like formal languages in that all the syntactic and semantic rules that comprise them involve lexicon minimally and pragmatics not at all, then the assumption that syntax and semantics should be studied in isolation from lexicon and pragmatics is sensible. But it would probably be a good thing if not all grammarians were to operate within the framework of this assumption just in case it should turn out to be less than absolutely true. It appears that phenomena such as sentences involving the hedges kinda and sorta are not conveniently studiable in an approach that isolates lexicon and pragmatics from the rest of grammar, precisely because knowledge of these sentences is knowledge of a construction that has lexical, syntactic, semantic, and pragmatic aspects.

Footnotes:

1 I gratefully acknowledge help from Claudia Brugman, Amy Dahlstrom, Charles Fillmore, George Lakoff, Tom Larsen, Mary Catherine O'Connor, and Karl Zimmer.

2 I have not made careful phonetic recordings of the attested examples, and the orthographic alternations kind of/kinda and sort of/sorta are based on rough impressions. It appears that the forms lacking a final consonant are more likely both before a word beginning in a consonant and in relatively informal registers; but this also is impressionistic. As some of the attested examples given below suggest, these hedges sometimes occur in surprisingly formal speech settings. I don't believe there is any phonetic difference between the hedges and the corresponding noun-preposition sequences.

3 In example (7), the presence of the intensifying adverb very, preceding the hedge, makes it clear that the scope of the hedge is restricted to the single word creative. There is the possibility of a semantically irrelevant syntactic ambiguity here depending on whether we consider sort of to be in construction with the adjective creative or with the adjective phrase creative. If we eliminate very the possibilities for ambiguity, now semantically relevant, are increased. Elimination of very from (7) produces the noun phrase

(12) sort of creative things with language and literacy

This expression is three ways ambiguous. The three semantically distinct constituent structures of (12) are given schematically in
(13)a, b, c. In (13)a the minimal constituent properly containing sort of is sort of creative; in b it is sort of creative things; and in c it is sort of creative things with language and literacy. (The c reading doesn't seem pragmatically likely in this attested example; but compare a phrase like sort of creative things with the detritus of historical linguistics.)

(13)a

sort of creative things with language and literacy

b

c

sort of creative things with language and literacy

sort of creative things with language and literacy

The degree to which ambiguities like these may be resolved prosodically is an interesting problem, but one which I do not address here.

Certain highly presuppositional qualifiers like even appear to have similar, although not identical, privileges of occurrence. For example, both even and kinda can occur as sisters to a phrase that properly contains a word or smaller phrase which bears heavy stress and serves semantically as the item focused by the modifier, as in (i) and (ii):

(i) Expert muralists can even get the paint into the stucco.

(ii) Expert muralists can kinda get the paint into the stucco.

kinda can quite generally also occur next to the focused element, forming a constituent with it, while this is often impossible with even:

(iii) Expert muralists can get the paint kinda into the stucco.

(iv) *Expert muralists can get the paint even into the stucco.
Similarly, *kinda/sorta* can be stylistically extraposed more readily than *even*.

(v) a John is sort of a boy scout.
   b John is a boy scout, sort of.

(vi) a John was even an eagle scout.
    b ??John was an eagle scout, even.

The fact that *even* modifies clearly referential noun phrases while *kinda/sorta* does not, as in (vii)a,b, is probably better viewed as a semantic-pragmatic than a syntactic difference.

(vii)a Even John passed the test.
   b *Kinda John passed the test.

5 I am indebted to David Justice for this example and for calling to my attention the existence of adjective phrases of the form INTENSIFYING ADVERB + HEDGE + ADJECTIVE.

6 (22)c may be possible for some speakers with something like the contradiction intonation of Liberman and Sag (1974). For such speakers it appears that in so responding Bob can indicate that the word *classical* isn't quite apt but that he accepts it anyway. As I understand the testimony of one such speaker, the contradiction intonation targets Ann's use of *classical* and so entitles Bob to hedge *classical with sorta* as if he were introducing it for the first time. Both the judgments and the rationale are tenuous. In any case, the most relevant feature of (23) is not so much that c is bad as that b is good and clearly features sort of as a deintensifying adverb.

I should point out that for convenience I am using the term "hedge" in a more restricted sense than that introduced by G. Lakoff (1972). In Lakoff's terminology, both what I have called hedges and what I have called deintensifying adverbs would be called hedges, as would also the intensifying adverb *very*. I imbue this terminological distinction with no theoretical importance but have simply contracted my use of the term hedge in the present paper to something more like its meaning in ordinary English in order to distinguish, for each of the phonological words *kinda* and *sorta*, two distinct syntactico-semantic objects, an adverb and a "hedge."

7 The *San Francisco Chronicle*, September 10, 1979. The article is by Heuwell Turcuit and entitled "Disappointing Program from Ailing Pianist."
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ACTIVE ZONES
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This paper investigates a certain phenomenon, illustrated in (1), pertaining to the compatibility of a relational predication with its arguments.

(1)(a) David blinked.
(b) She heard the piano.
(c) I’m in the phone book.

All are perfectly normal expressions, yet they exhibit an apparent peculiarity when we think about what they actually seem to say. The subject of (1)(a) names a person, but the activity of blinking is not something carried out by a whole person—only the eyelid really does anything. In (1)(b), we encounter the seeming anomaly of a person hearing a physical object, when the only things we can in fact hear, quite obviously, are sounds. If (1)(c) is taken literally, moreover, we can only conclude that the speaker is either very small or quite cramped.

Examples like these have often been noted in one connection or another, but I am unaware of any comprehensive and unified treatment. Their implications are quite substantial, and go right to the heart of critical grammatical issues. I will claim, for instance, that the sentences in (2) illustrate the same basic phenomenon as those in (1).

(2)(a) Wombats are tough to catch.
(b) Tom is likely to succeed.
(c) I believe Donovan to be an honorable man.

The sentences in (2) are commonly analyzed as manifesting the syntactic movement (or relation-changing) rules of Object-to-Subject Raising, Subject-to-Subject Raising, and Subject-to-Object Raising, respectively. I will suggest, on the contrary, that a reasonable account of the normal connection between relational predications and their nominal arguments, required even for single-clause expressions, obviates the need for special syntactic rules of this sort.

I. BASIC ASSUMPTIONS

I will examine the problem from the standpoint of the framework of cognitive grammar, also commonly referred to as space grammar (cf. Langacker 1981a, 1981b, 1982, 1983; Casad and Langacker in press; Lindner 1982). This framework does not posit derivations from abstract underlying structures—it is claimed instead that grammar is symbolic in nature, with aspects of the overt form of expressions serving to symbolize their structuring of conceptual content. All grammatical units are claimed to be
bipolar, consisting of a semantic unit at one pole symbolized by a phonological unit at the other pole. Moreover, grammar—both morphology and syntax—is seen as merging with lexicon to form a continuum of symbolic units.

More directly important are certain claims concerning meaning and semantic structure. Most basically, I take the position that meaning is to be equated with conceptualization, and that semantic structure is simply conceptualization shaped to the specifications of linguistic convention. A linguistic predication is thus a conception that functions as the semantic pole of an expression, be it a single morpheme or a composite expression of any degree of complexity. Following Haiman (1980), the putative distinction between semantics and pragmatics (or between linguistic and extra-linguistic knowledge) is claimed to be artifactual. Instead I assume that linguistic semantics is encyclopedic in nature: all linguistic predications are characterized relative to cognitive domains, and any knowledge system or conceptual complex—regardless of its size and scope—is capable of serving as a domain for this purpose. For example, the conception of a right triangle serves as the cognitive domain for the characterization of HYPOTENUSE (i.e. the semantic pole of hypotenuse), the conception of the human arm as the domain for ELBOW, and knowledge of the rules and strategies of baseball as the domain for SACRIFICE BUNT. It is difficult to conceive of a meaningful description of these notions that would not presuppose these knowledge structures in an essential way.

However there is more to the meaning of an expression than just a cognitive domain: a given expression structures the conceptual content of its domain in a particular fashion, for example by construing it at a certain level of precision and specificity, by viewing it from a certain perspective, or by rendering certain substructures more prominent than others. I will say that the lexical and grammatical units in an expression impose a particular image on the conceptual content of the relevant domains; the term image does not refer here to visual or sensory imagery in the usual sense, but simply to alternate construals or structurings of semantic content. For example, the sentences in (3) impose contrasting images on what may be exactly the same conceived situation:

(3)(a) The lumberjack guzzled his whisky.
(b) The liquid was consumed.

One difference in the two images is the far greater specificity of (3)(a). A second difference pertains to figure/ground alignment, reflected in voice and the choice of subject.

One particular facet of such imagery is of central importance to us here, namely what I call the profile/base distinction. The base for a linguistic predication is its domain; the profile for a predication is a substructure of the base that is accorded special prominence as the substructure which the expression designates. Some examples are given in Figure 1, where the profiled
substructure is indicated in boldface: the conception of a right triangle is the base for the characterization of the predication HYPOTENUSE, whose profile is a particular side of this conceived entity; similarly, the conception of a long, thin object is the base for TIP, and that of a kinship configuration is the primary (but not the sole) knowledge system required for the characterization of UNCLE. It is crucial to observe that the meaning of a linguistic expression is not given by either its base or its profile alone--instead it resides precisely in the relation between the two. Without a profile, a conception makes no designation; without the base, the designated entity either does not exist or cannot be properly identified. It is also important to note that two or more predications can have essentially the same base and still differ semantically by virtue of their choice of profile within this base. In 1(c), for instance, different choices of profile would yield such alternate predications as GRANDMOTHER, GRANDFATHER, PARENT, and also (with appropriate gender adjustments) nieCE and nepHEW. Note that the entire base figures in the meaning of a predication, even though only a substructure of this base is profiled (designated) by the expression.

Figure 1

Predicates can be categorized with respect to the nature of their profile. I would maintain that a nominal predication designates a thing, defined very roughly as a bounded region in some domain; hypotenuse is thus a noun because it designates a bounded region within the conception of a right triangle, uncle because it profiles a node (one type of bounded region) within a conceived kinship configuration, and so on. (Physical objects, as bounded regions in space, are things by this definition, but the definition makes no direct reference to them.) A relational predication is one that profiles the interconnections between two or more conceived entities, where an entity can be either a thing or another relation. Within the class of relational predications, a basic distinction can be made between stative relations, which designate a single configuration, and processes, which profile a continuous series of such configurations distributed through conceived time and scanned sequentially. Stative relations
correspond to a number of grammatical classes that include prepositions, adjectives, and simple adverbs. Processes are coextensive with the class of verbs.

Though they are hardly adequate, for expository purposes I will adopt the abbreviatory notations in Figure 2 for the fundamental classes. A thing, since it profiles a bounded region in some domain, is conveniently indicated by a circle. The profile of a stative relation is more complex, as it designates not only two entities—indicated by the rectangles—but also, crucially, the interconnections between these entities. These participating entities can be things, stative relations, or processes. They need not be distinct, and they need not be separately expressed in a sentence to be counted as part of the semantic structure of a relational predication. Finally, since a process involves the evolution of a conceived situation through time, the abbreviatory notation includes an arrow to suggest its temporal axis. The subject of a process is always a thing.

(a) (b) tr (c) tr

THING

STATIVE

RELATION

PROCESS

Figure 2

An additional point concerns the asymmetry between relational participants which underlies the traditional subject/object distinction. The notions I employ, \textit{trajectory} (tr) and \textit{landmark} (lm), are more general—subjects and objects are special cases of trajectories and landmarks, respectively. A trajectory is defined as the figure within a relational profile. A landmark can be any prominent substructure; the most salient (aside from the trajectory/figure) will be referred to as the primary landmark (this can be equated with a direct object, when present). All relational predications are claimed to involve some type of trajectory/landmark asymmetry as part of their internal structure, regardless of whether the participants are spelled out explicitly by other expressions. Two examples are sketched in Figure 3. The basic locative sense of \textit{in} is given in 3(a). \textit{IN} predicates a relationship of inclusion between two things; the landmark, equated with the container, functions as a point of reference for locating the trajectory. In 3(b) is represented the adjectival sense of \textit{yellow} illustrated by expressions like \textit{yellow flash}. The landmark is a region in the cognitive domain of color space, delimited primarily with respect to the hue dimension of this domain. The
trajector is a light sensation of some kind (indicated adhocly with squiggly lines); YELLOW specifies the coincidence of this sensation with some portion of the landmark region. Figures 3(a) and (b) are quasi-pictorial diagrams, and the nature of the interconnections between the trajector and landmark are given directly by the diagrammatic configuration; it is these interconnections that are the pivotal elements of the relational profile.

(a)  
\[
\begin{array}{c}
\text{SPACE}
\end{array}
\]

(b)  
\[
\begin{array}{c}
\text{HUE}
\end{array}
\]

\[
\begin{array}{c}
\text{DIM.}
\end{array}
\]

\[
\begin{array}{c}
\text{COLOR SPACE}
\end{array}
\]

\[
\begin{array}{c}
\text{YELLOW (=ADJ)}
\end{array}
\]

Figure 3

One final point concerns the prevalence of lexical polysemy. It is hardly controversial that a common lexical item typically displays an extensive array of interrelated meanings, some of which are felt to be more "basic" than others. In the present framework, every conventionally sanctioned meaning of a lexical item is treated as a distinct predication. A polysemous expression therefore has for its semantic role, not a single predication, but rather an array of alternate predications representing the range of conventionally established values it can assume. These predications can be thought of as nodes in a network, some of which bear relationships of semantic specialization or semantic extension to others. They can also differ greatly in cognitive salience, some being more easily elicited than others.

In view of the above, it should not be surprising to find that one way in which the meanings of a lexical item can differ is by the imposition of alternate profiles on the same base. Consider, for example, the contrast between yellow as an adjective (e.g. yellow flash) and as a noun (Yellow is her favorite color). The former designates a relation, as diagrammed above in Figure 3(b). What about the nominal variant? As a noun, it profiles a bounded region in some domain. I equate this domain with color space, and the bounded region with the same region of color space that functions as the relational landmark in the adjectival predication. By removing the trajector from 3(b), and retaining as the profile the same bounded region along the hue dimension that is identified in 3(b) as the landmark, one obtains a predication that constitutes the meaning of yellow when it is employed as a noun.

II. THE PHENOMENON

Let us take the sentences in (4) as our point of departure. In each instance it can be argued that the central relational predication--APPROACH, BEYOND, or NEAR--profiles an interconnection
in which its trajector and landmark participate as integral, undifferentiated wholes. As the spacecraft approaches Uranus, for example, every part of it becomes progressively closer to every part of the planet, and no particular subpart of either one has special status in this regard.

(4)(a) The spacecraft is now approaching Uranus.
(b) Goleta is beyond Santa Barbara.
(c) Your dog is near my cat.
(5)(a) Your dog bit my cat.
(b) Your dog bit my cat on the tail with its sharp teeth.
(c) ?Your dog bit my cat with its teeth.

When we examine (5)(a), a rather different picture emerges. Here it is evident that the relational predication BITE designates an interaction between its trajector and landmark that directly involves only selected aspects of these entities. For instance, the teeth of the dog are pivotal to the act of biting, but the contribution of its tail and kidneys to this process is at best negligible. With respect to the landmark, BITE itself does not specify which particular part of the cat is privileged to participate directly, but BITE strongly suggests that only restricted portions are affected.

Those portions of a trajector or landmark that participate directly in a given relation will be referred to as its active zone with respect to the relation in question. For some relational predications, like those in (4), the active zone of the trajector and/or landmark is coincident with the whole. For others, like BITE, the active zone of the trajector and/or landmark is limited to a proper subpart of the whole. The active zone should not be thought of as a discrete or sharply bounded region within the overall entity—it is more accurate to think of it as the focal area of the relational interaction, the participation of a region becoming more tenuous the farther it lies from this focus. For example, the trajector’s participation in the process designated by BITE is not strictly limited to its teeth: also involved are the jaws, the operative muscles, the nervous system, and so on. Pushing things to the extreme, one could argue that every part of the trajector is involved in the act of biting in one way or another, however marginal it might be, if only because all portions of the body are interconnected, so that no portion is totally unaffected by what happens to any other. I would not dispute this argument. The only point crucial here is that the participation of certain regions is obviously more direct and more central to the relational conception than that of others.

Linguistic form is often blind to these subtleties. Precisely the same expressions, namely your dog and my cat, are used to describe the trajector and primary landmark in sentences (4)(c) and (5)(a), even though these entities participate as integral wholes only in the former. On the assumption that the nouns dog and cat designate the entire animal (so that dog, for instance, would be an
inappropriate expression to describe a disembodied set of teeth), we can observe that (5)(a) manifests a notable discrepancy between what is profiled by the trajector and landmark of BITE and the active zones of these entities with respect to the process. This discrepancy sometimes has overt linguistic consequences; it is possible, for example, to spell out the active zones explicitly by means of periphrastic expressions, such as the prepositional-phrase complements in (5)(b). Generally, though, such periphrasis is optional, and one resorts to it only when this additional specification is informative. This is the case in (5)(b), since BITE is vague about the active zone of its landmark, and since the adjective sharp provides information about the active zone of the trajector that would not otherwise be available. However the prepositional-phrase complement in (5)(c) adds nothing to the content conveyed by the verb, so this sentence is needlessly redundant.

The existence of a substantial discrepancy between the entity profiled by an expression and its active zone with respect to a given relational predication is not at all unusual. In fact, a bit of reflection reveals that a discrepancy between profile and active zone represents the normal situation. It is in fact quite difficult to find convincing examples like those in (4), where all aspects of the designated entity participate equally in a relationship. In the overwhelming majority of instances the various facets of the profiled entity participate in a relationship to different degrees and in different ways. The examples in (6) afford some initial appreciation of the ubiquity of this phenomenon.

(6)(a) Roger blinked. (f) Roger figured out the puzzle.
(b) Roger ate an apple. (g) Roger whistled.
(c) Roger heard a noise. (h) Roger peeled an orange.
(d) Roger walked faster. (i) Roger licked the popsicle.
(e) Roger is digesting. (j) Roger breathed hard.

Considering the trajector of the main verb, we find that only selected facets of the designated individual participate directly in the process, and that these facets differ from one expression to the next. Roger's eyelids are the primary participants in (a); in (b) his hands, mouth, teeth, tongue, and the upper parts of his alimentary canal are more directly involved than, say, his kneecaps; his ears and central nervous system are pivotal in (c); while the whole body moves in (d), the legs in particular are of prime importance; and so on. In those cases where the landmark is distinct from the trajector, there is comparable variation. Thus the puzzle in (f) participates wholistically in the verbal process, but presumably only part of the apple is eaten in (b) (most people do not consume the core), while in (h) and (i) only the outer surface of the landmark object is affected.

Some discrepancy between active zone and profile is thus the rule, not the exception. Our conception of grammatical organization must therefore be able to accommodate it as a normal
situation rather than a pathological one, preferably without special apparatus. In fact, the problem is even worse than I have so far indicated. For one thing, even for those predications which appear to relate the trajector and landmark as integral wholes there is often an active zone/profile discrepancy in specific instances. Consider IN, sketched in Figure 3(a). At least its trajector would seem to participate wholistically in the inclusion relationship with its landmark. Yet this is very commonly not the case:

(7) (a) Abernathy is in the bathtub.
(b) Susan has a cigarette in her mouth.
(c) He has an axe in his hand.

A normal construal of all three sentences situates only a portion of in's trajector within the confines of its landmark.

A second exacerbating factor is that the active zone is often not even a subpart of the entity designated by a nominal expression. Frequently it is something merely associated with the designated element in some characteristic fashion, as we saw above in (1)(b)-(c). In (1)(b), the subject does not hear the piano perse, as a physical object, but rather the sound emitted by the piano—canonically this would be the musical sound produced by playing the piano, but in context it could also be the crashing sound it emits when dropped from a helicopter. In (1)(c), of course, it is not the speaker as a physical object who occupies the phone book, but rather a symbolic representation of his name, address, and phone number. (8) provides some further examples.

(8) (a) I smell a cat. (b) I need a red pen.
(c) The ball is yellow. (d) This red pen is yellow.

I might say (8)(a) when opening the garage door in the morning; what I actually smell is the odor emitted by certain excretions of the cat. In (8)(b), it is not the ball as a physical object that is capable of interacting with color space (a range of possible color sensations)—rather it is a color sensation associated with the ball's outer surface. The phrase red pen is ambiguous, and its ambiguity hinges precisely on the choice of active zone for pen with respect to the color predicition. On the one hand, the active zone may be the color sensation associated with the outer surface of the pen (parallel to (8)(b)); on the other hand, it may be the sensation associated with the marks left on the page when the pen is used as a writing implement. By taking the notion active zone into account, we can explain why (8)(d) is meaningful and non-contradictory. The active zone of the pen with respect to the predicition RED is the color of the marks it makes, while for YELLOW it is the color of the pen's outer surface.

Obviously, the permitted discrepancy between profile and active zone greatly increases the flexibility of a linguistic system. If the two were always required to coincide precisely,
i.e. if the trajector and landmark of a relational predication had to be expressed with full accuracy and specificity, the result would be a vast proliferation of highly cumbersome locutions, a sample of which are offered in (9).

(9)(a) Roger’s eyelids blinked.
    (b) Roger’s mind figured out the puzzle.
    (c) Roger’s lungs and oral tract whistled.
    (d) Susan has the end of a cigarette in her mouth.
    (e) He has a portion of the handle of an axe in his hand.
    (f) The color sensation associated with the outer surface of this pen, the color sensation associated with the marks created by which is red, is yellow.

The tolerance of profile/active zone discrepancy is further quite natural in cognitive terms, for it permits the designation of linguistic expressions to focus on conceived entities that have substantial cognitive salience. The following principles can be seen at work in various examples: (i) a whole is generally more salient than its individual parts; (ii) discrete physical objects are generally more salient than abstract entities; and (iii) humans and (to a lesser extent) animals are generally more salient than inanimate objects (other things being equal).

III. ANALYSIS

The apparent difficulty posed by profile/active zone discrepancies is that what a sentence literally says conflicts with how it is actually understood, so that its compositional semantic value is either inappropriate or logically inconsistent. This is the type of situation for which generative theory has commonly posited logically consistent underlying structures, from which the surface form of an expression is derived by the application of transformational rules or some comparable device. For example, if it is granted that one can only hear sounds, not physical objects, the seeming anomaly of (10)(b) might be accommodated by taking (10)(a) as a deep structure and postulating an optional transformation that deletes the underscored portion of it.

(10)(a) She heard the sound of the piano.
    (b) The color sensation associated with the outer surface of the ball is yellow.
    (c) Roger’s hands, mouth, teeth, tongue, and the upper parts of his alimentary canal ate an apple.

Let us call this type of approach the linguistic paraphrase analysis: an expression derives from an underlying structure that—when manifested without deletions—provides a logically accurate paraphrase of its actual meaning.

The linguistic paraphrase analysis is offered only as a straw man, not as a serious analysis on my part or anyone else’s. There
are obvious problems with it. While reasonable enough for cases like (10) (a), where a simple and obvious paraphrase readily suggests itself as a deep structure, its plausibility quickly evaporates when one tries to extend it to a representative array of instances: few linguists would be attracted by the deletions in (10) (b) - (c) for the derivation of simple sentences like The ball is yellow and Roger ate an apple. The choice of a particular paraphrase to serve as underlying structure is arbitrary, moreover, and any paraphrase that is chosen is itself likely to prove inaccurate in more subtle ways; (10) (c), for instance, does not indicate that the various body parts mentioned participate in the process to different degrees and in different ways. Furthermore, the linguistic paraphrase analysis treats as problematic—as something to be remedied by abstract constructs—something that in actuality represents the normal situation rather than anything exceptional. A more natural account would be one in which the phenomenon is not a problem at all.

Actually, I would argue that the perception of the apparent difficulty rests on certain tacit and ill-founded assumptions. On what basis does one conclude that (10) (a), for example, is more accurate or logically valid than (1) (b) She heard the piano as a characterization of the conceived situation? It is by virtue of the assumption—which I myself exploited in presenting the data—that hear has precisely the same meaning whether sound or piano occurs as its direct object; consequently the collocation of hear and piano should be anomalous, since a sense of hear which specifies that its direct object is a sound cannot combine felicitously with an object nominal designating a physical object. This line of thought prejudges the semantic value of the verb, however, treating it as non-polysemous and attributing certain specific properties to its single meaning. The validity of these assumptions is not self-evident. Instead of saying that hear has a single meaning, designating the interaction between the perceiver and a sound, one could perfectly well say that hear has two semantic variants: the first designates the interaction between a perceiver and a sound, while the second designates the interaction between a perceiver and a sound-emitting object (the emission of sound being the basis for this interaction). (10) (a) and (1) (b) then involve different predications, both symbolized by the phonological sequence hear, and in neither expression does the meaning of the direct object nominal conflict with the nature of the relational landmark implied by the verb. The linguistic paraphrase analysis avoids the necessity of postulating two separate predications associated with hear, but this is at best a Pyrrhic victory, as it engenders the need for highly abstract and highly problematic analyses like those in (10). Moreover, I take it as established that polysemy is the normal state of affairs for common lexical items. The truly heroic efforts that would be required to eradicate it in favor of abstract derivations in all instances would most certainly be radically misguided.
The analysis is rendered a bit more explicitly in Figure 4. The predication sketched in 4(a) corresponds to sentences like (10)(a), while that in 4(b) is illustrated by sentences like (1)(b). If the former is somehow more "basic" than the latter, as the argument for a transformational derivation of (1)(b) assumes, I would interpret this not as a matter of logical consistency, but rather as reflecting the greater entrenchment and cognitive salience of HEAR, from which HEAR' may well originate as a semantic extension; all of this is perfectly consistent with the view of polysemy outlined at the end of section I and is consonant with the general character of lexical items. Both predications have the same base, and differ only in the profile they impose on this base. Common to both predications, in other words, is the knowledge system that involves the full array of relevant concepts: that of sounds, including their emission from physical objects (or other sources); that of perceptual experience, implying a perceiving individual; and the knowledge that such experience relies on certain auditory apparatus within the perceiving individual.

The contrast between the two predications—the two senses of hear—comes down to a matter of imagery, as this term was defined earlier. Specifically, the predications differ as to the substructures they single out for special prominence as the trajector (figure within the relational conception) and primary landmark (the most salient entity other than the figure). However, the relative prominence of substructures, though it is definitely an aspect of meaning and constitutes a semantic difference between the two predications, is independent of what one might call the "content" of the predications as defined by their common base. In both instances, the perceiver as an integral whole is profiled as the relational trajector, even though selected facets of this individual are known to function more directly in auditory experience than others. Furthermore, in both predications the sound is conceived as mediating the relationship between this trajector and the sound source, regardless of whether it is the sound in particular or its source that is profiled as the primary landmark. HEAR focuses on the direct interaction between the sound
and the perceiving individual, while HEAR' profiles instead the mediated interconnection between perceiver and the sound source, but both relationships are part of the meaning of both expressions, despite their differing salience. Observe that the two predications share a profile/active zone discrepancy with respect to their trajector. HEAR' also exhibits such a discrepancy with respect to its landmark, while for HEAR the profile and active zone of the landmark coincide.

In short, the cognitive grammar framework accommodates the phenomenon with no special apparatus whatever. All of the constructs needed for this purpose are independently established features of the model, most notably its treatment of lexical polysemy and the profile/base conception of semantic structure. Profiling is a matter of the relative prominence of substructures within a domain, and to some extent this aspect of semantic organization can vary independently of how the various substructures are intrinsically structured and interconnected. The entities profiled by a predication can therefore deviate from those that participate most directly and critically in a relationship, without this affecting its "content" or its "logical properties".

IV. GRAMMATICAL IMPLICATIONS

Since the nature of a predication's profile determines its basic grammatical category, lexical polysemy of the sort just described can extend across grammatical classes. We have already seen this for color terms like yellow, which can designate either a bounded region in color space, in which case the expression is nominal, or else a relationship of coincidence between this region and a light sensation, in which case the expression is adjectival. There are actually multiple adjectival senses. They differ as to whether the light sensation is itself selected as the trajector (relational figure), as in Figure 3(b), or whether that honor is accorded to some other entity, typically a physical object whose outer surface is the source of this sensation. The contrast between the yellow of yellow flash and that of yellow ball is therefore not unlike the one between the two senses of hear.

Another example of polysemy across grammatical classes is provided by modifiers like fast that can be used as either adverbs or adjectives (e.g. work fast vs. fast car). The adverbial predication is sketched in Figure 5(a). Its domain is the conception of a rate scale, and the region on this scale that lies beyond the neighborhood of the norm (n) functions as the primary landmark. Processes can be situated at various points along this scale, and the trajector of the predication is one such process, specified as being situated within the landmark region. What about the adjectival fast? A rate scale is clearly relevant, but a physical object like a car cannot, per se, interact with this scale. The active zone of a physical object with respect to a rate scale must be some process in which this object participates. This is made explicit in Figure 5(b), which has exactly the same base as
5(a). The contrast lies solely in the profiling, and specifically in the choice of overall trajector: the trajector of the adjectival FAST is not the process that occupies the landmark region of the rate scale, but rather the trajector of that process. The process is nevertheless a crucial part of the meaning of the adjective, as it mediates the interconnection between the overall trajector and landmark.

![Figure 5](image)

We saw previously, in (5), that when the active zone of a predication diverges from its profile the former can be spelled out periphrastically if there is communicative motivation for so doing. This is true for the implicit process that functions as the active zone of the adjectival FAST. When the modified noun strongly implies a particular type of process, specifying this process periphrastically is superfluous, as seen in (11).

(11) (a) That barber is fast. (c) That car is fast.
(b) That runner is fast. (d) That surgeon is fast.

(12) (a) When it comes to sweeping out the shop, that barber is really fast.
(b) That surgeon is fast at solving a Rubik’s Cube.

Periphrasis becomes necessary, however, when the process that functions as active zone is not the one derivationally or canonically associated with the modified noun, as in (12).

A very similar analysis readily accommodates the seemingly unrelated data cited in Newmeyer 1970. The following examples are representative:

(13) (a) He began eating dinner.
(b) He began dinner.
(14) (a) The orchestra started playing the next song.
(b) The orchestra started the next song.
(15) (a) The author finished writing a new book.
(b) The author finished a new book.
The problem is to account for the (b) sentences, where an aspectual verb like begin, start, or finish takes a simple direct object nominal instead of the verbal complement we would "logically" expect. Newmeyer proposes something akin to the linguistic paraphrase analysis, but I would simply say that these verbs manifest a pattern of lexical variation hinging on a permitted discrepancy between active zone and profile. The basic analysis is presented in Figure 6.

I have nothing of a detailed nature to say about the semantic structure of verbs like begin, so instead of trying to diagram this structure I have simply employed the abbreviatory notation for a process predication introduced in Figure 2(c). In a sentence like (13)(a), BEGIN profiles a process in which the trajector is a thing (spelled out by the subject nominal) and the primary landmark is another process. (Here and in what follows, I simplify matters in irrelevant respects by ignoring the semantic contribution of elements like -ing and to.) In a sentence like (13)(b), on the other hand, the related predication BEGIN' profiles a process in which both prominent participants are things: the trajector is the same, but the primary landmark is not the initiated process as a whole, but rather the landmark of that process. The initiated process remains as a pivotal facet of the base--it is the active zone of the landmark with respect to the inceptional process designated by this predication--but it need not be spelled out explicitly when its character is apparent from context or the other lexical items in the sentence.

I would emphasize that the analyses presented so far in this section require no special apparatus. They employ precisely the same constructs introduced earlier and needed to handle the active zone/profile discrepancies of simple sentences like those in (1). The only novel aspect of these latter analyses--one that is really nothing more than a special case of the general phenomenon--is the notion that the active zone of a thing with respect to a relationship may be a process in which that thing participates. This is necessary to account for the adjectival sense of fast, as
well as examples like (13)-(15). Neither of these is generally thought to be associated with the raising constructions of (2), but it may already be apparent that the present analysis establishes a connection. In fact, the analysis I propose for raising constructions should by now be quite obvious.

Let us focus on Object-to-Subject Raising. The standard analysis derives the sentences in (16) from the respective deep structures that also underlie those in (17).

(16) (a) Hondas are easy to fix.
(b) Landscapes are tough to paint.
(c) Monopoly is fun to play.
(17) (a) To fix Hondas is easy.
(b) To paint landscapes is tough.
(c) To play Monopoly is fun.

Main-clause predications like easy, tough, and fun are claimed to have precisely the same meaning in the constructions of (16) and (17), one that selects a clausal subject at the deep-structure level. Object-to-Subject Raising then accounts for the superficial divergence from this pattern in cases like (16).

There are two basic classes of arguments that are generally advanced to motivate this type of analysis. One class—invoking "idiom chunks" (e.g. headway) and "dummy" elements like it and there—I will ignore here, except to note in passing that they depend on certain assumptions that I do not accept (cf. Langacker 1983). Instead I will concentrate on the second type of argument, which appeals to selectional restrictions and "logical" grammatical relations. In presenting the raising analysis to a class, I have often said something very much like the following: "What does (16)(a) mean? Logically, it is not Hondas that are easy, but rather the process of fixing them. The superficial form of the sentence obscures this relationship, but such relationships are captured explicitly at the deep structure level if sentences like (16) derive by transformation from underlying structures like (17)."

Important and persuasive as such arguments were in establishing the transformational model, I would claim in retrospect that they are fallacious. The raising rules exemplify the linguistic paraphrase analysis, and the argument from logical grammatical relations is subject to the same criticism advanced in section III with respect to the putative derivation of (1)(b) She heard the piano from (10)(a) She heard the sound of the piano: the argument prejudges the semantic value of the governing lexical item, assuming quite gratuitously that it has precisely the same meaning in both constructions, and that this meaning can be determined on some kind of (ill-defined) "logical" grounds.

Instead I suggest that tough, for instance, is polysemous, having the two semantic variants sketched in Figure 7 (among others). The base for both predications is a conceived scale of difficulty along which processes can be situated. The primary
landmark is the region of this scale that lies beyond the neighborhood of the norm. In the case of TOUGH, probably to be regarded as the more deeply entrenched variant (from which the other is extended), the trajector is a process that is located in this landmark region. All of these elements are present in the base of TOUGH', which differs only in its choice of overall trajector: the trajector of this predication is equated not with the entire process situated in the landmark region, but rather with the landmark of this process in particular. The full process is nevertheless crucial to the semantic value of TOUGH', for it constitutes the active zone of the overall trajector with respect to its interaction with the difficulty scale.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure7}
\caption{Figure 7}
\end{figure}

In some respects my lexical-variant analysis resembles the syntactic raising analysis. However the former straightforwardly accommodates certain types of data that cannot be handled in a purely syntactic account. I treat the to-clauses in (16) as periphrastic specifications of the trajector's active zone with respect to the scale of difficulty (or pleasure, etc.); parallel sentences lacking these clauses are thus not unexpected, but they are problematic in the raising analysis, since the missing clauses are the putative source of the subject nominal.

(18)(a) Landscapes are tough.
(b) Monopoly is fun.
(c) When it comes to fixing them, Hondas are easy.

(18)(a) would be perfectly natural in the context of a painting class, where the process functioning as the active zone is too obvious to require periphrastic specification; the operative process is similarly quite apparent even out of context in (18)(b). Moreover, the lexical variant analysis is consistent with alternate types of periphrasis (though a to-clause is standard). Sentences like (18)(c) are thus anticipated, but they are problematic for the standard raising analysis.
The analysis of Subject-to-Subject and Subject-to-Object Raising differs only in specifics. Slightly different senses are thus attributed to likely in (19)(a) and (b): a process serves as the overall trajector of LIKELY in (19)(a); the trajector of this process is specified instead as the overall trajector of LIKELY in (19)(b), but the process remains in the base and functions as the active zone for the interaction of the overall trajector with the probability scale. The to-clause in (19)(b) elaborates the active zone peripheristically, but on occasion it can be omitted, as seen in (20).

(19)(a) For the dog to escape is likely.
(b) The dog is likely to escape.
(20)(a) A war is likely.
(b) Do you think anyone will come to the party?
Well, Tom is likely.
(21)(a) I would expect for the Clippers to lose again.
(b) I would expect the Clippers to lose again.
(c) When do you expect Tom?

In similar fashion, slightly different predications are associated with expect in (21)(a) and (b). A process functions as the overall landmark of EXPECT in (21)(a), but the trajector of this process is so designated by EXPECT in (21)(b). The landmark process of (21)(a) is nevertheless an active zone in (21)(b), where it is elaborated peripheristically by the to-clause. While such elaboration is generally obligatory, sentences like (21)(c) show that it is optional with expect when the process is understood to involve nothing more than arrival on the scene.

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Case Marking and Subj ecthood in Kipeã Kiriri
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University of California, Berkeley

Kipeã Kiriri is a dialect (or language) of the now extinct Kiriri language (or language family), shown in (1), formerly spoken in the state of Paraiba in northeastern Brazil (IBGE 1981).

(1) Kiriri relationships (cf. Mason 1950:287)

```
? -- Equatorial (Greenberg 1959:22)
Kiriri (or Kariri) -- Macro-Carib (Swadesh 1959:20)

Sabujá
Kipeã -- Macro-Gê (Rodrigues 1975:4035)
Kamurã
Dzubukuá

"isolate" (Rivet and Loukotka 1952:1128)
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Kipeã is attested only in a grammar (Mamiani 1699) and a catechism (Mamiani 1698) written in the late seventeenth century by the Italian Jesuit priest Luiz Vincencio Mamiani (Lodovico Vincenzo Mamiani della Rovere). The other forms of Kiriri (Kamurã, Dzubukuá, and Sabujá) are even less well attested than Kipeã, as can be seen from the annotated references (section B) at the end of this paper.

Though Mamiani's grammar is generally quite thorough and insightful for a grammar of its antiquity, he was forced by his traditional Latin-based model of grammar to present a seemingly bizarre analysis of the verbs according to which some verbs were considered to be inherently "passive" with no corresponding active form, and all other verbs were said to belong to a class of "neutral" (or "non-passive") verbs.¹ For example, in (2)²

(2) Ø-pa-kri Paulo no Niho
3-BE.KILLED-past PAULO(nom) ablative INDIAN
'Paulo was killed by the Indian'

the verb pa was classed as a "passive" verb because it supposedly had "passive meaning" ('be killed' rather than 'kill'), its nominative subject was a patient, and the agent appeared not as the subject but rather as the object of the preposition no which was said to indicate the "ablative of agent". Mamiani was careful to point out, however, that such "passive" verbs had no corresponding active form. Neutral verbs included ones like uipabo 'confess' seen in

(3) s-uirapo do di-buage-te
3-CONFESS acc 3reflexive-BAD-participle
's/he confesses his/her (own) sins'
where the meaning of the verb is active ('confess' rather than 'be confessed'), the nominative subject is often an agent (as in 3), and the "direct object", if there is one, is indicated by the "accusative" preposition do. Mamiani resisted calling verbs such as the one in (3) "active" verbs because he felt that this would imply that they had a corresponding passive form, which they do not.  

Subsequent investigators have not been content with Mamiani's analysis and have attempted to recast his data in more modern linguistic terms. For example, Baptista Gaetana d'A. Nageira in his introduction to the second edition of Mamiani's grammar argued that in a sentence like

\[(4) \text{si-di no Tupă ku-doho} \]
\[3\text{-BE.GIVEN abl GOD 1pl.inclusive-dative} \]
\'it was given to us by God'

the so-called passive verb di is really active and that no should be considered an object clitic on the verb similar in function to the object clitics in Portuguese. Then Tupă would be the (unmarked) direct object of the active verb (also as in Portuguese). Note, however, that while such an analysis might work for an example like (4), it will not work in (2) where an overt subject NP intervenes between the verb and the supposed clitic. Rodrigues (1942) argued that the do in sentences like (3) is actually not a preposition but the definite article preceding the direct object NP, which is unmarked for case (again as in Portuguese). Note, however, that this analysis would mean that "neutral verbs" could only have definite direct objects and that no other NPs could be marked for definiteness.  

Corrêa de Azevedo (1965) considers no and do to be prepositions, as did Mamiani. However, she considers the NPs marked by either of these prepositions to be "objects" of transitive clauses ("sentences with obligatory objects"), and seems to let pass without comment the fact that some of these "objects" are semantic patients (as might be expected) while others are semantic agents. She also sets up two verb classes comparable to Mamiani's "passive" and "neutral" classes; however, these classes are distinguished purely by morphological criteria rather than by their semantics: one class includes those verbs which can take the prefix ũ- while the other class consists of those verbs which cannot take this prefix (see the discussion of relative clauses below). Mamiani had also noticed this fact but apparently did not consider it to be the defining characteristic of his verb classes.

In the end it can be seen that these later treatments of the verb classes and case-marking are no more satisfying than Mamiani's, largely because of the failure of all of these investigators to recognize Kipek as an ergative language. My own reanalysis of the case-marking is summarized in Table 1. Examples (5-7) illustrate case-marking pattern A (cf. 5 and 7 with 2 and 4).
Case-marking pattern

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>ergative</td>
<td>nominative</td>
<td>(dative)</td>
</tr>
<tr>
<td>B</td>
<td>nominative</td>
<td>(dative)*</td>
<td>(dative/allative)</td>
</tr>
</tbody>
</table>

I = agent, experiencer, source; II = patient; III = goal

*with a few verbs this argument is marked with some other case, usually a locative one, rather than with the dative

Table 1: Kipeä Case-marking

(5) ð-pa-kri  Paulo  no ŋiho
     3-KILL-perfective PAULO(nom) erg INDIAN
     'the Indian killed Paulo'
(6) b-isapri-kri ewacă e-na-ho
     WHIP-perf YOU 2-erg-intensive
     'you whipped yourself'
(7) si-di no Tupā ku-do-ho
     3-GIVE erg GOD 1pl.incl-dat-intens
     'God gave it to us'

A nominative NP is unmarked for case and often appears as either a full noun phrase, as in (5), or an independent pronoun, as in (6), in the first argument position after the verb. Most often, however, a pronominalized nominative does not appear as an independent pronoun but rather is indicated only by an agreement prefix on the verb, as in (7). The verb also generally shows agreement with a full nominative NP, but it never shows agreement with an independent pronoun. All non-nominative arguments are marked for case by an inflectable preposition like the ones shown in Table 2, as can be seen in the examples above. Examples (8-13) illustrate case-marking pattern B (cf. 3 with 13).

(8) ma proh ewacă mo su-su ŋewo
     BURN THEN YOU loc 3-FIRE DEVIL
     'then you would burn in the devil's fire'
(9) ð-unu-iʒā  bæ hi-si bo hi-se
     3-SUFFER-TRULY AND 1-HEART vocative 1-LORD
     'and my heart truly suffers, my lord'
(10) e-koto kune  do su-tayu a
     2-STEAL BY.CHANCE dat 3-MONEY plural
     'did you steal his money?'
(11) s-uka Tupā ku-do-ho
     3-WANT GOD 1pl.incl-dat-intens
     'God loves us'
(12) so de a-keiko do e-buŋge-te do ware
WHY 2-HIDE dat 2-BAD-nominal dat PRIEST
'why did you hide your sins from the priest?'

(13) s-ui-pab asigny do di-buŋge-te so ware
3-CONFESS dat 3ref1-BAD-nominal allat PRIEST
's/he confesses his/her sins to the priest'

Table 2: Kipea Prepositions

This pattern is used not only with one place intransitive verbs like those in (8) and (9), but also with two- and three-place intransitives like those in (10-13), which generally translate as transitives.

It can be seen, then, that Kipea appears to have an ergative case-marking system. This in itself is perhaps not particularly noteworthy. However, after noting some of the superficial similarities between Kipea and certain other ergative languages, I will attempt to demonstrate that Kipea is in fact quite unusual in that the notion of subjecthood in this language is very different from the notion of subjecthood in other better known languages. In particular I intend to show that in Kipea, subjecthood is to a large extent determined by a notion of "affectedness" inherent in the lexical semantics of the verbs.

The case-marking system illustrated in Table 1 is very much like that found in some other better-known ergative languages. For example, Georgian, according to Harris (1981:1), has the case-marking patterns shown in Table 3, examples of which are
shown in (14).

<table>
<thead>
<tr>
<th>Case-marking pattern</th>
<th>Subject</th>
<th>Direct Object</th>
<th>Indirect Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>ergative</td>
<td>nominative</td>
<td>(dative)</td>
</tr>
<tr>
<td>B</td>
<td>nominative</td>
<td>(dative)</td>
<td>(dative)</td>
</tr>
<tr>
<td>C</td>
<td>dative</td>
<td>nominative</td>
<td>(&quot;tvis-nominal&quot;)</td>
</tr>
</tbody>
</table>

Table 3: Georgian (South Caucasian or Kartvelian) Case-marking

(14) Georgian (Harris 1981:1)  
(Note: I, II, III = tense/aspect/mood categories; 1, 2, 3, 4 = verb classes)

(a) glexma             datesa simindi
PEASANT-erg HE-SOWED-IT-II-1 CORN-nom
'the peasant sowed the corn'

(b) glexi              tesavs siminds
PEASANT-nom HE-SOWS-IT-I-1 CORN-dat
'the peasant is sowing the corn'

(c) glexs              dautesavs simindi
PEASANT-dat HE-SOWED-IT-III-1 CORN-nom
'the peasant has sowed corn'

Similarly, the North Central Caucasian languages Chechen and Ingush show the patterns in Table 4, as reported in Nichols (1984). Ingush examples of these patterns are given in (15).

<table>
<thead>
<tr>
<th>Case-marking pattern</th>
<th>Subject</th>
<th>First Object</th>
<th>Second Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (transitive)</td>
<td>ergative</td>
<td>nominative</td>
<td>(oblique)*</td>
</tr>
<tr>
<td>B (intransitive)</td>
<td>nominative</td>
<td>(oblique)*</td>
<td></td>
</tr>
<tr>
<td>C (inverse)</td>
<td>dative</td>
<td>nominative</td>
<td></td>
</tr>
</tbody>
</table>

*oblique = dative, allative, or locative

Table 4: Chechen-Ingush (North Central Caucasian or Nakh) Case-marking
(15) Ingush (Nichols 1984)

(a) na: nas biera: kuoč t'a-ju:x  
MOTHER-erg CHILD-dat SHIRT-nom ON-DRESSES  
'the mother puts a shirt on the child'

(b) swo cunnə b'far-jeş
I-nom HIM-dat EYE-LOOK  
'I'm looking at him'

(c) suona yž kinişka d-iez
ME-dat THIS BOOK-nom class-LIKE  
'I like this book'

It can be seen by comparing Tables 1, 3, and 4 that the case- 
marking patterns of Kipɛɛ are very much like the A and B patterns 
of Georgian and Chechen-Ingush. There are also a very few verbs 
in Kipɛɛ which look superficially like "inverse" verbs requiring a 
pattern similar to the pattern C in Georgian and Chechen-Ingush, 
but with the allative case used instead of the dative. Examples 
of the three such verbs that I have found are seen in (16).

(16) (a) ... do di-ne so di-kagi-kie-ri 
dat 3refl-LOOK.AT allat 3refl-WELL-neg-nominal  
'...to take care of the sick' 
(lit. 'to look to s/he-who-is-not-well')

(b) ... bo di-ńikişi gi ey-aì 
abl 3refl-CAUSE.COMPASSION 2-allat  
'...that you take pity on him' 
(lit. 'that he cause compassion to you')

(c) i-tu Jesus Christo do bihe i-Ruræ 
3-TALK JESUS CHRIST apposition ONE 3-SON  
Tupä do ku-se a hi-aì 
GOD appos p1.incl-LORD pl 1-allat  
'I believe in Jesus Christ, the only son of God, our lord' (lit. 'Jesus Christ, the only son of God, our lord, talks to me')

On closer examination, however, it would appear, especially when 
considering their literal meaning, that the examples in (16) are 
best analyzed as examples of pattern B with allative goal and no 
patient expressed.

It is interesting, though perhaps coincidental, that Harris 
(1981) also argues for collapsing patterns B and C in Georgian, 
accounting for the observed differences between the two patterns 
by means of the syntactic rules of Inversion and Unaccusative. 
This, however, brings up some important differences between Geor-

gian on the one hand and Chechen, Ingush, and Kipɛɛ on the other. 
For one thing, the three case-marking patterns of Georgian are 
traditionally considered to depend on the morphological class 
of the verb and the particular tense/aspect/mood category that it is 
used in. For example, the class 1 verb shown in (14) can appear
with all three patterns depending on its tense, aspect, and mood. This is not the case, however, in Chechen, Ingush, and Kipeș, where the case-marking patterns are lexically determined by the verb; that is, each verb may be used with one and only one of the possible case marking patterns. For Kipeș this means that verbs may be grouped into two classes: those which require pattern A, which are Mamiani's "passive" verbs, and those which require pattern B, which are Mamiani's neutral verbs. The three case-marking patterns of Chechen-Ingush are apparently determined by the valence of the verb and the semantic roles of the arguments that the verb is subcategorized for. According to Nichols (1984:185) there is a fairly close correlation between surface case and semantic role with agents usually showing up as ergative, experiencers as dative, goals as either dative or allative, and patients as nominative. It can be seen from Table 1, however, that the relationship between surface case and semantic role is not that straightforward in Kipeș.

Another important difference between Georgian and the other languages discussed here is that in Georgian, as argued by Harris (1981), there are syntactic rules like Passive, Inversion, etc. which change grammatical relations; and that by studying these and their interactions, one can identify subjects, direct objects, and indirect objects in Georgian. Thus, despite the differences in surface case-marking, Harris argues that those arguments represented by the left-hand column in Table 3 are final subjects, those in the middle column are final direct objects, and those in the right-hand column are final indirect objects. In Chechen-Ingush, however, there are no such rules. Thus, it is impossible to determine whether those arguments identified as "first object" and "second object" in Table 4 are terms or non-terms in the Relational Grammar sense. Even the identification of subjects in Chechen-Ingush is not quite as straightforward as it might seem since, according to Nichols (1984:194), reflexivization and chained clauses are controlled by discourse theme, not subject. Nevertheless, Nichols (1984:195) identifies those arguments represented by the left-hand column of Table 4 as subjects on the basis of, among other things, the fairly rigid word order, a hierarchy of semantic roles, and on the basis of which argument is the preferred theme. Thus, the argument that Nichols identifies as subject in Chechen and Ingush corresponds to that argument that Harris identifies as final subject in Georgian.

In Kipeș too there are no syntactic rules, like those in Georgian, that would allow one to argue for non-subject termhood. There are a number of syntactic tests which will identify subjects; however, these tests show that the subject in Kipeș is not the argument in column I of Table 1, which would correspond to the subjects in Georgian and Chechen-Ingush; rather, these tests consistently show that the subject in Kipeș is always the nominative NP in both case-marking patterns.

To see this, let us first consider how reflexives are formed. We have already seen a non-third person reflexive in (6), which
was formed merely by having two second person arguments in the clause. With third person reflexives the situation is different. In Kipek there are two sets of third person agreement prefixes. One set indicates the ordinary third person as seen for example in (17) on the verb and on the word meaning 'house'.

(17) Ø-pa-kri Paulo no ŋiho mo s-era
     3-KILL-perf PAULO erg INDIAN loc 3-HOUSE
     'the Indian_1 killed Paulo_2 in his_1 house'

There is, however, another set of reflexive third person prefixes. On nouns these are used whenever the possessor of the noun is coreferential with the nominative NP of the clause. Thus, (18) is the same as (17) except here the house is possessed by Paulo rather than the Indian, so 'house' has the reflexive prefix.

(18) Ø-pa-kri Paulo no ŋiho mo d-era
     3-refl-HOUSE
     'the Indian_1 killed Paulo_2 in his_1 house'

A similar example with a pattern B verb is shown in (19).

(19) Ø-ŋ-eke uinu i-woboho di-de
     3-CRY CHILD 3-FOR 3-refl-MOTHER
     'the child_1 cries for his_1 mother'

Third person reflexive clauses are then formed by using the reflexive prefix with the ergative preposition when the verb is a pattern A verb as in (20), or with the dative preposition when the verb is a pattern B verb as in (21).

(20) Ø-pa-kri d-na-ho
     3-KILL-perf 3-refl-erg-intens
     's/he killed him/herself'

(21) s-uka di-do-ho
     3-WANT 3-refl-dat-intens
     's/he loves him/herself'

Thus it can be seen that in both pattern A and pattern B it is the nominative NP, never the ergative NP, which dictates the use of the reflexive prefix on nouns and prepositions. This then indicates that the nominative NP is the subject in both pattern A and pattern B. Further evidence for this can be seen in the use of the reflexive prefix on verbs. The reflexive prefix will appear on a verb in certain types of complement clauses just in case its subject, i.e. the nominative NP, is coreferential with the subject of the main clause. Thus in (22) the purpose clause contains a pattern B verb meaning 'steal' whose third person subject is coreferential with, or controlled by, the subject of the main clause. Therefore, the verb meaning 'steal' has the reflexive agreement prefix.
(22) Ø-te-kri do di-koto  
    3-COME-perf dat 3refl-STEAL  
    's/he came to steal'  

Similarly, in (23) there are two conjoined purpose clauses containing pattern A verbs.

(23) Ø-kro-yo uye s-ai Ø-pi-kri mo rada  
    3-BE-MANY SUN 3-allat 3-BE-perf loc EARTH  
    bo di-neco no di-de do Santa Maria  
    abl 3refl-SEE erg 3refl-MOTHER appos SAINT MARY  
    no di-äänu do apostro a  
    erg 3refl-SON appos APOSTLE pl  
    no dehē, bo i-krocābī a i-ña  
    ALSO abl 3-CONSOLE pl 3-erg  

    'he stayed many days on earth to be seen by  
    his mother, Saint Mary, (and) by his sons,  
    the apostles, and to console them'  

In the first such clause, meaning 'so that his mother, Saint Mary, and his sons, the apostles, could see him', the nominative subject of the pattern A verb neco (namely, the 'him' of the translation) is coreferential with the matrix clause subject (i.e., the subject of pikri). Therefore, neco has the reflexive prefix. In the second purpose clause, meaning 'to console them', the third person subject of the pattern A verb krocābī is not coreferential with the matrix clause subject, but rather with the ergative NP of the first purpose clause ('his mother, Saint Mary, and his sons, the apostles'). Therefore, krocābī has the ordinary third person prefix. Note that the ergative NP in the second purpose clause (i-ña) is coreferential with the main clause subject, but it also does not take the reflexive prefix because it is not itself a subject.

Finally we can consider relative clauses. One way to form relative clauses can be seen in (24).

(24) (a) Pero, di-pa-kri-ri hi-ña  
    PEDRO 3refl-KILL-perf-nominal 1-erg  
    '...Pedro, who I killed'  

(b) Tupā, d-uka-ri hi-dio-ho  
    GOD 3refl-WANT-nominal 1-dat-intens  
    '...God, who loves me'  

The verb in the relative clause appears in a special nominalized form which requires the third person reflexive prefix. As can be seen, nominative subjects can be relativized this way regardless of whether the verb is a pattern A verb as in (24a) or a pattern B
verb as in (24b). The ergative argument of a pattern A verb may also be relativized as seen in (25).

(25) Pero, d-u-pa-kri-ri kra3o  
PEDRO 3refl-prefix-KILL-perf-nominal COW  
'...Pedro, who killed the cow'

However, when this happens, the verb must have a special prefix u- after the reflexive prefix. Thus, once again it can be seen that nominative NPs are treated the same way in both case-marking patterns while ergative NPs are treated in a different and more marked way. All of these facts indicate that the nominative NP is the subject in both case-marking patterns. It has often been pointed out that languages like Georgian, Chechen, and Ingush are morphologically ergative but syntactically non-ergative. The facts presented here, however, show that Kipe3 displays not only morphological but also syntactic ergativity.6

Having shown that the subject in Kipe3 is always the nominative NP, never the ergative NP, I now want to consider the motivation for the two classes of verbs. Hopper and Thompson (1980) note that in other languages with multiple case-marking patterns such as those we have been looking at, the type A pattern is associated with high Transitivity and the B type with low Transitivity. They cite Samoan as an example of a language where the class of more active verbs like 'hit' require an ergative case-marking pattern like the Kipe3 pattern A, while less active verbs like 'see' require a non-ergative pattern like the Kipe3 pattern B. An example is seen in (26).

(26) Samoan (Hopper and Thompson 1980:270)  
(a) ergative  
na  fasi e  le tama le teine  
tense HIT  erg THE BOY THE GIRL  
'the boy hit the girl'  
(b) non-ergative  
na  va'ai le tama i  le teine  
tense SEE THE BOY oblique THE GIRL  
'the boy saw the girl'

Intuitively it would seem that the situation is similar in Kipe3. Pattern A verbs include ones like 'kill', which should be of high transitivity; and pattern B verbs include ones like 'love', which should be of lower transitivity. In order to test this hypothesis, I took the 26 pattern A verbs shown in Table 5 and the 35 two- and three-place pattern B verbs shown in Table 6 from Mamiani's grammar and catechism and tried to rate them according to the Transitivity parameters shown in Table 7. Since all of the verbs in Tables 5 and 6 have two or more participants, I did not include parameter A of Table 7 in the calculations. Nor did I include F and G since these depend entirely on other elements of the sentence in which the verb is used and not on lexical
<table>
<thead>
<tr>
<th>Verb</th>
<th>Transitivity</th>
<th>CONSEQUENTIALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>bābi 'order, command'</td>
<td>4</td>
<td>?</td>
</tr>
<tr>
<td>beñe 'explain, declare, announce, show'</td>
<td>4.5</td>
<td>+</td>
</tr>
<tr>
<td>bësapri 'whip'</td>
<td>6.5</td>
<td>?</td>
</tr>
<tr>
<td>di 'give'</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>do 'receive'</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>he 'anoint'</td>
<td>4.5</td>
<td>?</td>
</tr>
<tr>
<td>kru 'drink'</td>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>më 'take (away), carry (off), receive'</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>mëibæ 'lift, raise'</td>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>mëperë 'make leave, take (away, off, out)'</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>mëte 'make come, bring'</td>
<td>5</td>
<td>+</td>
</tr>
<tr>
<td>moro 'do thus, perform an act'</td>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>neco 'see'</td>
<td>2</td>
<td>+</td>
</tr>
<tr>
<td>'know'</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>nio 'make'</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>nuñe 'guard, protect, keep safe, save'</td>
<td>4</td>
<td>(??)</td>
</tr>
<tr>
<td>pa 'kill'</td>
<td>7</td>
<td>+</td>
</tr>
<tr>
<td>pedi 'find'</td>
<td>5</td>
<td>+</td>
</tr>
<tr>
<td>po 'spank, strike, beat'</td>
<td>6.5</td>
<td>+</td>
</tr>
<tr>
<td>pododo 'crucify'</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>ti 'throw down'</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>tikro 'cast, throw, hurl, fling'</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>to 'institute, make, cause, prepare'</td>
<td>5</td>
<td>+</td>
</tr>
<tr>
<td>uriwo 'help'</td>
<td>4.5</td>
<td>+</td>
</tr>
<tr>
<td>waikucu 'baptize'</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>wowoke 'deceive'</td>
<td>4.5</td>
<td>+</td>
</tr>
<tr>
<td>ya(h)i 'conceive'</td>
<td>5</td>
<td>?</td>
</tr>
</tbody>
</table>

Table 5: Pattern A Verbs

Properties of the verb itself. Some of the other parameters such as the potency of the agent and the individuation of the patient also depend on other elements in the clause, but by trying to imagine prototypical scenes that might be described by the verb, I attempted to include these parameters too. This of course makes the whole enterprise a little slippery; but by giving a verb one point for each high Transitivity parameter that it seemed to have, and a half point in questionable cases, I came up with the Transitivity figures in Tables 5 and 6. Here it can be seen that in general the pattern A verbs exhibit higher transitivity than the pattern B verbs. There seems to be a serious glitch in the pattern, though, with verb number 13 in Table 5. However, Hopper and Thompson (1980:270) note that in the Northwest Caucasian language Adyghe an ergative case-marking pattern is used with 'see' while a non-ergative pattern is used with 'to look at'. They note that with these verbs "the completeness and totality of the action provide the deciding criterion: 'seeing' means taking in the whole of something, while 'looking at' suggests partial and indirect effect." We seem to have a similar situation, then, with Kipeć.
<table>
<thead>
<tr>
<th>Number</th>
<th>Verb</th>
<th>Transitivity</th>
<th>Consequentiality</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>bījō̊krada 'be disgusted, be nauseated, loathe'</td>
<td>1.5</td>
<td>-</td>
</tr>
<tr>
<td>27</td>
<td>bito 'fornicate'</td>
<td>4.5</td>
<td>-</td>
</tr>
<tr>
<td>28</td>
<td>ede 'dislike'</td>
<td>1</td>
<td>+</td>
</tr>
<tr>
<td>29</td>
<td>erekidī 'ask (about)'</td>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>30</td>
<td>keiko 'cover (up), conceal, hide'</td>
<td>3.5</td>
<td>+</td>
</tr>
<tr>
<td>31</td>
<td>kēde 'order, command, advise'</td>
<td>4</td>
<td>?</td>
</tr>
<tr>
<td>32</td>
<td>koto 'steal'</td>
<td>3.5</td>
<td>+</td>
</tr>
<tr>
<td>33</td>
<td>krikie 'ask (for)'</td>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>34</td>
<td>mārā 'fight'</td>
<td>4.5</td>
<td>-</td>
</tr>
<tr>
<td>35</td>
<td>me 'speak'</td>
<td>3</td>
<td>+</td>
</tr>
<tr>
<td>36</td>
<td>mepedi 'slander, defame'</td>
<td>3.5</td>
<td>-</td>
</tr>
<tr>
<td>37</td>
<td>ne 'to look at watch, guard'</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>38</td>
<td>nēyēta 'desire'</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>39</td>
<td>ŭikiēgi 'pity'</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>40</td>
<td>ŭikoro 'not want to, not feel like, not be in the mood for'</td>
<td>1</td>
<td>?</td>
</tr>
<tr>
<td>41</td>
<td>ŭikræ 'want to, feel like, be in the mood for'</td>
<td>1</td>
<td>?</td>
</tr>
<tr>
<td>42</td>
<td>re 'become irritated, upset'</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>43</td>
<td>tu 'talk'</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>44</td>
<td>ubi 'see'</td>
<td>2</td>
<td>+</td>
</tr>
<tr>
<td>45</td>
<td>ucoo ho 'tease'</td>
<td>4.5</td>
<td>-</td>
</tr>
<tr>
<td>46</td>
<td>uibo 'vomit'</td>
<td>2</td>
<td>+</td>
</tr>
<tr>
<td>47</td>
<td>uipabo 'confess'</td>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>48</td>
<td>uka 'want, love'</td>
<td>2</td>
<td>+</td>
</tr>
<tr>
<td>49</td>
<td>ubete 'recognize'</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>50</td>
<td>ukēbi 'make a mistake about, be wrong about'</td>
<td>1</td>
<td>+</td>
</tr>
<tr>
<td>51</td>
<td>una 'distribute'</td>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>52</td>
<td>une 'know how to make'</td>
<td>1</td>
<td>?</td>
</tr>
<tr>
<td>53</td>
<td>upre 'lie'</td>
<td>3</td>
<td>+</td>
</tr>
<tr>
<td>54</td>
<td>use 'become happy'</td>
<td>2.5</td>
<td>+</td>
</tr>
<tr>
<td>55</td>
<td>uwañi 'to need'</td>
<td>1</td>
<td>?</td>
</tr>
<tr>
<td>56</td>
<td>wi 'become'</td>
<td>2.5</td>
<td>?</td>
</tr>
<tr>
<td>57</td>
<td>winu 'dare'</td>
<td>2</td>
<td>?</td>
</tr>
<tr>
<td>58</td>
<td>worone 'tell'</td>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>59</td>
<td>woroyēta 'admire what is seen, look with admiration'</td>
<td>1.5</td>
<td>?</td>
</tr>
<tr>
<td>60</td>
<td>yako 'grow tired of, bored with'</td>
<td>2</td>
<td>+</td>
</tr>
</tbody>
</table>

Table 6: Pattern B Verbs

verbs 13 (Table 5) and 37 (Table 6) (though we may still have a problem with verb no. 44 in Table 7). There is also a problem in the observed overlap between the Transitivity scores of the two sets of verbs in the 4 - 4.5 range. It would be nice if this could be attributed to faulty calculation, but it is not certain that that is the case.
<table>
<thead>
<tr>
<th></th>
<th>HIGH</th>
<th>LOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Participants</td>
<td>2 or more</td>
<td>1</td>
</tr>
<tr>
<td>B. Kinesis</td>
<td>action</td>
<td>non-action</td>
</tr>
<tr>
<td>C. Aspect</td>
<td>telic</td>
<td>atelic</td>
</tr>
<tr>
<td>D. Punctuality</td>
<td>punctual</td>
<td>non-punctual</td>
</tr>
<tr>
<td>E. Volitionality</td>
<td>volitional</td>
<td>non-volitional</td>
</tr>
<tr>
<td>F. Affirmation</td>
<td>affirmative</td>
<td>negative</td>
</tr>
<tr>
<td>G. Mode</td>
<td>realis</td>
<td>irrealis</td>
</tr>
<tr>
<td>H. Agency</td>
<td>A high in potency</td>
<td>A low in potency</td>
</tr>
<tr>
<td>I. Affectedness of O</td>
<td>0 totally affected</td>
<td>0 not affected</td>
</tr>
<tr>
<td>J. Individuation of O</td>
<td>0 highly individuated</td>
<td>0 non-individuated</td>
</tr>
</tbody>
</table>

Table 7: Transitivity (Hopper and Thompson 1980:252)

To get another perspective on this, I also considered Chafe's (1980) notion of "consequentiality". According to Chafe there is an aspect suffix in Seneca which he calls the "stative aspect" suffix. On some verbs this suffix seems to indicate perfect while with some other verbs it seems to indicate progressive. There is also a very small number of ambiguous verbs where the meaning of the stative suffix depends on the context. Chafe feels that those verbs for which the stative suffix means perfect describe events which have perceptible consequences while those for which the meaning is progressive do not have such consequences. He also notes that there is a similar phenomenon in Japanese, except that in Japanese the class of ambiguous verbs is much larger than in Seneca. In comparing non-ambiguous verbs in these two languages, Chafe discovered that there is a very high degree of agreement as to which verbs are consequential and which are not. While English does not have anything like the Seneca stative suffix, Chafe conducted an experiment which showed that English speakers also seem to be sensitive to the notion of consequentiality and again showed a high degree of correlation between the different languages as to which verbs are judged to be consequential.

The notion of consequentiality seems to be related to some of the Transitivity parameters, especially parameter I since those verbs whose patients are totally affected should be consequential. For each of the verbs in Tables 5 and 6 I tried to find a Seneca equivalent and determine its consequentiality. It can be seen in Table 5 that all of the pattern A verbs for which I found Seneca equivalents were consequential except for 13 in one, but not both, of its senses, and for 15. I have no explanation for 15 other than to say that the Seneca verb may not have actually been equivalent. The pattern B verbs in Table 6, however, are really a mixed bag: some are consequential and some non-consequential. However, it should be noted that for all of the pattern A verbs, between the agent or experiencer and the patient, the participant that is most affected by, or which most suffers or benefits from the consequences of, the event described by the verb is the
patient; and the patient is the subject for all of these verbs. The claim I want to make is this: for those pattern B verbs which are consequential, it is not the patient that is most affected (as it is with the pattern A verbs) but rather the agent or experiencer. Thus, for example, in verb no. 28 'dislike', it is the "disliker", not the "disliked", which is typically most affected by the disliking; and it is the "disliker", not the "disliked", which appears as the subject. In Larsen (1982) I argued that in the Mayan language Aguacatec there were certain situations in which the notion of affectedness entered into the determination of which participant would be be expressed as the subject. In Kipeá, however, it seems that affectedness is probably the most important feature of subjecthood. For many languages people have attempted to relate in some way the notion of subject to discourse notions like theme, topic, or viewpoint (see, e.g., DeLancey 1981) or to notions of semantic role (see e.g., Fillmore 1968) or both (see, e.g., Bates and MacWhinney 1982). In Kipeá, however, it would appear that the notion of subject has little directly to do with such things. In general is seems that the subject in Kipeá is that participant which is typically most highly affected by the event or situation described by the verb.

NOTES

1. Although this is, in fact, what Mamiani says on pp. 25-6 of the second edition of his grammar, he claims later (p. 64) that there are actually three classes: "passive", "neutral", and "substantive". "Substantive verbs" are in fact just nouns and adjectives used as predicates. Mamiani was forced into this kind of classification by his Latin-based model of grammar: Kipeá has no verb corresponding to the Latin sum. In Corrêa de Azevedo's (1965) treatment of Kipeá grammar, all adjectives are considered to be "stative verbs". In both treatments it appears that Mamiani's "substantive verbs" and Corrêa de Azevedo's "stative verbs" function just like "neutral verbs" when used as predicates.

2. Though I have some reservations about it, all Kipeá forms will be cited according to the phonemic analysis presented in Corrêa de Azevedo (1965). The phonemic symbols which differ from those of Mamiani's original orthography are: /k/ = <k>/i,e, = <o>/elsewhere; /g/ = <gh>/i,e, = <g>/elsewhere; /c/ = <ts, tc>; /d/ ([k, ³]) = <ch, tch>; /3/ = <dz>; /j/ = <dj>; /ñ/ = <nh>; /y/ = some <ngh>/i; /θ/ = <g>; /ð/ = <ñn, ñm>; other /v/ = <V, Vn, Vm>.

3. Mamiani notes in his grammar (2nd ed., pp. 67-8) that "substantive verbs", and some "neutral verbs" (i.e., apparently some, but not all, of those one-place intransitives which can have patient subjects), can be turned into "passives" by the addition to the clause of an agent NP, marked by the preposition no. He is careful to note, however, that this should not be considered "passivization". He says that in a true
passive the "nominative" becomes "ablative", but in Kipeľ the "nominative" stays "nominative", and the "ablative of cause" is just added to indicate the agent.

4. Judging from his presentation of Kipeľ material in class (UC Berkeley, 1983), I gather that Rodrigues has abandoned this analysis.

5. Except, of course, for those one-place intransitive pattern B verbs mentioned in footnote 3, which can take an added ergative argument, thus being able to appear in both pattern A and pattern B clauses. An example is

(i) Ø-kuñi
3-COLD
'it is cold'
(ii) Ø-kuñi e-na
3-COLD 2-erg
'you made it cold'

All such verbs are basically pattern B verbs which can be turned into causatives by the addition of the ergative argument.

6. If Dixon's (1979) claims about the universality of notions like A, S, and O and the universality of the notion of Subject = \{A, S\} are correct, then it can be said that Kipeľ displays syntactic ergativity in that subordination seems to operate on an S/O pivot (see Dixon 1979:120-5). However, it is not clear to me that the notion of Subject = \{A, S\} has any relevance at all to Kipeľ grammar. Discussion of this is beyond the scope of this paper, however, I might mention that it is not clear that A and S are treated the same way, and differently from O, in Kipeľ imperatives. In Marantz's (1981) theory, it would appear that Kipeľ would be a true "ergative language", as opposed to a "nominative/accusative type B" language (i. e., one that displayed only morphological ergativity). I believe Marantz's notion of a true "ergative language" constitutes a kind of "syntactic ergativity", though not necessarily the same kind of syntactic ergativity that Dixon discusses.

7. Most of this information came from Chafe (1967). Some of these items were kindly elicited from or checked with native speakers by Chafe.

8. It is interesting, and I think also significant, that all of the pattern B verbs which received a Transitivity score of 4.5 are non-consequential, unlike those pattern A verbs with the same Transitivity score.
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B. Primary sources for other Kiriri languages:


C. Secondary sources:


Rodrigues, Aryan Dall'Inga. 1942. O artigo definido e os numerais na língua Kiriri; Vocabulário Português-Kiriri e Kiriri-Portugues. Arquivos do Museu Paranaense 2.179-211.


D. Other references:


Chafe, Wallace L. 1967. Seneca morphology and dictionary. (Smithsonian contributions to anthropology, vol. 4.)
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In a recent unpublished paper, Shibatani (1984) proposes a prototype analysis of passives, based on a set of pragmatic functions and morphological, semantic and syntactic properties, including change in grammatical relations. Dahlstrom (1983) shows that this feature of grammatical relation change must be taken as a criterial definition of passive, since the pragmatic, semantic and discourse features prototypically associated with passives may also result from inverse-verb structures (such as those in Algonkian and Navaho) which do not change grammatical relations. In light of this, I will examine three different constructions in Marwari (an Indo-Aryan language of western Rajasthan) which share the syntactic property of promoting a patient into subject position, and a pragmatic property of "defocussing" the agent. The three constructions, which I call the anti-transitive, the inflectional passive and the periphrastic passive, are illustrated by the sentences in [1].

[1a] cāval pāk-e
    rice  cooks
   "The rice is cooking"

[1b] cāval pakāįj-e
    is-cooked
   "The rice is being cooked"

[1c] cāval pakāiyō jāv-e
    cooked  goes
   "The rice is being cooked"

To give a rough idea of what these categories mean, the sentences I label as passives are both semantically parallel to English passives, while the anti-transitive is crucially characterized by complete absence of an agent. I will show that an adequate account of the differences between the anti-transitive and the passive requires, in addition to a narrow syntactic definition of passivization as a relation-changing rule, the recognition of a separate parameter of semantic valence. In particular, although valence-changing operations may produce sentence types that seem to mirror the syntax of passives, an examination of the semantics will show that they differ crucially from passives in their treatment of the agent. I will also show that the two Marwari passives are identical relation-changing rules, the only differences between them being attributable to rule ordering and the
distinction between lexical and phrasal processes.

I define semantic valence as the number of obligatory participant roles in the cognitive scene associated with a verb. The semantic valence of a verb is thus independent of particular syntactic representations of the scene, which may involve sentences with changes in syntactic transitivity or may leave cognitively obligatory participant roles unspecified. The semantic valence associated with a verb as a lexical item thus remains constant regardless of the syntactic structures in which the verb appears.

Marwari, however, has a valence-changing rule which relates sets of verbs of different semantic valence. The intransitive verb pāk in [1a] means "cook (int)". It is related by the set of lexical valence-changing rules to both the transitive verb pakāv "cook (tr)" and the causative verb pakvāv "have someone cook (sthg)". These lexically related univalent, bivalent and trivalent verbs are illustrated in [2].

[2a] pāk "cook [intransitive]" UNIVALET (anti-transitive)
cāval pāk-e
rice cooks
"The rice cooks"

[2b] pakāv "cook [transitive]" BIVALENT (transitive)
vā cāval pakāv-e
she cooks
"She cooks the rice"

[2c] pakvāv "have someone cook" TRIVALENT (causative)
vā un-sū cāval pakvāv-e
she him-INST has-cook
"She has him cook the rice"

The Marwari valence-changing morphology that relates these verbs is based on a very complex system of morphophonemic variation of stem-internal vowels (vowel length and height) and a set of causative suffixes. The valence changing operation produces sets of verbs that may exhibit vowel changes, suffixation, or both, as illustrated in [3].
### VALENCE-CHANGING MORPHOLOGY

<table>
<thead>
<tr>
<th>univalent</th>
<th>bivalent</th>
<th>trivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>pāk &quot;cook&quot;</td>
<td>pakāv &quot;cook[tr]&quot;</td>
<td>pakvāv &quot;have-open&quot;</td>
</tr>
<tr>
<td>baṇ &quot;be made&quot;</td>
<td>baṇāv &quot;make[tr]&quot;</td>
<td>baṇvāv &quot;have-build&quot;</td>
</tr>
<tr>
<td>baḷ &quot;burn&quot;</td>
<td>bāḷāv &quot;burn[tr]&quot;</td>
<td>bāḷvāv &quot;have-burn&quot;</td>
</tr>
<tr>
<td>mar &quot;die&quot;</td>
<td>mār &quot;kill, strike&quot;</td>
<td>marāv/marvāv &quot;have-kill&quot;</td>
</tr>
<tr>
<td>muṟ &quot;turn, bend&quot;</td>
<td>moṟ &quot;turn, bend[tr]&quot;</td>
<td>muṟāv/muṟvāv &quot;have-turn&quot;</td>
</tr>
<tr>
<td>khūl &quot;open&quot;</td>
<td>khoḷ &quot;open[tr]&quot;</td>
<td>khulāv/khulvāv &quot;have-open&quot;</td>
</tr>
<tr>
<td>pīghal &quot;melt&quot;</td>
<td>pīghāl &quot;melt[tr]&quot;</td>
<td>pīghāv/pīghāvāv &quot;have-melt&quot;</td>
</tr>
</tbody>
</table>

Although the causative trivalent verbs are always suffixed and are clearly derived forms, the determination of the basic form, and the direction of derivation among the univalent and bivalent verbs is somewhat problematic in this system, because the neatest solution for the morphology creates a mess for the semantics and vice versa. Much has been written on the parallel valence system in Hindi, and a non-controversial account has yet to be proposed. For our purposes here, however, direction of derivation is irrelevant, though I will continue to refer to the univalent member of the set as anti-transitive as if it were the derived form.

I call the verb in [2a] univalent because it has only one cognitively obligatory participant role. Rather than speaking of syntactic demotion of an agent (as in the case of true passives), we must consider this an example of elimination of the agent from the frame altogether. That is, although comparison of [2b] with [2a] shows a grammatical relation change with regard to the status of the patient as object versus subject, semantically, [2a] contains no agent at all. While elimination of a participant role may thus be considered a sort of strong pragmatic demotion, it is perhaps to be distinguished from relational change.

The Marwari passives, on the other hand, do imply an agent. They are true relation changing rules, but do not alter the semantic valence of the verb. That is, the ex-object becomes a subject, and the ex-subject, though semantically and syntactically demoted out of the clause nucleus, is still an obligatory participant role in the conceptualization of the event.

Passivization in Marwari is of two kinds. The inflectional passive is derived by addition of the bound morpheme -īj to the active stem, producing a new syntactically intransitive verb. The periphrastic passive is a phrasal construction that is composed of the perfect participle of the verb followed by an inflection-bearing form of the verb jā ("to go"). The process of passivization in Marwari is illustrated in [4].
[4] PASSIVE MORPHOLOGY

<table>
<thead>
<tr>
<th>active</th>
<th>inflectional</th>
<th>periphrastic</th>
<th>passive</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>kar</td>
<td>&quot;do&quot;</td>
<td></td>
<td>kar-īj</td>
<td>kar-iyo jā</td>
</tr>
<tr>
<td>dekh</td>
<td>&quot;see&quot;</td>
<td></td>
<td>dekh-īj</td>
<td>dekh-iyo jā</td>
</tr>
<tr>
<td>khā</td>
<td>&quot;eat&quot;</td>
<td></td>
<td>khā-īj</td>
<td>khā-iyo jā</td>
</tr>
<tr>
<td>mār</td>
<td>&quot;kill&quot;</td>
<td></td>
<td>mār-īj</td>
<td>mār-iyo jā</td>
</tr>
</tbody>
</table>

Marwari passives, as well as anti-transitives, construe the patient in the syntactic role of subject. For a number of reasons that don't concern us here, some of the standard syntactic tests (e.g., control structures, equi, etc.) cannot be applied in this language as evidence for subjecthood. However, other evidence indicates the subject status of the patient in all three sentence types in [1]. These other tests include verbal agreement, conjunction reduction and behavior under nominalization. I will briefly illustrate the latter. As shown in [5] and [6], when a Marwari sentence is nominalized, as with a gerund, its subject appears in the genitive.

[5] NOMINALIZATION OF INTRANSITIVE

rām jodhpur jāv-e  
Ram Jodhpur goes  
"Ram goes to Jodhpur"

NP[S[rām-ro jodhpur jāv-ṇo]] cokho he 
Ram-GEN going good is  
"It is good for Ram to go to Jodhpur"  
(lit. Ram's going to Jodhpur is good)

[6] NOMINALIZATION OF TRANSITIVE

rām kelo khāv-e  
Ram banana eats  
"Ram eats the banana"

NP[S[rām-ro kelo khāv-ṇo]] cokho he 
Ram-GEN eating good is  
"It is good for Ram to eat the banana"  
(lit. Ram's eating the banana is good)

*kelo-ro (rām-sū) khāv-ṇo cokho he 
-GEN -INST

This is entirely parallel to English, as in John's going to Fiji worried me. This same operation applies to the patient in nominalized anti-transitives (as in [7]), inflectional passives (as in [4]).
[8]) and periphrastic passives (as in [9]).

[7] NOMINALIZATION OF ANTI-TRANSITIVE (cf. [1a])

cāval hoše pak-e
rice slowly cooks
"The rice cooks slowly"

NP[_[cāval-ro hoše pāk-no]] cokho he
-GEN cooking good is
"It is good for the rice to cook slowly"
(lit. The rice's slowly cooking is good)

[8] NOMINALIZATION OF INFLECTIONAL PASSIVE (cf. [1b])

cāval hoše pakāi-j-e
is-cooked
"The rice is being slowly cooked"

NP[_[cāval-ro hoše pakāi-j-no]] cokho he
-GEN being-cooked good is
"It is good for the rice to be cooked slowly"
(lit. The rice's being slowly cooked is good)

[9] NOMINALIZATION OF PERIPHRASTIC PASSIVE (cf. [1c])

cāval hoše pakāi-yo jāv-e
cooked goes
"The rice is being slowly cooked"

NP[_[cāval-ro hoše pakāi-yo jāv-no]] cokho he
-GEN cooked going good is
"It is good for the rice to be cooked slowly"
(lit. The rice's being slowly cooked is good)

These nominalized sentences, which clearly preserve their anti-transitive or passive structure, indicate that the patient is indeed a subject.

Aside from this syntactic parallel, the three constructions under discussion also share the pragmatic effect of defocusing the agent. As Davison (1980) and Shibatani (1984) point out, it is this defocusing of the agent that allows passives in many languages to acquire special potential or capabilitative meanings. In Marwari, anti-transitives as well as passive may take on such implicative meanings, particularly when negated or used in imperfect constructions. Passive sentences generally leave their agent unspecified, but if the agent is specified, the capabilitative reading becomes primary, as shown in [10]. The sentences in [11] are examples of the anti-transitive also being used for implicative potential or capabilitative meanings.
[10] PASSIVES WITH POTENTIAL/CAPABILITATIVE MEANINGS

a) ero kāṁ aṭhe nī karij-e
   kariyo jāv-e
   such work here not is-done
   "This kind of work is not (cannot be) done here"

b) mā-sū ero kāṁ nī karij-e
   kariyo jāv-e
   us-INST such work not is-done
   "We can't do this kind of work"


a) ñī bartan mē cāval nī pāk-ēlā
   this pot in rice not cook-FUT
   "The rice won't (can't) cook in this pot"

b) bhījyoro balīto nī bal-e
   wet wood not burns
   "Wet wood doesn't (can't) burn"

On the basis of these two features alone, that is syntactic patient-promotion and pragmatic agent-defocusing, one might be tempted to include the anti-transitives in the category of passives. That is, the anti-transitive produces a pragmatic effect (agent defocusing) which Shibatani considers a primary element of the passive prototype. It also exhibits a syntactic property (patient-promotion) which would satisfy a proposed minimal syntactic requirement that passives be "relation-changing". However, I think we would not wish to call the anti-transitive a kind of passive. Although both processes "demote" the agent, anti-transitives do so by eliminating the agent from the cognitive frame, an operation which I think should be excluded from the purview of passivization.

English sentence pairs like those in [12] illustrate the kind of semantic difference which I am attributing to semantic valence.

[12] THE DOOR CLOSED       THE DOOR WAS CLOSED
    THE CLOTHES ARE WASHING   THE CLOTHES ARE BEING WASHED
    THE RICE DIDN'T COOK WELL  THE RICE WASN'T COOKED WELL

That the agent is still cognitively present in passives but absent in anti-transitives can be seen by constructing sentence frames that explicitly negate the presence of an agent. As Pandharipande (1981) shows for Hindi, univalent anti-transitive verbs (as in [13]) are possible in such agentless frames, but passives (as in [14]) are not.
[13] ANTI-TRANSITIVES IN EXPLICITLY AGENTLESS FRAMES

a) ḫǒd pak-iyọ paŋ koi nǐ pakā-iyọ
   egg cooked but no-one cooked
   "The egg cooked, but no one cooked it"

b) kivār khul-iyọ paŋ koi nǐ ho
   door opened but no-one was
   "The door opened but no one was there"

[14] PASSIVES IN EXPLICITLY AGENTLESS FRAMES (ungrammatical)

a) *fido {
   pakāj-iyọ
   } paŋ koi nǐ pakā-iyọ
   egg was-cooked but no-one cooked
   (*The egg was cooked but no one cooked it)

b) ??kivār {
   kholi-iyọ
   } paŋ koi nǐ ho
   door was-opened but no-one was
   (??The door was opened but no one was there)

This semantic difference explains a further contrast between passives and anti-transitives that shows up in the syntax. Marwari has a discourse marker (ne) which is functionally parallel to the Hindi so-called dative/accusative marker ko. This ne marker functions in discourse to mark highly salient affected patients when they appear in direct object position. In particular, this marker indicates specificity and definiteness of the patient (as in [15]), though it is sensitive to other parameters of salience such as animacy and humanness. (See Junghare [1983] and Masica [1981]).

[15] -ne AS SPECIFIED OBJECT MARKER

a) mhē ek pothī bhaṇī a') mhē āp-ṛī pothī-ne bhaṇī
   I a book read I you-of book-NE read
   "I read a book"  "I read your book"

b) mhē ek dhobi dekhiyo b') mhē ū dhobi-ne dekhiyo
   I a washerman saw I that washerman-NE saw
   "I saw a washerman"  "I saw that washerman"

In Marwari passives, patients in subject position also exhibit variable ne marking. Informants report that marking a passive subject with ne connotes that the action was intentionally carried out by the agent, while this connotation is absent if the ne is absent. Thus, although neither sentence in [16] specifies an agent, [16a] could be used where Ram is struck in a car accident, while [16b] connotes intentional homicide.
[16] -ne MARKING ON PASSIVE SUBJECTS

a) rām {mārīj-iyo
     (māriyo giyo
     Ram was-killed
     "Ram was killed"

b) rām-ne {mārīj-iyo
     (māriyo giyo
     Ram-NE was-killed
     "Ram was killed
     (i.e. murdered)"

A significant difference between the anti-transitive and the passive is that while the passive allows this use of the dative/accusative marking to reinforce the "agentivity" of the demoted agent, anti-transitives do not allow ne-marking at all, regardless of saliency, specificity, etc., as shown in [17].

[17] -ne MARKING ON ANTI-TRANSITIVE SUBJECTS (ungrammatical)

a) cāvaḷ (*-ne) pāk-iyo
   rice (*-NE) cooked
   "The rice cooked"

b) rām (*-ne) mar-iyo
   Ram (*-NE) died
   "Ram died"

c) māhāro ghar (*-ne) baḷ-iyo
   my house (*-NE) burned
   "My house burned"

This evidence indicates that a connotation of intentional agency is incompatible with anti-transitives, a fact which is explained naturally if anti-transitives have no agent at all.

A final difference between passives and anti-transitives is the fact that Marwari freely allows the passive morphology to be applied to intransitive verbs as well as transitives, while there is no analogous application of anti-transitive (i.e. valence reduction) operations to intransitives. As the subjectless sentences in [18] show, passivization of intransitives performs its usual function of defocusing the agent, and in this case again provides the sort of potential or prescriptive readings that Shihbatani discusses cross-linguistically.

[18] PASSIVES FROM INTRANSITIVES

a) so "sleep" aṭhe nǐ {soīj-elā
   (soiyo jāv-elā
   here not be-slept-FUT
   "One can't sleep here"
b) dhab "stop" itta tāvre nī ḍhabīj-e ḍhabiyo jāv-e
so-much sunshine-in not is-waited
"One can't (shouldn't) stop in such heat"

c) jā "go" sākil-su borunde nī jāīj-e jāiyo jāv-e
bike - by Borunda not is-gone
"One can't/shouldn't go to Borunda by bike"

No parallel anti-transitive (or valence-reduced) forms exist, which is precisely what we would expect, since intransitives like sleep, stop and go are already univalent.

To summarize the discussion so far, anti-transitives and passives share one syntactic and one pragmatic feature, but differ both syntactically and semantically in other ways. I propose that the notion of semantic valence reduction be kept distinct from the notion of grammatical relation-change and that anti-transitives be thereby excluded from the category of passives.

Having distinguished anti-transitives from passives in general, we will now look at the inflectional and periphrastic passives in Marwari. Although the two types of passives seem, so far, to function identically, I will now show that they differ in regard to their interaction with another rule in the language. Marwari has a system of serial verbs (also known as compound verbs). These are verbal sequences composed of an uninflected verb which carries the lexical meaning and a second verb (selected from a small closed set) which carries the inflectional ending but has lost its lexical meaning. The semantic contrasts between simple verbs and serial verbs do not concern us here. (See Hook [1978] and Porizka [1977,1981]). As a general rule, the verb jā "go" may act as the V2 compounding with intransitive main verbs, while the verbs le "take" or de "give" may act as the V2 compounders with transitive main verbs. The basic process is exemplified in [19].

[19] COMPOUND VERB FORMATION

a) vo so-iyo ------→ vo so giyo
he slept  he sleep-went
"He slept"  "He fell asleep"

b) vo khāpo khā-iyo ------→ vo khāpo khāy liyo
he food ate  he food eat-took
"He ate the food"  "He ate up the food"
c) vo kāgad bhej-iyo ----> vo kāgad bhej diyo
    he letter sent          he letter send-gave
    "He sent the letter"    "He sent off the letter"

Nearly all verbs may be found as V1 main verbs in such compound verb constructions. From this, we would expect that all passive verbs (as well as anti-transitives) would function just like any other intransitives and be able to undergo compounding with the V2 ġā. As shown in [20] and [21], anti-transitives and inflectional passives do indeed appear as V1 main verbs in such compound constructions. However, this process of compound verb formation cannot be applied to periphrastic passives, as shown in [22].

[20] COMPOUND VERBS FROM ANTI-TRANSITIVES

a) mukām bāl-iyo ----> mukām bāl giyo
   house burned          house burn-went
   "The house burned"    "The house burned up/down"

b) cāval pāk-iyo ----> cāval pāk giyo
   rice cooked           rice cook-went
   "The rice cooked"     "The rice cooked up"

[21] COMPOUND VERBS FROM INFLECTIONAL PASSIVES

a) khāṇo khāįįj-iyo ----> khāṇo khāįįj giyo
   food was-eaten        food be-eaten went
   "The food was eaten"  "The food was eaten up"

b) kām kariįj-iyo ----> kām kariįj giyo
   work was-done         work be-done went
   "The work was done"   "The work was (all) done"

[22] COMPOUND VERBS FROM PERIPHRASTIC PASSIVES (ungrammatical)

a) khāṇo khāiyō giyo ----> *khāṇo khāiyō ġā giyo
   food eaten went       food eaten-go went
   "The food was eaten"  "The food was eaten"

b) kām kariyo giyo ----> *kām kariyo ġā giyo
   work done went        work done-go went
   "The work was done"   "The work was done"

The two kinds of passives thus exhibit differential behavior with regard to the application of compound verb formation. The explanation that suggests itself is that compound verb formation only applies to lexical main verbs, and that anti-transitives and inflectional passives meet this condition while periphrastic
passives do not. However, another piece of evidence argues for a possible rule-ordering explanation of these facts. Recall that compounding may apply to transitives or intransitives. Since transitive compound verbs (e.g. those with le or de as in [19b] and [19c]) function like transitive verbs in other respects, we would expect them to be able to undergo passivization themselves. In [23a] and [23b] we show that such transitive compound verbs can indeed be passivized with periphrastic passivization, but may not undergo inflectional passivization.

[23a] PERIPHR. PASSIVIZATION OF COMPOUND VERBS

\[
\text{vo kh\=ano kh\=ay liyo} \quad \longrightarrow \quad \text{kh\=ano kh\=ay liyo giyo}
\]
\[
\text{he food eat-took} \quad \quad \quad \text{food eat-taken went}
\]
\[
\text{"He ate up the food"} \quad \quad \quad \text{"The food was eaten up"}
\]

[23b] INFL. PASSIVIZATION OF COMPOUND VERBS (ungrammatical)

\[
\text{vo kh\=ano kh\=ay liyo} \quad - \quad - \quad \longrightarrow \quad \text{*kh\=ano kh\=ay lir\={i}j-iyo}
\]
\[
\text{he food eat-took} \quad \quad \quad \text{food eat - was-taken}
\]
\[
\text{"He ate up the food"}
\]

This differential behavior of the passives proves that inflectional passivization must be ordered before compound verb formation, and that periphrastic passivization must follow compound verb formation. In other words, the facts described above can be explained by positing an ordered set of rules in which the process of compound verb formation intervenes between the two kinds of passivization.

What then is the ordering of the valence-changing rules relative to these other processes? We have already shown (in [20]) that compound verb formation can apply to anti-transitives. Since the same valence-changing operations also produce causative verbs as described above, the additional fact that these causatives may undergo either kind of passivization indicates that valence changes must take place before any of the other rules apply. This is shown in [24a,b]. In other words, the output of the valence-changing rules can undergo any of the other three operations. Since the outputs of none of the other rules can undergo subsequent valence change (as shown in [25a,b]), an ordered set of rules must place valence change before the others.

[24] PASSIVIZATION OF CAUSATIVES

a) inflectional passivization

\[
\text{vo c\=a\=val pak\=v\=a\=j-iyo} \quad \longrightarrow \quad \text{c\=a\=val pakv\=a\={i}j-iyo}
\]
\[
\text{he rice had-cooked} \quad \quad \quad \text{rice was had-cooked}
\]
\[
\text{"He had the rice cooked} \quad \quad \quad \text{"The rice was had-cooked"}
\]
\[
\text{(i.e. by someone)}
\]
b) periphrastic passivization
vo cąvąl pakvä-iyo -----> cąvąl pakväiyo giyo
he rice had-cooked             rice had-cooked went
"He had the rice cooked
(i.e. by someone)"

[25a] VALENCE-CHANGE (e.g. CAUSATIVIZATION) APPLIED TO PASSIVES
khąj                             *khąj-vąv
khąiyo ją                           (*khąiyo ją-vąv
"be eaten"
(* cause-to-[be-eaten])

[25b] VALENCE-CHANGE (CAUSATIVIZATION) APPLIED TO COMPOUNDS
khąy le - - - - *khąy lirąv
eat-take     eat cause-to-take
"eat up"       (* cause-to-[eat-up])

vo khąço khąy liyo - - - - *vo rąm-su khąço khąy lirą-iyo
he food eat-took                 he Ram-by food eat caused-to-take
"He ate up the food"             (*He had Ram eat-up the food

To summarize, the interactions of the rules of valence-change, inflectional passivization, compound verb formation and periphrastic passivization indicate that they are strictly ordered as shown in [26].

[26] POSITED RULE ORDERING:
A) VALENCE-CHANGE
B) INFLLECTIONAL PASSIVIZATION
C) COMPOUND VERB FORMATION
D) PERIPHRASTIC PASSIVIZATION

The output of any of these rules may be subjected to any of the later rules, with the following pragmatic restrictions: (1) anti-transitives, because they have no agent anyway, cannot undergo either kind of passivization (since passivization is pragmatically an agent-defocusing rule), and (2) passives themselves may not be passivized (since the agent is already defocused). Given these pragmatic limitations, any combination of these optional processes may be applied, as shown in [27].
[27] COMBINATIONS OF RULE APPLICATIONS

A+B (causative + inflectional passivization) -- see [24a]
A+C (anti-transitive + compound formation) -- see [20]
    causative + compound formation:
    vā  rām-sū  cāvāl  pakvāy  liyo
    she  Ram-INST  rice  have-cook  took
    "She had Ram cook up the rice"
A+D (causative + periphrastic passive) -- see [24b]
B+C (inflectional passive + compound formation) -- see [21]
B+D pragmatically ruled out
A+B+C causative + inflectional passivization + compounding:
    cāvāl  pakvāīj  giyo
    rice  be[had-cooked]  went
    "The rice was had-cooked-up"
A+C+D (causative + compound + periphrastic passive)
    cāvāl  pakvāy  diyo  giyo
    rice  [have-cook]-given  went
    "The rice was had-cooked-up"

I have shown that the passives in Marwari, as distinct from the anti-transitives, are relation-changing rules. I have further shown that the two kinds of passives, though they appear to be identical in semantic and syntactic function, must be ordered separately in the grammar. Space limitations do not allow me to discuss all the consequences of the rule ordering proposed in [26]. But I will briefly point out that while rules A and B appear to be lexical rules, the status of C and D is problematic. In both of these constructions certain emphatic particles may intervene between the constituent elements, that is, between the V1 and V2 in compound verb structures, and between the participle and the verb jā in the periphrastic passives. In the latter case, the construction is even more clearly phrasal in nature, since the participle itself will exhibit concord with the passive subject, and must therefore be accessible to the syntax. Such internal boundaries are totally lacking in the output of the valence-changing and inflectional passive rules, which are based on bound morphology with no syntactically accessible internal structure. If the line between lexicon and syntax is to be drawn between rules B and C, this means that Marwari has bona-fide relation changing rules with apparently identical semantics (i.e. the two passives), both in the lexicon and in the syntax, a fact which must be taken note of in any level-order account of language.
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Anaphora and notions of command
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Research on pronoun-antecedent relations really got moving when several linguists in about 1966 observed independently and almost simultaneously that the possibility of a pronoun preceding its antecedent (that is, the possibility of backwards anaphora) is subject to a condition involving some notion of subordination. For example, a pronoun in a relative clause may precede an antecedent in the main clause but a pronoun in a main clause may not precede an antecedent in a relative clause (1), and a pronoun in an adverbial clause may precede an antecedent in the main clause but, subject to a revision that I will take up shortly, a pronoun in the main clause may not have an antecedent in a following adverbial clause:

(1) a. The policeman who arrested John beat him.
   a'. The policeman who arrested him beat John.
   b. John was beaten by the policeman who arrested him.
   b'. *He was beaten by the policeman who arrested John.

(2) a. After Mary finished the report, she went home.
   a'. After she finished the report, Mary went home.
   b. Mary went home after she finished the report.
   b'. *She went home after Mary finished the report.

An important topic in the ensuing research on anaphora has been that of determining precisely what notion of subordination figures in constraints on anaphoric relations. The notion that figured most prominently in work from the 60's to the mid 70's is Langacker's (1969) notion of command, which is defined in terms of the syntactic category S and the relation of domination among nodes of a tree. Paraphrasing Langacker,

(3) A node $X_1$ commands a node $X_2$ in a given tree if the lowest S-node that dominates $X_1$ also dominates $X_2$ (alternatively: ... if one can get from $X_1$ to $X_2$ by tracing up the branches of the tree until one hits a S-node, and then tracing downward).

For example, in (4), NP$_b$ commands only those nodes that are dominated by S$_1$, since S$_1$ is the lowest S-node that dominates NP$_b$, whereas NP$_a$ commands all the nodes of (4), since S$_0$, the root of (4), is the lowest node that dominates NP$_a$.

In the late 1960's, there was a reasonably good consensus among generative grammarians that some version of (5) was the main constraint on anaphoric relations:

(5) An anaphoric device (AD) may not precede and command its antecedent.
For example, according to (5), (1a') is all right because the pronoun precedes but does not command its antecedent, while (1b') is deviant because the pronoun both precedes and commands its antecedent. The details of the definition (3) were made to fit the assumptions about constituent structure generally made by transformational grammarians at that time, in particular the assumption that S-modifying adverbial clauses as in (2a) fit into a constituent structure as in (6a), with the adverbial expression a sister of the subject and $\bar{V}$, rather than as in (6b):$
abla$

(6) a. 

I have argued (McCawley 1983) that such sentences in fact have the (6b) structure, with the adverbial clause instantiating the prototypic modifier configuration, in which a modifier combines with something of a certain category into a larger constituent of the same category. If the definition (3), the constraint (5), and the (6b) constituent structure were combined, false predictions about such sentences as (2b') would result: NP's in the main clause would not command NP's in the adverbial clause, since the lowest node dominating the NP's of the main clause is $S_1$ rather than $S_0$, and (2b') then would not violate (5). Thus, to retain a version of (5), one who accepts the (6b) structure must redefine command to make it fit the latter claims about constituent structure. I accordingly replace (3) by the revised definition (7), which yields the same predictions when combined with the right constituent structure as the original definition did when combined with the commonly assumed wrong structure:$
abla$

(7) A node $X_1$ commands a node $X_2$ in a given tree if there is a node $X_3$ such that (i) $X_3$ is equivalent to the lowest S-node that dominates $X_1$ and (ii) $X_2$ dominates $X_3$, where a node $X$ is equivalent to any node that dominates only $X$ and modifiers of $X$. 
For example, in (6b) $S_1$ is equivalent to $S_0$ (one might even say that they are 'the same $S$'), and the immediate constituents of $S_1$ will thus command all nodes dominated by $S_0$.

A number of types of sentences pose difficulties for the Langacker-Ross 'precede and command' constraint (5). For example, since (8) has only a single $S$, every node commands every other node and thus by (5) no backwards anaphora should be possible -- a pronoun that precedes its antecedent in (8) will precede and command it and thus (5) will be violated; nonetheless, (8) is perfectly acceptable to many persons and only mildly deviant to others:

(8) His mother loves John.

In (9a-a') we have the exact opposite of what the Langacker-Ross constraint predicts. Since here too there is only one $S$, only forwards anaphora should be possible, but in reality only backwards anaphora is normal:

   a'. *Near John, he saw a snake.  b'. *He saw a snake near John.

There is an obvious way in which one might propose to account for (9a-a'), namely to have the anaphora constraint (5) apply not to surface structure but to an underlying structure in which the preposing of the $P$ has not applied. Note that in (9b-b') only forwards anaphora is possible, and if the anaphora constraint applies to a level of structure in which the word order is as in (9b-b') rather than as in (9a-a'), the anomaly posed by (9a-a') will be accounted for. However, Lakoff (1968) has shown such a move to be unviable. Lakoff noted that forwards anaphora is not blocked when the antecedent is within a subordinate clause in the preposed constituent. The account of (9a-a') in which anaphora conditions apply prior to preposing incorrectly predicts that (10a') should be unacceptable, in view of the unacceptability of (10b'):

(10) a. Near the car that he was repairing, John saw a snake.
   a'. Near the car that John was repairing, he saw a snake.
   b. John saw a snake near the car that he was repairing.
   b'. *He saw a snake near the car that John was repairing.

Lakoff observed that one could not even salvage that proposal by the last-ditch effort of having two separate preposing transformations, one applying to (at least some) $P$'s containing relative clauses and preceding the level to which (5) applies, and one applying to other $P$'s after the level relevant to (5), since there are examples in which a $P$ contains two NP's, one working the one way and the other the other way:

(11) a. Near the manuscript of his that Mary was editing, she saw John.
a'. *Near the manuscript of John's that Mary was editing, she saw him.

a''. *She saw John near the manuscript of his that Mary was editing.

To account for the acceptability of the his/John pair in (11a), the preposing here would have to follow the anaphora condition (cf. (11a')), but then the Mary/she pair in (11a) should be unacceptable because Mary in (11a'') cannot be the antecedent of she.

Lakoff (1968) also noted a third difficulty for the Langacker-Ross condition, namely that, contrary to the prediction of the condition, it is possible for a pronoun in a main clause to have an antecedent in a following adverbial clause, but only if the pronoun is within the V of the main clause, not if it is the subject:

(12) a. Mary hit him before John had a chance to run away.
   a'. *He ran into Mary before John had a chance to hide.
   b. Mary gave him the money before Sam could refuse.
   b'. *He took the money from Mary before Sam realized that Ann was watching.

The difference between the behavior of subjects and of non-subjects is an anomaly from the point of view of the Langacker-Ross constraint, which is sensitive only to the clause membership of the various items, not to their role within the clause.

An elegant and appealing solution to these difficulties was proposed by Reinhart (1976), who argued that the structural condition relevant to anaphoric relations is not command but rather c-command, which Reinhart defined as in (13a), and which I will redefine as in (13b) so as to accommodate the constituent structure that I assume here:

(13) A node $X_1$ c-commands a node $X_2$ if (a: Reinhart, b: McCawley)
   a. the lowest branching node that dominates $X_1$ dominates $X_2$.
   b. there is a node $X_3$ such that (i) $X_3$ is equivalent to the lowest major-category node that dominates $X_1$ and (ii) $X_3$ dominates $X_2$.

I take $S$ and the phrasal categories to constitute the 'major categories'. Since $S$ is a major category but not the only one, c-command implies command, but not vice-versa. For example, the subject c-commands everything else in its clause, but the constituents of a V do not c-command the subject. Thus, the difference between subjects and non-subjects noted in (12) can be accounted for if we replace Langacker and Ross's condition (5) by Reinhart's (14):

(14) An AD may not c-command its antecedent.

Taking the adverbial clauses in (12) to be S-modifiers, the subject of the main clause c-commands everything in the adverbial clause,
but the direct object of the main clause does not, and thus subject pronouns with an antecedent in the adverbial clause in (12) violate (14) but object pronouns do not.

Reinhart's constraint also correctly predicts that (8) will be acceptable: the pronoun he is a proper part of the NP his mother and thus does not c-command anything in the V. By contrast, in *He loves John's mother, where the pronoun is the whole subject NP, the pronoun c-commands the antecedent and there is thus a violation of (14).

Note that Reinhart's condition differs from the Langacker-Ross constraint in an additional respect besides its referring to c-command rather than to command: it also makes no reference to left-right order, while the Langacker-Ross constraint does refer to order. This makes it possible for Reinhart's proposal to yield correct predictions about (9). While the surface constituent structure of such examples is controversial and I will in fact argue below for a constituent structure different from that which Reinhart assumes, the subject will in any event c-command the material of the preposed P and thus a pronoun as subject of such a sentence should not allow an antecedent within the P. The sentences in (10) of course remain a problem for Reinhart's approach: if the subject c-commands the object of the preposition, it also c-commands all constituents of the object of the preposition, and thus Reinhart's proposal provides no reason why (10a') should be any more acceptable than (9a').

Let us return to the examples in (12). In McCawley (1983), I argued that S-modifiers are optionally realizable as V-modifiers, i.e. there is a derivational step optionally converting e.g. (15a) into (15b):

(15) a. S
    \-- S
    \-- P
    \-- NP Mary
    \-- V hit
    \-- John

b. S
    \-- S
    \-- P
    \-- NP Mary
    \-- V could run away
    \-- John

As evidence that the adverbial expressions in question occur both as surface S-modifiers and as surface V-modifiers, note that the adverb can appear both as an adjunct to a conjoined S (16a) and within one of the conjuncts of a conjoined V (16b):

(16) a. [[Mary hit Bill] and [Nancy hit Tom]] before John could stop them.
     b. Mary [[hit Bill before John could stop her] and [started screaming at both of them]].
Only under the first of these possible surface constituent structures do (12a,b) avoid a violation of Reinhart's constraint. Constituents of the main clause \( \bar{V} \) do not c-command material within a S-modifier, but they do c-command material within a \( \bar{V} \)-modifier. Thus, if (12a,b) are altered in such a way as to force the constituent structure to be taken as in (15b), they should become unacceptable in view of the violation of Reinhart's constraint. This prediction turns out correct — the conjoining in (17a) and the pseudo-cleft construction in (17b) require that the adverbial clause be parsed as a surface \( \bar{V} \)-modifier, and both are quite odd:

\[(17)\]
\[
\begin{align*}
&\text{a. } *\text{Mary both }[[\text{hit him before John had a chance to get up}] \\
&\quad \text{and }[\text{screamed at the top of her lungs}]]. \\
&\text{b. } *\text{What Mary did was }[[\text{hit him before John had a chance to get up}}].
\end{align*}
\]

Reinhart's constraint also provides an explanation of a puzzle noted by Carden 1981, namely that while anaphoric one appears to be subject to much the same constraints as are personal pronouns, it nonetheless is acceptable in analogs to (9a'):

\[(18)\]
\[
\begin{align*}
&\text{a. Near the little robin, the big one saw a worm.} \\
&\text{b. Near the big one, the little robin saw a worm.}
\end{align*}
\]

Here the solution to the puzzle is the same as in the case of (8): since one replaces an \( \bar{N} \) and not a whole NP, the NP node is the lowest major-category node that dominates it, and thus one does not c-command anything outside of its NP, just as in (19) the he of his brother does not c-command anything outside of its NP, and thus no violation of (14) is possible.

\[(19)\] Near John, his brother saw a snake.

By contrast, in (20), where the \( \bar{N} \) c-commands everything in the relative clause that is adjoined to it, the acceptability of the examples parallels that of the examples in (9):

\[(20)\]
\[
\begin{align*}
&\text{a. The little robin that the big one had pecked was bleeding.} \\
&\text{b. } *\text{The little one that the big robin had pecked was bleeding.}
\end{align*}
\]

Examples parallel to (9) in which the relevant NP is not the subject but the direct object confirm the essence of Reinhart's account of (9) but force one to adopt a different constituent structure from that assumed by Reinhart:

\[(21)\]
\[
\begin{align*}
&\text{a. } *\text{In Mary's apartment, John found her.} \\
&\text{a'. } *\text{Next to Mary's house, John saw her.} \\
&\text{b. In Mary's apartment, John attacked her.} \\
&\text{b'. Next to Mary's house, John kissed her.}
\end{align*}
\]

The \( \bar{P} \) in (21a-a') is a deep structure constituent of the \( \bar{V} \), whereas
that of (21b-b') is a S-modifier. If Reinhart's constraint is to account for the oddity of (21a-a'), the $\overline{P}$ must be c-commanded by the direct object and thus must be either a constituent of the $\overline{V}$ or a modifier of the $\overline{V}$ in surface structure, i.e. the surface structures of (21a-a') vs. (21b-b') must differ along the lines of (22a) vs. (22b), with the preposing of the $\overline{V}$-constituent leaving constituent structure unchanged and thus resulting in a discontinuous structure:

(22) a. 

- $\overline{P}$
- S
- NP
- V
- NP

in Mary's apartment
- John
- found
- her

b. 

- $\overline{P}$
- S
- NP
- V
- NP

in Mary's apartment
- John
- attacked
- her

A similar treatment is required in examples like those of (23), taken from Reinhart 1981:682; instrument adverbs allow only an analysis as a $\overline{V}$-modifier, and thus both the subject and the object c-command material within the adverb provided that here, as before, the preposing affects only order and not constituent structure:

(23) a. *With Rosa's peacock feather, she tickles people.
   a'. *With Rosa's peacock feather, I tickled her.
   b. With her peacock feather, Rosa tickles people.
   b'. With her peacock feather, I tickled Rosa.

Reinhart's approach provides such elegant solutions to so many puzzles about anaphoric relations that it is dismaying to observe that it fails to account for some quite ordinary sorts of examples. The most distressing failure of at least the pristine version of Reinhart's approach is with examples such as (2a), where a main clause subject pronoun has an antecedent in a preceding adverbial clause: with the constituent structure assumed here and the definition of c-command given above, a subject c-commands everything in a S-modifier, and thus the pronoun in (2a) c-commands its antecedent, in violation of (14). Reinhart was of course aware of examples like (2a), and dealt with them by gerrymandering the constituent structure so as to make subjects c-command the material only of postposed
not of preposed $S$-modifiers. She took preposed $S$-modifiers to be outside the main $S$ ([S $F$ [S $NP$ $V$]]) and postposed modifiers to be inside it ([S $NP$ $V$ $F$]), so that (under her definition of c-command (13a)) the subject will c-command the material of the modifier only in the latter case. To my knowledge, all other evidence supports structures in which modifiers are sisters of what they modify, and Reinhart is able to maintain (14) only by adopting constituent structures that have no independent justification and ruling out structures that do have independent justification; in particular, the acceptability of examples like (16a) provides evidence that the postposed modifier can be outside the main $S$, but Reinhart must exclude that structure, since in combination with her definition of c-command it would falsely imply that (2b') should be acceptable.

A second class of cases where Reinhart's approach makes false predictions has already been mentioned: sentences like (10a'), in which the antecedent of a pronoun is inside a relative clause within a preposed $V$-constituent. Here, as in (2a'), the discrepancy between Reinhart's condition and the facts involves forwards pronominalization with an antecedent in a subordinate clause. Such examples led Carden (1981) to conclude that anaphoric relations between clausalmates are subject to different restrictions than are anaphoric relations between non-clausalmates. In particular, it appears as if an appealing feature of Reinhart's condition, namely its blindness to word order, cannot be maintained in general: while a pronoun c-commanding its antecedent seems to be enough to make the anaphoric relation unacceptable if the pronoun and antecedent are clausalmates, it is not enough if they are not clausalmates.

Reinhart's condition is supposed to apply to surface structures. Carden has noted a class of cases where surface structure is insufficient to distinguish between good and bad anaphoric relations, namely cleft and pseudo-cleft sentences:

(24) a. Near him is where John saw the snake.
a'. *Near John is where he saw the snake.
b. It was near him that John saw the snake.
b'. *It was near John that he saw the snake.

Under the most commonly accepted surface structures for such sentences, neither of the two NP's c-commands the other and thus no violation of (14) is possible. Furthermore, there are acceptable sentences as in (25) that appear to differ in no relevant detail of surface structure from the unacceptable (24a',b'):

(25) a. Near John was what he desperately needed.
b. It was obvious to John that he was in danger.

Carden took such examples to show that there is at least a class of cases in which anaphoric relations are constrained by a condition that relates to an underlying level of structure. Specifically, Carden assigned to cleft sentences a deep structure containing the
non-cleft analog as a constituent and took the unacceptability of examples like (24a',b') to reflect the unacceptability of the given anaphoric relation in the cyclic output of the embedded S (*He saw the snake near John). Sentences as in (25) would not have such a S in their deep structures.

It is not the case, however, that cleft sentences in general allow only the anaphoric relations that their non-cleft counterparts do. For example, in (26) an anaphoric relation is allowed in a cleft sentence that is excluded in the corresponding noncleft:

(26) a. It was the diamond that John had stolen that he was offering me.
   b. *He was offering me the diamond that John had stolen.

This might suggest that it is only underlying clausemates whose anaphoric relations are constrained on the basis of underlying structures, but that suggestion is wrong, since main-clause pronouns with antecedents in complements also appear to be excluded even when their structural relationship is broken up in a cleft construction:

(27) a. *What he denied was that Nixon was a crook.
    a'. *He denied that Nixon was a crook.
    a". What Nixon denied was that he was a crook.
    b. *What he was oblivious to was John's being regarded as a fool.
    b'. *He was oblivious to John's being regarded as a fool.
    b". What John was oblivious to was his being regarded as a fool.
    c. *What I told him was that John should leave me alone.
    c'. *I told him that John should leave me alone.
    c". What I told John was that he should leave me alone.

In (28), I sketch a drastically revised version of Carden's analysis that salvages what can be retained of Reinhart's approach while accommodating in a non-devious fashion (i.e. without ad-hoc monkeying with the constituent structures) the problems for Reinhart's analysis that Carden and I have adduced. This will be an inhomogeneous account of anaphora: rather than attempting to have a single condition like Reinhart's (14), I, like Carden, distinguish classes of cases that are subject to different restrictions. There will be a class of cases subject to a condition not on surface structure but on cyclic outputs, which I give in brute force fashion in (28a), which simply lists the cases taken up in (24) and (27). Since cases such as (2) must not be taken in under this condition, it will not be possible to formulate it as simply excluding cyclic outputs in which a pronoun c-commands its antecedent, which would wrongly exclude (2a). I have not yet surveyed the cases where
underlying structural relations could conceivably affect anaphora possibilities in enough detail to have any confidence in any generalization that I might offer in place of the list in (28a). In view of the differences between the cases where AD and antecedent are clausemates and the cases where they are not, I am forced to set up two separate surface structure constraints, given in (28b):

(28) a. CONDITION ON CYCLIC OUTPUTS. If a constituent X c-commands a coreferential constituent Y that is either a clausemate or a constituent of a complement S, Y must be an AD with X as antecedent.
   b. CONDITIONS ON SURFACE STRUCTURE. An AD may not c-command its antecedent if it
      i. is a clausemate of the antecedent:
         *Near John's mother, he saw a snake.
      ii. or precedes the antecedent:
         *She went home after Mary had finished the report.

I will conclude by taking up a type of example that appears to conflict with (28a) but in fact can be reconciled with it fairly straightforwardly. Note that in (29a-b), anaphoric relations in either direction are possible despite the fact that under the Tough-movement analysis, which I wish to assume here, supposedly (29a) would have a derivation involving a cyclic structure (29c) that violates (28a):

(29) a. Bill's mother is easy for him to like.
    b. His mother is easy for Bill to like.
    c. *He likes Bill's mother

For a variety of reasons that I elaborate in McCawley (1981, 1984) and elsewhere, I wish to assume underlying structures in which each full non-sentential NP is external to its host clause, more specifically, in which it is an adjunct to the S that is its scope. Thus, I would assign to (29a) a deep structure roughly as in (30a), and the cyclic outputs of S₂ and S₁ would then be (30b-c), neither of which violates (28a):

(30) a. 

```
[Det the [N mother [NP₁ Bill] V he V NP x like (her)]]
```

```
[Det the [N mother [NP₁ Bill] V be easy A for S [A easy NP₁ V him to like]]]
```
Thus, only the surface conditions (29b) constrain the anaphoric possibilities for the pair of NP's marked in (29a-b). If my treatment of (29a-b) is correct, then the same treatment ought to be appropriate for all cases where either the pronoun or the antecedent is contained in a larger non-sentential NP, i.e. all such cases should be effectively unconstrained by (28a), since an 'external NP' analysis as in (30) will be available in those cases, and thus only the surface constraints (29b) ought to restrict the anaphora possibilities for such sentences. In particular, this approach provides for a derivation according to which (31a) is well-formed, notwithstanding the deviance of (31b), namely one involving a deep structure in which Bill's mother is external to a structure that would underlie It's x that Bill likes:

(31) a. It's Bill's mother that he likes.
    b. *He likes Bill's mother.

I oscillate between two ways of interpreting (31a), one under which it feels normal and one under which it feels odd. Since the approach sketched here allows both for a deep structure in which Bill's mother is outside the cleft structure and for one in which it is inside it, the latter but not the former giving rise to a violation of (28a), this Necker-cube-like reaction to (31a) can be held to provide further confirmation of the above analysis, though a puzzle worth pondering remains -- why should the analysis under which (31a) is ill-formed be so easy to arrive at and not be instantly discarded on one's way to the far from obscure alternative analysis?

NOTES

1 Throughout this paper, asterisks and other stigmata will refer only to interpretations in which the underlined 'full' NP is the antecedent of the underlined pronoun. Interpretations in which the pronoun refers to something in an earlier sentence are always possible and are thus immaterial to the issues discussed here.
2 To maximize comparability among the analyses discussed here, I have labeled all trees in accordance with the conception of syntactic category sketched in McCawley 1982b. Symbols of the form $\bar{X}$ here simply mean 'phrasal unit whose head is of the part of speech X'. The use of such symbols should not be misconstrued as implying acceptance of any of the other ideas commonly accepted in 'X-bar syntax'; in particular, multiple bars have no meaning in the conception of category assumed here.

3 I exercise here the right, as Langacker, Ross, and Reinhart before me have, to gerrymander the details of my definitions so as to make them fit my assumptions about constituent structure. My successors, of course, retain the right to do likewise.

4 Reinhart's analysis is viable only if 'branching node' is interpreted as meaning not (as one might suppose) 'node that branches' but rather 'node of a category that allows branching'. Under that interpretation, 'branching node' in (13a) covers virtually the same things as 'major-category node' in (13b), differing only with regard to cases where non-major categories allow branching.

5 See McCawley 1982b for arguments that (among other things) extra-position of relative clauses and placement of parentheticals give rise to discontinuous structure.

6 Carden also disputes Reinhart's claim that c-command is the relevant structural relation. Since I find the evidence supporting c-command clearer than the facts that Carden adduces in opposition to it, I retain that particular aspect of Reinhart's analysis.

7 This is a version of the proposal that Lakoff (numerous public and private communications, but I can't locate a published citation) offered under the slogan 'Complements in, modifiers out' in about 1968.

REFERENCES


McCawley, James D. 1981. Everything that Linguists have Always Wanted to Know about Logic (but were Ashamed to Ask). Chicago: University of Chicago Press.
Some problems of agreement in English and Albanian
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I. Introduction. I discuss in this paper some problems of agree-
ment in English and Albanian, with emphasis on the latter, showing
how they raise difficulties for the treatment of agreement in Gen-
eralized Phrase Structure Grammar (gpsg), and suggesting modifica-
tions to allow a satisfactory account of such problems.

As I pointed out in Morgan (1972), the agreement problem con-
sists of at least two subproblems: what I called the selection
problem--the problem of determining which two (or more) elements
are involved in the agreement relation--and the determination
problem--that is, how are the agreement properties of a given
word or phrase determined? The data I will examine here bear
mainly on the determination problem. The questions involved, in
general and for a particular language, include these:

1. Are the agreement properties of a phrase P determinable
   from denotational properties of P?

2. From formal linguistic properties of P?

3. From some complex function of denotational and formal
   properties?

4. If from formal properties, which ones? Is the order of
   constituents in P a factor?

5. To what extent is the determination problem context-
   independent? That is, can one determine the agreement
   properties of P without reference to properties of the
   construction containing P, or the elements with which P
   agrees? For example, could a given NP count as singular
   as a member of one construction, but as plural in another
   construction? Perhaps even count as singular for one
   principle, plural for another simultaneously in a single
   sentence?

The determination problem is thus analogous to the problem of com-
positionality in semantics: how do we determine the agreement
properties of composed expressions from the grammatical and/or se-
semantic properties of their sub-expressions and their mode of com-
bination?

The heart of the answer gpsg provides to such questions is
embodied in the following general agreement principles, (con-
straints on the instantiation of rule schemata of the form [B0  B1
...  Bn], by PSG rules of the form [A0 A1 ... An]) paraphrased
somewhat from Gazdar and Pullum (1982): 2

A. HEAD FEATURE CONVENTION: If Bi is the head of  B0  then
HEAD(Ai) = HEAD(A0) [where An is the category that instantiates Bn]

B. CONTROL AGREEMENT PRINCIPLE: If Bi controls Bj then
AGR(Ai) = AGR(Aj) [An, Bn as above; X controls Y if
(roughly) Y is a function and X is its argument]

C. FOOT FEATURE PRINCIPLE: The increment of the mother
category's FOOT feature is the unification of the incre-
ments of the daughter categories' FOOT features. [...] the
foot feature appearing on the mother ... brings together
all the additions to foot features in daughters in virtue
of feature instantiation]

The principles in A, B and C have the effect of filters on sets of
CF PSG rules, admitting only those rules that satisfy all three
conditions. In the strict interpretation of gpssg, wherein state-
ments of the meta-grammar are to be interpreted as inducing a set
of rules that constitute (or are equivalent to) a context-free
phrase structure grammar, it follows that agreement can be en-
forced directly only between elements of the same rule; i.e., only
between mother and daughter nodes or between sister nodes. Agree-
ment between more distant elements must be enforced indirectly,
via chains of mother-daughter or sister-sister relations. Agree-
ment restrictions that are not accounted for by these principles
must be captured by stipulation (as feature specifications) in
particular rule schemata. A and C constitute a simple general
solution to the determination problem, B is a general solution for
the selection problem. A and C, stated in terms of order-
independent head relations, imply that order of elements within a
phrase is not a factor in determination. Semantic properties are
involved directly only in B, which has no immediate bearing on the
determination problem. Agreement properties then must be deriv-
able via head (and/or foot) relations as a projection from gram-
matical properties (i.e. features) of lexical items.

II. Problems in English. The evidence from English is mixed but
problematic. The difference between examples (1) and (2) suggests
that denotation is relevant; but one could propose some grammatici-
al property on which and and or differ as a solution to the prob-
lem.

(1) (Both) Harry and Bill have/*has failed the exam.
(2) (Either) Harry or Bill has/*have failed the exam.

Example (3) (from Quirk et al. 1972), on the other hand, suggests
strongly that denotational properties are crucial; the number of
the verb depends upon whether the intended referent of the subject
NP is one person or two.

(3) His aged servant and the subsequent editor of his papers
was/were with him at his death bed.

Examples (4) and (5) point in the other direction: the reference of the subject NP in (4) is clearly to more than one person, yet the verb is singular. The reference of the subject in (5) is to one person (or none), yet the verb is plural. Here grammatical properties of the head determine the number of the NP, in a way which is apparently inconsistent with the semantics.

(4) More than one person has/#have failed this exam.
(5) Fewer than two people have/#has failed this exam.

Thus determination in English must be a function of both grammatical and denotational properties.

As I pointed out in the earlier paper, English also provides evidence that can be construed both for the relevance of order to the determination problem, and against the context-independence of determination principles. The phenomenon involved is what I called the 'closest conjunct principle', which operates in conjoined subjects in some syntactic contexts with the consequence that the verb agrees with the conjunct that is closest to it. The principle can be seen to operate (for some, not all speakers) in examples like (6) and (7), but not in simpler constructions like (8) and (9).

(6) There was/#were a man and two women in the room.
(7) There were/#was two women and a man in the room.
(8) A man and two women were/#was in the room.
(9) Two women and a man were/#was in the room.

Notice that one might construe the evidence in (6) and (7) in two ways:

(a) the examples show that selection principles must select in (6) and (7) not the mother NP 'a man and two women' or 'two women and a man', but must pick out the closest conjunct as the NP with which the verb agrees in this construction. Determination principles apply to the selected NP in the usual way. This construal is inconsistent in principle with gp, since the elements selected stand neither in the sister-sister nor in the mother-daughter relation, hence would not be in the same CF FSG rule.

(b) selection principles apply in (6) and (7) to select 'a man and two women' and 'two women and a man' as the NP's with which the verbs must agree. But determination principles apply in this construction such that the agreement properties of the mother NP are determined by its leftmost daughter. This construal is inconsistent with the gp treatment given in A and C (though not in principle
inconsistent with a PSG analysis), since the determination principles would have to be sensitive to the order of conjuncts. In recent work (e.g. Sag et al. ms.) each conjunct of a conjoined structure counts as a head. Perhaps certain heads can be selected as privileged in some principled way. But if the relevant property is, as I claimed in the previous paper, closest to the verb, then the determination principles must refer to elements that are not in the same rule.

In either case, there is some dependency on grammatical context, in that conjunct order is relevant only in a few constructions, like 'there'-insertion, disjunct subjects and some inversions, in a way that presents problems for gpsg (or any existing theory, for that matter).

Notice by the way that the result can conflict with other agreement relations. Some speakers who agree with (6) and (7) find (10) unacceptable, though one speaker accepts (11). All accept (12).

(10) There was/were a man and two women sunning themselves on the patio.
(11) There was a man and two women sunning themself on the patio.
(12) There were two women and a man sunning themselves on the patio.

But the interpretation of the English data is problematic. Clearly the agreement system in English is moribund; there is almost complete neutralization in most verbs, with be the only verb surviving with any degree of paradigmatic variation for number and person. Thus there is, as one might expect, a great deal of inter-speaker variation that seems not to correlate with generally recognized dialect lines. Judgments are feeble and fleeting for many speakers, and likely to be influenced by performance factors, like the strategy that makes (13) a natural and common kind of error (as opposed to (14), an unlikely error).

(13) *A copy of the rules are available at the station.
(14) *A discussion of the rules are available at the station.

One hardly feels confident in drawing important conclusions about the form of grammars from the puzzling and disorderly data of English verb agreement. If gpsg should be allowed something like the 'core/periphery' distinction in government and binding theory, English agreement would be a prime candidate for the periphery.

III. Problems from Albanian. But there is evidence for some of these points in Albanian, a language with a healthy agreement system, showing some inadequacies of the gpsg treatment of agreement. There is evidence for something like the closest conjunct princi-
ple, for the dependency of determination principles on grammatical context, and a new kind of evidence for the crucial role of order in agreement. These are all found in the syntax of the adjectival particle. To show the workings of the particle system, I need first to supply some background on the parameters of the Albanian agreement system.

Albanian marks nouns and their dependents for four properties: case (nominative, accusative, oblique), number (singular, plural), gender (masculine, feminine) and definiteness (definite, indefinite) as illustrated in the noun paradigms below:

(15)  SINGULAR                      PLURAL

('boy', 'son')

<table>
<thead>
<tr>
<th>Nom.</th>
<th>djal</th>
<th>djali</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc.</td>
<td>djal</td>
<td>djal</td>
</tr>
<tr>
<td>Obl.</td>
<td>djali</td>
<td>djalit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indef.</th>
<th>Def.</th>
<th>Indef.</th>
<th>Def.</th>
</tr>
</thead>
<tbody>
<tr>
<td>djem</td>
<td>djemt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>djemve</td>
<td>djemvet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SINGULAR                      PLURAL

('girl', 'daughter')

<table>
<thead>
<tr>
<th>Nom.</th>
<th>vajzë</th>
<th>vajza</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc.</td>
<td>vajzë</td>
<td>vajzën</td>
</tr>
<tr>
<td>Obl.</td>
<td>vajze</td>
<td>vajzës</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indef.</th>
<th>Def.</th>
<th>Indef.</th>
<th>Def.</th>
</tr>
</thead>
<tbody>
<tr>
<td>vajza</td>
<td>vajzat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vajzave</td>
<td>vajzavet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Modifier phrases follow the noun; the first element of the modifier phrase is a particle whose form depends on the agreement properties of the head noun. The rest of the modifier phrase can be an adjective, as in (16) and (17), or a noun phrase in oblique case, interpreted as possessor, as in (18) and (19).

(16) djali i mirë 'the good boy (Nom.)'
(17) djem të mirë 'good boys (Nom. or Acc.)'
(18) vajza e kryetarit 'the daughter of the president (Nom.)'
(19) vajzavet të kryetarit 'the daughters of the president (Obl.)'

Notice that in the latter two examples the particle agrees not with the oblique NP to its right, but with the head noun to its left.

Below is a full chart of the particle forms. Notice that some cells contain two forms. This can be ignored for the moment, but I will return to it later.
The structure of the modified NP (as I shall argue) is as below:

What is crucial in this diagram is the right-branching structure, wherein the particle forms a constituent with its right sister, this constituent in turn being a sister of the head NP. Examples (20) through (23) provide evidence for this structure. First, (20) shows that when a modifier phrase occurs in predicate position, the particle occurs with it, which is consistent with the right-branching structure above, but not predicted by a left-branching or flat analysis. Moreover, the particle may not occur as a sister of the head NP, without modifier, as shown in (21).

(20) djali ësht i zgjuar 'the boy is intelligent'
(21) *[djali i] ësht zgjuar 'the boy is intelligent'

Second, when modifier phrases are conjoined, each conjunct may have its own particle, as in (22); if the particle were part of the head, as in the left branching analysis, we would expect conjoined heads each to have particles, as in the ungrammatical example (23). Given the gpgs treatment of coordination, this is fairly conclusive evidence for the right-branching analysis.

(22) djali [[i mirë] dhe [i zgjuar]] 'the good and intelligent boy'
(23) *[[djali i] dhe [vajza e]] mirë 'the good boy and girl'

A phenomenon like the closest conjunct principle arises when heads
are conjoined. In such cases, where a single modifier phrase is
predicated of each conjoined head, the particle in the modifier
phrase agrees with the conjunct closest to it, as shown in (24)
and (25).

(24) [djali dhe vajza] [e/#i/#të kryetarit] 'the son and
daughter of the president'
(25) [vajza dhe djali] [i/#e/#të kryetarit] 'the daughter and
son of the president'

As was the case for English, we can construe the problem two ways,
as in (a) and (b) below:

(a) Selection principles operate such that the modifier
phrase (hence its particle) agrees with the coordinate NP
'djali dhe vajza'. Determination principles operate in
such a fashion as to assign to the mother NP the agreement
properties of its final conjunct head.

(b) Selection principles operate such that the modifier
phrase agrees directly with the final conjunct daughter of
the head NP.

Again, (b) raises serious difficulties for_gpsg, since it involves
elements not in the same rule. But there is some evidence that it
is correct. This evidence arises in examples like (26), struc-
tured as shown (the categories are numbered for expository pur-
poses, not bar level).³

(26) vajza dhe djali i kryetarit janë/#ësh'të/#e/#i mirë
'the daughter and son of the president are good'

```
S       VP
  |     |
 NP0   AP1
  |     |    V
 NP1   AP2
  |     |  Prt2
 NP2  |   |  Adj
  |    Prt1
  |    NP3
 vajza dhe djali i kryetarit janë(are) të(pl) mirë
    #ë  #ësh't(is) #i(sg)
```

Here the verb ('janë') and a modifier particle (Prt2) in predicate
position both take plural form even though the modifier particle
(Prt1) within the subject NP0 is singular to agree with the final
conjunct (NP3) of the subject. In view of this example, the
choices are:

(a') Selection principles select NP0 as agreeing with VP
(hence ultimately with Prt2 and the verb), NP1 as agreeing with AP1 (hence Prt1). Determination principles apply to NP1 to assign it the agreement properties of its final conjunct. But notice that even though NP1 is singular, determination principles must assign plural number to its mother, NP0. In neither case does the Head Agreement Convention apply as formulated.

(b') Selection principles select NP3 (not NP1) as agreeing with AP1 (hence Prt1) and NP0 as agreeing with VP (hence Prt2 and V). Determination principles assign NP1, hence NP0, plural agreement, as the Head Feature Convention predicts. But this is inconsistent with gpsg, since selection principles must refer directly to NP3 and AP, which are not in the same rule.

In either case, there are severe difficulties for gpsg.

A second wrinkle of the particle problem, equally difficult for gpsg, is involved in those cells of the particle paradigm that contain two forms. The distribution of the two is not free, but is determined by syntactic features of context:

the left-most form in each cell (I shall call this the 'proximal' form) must occur when the particle immediately follows its lexical controller and is c-commanded by it;
the right-most form (I shall call this the 'distal' form) must be used in all other contexts.

To make this clear I must first define 'lexical controller', then show some evidence that motivates the generalization just given.

Definition: An element a is a **lexical controller** (LC) of another element b just in case either

(i) a is lexical (i.e. X0) AND
(ii) b is controlled (in the sense of the Control Agreement Principle) by a's maximal projection (i.e. the highest phrase of which a is lexical head)

or

(iii) there is some node c such that a is the lexical controller of c and b is dominated by a node whose maximal projection is c

Conditions (i) and (ii) say that the lexical head of an argument is the LC of the predicate phrase; (iii) extends the relation to certain nodes that the predicate phrase dominates. In NPs consisting of an NP and a modifier phrase, then, the head noun of the
modified NP will always be LC of the particle in the modifier phrase, by condition (iii). Then in the simplest instance of the particle construction, as exemplified in (27), the particle immediately follows and is c-commanded by its LC, hence must take proximal form.

(27)

```
NP
  \   \          AP
 /    \         N
|      |     Prt
|      |     Adj
\------/        \\
   djalin e/*të mirë
```

But the particle may be separated from its LC, that is, not immediately following it, in a number of ways. A possessive pronoun may intervene, as in (28), where distal form is required.

(28) me djalin tim të/*e mirë 'with my good boy'

Regardless of whether the structure here is stacked, as in (28b), or flat, as in (28c), 'djalin' is LC of the particle. But the particle does not immediately follow its LC.

(28b) [[djalin tim] [të mirë]]
(28c) [djalin tim [të mirë]]

The particle may also be separated from its LC if there are elements in the modifier phrase that precede the particle, as in (29) and (30), where shumë ('very') and më ('more') are the initial elements of the modifier phrase. In each of these cases the distal form of the particle is required.

(29) me [djalin [shumë të/*e mirë]] 'with the very good boy'
(30) me [djalin [më të/*e mirë]] 'with the better/best boy'

The particle will be separated from its LC if the modifier phrase is a non-initial member of a stacked or sequential structure of modifier phrases. In such structures, the particle in the left-most modifier phrase will be proximal, if it is the left-most element in that phrase. All subsequent particles will be distal, as illustrated in (31) and (32).

(31) në [[të gjithë sektorët] [e/*të ekonomisë]] 'in all sectors of the economy'
(32) në [[të gjithë sektorët] [[e/*të ekonomisë] [dhe [të/*e kulturës]]]] 'in all sectors of the economy and the culture'

Notice that if the head NP itself is coordinate, then each conjunct head is a LC by the maximal projection condition. Hence the lexical head of the final conjunct is an LC of, and c-commands, a
particle in a following modifier phrase, therefore requires the proximal form if the particle follows immediately, as in (33).

(33) [ekonomišë dhe kulturës] [së/*të popullit tonë] '[the economy and the culture] [of our people]'

The particle can also be separated from its LC if the LC is not final in its phrase. This is illustrated nicely by the syntactic minimal pair in (34) and (35). If the sentence is to be interpreted in the way indicated by the bracketing in (34), such that 'of the Soviet Union' is predicated of 'minister of culture' (thus the reference is to the person who has the job of culture minister in the Soviet Union), then the particle takes the distal form 'të', since it is not adjacent to its LC, 'ministrin'. On the other hand, if the sentence is interpreted as in the bracketing in (35), such that it is Soviet culture that the person is minister of, then the particle takes the proximal form 'së', since it is immediately adjacent to and c-commanded by its LC, 'kulturës'.

(34) me [[ministrin e kulturës] [të/*së Bashkimit Sovietik]] 'with [the culture minister] [of the soviet union]'

(35) me [ministrin [e [kulturës [së/*të Bashkimit Sovietik]]]] 'with [[the minister] [of [culture [of the so- viet union]]]]'

The relevance of the c-command condition can be seen in another minimal pair, as in the difference between (36), structured as in (38), and (37), structured as in (39). In both cases, the modifier phrase containing the particle plus hapur ('open') is predicated of derën ('the door'). Hence there is agreement in both examples between the particle and its LC, as predicted by the Control Agreement Principle. But the two examples differ on the proximal/distal distinction. In (36), the particle is adjacent to the lexical head (derën), of the argument phrase, and c-commanded by it, hence takes proximal form. But in (37), though the particle immediately follows the lexical head of the argument phrase, it is not c-commanded by it, hence takes distal form.

(36) e gjeta derën e hapur 'I found the open door'

(37) e gjeta derën të hapur 'I found the door open'
To sum up: The modifier particle presents two sets of problems. First, there is a phenomenon reminiscent of the closest conjunct problem for English, in which the particle agrees not with the coordinate NP of which it is predicated, but with the final conjunct of that NP. The strategy of marking the dominating NP to take the agreement markings of its final conjunct appears to be ruled out by the fact that the dominating NP must be marked plural in the usual way, in order to insure that the NP node that dominates it will be marked plural via the Head Feature Convention. Thus the problem seems to require agreement directly between nodes that are not sisters, hence not members of the same rule.

Second, there is a special case of particle suppletion that depends on whether the particle in question immediately follows and is c-commanded by the lexical head of its controller. This too seems to require an agreement principle that can refer directly to nodes that are not sisters, hence inconsistent with gpgs.

I cannot rule out the possibility of accounting for these cases (at least the latter one) with some ingenious use of new foot features, so that the principle could be stated as agreement between sisters. But consider what the foot features would have to encode to account for the second problem, and how complicated the inheritance principles would have to be. Presumably two features would be required, one feature to encode whether a given node had a proximal or distal particle as left-most leaf, and another feature to encode whether a NP had a lexical head as right-most leaf. But the inheritance principles would have to be such as to pass this feature value up only if the mother node had
as its left daughter a node marked plus for proximal-particle-as-left-leaf (or a right-most daughter marked for lexical-head-as-right-leaf); moreover, AP nodes dominating proximal particles that were not left-most, like the ungrammatical cases (40) and (41), would have to be marked as ungrammatical by some additional principle that would be faced with the same problems.

(40)  
\[
\text{AP[fem, obl, sg, def]}
\]

```
  Adverb  AP
   \_    \_  
     \_    \_  
       \_    \_  
         \_    \_  
           shumë  së  mirë
       'very'    'good'
```

(41)  
\[
\text{AP[fem, obl, sg, def]}
\]

```
  AP  
   \_  
     \_  
       \_  
         \_  
           Prt  Adj  Conj.  AP
       \_    \_    \_    \_  
         \_    \_    \_    \_  
           së  mirë  dhe  së  zgjuar
```

IV. Conclusion. There are two main points to draw from the data considered here. First, from the English data (discussed in greater detail in my earlier paper and in the agreement section in Quirk et al. 1972) is that there are (at least) two sets of conditions involved in agreement: semantic conditions and syntactic conditions. A treatment of the semantic conditions requires a treatment of the semantics of plurality, in a way consistent with complications of the data I have only alluded to here.

Second, from both the English and the Albanian data it appears that there are agreement phenomena that are inconsistent with the strict (CF PSG) interpretation of gpsg in requiring principles that refer directly to nodes that are not generated by the same PSG rule. A few more comments are in order on this topic.

There are a number of formal interpretations one might put on a gpsg meta-grammar. The one pushed hardest by advocates of gpsg is the CF PSG interpretation, wherein the meta-grammar is seen as an inductive definition of a set of CF PSG rules. The advantage of this interpretation depends entirely on the CF property: first, the CF interpretation allows an immediate assessment of the generative capacity of the theory: it is CF. Second, the fact that it is CF might be interpreted as a selling point of the theory, for linguists interested either in Chomskyan explanatory adequacy
or in psychological or computational problems of parsing. But it seems to me the importance of these advantages is over-rated. The measure of parsability of classes of languages is, as I understand it, a worst-case measure; there can be CS languages that are easier/faster to parse than some CF languages. The relevance of the CF-is-parsable argument is peripheral at best.

Furthermore, the CF PSG interpretation is a red herring for gpsg as a model of mental representation of grammar. Proponents of gpsg acknowledge that the full set CF PSG rules induced by a non-trivial meta-grammar might number in the millions of rules. It is therefore implausible to take the induced PSG itself as a mental representation of grammar. Then clearly it is the meta-grammar itself, not the induced PSG, that is of interest as a model of mental representation, the object of knowledge, the thing acquired by children and used in some fashion by adults. This is intuitively more consistent with an older (but now less emphasized) interpretation of a meta-grammar: as a set of rules that directly admit trees, hence sentences. On this interpretation, the PSG expansion scheme is merely a theoretical tool for measuring the generative capacity of the theory. Slight changes in the theory made for empirical reasons might raise its generative capacity above CF. The kinds of agreement principles I have argued for are likely to be of this nature. They can be stated as well-formedness conditions on trees, but involve nodes that may be widely separated in the tree, rather than standing in sister-sister or mother-daughter relations. One would, of course, hope to find narrow limits on rules of this kind, for example that the elements involved must be terminal.

The question is, then, how important is the loss of the magical CF property? I think it is not that important, in the face of the facts. There have been other arguments that some natural languages are not CF, Bresnan et al. (1982), for example. And the CF property seems to me to be altogether the wrong measure of theoretical interest of a theory. To my mind, what is of interest about gpsg is its single-level nature. At the very least it is a fascinating and important experiment in pursuit of the question, 'How much syntax can be accounted for, and how well, using a theory that has only one syntactic level?' The answer so far is, a surprising amount, and with many new insights. The problems I have presented in this paper, and the direction of the answers I've proposed, do not threaten that central aspect of the gpsg approach.

FOOTNOTES

1. I am grateful to Georgia Green and Steve Helmreich for comments on earlier versions of this paper, and to Professor Mehdi Hetemi of the University of Pristina for help in providing data. Other
crucial data in this paper are taken from Zëri i Popullit and from the book Në Hien e Hurmave. This research was supported in part by National Science Foundation Grant NSF IST 81-17238 to the University of Illinois.

2. Recent reformulations of these principles (e.g. Sag et al., ms.) do not overcome the problems raised here, as far as I can see.

3. If NPO of (26) is not structured as shown, but as below, then the problem becomes one of blocking the ungrammatical structure that is just like the one proposed in the text for NPO, except that Prt1 is plural.

```
   NPO
  /    |
 NP1   NP2
     /  \
   NP   Conj
   AP   NP
     /  |
   NP   AP
   Prt  NP
      /  |
     vajza dhe djali i kryetarit
```

4. One might be tempted to look for a phonological treatment of the alternation, to rid the syntax of this problem. But a phonological treatment is extremely implausible. The rules that would be involved do not resemble any phonological process that is independently motivated for Albanian, and in fact there are surface counter-examples within the particle system itself to any kind of phonological conditioning one might appeal to. For example, 'e' and 'të' alternate as proximal and distal forms (e.g. for feminine singular accusative definite), but the single (both proximal and distal) form for feminine singular nominative definite is 'e'. Thus (i), (ii) and (iii) constitute a counter-example to any attempt for derive 'të' from 'e' in certain phonological environments; in those same environments, fem. sg. nom. def. 'e' remains 'e'.

   (i) vajza e/#të mirë 'the good girl'
   (ii) vajza ime e/#të mirë 'my good girl'
   (iii) vajza e mirë dhe e/#të dashur 'the good and dear girl'

Deriving 'e' from 'të' would fail for similar reasons. Nonetheless, it may well be that the alternation was originally a phonological one. I should also point out that a similar (though not identical) pattern occurs in possessive pronouns. Thus there are
proximal/distal alternations like *ime/time/sime*, ('my'). It seems clear that these pronoun alternations arose historically through fusion of the particle with a following pronoun form; indeed in plural forms the particle and pronoun are still separate. But there are some differences between the particle alternations and the corresponding fused pronoun alternations; e.g. to the *e/të* alternation for singular definite accusative particles there corresponds a single pronoun form, *time*.

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Sag, Ivan, Gerald Gazdar, Tom Wasow and Steven Weisler (ms) Coordination and how to distinguish categories. Unpublished manuscript.
ON ECP VIOLATIONS IN Krio*
Dudley K. Nylander
University of Manitoba

0. Introduction

One of the principles of grammar introduced in Chomsky (1981) is the Empty Category Principle:

(1) Empty Category Principle (ECP) \( (\angle e) \) must be properly governed.\(^1\)

Proper government, as defined by Chomsky, falls into two categories (see footnote 1). Firstly, there is government by a lexical element of the (+N+V) type. In (2a), for instance, the empty category \( (e_i) \) is properly governed by the verb see, which is a lexical element of the (-N+V) type. Secondly, there is government by coindexation. In (2b), for example, the empty category in subject position \( (e_i) \) is properly governed by the coindexed trace in COMP, i.e., \( t_i \).

(2) a. Who \( i \) did you see \( e_i \)?

b. Who \( i \) do you think \( (\_s, t_i \_s e_i \_s \text{ came?}) \)

Kayne (1981) proposes a somewhat different formulation of the ECP. Pointing to the fact that

(3) "... one might wonder why ECP should have two such dissimilar halves, the second of which appears to allow for an empty category to lack an antecedent" (1981: 102)

Kayne proposes the following formulation of ECP:

(4) Empty Category Principle (ECP)

An empty category \( \beta \) must have an antecedent \( \angle \) such that (1) \( \angle \) governs \( \beta \) or (2) \( \angle \) c-commands \( \beta \) and there exists a lexical category \( X \) such that \( X \) governs \( \beta \) and \( \angle \) is contained in some percolation of \( X \).

Consider, now, the following Krio sentence:

(5) údá \( i \) ̀nà m̀m̀bà \( (\_s, t_i \_s \_s e_i \_dè kàm?\)\)

who-you-think- that- PROG-come
"who \( i \) do you think that \( e_i \) is coming?"

As things stand, (5) poses a problem for both (1) and (4), since the empty category in subject position \( (e_i) \) is not properly governed. Given the fact that COMP branches (since it contains both \( t_i \) and \( sè \)), \( t_i \) does not c-command (hence, does not govern) \( e_i \). More precisely, (5) has the following structure (irrelevant
details omitted):

(6)

\[
\begin{array}{c}
\text{S'}\\
\text{COMP}\\
\text{t_i} \quad \text{se} \quad \text{NP} \quad \text{VP}\\
\text{e_i}
\end{array}
\]

In this paper, I shall attempt to provide a coherent explanation for the ECP violation in (5) and (6). More precisely, I shall attempt to show that what (5) and (6) illustrate is an apparent (rather than a real) ECP violation. I shall also consider the question of whether ECP should be formulated in terms of an antecedent, as suggested by Kayne. The rest of the article is organized as follows. In section 1, the nature of the that-complementizer sé will be examined more closely. Evidence will be given to show that sé has properties which distinguish it from English that. In section 2, evidence against WH-movement as a rule of Krio grammar will be provided. This, in turn, will call for a reanalysis of the problem under study. In section 3, the question of whether ECP should refer to an antecedent will be examined. Section 4 is the conclusion. The theoretical implications of the analysis will be presented in this section.

1. On the Nature of sé

One particularity of Krio is that the choice of a complementizer depends on the semantic value of the matrix verb.5 Regarding sé, Williams (1976:177) remarks:

(7) "The complementizer sé is found to occur almost exclusively with three groups of verbs: verbs of saying, psychological verbs, and sensory verbs" (Williams' italics).

The use of sé as a complementizer is illustrated in (8):

(8) a. à bìn yèrì (S, sé (S John dè k'á)m)
   I-PAST-hear- that- John-PROG-come
   "I heard that John was coming"

b. ì bìn m'èmbà (S, sé (S ùnà gò k'á)m)
   he-PAST-think- that- you-PROS-come
   "he thought that you would come"
However, sé has a particularity. It is also a verb ("say"), as in (9):

(9) a. John bín sé ùnà fɔ̀ kάm
    John-PAST-say-you-OBL-come
    "John said you should come"

    b. wé̂tín ì bín sé? "what did he say?"
    what-he-PAST-say

sé is therefore at once a verb ("say") and a that-complementizer. There is, as such, one fundamental difference between Krio sé and English that, namely, that sé (unlike that) is a lexical (-N+V) element. As a lexical element, sé can be a proper governor.

2. Evidence against WH-Movement in Krio

The construction known as the cleft predicate (CP) is found in a number of African and creole languages. (10) and (11) are Krio examples of CP:

(10) nà álài John dè álài
    it is-shout-John-PROG-shout
    "what John is doing is shouting"
    (lit. "it is shout that John is shouting")

(11) nà wákài à bín dè wákàì
    it is-walk-I-PAST-PROG-walk
    "what I was doing was walking"
    (lit. "it is walk that I was walking")

Consider, now, Muysken's (1978) analysis of CP. Muysken points out that CP involves not WH-movement, but, rather, base-generation and coindexation. Let us assume, for a unified analysis of WH-phenomena in Krio, that the language lacks a WH-movement rule. Then (5) (repeated here as (12)) must be reanalysed as (12'):

(12) údáì ùnà mimbà ñ_tí_sé (S eí dè kàm?)
    who-you-think- that- PROG-come
    "who do you think that eí is coming?"

(12') údáì ònà mimbà ñ_sé (S eí dè kàm?)

In (12'), (i) COMP does not branch and (ii) the empty category in subject position (eí) is properly governed from COMP by the lexical item sé. Under this analysis, there is no longer any ECP violation.
3. **Should ECP Refer to an Antecedent?**

Consider the contrast in grammaticality between the following impersonal constructions:

(13) a. l tán lèkkè sé John dè káṁ
    "it-appears-like-that-John-PROG-come"
    "it appears that John is coming"

b. *ì tán lèkkè sé e₁ dè káṁ
    "it-appears-like-that- PROG-come"
    "it appears that e₁ is coming"

The ungrammaticality of (13b) is surprising, since the relationship between sé and e₁ is the same in (13b) as in (12'), repeated here as (14):

(14) údá₁ ʊnì m'ìmbà (S, sé(S e₁ dè káṁ?))
    "who₁ do you think that e₁ is coming?"

Consider, however, the contrast in grammaticality between (13b) and (15):

(15) údá₁ l tán lèkkè sé e₁ dè káṁ?
    who-it-appears-like-that- PROG-come
    "who₁ does it appear that e₁ is coming?"

Like (13b) vs. (15) is (14) vs. (14'):

(14') *ʊnà m'ìmbà (S, sé(S e₁ dè káṁ))
    you-think- that- PROG-come
    "you think that e₁ is coming"

Before accounting for the difference in grammaticality between the above pairs, let us consider the contrast between (16a) and (16b):

(16) a. John bìn káṁ  "John came"
    John-PAST-come

b. *e₁ bìn káṁ  "e₁ came"
    -PAST-come

The ungrammaticality of (16b) shows that Krio is not a pro-drop language. As such, an empty category will only be permitted in Krio if it has an antecedent. The ungrammaticality of (13b) and (14') can then be attributed to the absence of antecedents for the empty categories in the sentences. Since (13b) vs. (15) and (14) vs. (14') involves the presence vs. the absence of an antecedent, it can safely be concluded that ECP should be formulated in terms of an antecedent. (See also 4.1 below.)
Alternatively, the ungrammaticality of (13b) and (14') can be explained if we assume that every empty category in every language must be identified as one of the following types: (a) little pro (b) PRO (c) a variable (d) an anaphor. The empty categories in (13b) and (14') cannot be little pros, given the ungrammaticality of (15b). They cannot be PROs, since they are not controlled by any element. They cannot be variables, since they are not operator-bound. Nor are they anaphors, since they are not argument-bound.

4. Conclusion

The theoretical implications of the foregoing analysis can be summarised in four points, namely:

I. ECP must be formulated in terms of an antecedent, as suggested by Kayne (1981). Such a formulation neatly accounts for the ungrammaticality of (13b) and (14').

II. Since Krio does not permit null nominative subjects, but does have that-t structures, it must be concluded that there is no correlation between the presence of null subjects and that-t structures in a language, as pointed out by Rouveret (1980:105).

III. Kayne's approach requires the antecedent of a (governed) empty category to be contained in a (percolation) projection of the governor. In (14), the empty category (e) is governed by se, and has its antecedent (údá) in S'. However, the question of whether COMP or V is the head of S' does not arise (or arises in rather different terms) in the case of Krio, since se has complementizer and verbal properties.

IV. The grammaticality of (15) shows that S is not a bounding node in Krio. The analysis assumed is that of (15'). As can be seen, e is separated from its antecedent (údá) by two S nodes:

\[(15') Údá (S ' l k (S, se(S, e de k'am?)))\]

II

I

NOTES

* Preliminary versions of this paper can be found in two articles ("Should ECP refer to an Antecedent? Evidence from Krio" and "COMP, Government and the ECP") submitted to Linguistic Inquiry (LI) for publication. (Neither article was published.) I wish to thank some anonymous LI reviewers for their comments on the papers in question. In some instances, however, I have chosen not to follow their advice. Some of the issues raised here are also discussed (from different perspectives)

1. Chomsky (1981: 250) defines proper government as follows:
Consider structure (i)
(i) ( $\beta$ ...... $\gamma$ ...... $\alpha$ ...... $\gamma$ ...... ), where
   (a) $\alpha = x^0$ or is coindexed with $\gamma$
   (b) where $\emptyset$ is a maximal projection, if $\emptyset$
       dominates $\gamma$ then $\emptyset$ dominates $\alpha$
   (c) $\alpha$ c-commands $\gamma$

In this case, $\alpha$ governs $\gamma$
$\alpha$ properly governs $\beta$ if and only if $\alpha$ governs $\beta$
   (and $\alpha \neq$ AGR).

2. Kayne's study is based on examples mainly from French. See Aoun (1981) for a summary of Kayne's position.

3. Krio is an "English-based" creole language spoken in Sierra Leone and other parts of West Africa. (On pidgins and creoles in Africa, see Berry (1971). On Krio more specifically, see Jones (1971).)

   A word of caution is in order, since some readers may not be acquainted with features of creole languages. The lexicon of Krio is mainly from English. Jones (1971:69) points out that "something like four-fifths of what may be called the kernel lexicon of Krio is derived from English." Phonologically and syntactically, however, Krio is far removed from English. For example, phonologically, Krio is a tone language. (See, in this regard, Coker (1977), Coomber (1969), Fyle & Jones (1980), Johnson (1974) and Nylander (1979).) In this article, the tones are noted as follows: (high tone) $\searrow$ (low tone).

   Syntactically, Krio is characterised by constructions typical of West African languages (Givón (1979), Jones (1971)). As Givón (1979:12-13) points out:
   In looking at Krio, one is immediately struck by the following dichotomy: The bulk of the vocabulary comes from English. But the bulk of the grammar is unmistakably Kwa. The English derived lexicon has been fully adapted into the Kwa mold. (Kwa is the name of a group of languages spoken in West Africa. The best known of these languages are Yoruba and Igbo.) For this reason, Givón classifies Krio as an African-based (rather than an English-based) creole language.

   As regards the verb system, Krio has a number of preverbal markers. (On creole verb systems, see Muysken (1981). On the Krio verb system, see Jones (1968, 1971).) The following abbreviations will be used: PROG = progressive aspect; PROS = prospective mood.
4. ECP accounts for the difference in grammaticality between (i) and (ii) as follows. In (i), the presence of that in COMP prevents the trace in COMP (t₁) from counting as the local antecedent of e₁. In (ii), in the absence of that, t₁ counts as the local antecedent of e₁.

(i) *Who₁ do you think (S₁, t₁ that (S e₁ came?))
(ii) Who₁ do you think (S₁, t₁ (S e₁ came?))

Since (i) is the English equivalent of (5), it is legitimate to wonder the effect of sé-deletion (or non insertion of sé) is, in Krio. As I have elsewhere (Nylander (1981)) pointed out, (5) becomes ungrammatical in the absence of the complementizer. (On the non deletability of complementizers in creole languages, see Givón (1979:24).) Note, however, that even if the absence of sé had any effect, the grammaticality of (5), which has a branching COMP, would still have to be accounted for.

5. Krio is, in this respect, like Standard Arabic—see Aoun (1981).


7. See Williams (1976:177-178) for other examples.

8. In her classic study, Lord (1976) lists over thirty languages in which a given form is ambiguous between the verb say and a that-complementizer.

9. See Bynoe-Andriolo & Yillah (1975). (Note, also, that in (10( and (11), CP corresponds to an English pseudocleft construction.)

10. Muysken's study is based on Papiamentu, a creole language whose structure is similar to that of Krio.


12. See also Nylander (1981).


15. In other words, if S were a bounding node, (15') would violate Subjacency (Chomsky (1973, 1977)). Given the grammaticality of (15'), it can further be concluded that at most one out of PP and S' is a bounding node in Krio.
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Inner Islands

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Many syntactic processes or structures, if your theory doesn't view syntax as an event, as I will continue to, are interfered with by negation, either asserted or presupposed. Here's a frinstance:

(1)  
   a. This mist can't last, which Morpho and Hoppy (don't) realize.
   b. This mist can't last, as Morpho and Hoppy (*don't) realize.

Very puzzling, on the face of it, for it is apparent that the main clause of (1) is in some sense the deep object of realize in both cases, which seem anyway to be very close in meaning. Why should negatives be fine in which-clauses, but be excluded in as-clauses?

I have been musing about this niggardliness of negatives, this syntactic party-pooping that they do, for a long time now, and in this paper, I am going to retrace some of my footsteps, so that you will not have to reexplore some of the dead ends that I have gone into. I will not take the limited space available in this paper to document the fact that the general problem that I am dealing with here is not a problem of English alone. Try these starred sentences out in your favorite other languages and like as not, you will find highly similar restrictions over there too. Only similar, though - rarely identical. Sigh - the Comparative Syntactician's work is never done.

A word on the terminology: islands are what I called in my thesis (cf. now Ross (in press [believe it or not]) ) the maximal areas in which syntactic processes of a designated sort could apply. Basically, the island of a node in a tree is a chain of clauses extending upward from that node, each clause being a complement of the predicate in the next clause up. That's a bit too tight, also too loose, but it will do for now. I will also leave skirted the question as to how these islands are to be defined - syntactically, semantically, or pragmatically, or by some mix of all three.

I intend the notion of inner to be understood as follows: some processes (like the one forming as-clauses) have an even smaller domain of application than the theory of islands would predict. These processes, which I call inner rules, are inapplicable just in case the relevant island contains a negative element. Thus negatives shrink the size of what would otherwise be the available space of an island: inner rules are restricted to the domain of these inner islands.

OK, you may say, so far so acceptable, but now on with the show! Some rules are inner, some not - disclose to us which are
which, O Learned One! I too thought in these terms for many a year, until I recently realized that while some rules are always inner (the rule for as-clauses, for example), there are others which are only sometimes inner. **Question Formation** is one.

(2)  
   a. What did no imitation pearls touch?  
   b. *What did no imitation pearls cost?

So for some rules, we will have to specify which applications are, and which are not, sensitive to the influence of negation. By the way, it seems unlikely to me that we can get away with saying that *(2b) is out because of some semantic peccadillo. It is in fact evident that poor old *(2b) is straining every nerve to mean something, namely something like (3):

(3)  
There were lots of different prices for the imitation pearls. Were there some items at all prices, or were there some prices that were not being charged for any imitation pearl?

Unfortunately for *(2b), (most?) people just can't mean (3) with *(2b)'s troops. And in general, I am pretty skeptical about any attempt to do away with all syntactic parameters in inner island violations in favor of semantic ones. *(4a) looks like a good candidate for such a dodge, but *(4b) might perfectly well mean something along the lines of (3).

(4)  
   a. *How long didn't the concert last?  
   b. *How long did few concerts last?

Let us return now to the problem of explaining the difference between the superficially similar sentences in (2). Obviously, semantics won't help us here. For if (2a) can have a paraphrase like (5),

(5)  
There were some things not touched by any imitation pearls - which things?

why can't *(2b) have a paraphrase like (6)?

(6)  
There were some prices not assigned to any imitation pearls - which prices?

My current hypothesis is that the relevant notion here is that of adverbiality. For the similarity between (2a) and *(2b) is only apparent: in (2a), the typical case, the what corresponds to an underlying NP which is semantically a direct object (maybe a goal?). In *(2b), however, the what corresponds to a measure phrase (MP), the kind of constituent that modifies the adjectives in (?).
(7)  a. This nice sturdy one is 15 centimeters long.
    b. That whiskey is 73 years old.

    As can be seen from some of the sample ungrammaticalities
    in (8), MP's are more restricted than NP's: many types of
    combinations that would fly for the latter crash for the \textit{former}.

(8)  a. *This one is those/some/my/both centimeters long.
    b. *That whiskey is the years that it lay in the vat old.

Furthermore, it is clear that semantically, the MP's in (7) and
those that follow the verbs of (9)

(9)  a. This ruler cost seven/*those dollars.
    b. The pasta weighed 10 hl/*[sm] tons.
    c. The tarpon measured 60 meters/*the meters that we had
       estimated.

has some semantic role similar to that played by adverbs of
degree.

In short, (2) makes the same point that is made in (10). In
(10a), the rule of \textit{Cleft Formation} has extracted an NP, so the
adverbial factor is not present. In (10b), however, an
instrumental adverb has been clefted, and we see that this rule
too has applications that are inner.

(10)  a. It was this stiletto that they \textit{(never)} stabbed the
       lasagna with.
    b. It was with this stiletto that they \textit{*never} stabbed
       the lasagna.

\section*{\textbullet}

I will from now on assume that two points have been made:
(1) it is not rules \textit{per se} but rather applications of them that
are inner\[we have thus far seen this only for \textit{question Formation}
and \textit{Cleft Formation}, but there are others]\; and (2) the adverbial-
ity of the affected constituent plays a role in the innerness of
the application of the rule. Armed with this latter observation,
we may see a possible approach to the mystery of the contrast in
(1), with which I opened the paper.

First of all, the innerness of \textit{as}-clauses may be connected
to the fact that historically, \textit{as} is a reduced form of an adverb,
namely also. Further, there are uses of \textit{as} in current \textit{English}
in which it clearly functions as some sort of manner adverb rela-
tive pronoun:

(11)  I'll approach their kinkiness as they approached mine.

Of course, neither of these facts is much more than suggest-
ive of what the \textit{correct} story might be for the \textit{as} in such sentent-
ial clauses as those in (1b), but there is another piece of evi-
dence that has more weight, I think. The which-clause of (1a) is
a non-restrictive clause, in apposition to a sentence. Like all
other such clauses, it can only follow the clause it is modifying;
it cannot be "niched" between the constituents of the modified
clause. Thus the impossibility of *(12), in which such a niching
has been performed,

(12) *This mist, which Morpho and Hoppy (don't) realize, can't
last.

parallels the badness of *(13b):

(13) a. That this mist can't last, which Morpho and Hoppy (don't)
realize, is self-evident.

b. *That this mist, which Morpho and Hoppy (don't) realize,
can't last is self-evident.

However, the as-clause of (1b) is under no such limitations.
Sentential as-clauses can appear initially, or can be niched any-
where into the clauses that they modify, as long as major consti-
tuents are not interrupted. I indicate these possibilities by the
carets placed under (14) - a caret containing an asterisk indicates
a bad place for niching.

(14) This mist can't last, as Morpho and Hoppy (*don't) realize.

In other words, as-clauses have roughly the same nichabilities as
any other sentence adverb would. My hunch is that it may be in
this adverbial behavior of the entire clause that the innerness
of the rule that forms sentential as-clauses lies. At present,
it is opaque to me in the extreme as to what kind of adverbial
function the as can have within the realize clause of (1b). I
feel that the eventual solution must connect with the existence
of such sentences as those in (15), which were pointed out to me
by Jerry Morgan.

(15) a. Selznick thinks that grapes are sentient, but I think
different.

b. Barrington feels that the Jets could outbunt the A's,
and I feel that way/so too.

c. They feel that the set may be bumper-recursive. How
do you feel?

The underlined words are all connected with manner adverbs in one
way or tother, but none of them work with realize, so the dream
of making as an adverbial relative pronoun, and explaining the
innerness of sentential as-clauses on that basis must remain
distant for a while longer, I fear. However, that's the best
line I've got on the problem at present.
Let me now turn to an investigation of what kinds of adverbs seem to interact with negatives interferingly. There are two basic kinds of adverbs, as far as I have been able to discover: a set which never seems to form inner islands, and a set which sometimes does, and sometimes doesn't, with the deciding factors still obscure to me. Adverbs of the first type are listed in (16), with an example of each.

(16) Adverbs that don't care a hoot how negative you are

a. Directionals: Into which jugs didn't he pour any gravy?
b. Locatives: It is upstairs that we don't have vampires.
c. Temporals: It was yesterday that I didn't go to work.
d. Conditionals: It is only if Ronnie wins again that I am not remaining on the planet.
   Under what circumstances don't we wrap their ankles?
e. Durationals: It was for seven years that she did not return.
   For how many months have you not been taking cnidoblastian extract of falafel?
f. Comitatives: It is with Boris that I don't work well.

Now for the types of adverbs that sometimes seem to cause innerness. For each type, I will cite one ungrammatical, and one grammatical, example. If you can figure out what's going on here, please let me know.

(17) Adverbs that sometimes seem to care

a. Manner:  
   i. How did(*n't) you find a solution?
   ii. How did(n't) he fulfill the requirements?
b. Degree:  
   i. To what extent did you (*never) help out?
   ii. To what extent do(n't) you understand the proof?
c. Instrument
   i. It was with this hoe that they (*didn't) put the diamonds into the thick shakes.
   ii. It is with these rivets that eggshells should never be repaired.
d. Frequency
   i. ?It was six times that he didn't talk to me.
   ii. How many times did(n't) they show up?

One final type of adverb—benefactives—seems to always produce bad sentences with negation. I at least have not been able to make up any good sentences.

(18) Benefactives: For whom did(*n't) you enter the race?
   *It was for my dog that I didn't change jobs.

This partitioning of the set of adverbs makes no sense to me. It correlates with nothing else that I know of. I report it here simply in the hope that someone else will be able to get a handle on it.
I also regret to have to qualify the claim of (16a) and (16b) that directionals and locatives never figure in the creation of inner islands. For there is one rule (or possibly two?) that preposes certain adverbial PPs, and this rule seems to be inner in all its applications. Two cases, one directional, one locative, appear in (19).

(19) a. Down the road Sanford thinks/*doubts we/*nobody will zoom.
   b. Near the bandstand Jeff/*no students thought/*denied that he had seen an ocelot.

Needless to say, this is an enigma within a riddle.

Having discussed the interaction of adverbial type and inner-ness, I would now like to list the rules that I have found to be inner, or to have inner applications. There is precious little structure to this list, except that I start off with an attempt to use adverbiality to the hilt. Accordingly, I will begin with a bunch of cases of relative clauses, or things like them, that modify adverbial nouns (of the correct kind), nouns like degree, extent, manner, way, amount, and so on.

(20) Relative clausoids on adverbial nouns

a. The extent to which they (*won't) mess it up is staggering.

b. Sam will describe the way in which we (*won't) solve them.

c. The (amount of) headway that I will/*won't make on my tatting will satisfy the magistrate.

d. She greeted me with the (amount of) warmth that they (*won't) expect.

e. i. He is half the doctor that his mother was(*n't).
   (=he is a doctor to half the extent to which his mother was(*n't))

   ii. She is as brilliant as her sister was.
   (=the extent to which she is brilliant equals the extent to which her sister was brilliant)

   iii. Her brother is more voracious than my teen-ager is.
   (=the extent to which her brother is voracious exceeds the extent to which my teen-ager is)

A few comments are in order. In (20c) and (20d), I am suggesting remote structures containing amount to head the subordinate clauses. This will account for the synonymy of the versions with and without this noun, and in addition will provide a basis for explaining the innerness violations. Similarly, in the three construction types in (20e), even though the paraphrases with extent involve more structural changes than merely deletion, I feel that there is sufficient motivation to render derivations from the parenthesized versions attractive (Cf. Postal(1974) for details).
(21) Three more preposing rules, pretty adverby-looking

a. The lumpier they (*never) made the porridge, the happier (*few) students were.

b. The longest Sheldon (*seldom) had to wait was two decades. The thinnest that I could (*n't) get her to slice it was two millimicrons.

The terpest I will /*won't be able to word it is two lines.

c. I (*don't) think that (few) students realize that Cheerios are fattening, \[\rightarrow\] (via Slifting) Cheerios are fattening, I (*don't) think that (*few) students realize.

These three rules seem somehow connected to adverbial notions. The first asserts that one extent/amount covaries with another, and some such lowering analysis as Postal suggests for cases like (20eii-iii) can be worked out in this case too. I totally give up on such superlative cases as those in (21b), whose remote structures have been a conundrum to me for two decades. However, superlatives do involve degree modification, and degree adverbs are of the right kind.... In the third case, I don't know how to make a superordinate clause turn into a sentence adverb, but part of the process seems to involve the raising and preposing of complement clauses of verbs like **think, realize**, and so on. I have no real idea as to why innerness is involved.

I turn now to even worse cases. In (22), there are two constructions that are similar to relative clauses in following a noun or pronoun-like head, but this explains nothing.

(22) a. The tubas for us (*not) to play are on the chest.

b. All these samples (*don't) have to do is contain ytterbium and we're saved.

I note in passing that not all all-constructions are inner: note the grammatical cases in (23).

(23) a. All we didn't look at was the balance sheets.

b. All we didn't prove was that the set is recursively imaginable.

c. All I couldn't do was finish the bookshelves.

The only all-constructions that seem to involve innerness contain some modal like **must** or **have to** and a stative verb. Curiouser and curiouser.

The final batch of cases looks simultaneously non-adverbial and non-relative-clausoid.

(24) Hand-thrower-uppers

a. Object Deletion with predicates like **ready, fit, convenient, etc.** (though not with **too** or in **Tough-**constructions (Why??))
The papers are ready for you (*not) to put relish on. Jovelowkes is too gluttonous (not) to invite. Michael Jackson is tough (not) to worry about.

b. Object preposing/?deletion? after verbs like have, etc. I selected Ted Kennedy (*not) to throw mud at.

c. Respectively cases: Tony (never) flew to Ankara, and Geoff (never) flew to Bridgeport. Tony and Geoff (*never) flew to Ankara and Bridgeport, respectively.

d. Gapping cases: Sheila kept on/*from stuffing lions, and Fred tigers.

All in all, a pretty tatterdemalion set of cases. I feel that I am at least as far from understanding why a particular (part of a) process is inner as I am from understanding why the set of adverbs is partitioned as it is. Quite possibly, the answers are not unrelated.

I could go on and on here, but I will draw this preliminary report to a close. The conclusions that I have arrived at so far in my investigations are summed up in (25).

(25) a. Basically, inner islands are never formed when a rule affects the central grammatical relations of a clause. An exception is any case in which the affected element contains an adverb. Thus we can say What house can't you photograph? (the affected element is a direct object), but not *How big a house can't you photograph?

b. Only adverbials of a certain (mystery-shrouded) type seem to induce inner islands.

c. As far as I know, inner islands constrain only rules which make essential use of variables. That is, all local rules, like the term-changing rules of Relational Grammar, seem not to care how negative the elements they affect are.

That's as far as I've been able to see thus far. Good luck to anyone foolish enough to press on with this research!

**Bibliography**


On the Conceptual Link between Clauses I and II of the Extended Projection Principle
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Chomsky (1982) presents the Extended Projection Principle (EPP) as a postulated principle of Universal Grammar. It consists of the two clauses set out in (1):

(1) I. the Projection Principle
   II. the stipulation that clauses have subjects.

The Projection Principle states that
(2) All theta-marking properties of a head must be represented categorially at each syntactic level.

This means that the arguments assigned thematic (i.e. theta) roles by a lexical head must be expressed by either lexical or empty categories at each level of representation. The Projection Principle thus ensures that lexical heads obligatorily appear in certain syntactic configurations. Clause II replaces the phrase-structure rule
(3) S ---> NP INFL VP
ensuring that all clauses have subjects <fn 1>.

Chomsky argues that (1.II), which stipulates the obligatory nature of the subject, cannot be subsumed under the Projection Principle despite the fact that subjects are frequently theta-marked constituents. There are two reasons for this. First, non-theta-marked arguments can occupy [NP,S] position, and in fact must do so in e.g. it is raining. Second, (Chomsky 1982,p10) the theta-marked subject is not obligatory for heads, whereas subcategorized complements are, as can be seen from passives and from nominal constructions where the simple determiner can replace the external argument, for example the belief that S.

Chomsky states that the two clauses are linked conceptually. The apparent link between them is that both take the place of phrase structure rules in accounting for certain syntactic facts. However, the link between principles (I) and (II) can be stated much more strongly, and in a way which will give insight into the nature of structural representations. If we analyse a sentence as a hierarchical arrangement of maximal projections, the XPs in terms of which it is represented divide naturally into two classes, argument XPs and non-argument, or predicative, XPs. We shall see that, properly stated, the two clauses of the EPP
are complementary; clause (I) accounts for the
distribution of the argument XPs, and clause (II) for
the distribution of non-argument XPs. Furthermore,
these two principles can be stated in parallel fashion,
and thus the conceptual parallelism will be reflected
formally. We will examine each principle in turn, and
show that each can be restated in a more explanatory
manner, and that this makes the conceptual link between
them clear.

Since the Projection Principle is related to the
theta-criterion, it will clearly be a simplification of
the grammar if we can derive it from the latter rather
than stating it as an independent principle of the
grammar. The theta-criterion is formulated in (4):

(4)i. Each theta-role that a lexical head
obligatorily assigns must be assigned
to a unique argument.

ii. Each argument must be assigned a
theta-role. <fn 2>

The Projection Principle follows this up with the
additional criterion that (i) must hold at every level
of syntactic representation. Note that, as mentioned
above, (4.ii) accounts for the distribution of argument
XPs; a sentence will be ill-formed unless all
arguments are theta-marked according to this condition.
Now, we can view a lexical head as an open function,
with the theta-roles indicating how many arguments the
function requires to be complete and what the thematic
nature of such arguments must be. Clause (i) of the
theta-criterion can then be restated as the requirement
that all lexical functions be properly closed (or
'saturated', to use Frege's term). This holds as the
criterion of well-formedness on a representation of a
sentence in terms of heads and arguments -- which is
essentially what D-structure is. We can restate (4.i)
as (5):

(5) All lexical functions must be properly
saturated at D-structure.

From this (4ii) should follow automatically. If a
well-formed structure must be analysable as a properly
saturated function, then it follows from the notion of
a function that there can be no 'unattached' arguments
floating around. Note that this clearly implies that
the theta-criterion properly holds at D-structure and
not, as is usually argued, at LF. For the purposes of
this paper, we may assume this to be the case -- it
makes no empirical difference which way the rule is
stated. However, Rothstein (1984) proposes a theory of
semantic interpretation in which it is natural to state
it this way.
To derive the Projection Principle from (5) we need only assume that rules mapping between levels respect the assignment of structure at a given level. Thus if a condition holds at level n, it should also hold at level n+1 or level n-1, unless specifically broken by the mapping rules. In the general case, therefore, if lexical functions are satisfied at one particular level of structure then it should follow that they are satisfied at all levels of structure. It might be argued that this informally stated condition is equivalent to the Projection Principle, so that we have not gained anything by our reformulation. However, the point is that the Projection Principle can now be seen as an instance of a general condition on rules mapping between levels of representation, and should not be stated as an independent condition on the realisation of lexical argument structure.<fn 3>

Moving on to (1.II), the condition that clauses have subjects is, in its initial statement, a stipulation. The presence of [NP,S] follows from (5) just in case the head of the VP requires a thematic argument which is assigned to that position, but where this is not so (1.II) or (3) is needed. Subjects which are not accounted for by (5) may be D-structurally internal arguments, for example the subjects of passive or inchoative verbs as in (6):

(6) a. The cake was eaten.
   b. The door closed.

or they may be 'raised' subjects, as in (7):

(7) John was believed to have left.

or they may be pleonastics as in (8):

(8) a. It snowed.
   b. It was obvious that Mary would win.

We can account for the presence of these subjects in a non-stipulative way if we represent S-structure in terms of functions and arguments, parallel to our representation of D-structure. At this level the function is not a lexical function, but is syntactically defined. This syntactic function, which we will call a predicate, is the maximal projection, or XP. This predicate is analysed as syntactically open and requires an argument for closure. The argument, its subject, must be in the appropriate syntactic relationship, which is defined by the rule of predicate-linking. For English, the rule can be stated in the following way:

(9)i. Every non-theta-marked XP must be linked at S-structure to an argument which it immediately c-commmands, and which is immediately c-commanded by it.
II. Linking is from right to left (i.e. a subject precedes its predicate. <fn 4>

This rule clearly accounts for the paradigm case of predication in English -- the linking of [VP,S] to [NP,S]. It also accounts for the linking of secondary predicates to subjects in the so called 'small clauses' such as:

(10)a. John eats carrots raw.
b. Mary left John angry.

Note that the ambiguity of (10.b) is explained by the fact that there are two alternate structures allowed by (9):

(11) a. 

```
S
  NP
   V
  VP
  N
  Mary
  John
    angry
```

b. 

```
S
  NP
    V
  VP
  AP
  N
  Mary
  left
  John
    angry
```

In (11.a) angry must be predicated of John, whereas in (11.b) the only possible subject for the AP is [NP,S].

We hypothesise that (9.i) is a principle of Universal Grammar, while (9.ii) is clearly a parameter at which languages differ. It is clear that in non-configurational such as Warlpiri (9.ii) does not hold, whereas there is evidence that (9.i) can be substantiated. (Specifically, (9.i) ensures that subject and predicate are syntactic sisters. English has a hierarchical structure -- as (11) indicates. This means that subject and predicate are frequently adjacent, and if not, there are severe restrictions on what may separate them. Warlpiri is analysed as having a flat structure as in (12):

(12) 

```
S
  W
  W
  W
  W
```

where 'W' designates simply 'word'. (See Hale (1980)). Maximal projections may therefore take subjects which
are separated from them by much syntactic material, but which still meet the configurational criterion of (9.i).

All XPs are monadic functions which require a single argument to close them in this way, with the exception that NPs and S's, while they may be predicates linked to subjects, can alternatively be closed without involving an argument. In such cases, they themselves are closed arguments, and their distribution is governed by (5). This is possible because of the internal structure of these constituents; for further discussion see Rothstein (1983). <fn 5>

(9), by ensuring that every maximal projection of \( V \) is linked to a subject guarantees that (1.II) -- or (3) -- is met. However, it is a more general condition than either of these, in that they concern themselves only with inflected predicates, whereas (9) accounts for small clause predicates as well, and thus ensures the grammatical distribution of all non-argument XPs.

Under this account, 'subject' is analysed as 'subject of a predicate' not 'subject of an S', thus allowing us to define \( S \) as a specific type of subject-predicate relation -- an instance of primary predication -- rather than requiring it to be a primitive of the theory. <fn 6>

A further advantage of representing \( S \)-structure in this way involves the derivation of a semantic representation. Given an analysis of \( S \)-structure in terms of syntactic subjects and predicates, it is possible for the semantic component to derive from the syntax a representation in which subject-predicate relations are expressed.

The conceptual link between the two clauses of the EPP can now be stated explicitly, and formally set out. The theta-criterion requires that a well-formed sentence be analysable in terms of properly saturated lexical functions, and the predicate-linking rule requires that it be analysable in terms of properly saturated syntactic functions. We can express this conceptual parallelism formally by restating the EPP in the following way:

(13) For a sentence to be well-formed, syntactic and lexical functions must be properly saturated.

It follows from their respective natures that syntactic predicate functions are always monadic, whereas lexical functions are of variable polyadicity, ranging from the zero-adic e.g. \textit{rains} to the obligatorily triadic e.g. \textit{he put the book on the table}. The syntactic structure
of the predicate dictates that it always requires a single formal argument, whereas the number of arguments required by a lexical function depends on its meaning, a quintessentially idiosyncratic property.

This analysis accounts for the presence of pleonastic subjects in [NP,S] position and also for the fact that these never occur in [NP,NP] position. When an [NP,S] position is empty, there is nothing for the [VP,S] to be linked to, and unless the position is filled with an appropriate syntactic argument the sentence will be unacceptable by (9) -- or (13). Usually, the [NP,S] position is filled by an internal argument moved by move-α from within the VP. Where there is neither a theta-role assigned to [NP,S] nor an internal argument, as is the case with weather verbs like rain, the subject position remains empty, but the VP, a formally defined syntactic function, still requires an argument. A pleonastic is thus inserted to act as subject. <fn 7> The impossibility of pleonastics in [NP,NP] position, e.g. *it's rain, follows from this analysis. Prenominal NPs appear only in configurations such as (14):

(14)  
```
NP  
/   
|   
NP  N'  N
```

Subjects being 'subjects of predicates', the [NP,NP] cannot be a subject because there is no predicate for it to be a predicate of, as it is the syntactic sister only of an N'. Pleonastics are inserted only to ensure that the predicate-linking rule is satisfied, and as there is no XP requiring the [NP,NP] as a subject, a pleonastic will never be inserted in that position.

Notes

I should like to thank Ann Reed for discussion and criticism of an earlier draft of this paper.

1. Rule (3) is not entirely subsumed under the EPP because the statement of (1.II) makes no reference to the presence of INFL in clauses. The fact that the two rules do not have the identical effect is not a problem for this analysis, for we will show that the subject is not required by INFL but by the VP, or, more generally, by the XP. This is shown by the fact that non-inflected small clause XPs are also obliged to have subjects. The presence of inflection is due to separate constraints (see Rothstein (1983) and
forthcoming). Borer (1982) argues that the obligatory nature of the subject is due to properties of AGR, but it is not clear how her account can be extended to small clauses.

2. In its original statement (ii) also has a biuniqueness condition -- each argument must be assigned one and only one argument. Schein (1982), as well as Rothstein (1983) give arguments for a weakening of clause (ii) to its present statement, while Williams (1983) reformulates the theta-criterion in terms of argument complexes, which has the same effect.

3. Note that there is evidence (Higginbotham (1983)) that there are cases where the Projection Principle does not hold, so that it should not, in any case be considered an inviolable rule.

4. Note that this definition of predication differs from Williams (1980). He defines predication as the relation between the external argument of a lexical head and the maximal projection of that head, whereas we define it in purely syntactic terms.

5. It is clear that some such mechanism of 'internal' closure is logically necessary. It is a theorem of X-bar theory that every projection of a lexical category at S-structure must be dominated by the maximal projection of that category (where domination is a reflexive relation). Thus, if S-structure can be represented as a hierarchical arrangement of maximal projections, and if (9) holds, then unless there is some possibility of 'internal closure' we would not be able to avoid a problem of infinite regress -- except, perhaps, by circular linking. Intuitively, we can see that neither is a rule of grammar.

6. Rothstein (1983) discusses the definition of S as an instance of predication where the subject is not an internal argument of another lexical head, and states as a condition on well-formedness that an S must be either inflected, or theta-marked.

7. Note that in pro-drop languages, pleonastics are inserted in [NP, S] position even when there is an internal argument available to be moved. This argument is then coindexed with the pleonastic and with AGR, as in (i) (where AGR is affixed to the V),

(i) pro'arrivano'molti studenti'

and is understood as the subject, though structurally it is not the argument of the VP. This is possible because in these languages 'affix-hopping' is held to take place before case-assignment so that AGR (agreement) is available to assign nominative case to a post-verbal internal argument. In English this is not
so. A pleonastic can be inserted and coindexed with an internal argument only when that argument does not require case, for example:

(ii) it was clear that she would win.

References
Williams, Edwin. (1980) "Predication," LI 11/1
Williams, Edwin. (1983) "Against Small Clauses" LI 14/2.
Transitivity in Toba Batak and Tagalog
Fay Wouk, UCLA

Western Austronesian languages typically have systems for marking verbs in which the verbal morphology gives information about the case role of one particular argument-NP. That NP is often singled out by position or by a prenominal particle, and it has certain syntactic peculiarities as well. The whole system is usually called a focus system, and the NP whose role is marked on the verb is most often called subject, topic or focused NP. With one-argument verbs the "topic" is the only available NP, either agent or experiencer. When the verb has two or more arguments, a choice must be made between agent/experiencer, patient, and possibly one or more obliques, such as recipient, beneficiary, instrument, or location. The question of which NP is chosen for this distinction has never been adequately answered, although three possible explanations exist. In this paper I will briefly consider voice and focus as explanations, and show that they are incorrect. I will present discourse data that supports a modified version of the third explanation, the transitivity hypothesis.

The two languages I studied are Toba Batak of Sumatra, Indonesia, and Tagalog of the Philippines. One noun phrase is marked as "topic" or "focused" in each clause. In Batak this NP is marked by position, immediately following the VP, while in Tagalog it is preceded by the article ang. Verbal morphology gives information about the role of this "focused" NP. In Tagalog the morphemes umwa- mab- iiang- indicate that the "topic" is the actor, i- iwal- ilang- indicate that the "topic" is patient, benefactive, or instrumental, -aan -ain indicate that the "topic" is patient or direction, and -agan ka-an indicate that the "topic" is locative. In Batak, a prefix indicates either the "topic" is the actor ( maw- ) or the "topic" is a non-actor ( i- ), while in the non-actor form, the suffix -bon indicates that the "topic" is not a patient, but rather some sort of oblique, often recipient or beneficiary.

The use of the term "subject" for the NP whose role is registered on the verb suggests a choice of active vs passive that is often explained in terms of thematicity. Thompson (forthcoming) suggests that the use of English passive "seems to be based on the discourse structuring principles of thematic and inter-clausal continuity" (p.18). She concludes that
passive subjects tend to be thematic, while passive agents are non-thematic, and that the function of passive is to keep thematic elements in the subject slot. "Topic" also suggests thematicity, while "focus" most often refers to new information. There are problems with these analyses. The NP so pointed out is neither "focused" in the sense of presenting new information nor is it the "topic" in the sense of theme. The most common so-called "topics" are patients. It has been noted (Givon, 1979) that patients are statistically less likely to be human and definite than non-human and indefinite, while the opposite is true of agents. However, humans and definites are more likely to be thematic than non-humans. Thus, agents are more likely to be thematic than patients, and a theme oriented system will generally have more agents than patients as subject. Furthermore, it has long been noted that at least in Tagalog it is definite patients which become "topics", so clearly new information is not being presented. In terms of discourse function, the system in question is neither a focus system nor a voice system. I will use the more neutral term trigger in place of topic or focus throughout this paper. The overall system will be called a trigger system, and the NP will be called the trigger, since its case role triggers the verbal morphology. Clauses with actors for triggers will be referred to as +AT, while those with patients or other participants as triggers will be referred to as -AT.

Recently, Hopper & Thompson (1980) have suggested a new explanation of trigger choice on the basis of their scalar transitivity hypothesis. According to this hypothesis, the level of transitivity of a given clause is not just a result of the number of arguments which the verb has, but rather of a combination of factors, or parameters, "all concerned with the effectiveness with which an action takes place," such that verbs with the same number of arguments could be higher or lower in transitivity with respect to each other. Hopper & Thompson found that these parameters tended in fact to co-vary, so that a clause that was high in one would be high in several others. A given clause will be more transitive if it ranks higher on a number of these parameters, and less transitive if it ranks lower. The parameters that they consider relevant to transitivity are given in the following table.
Table 1

<table>
<thead>
<tr>
<th>participants</th>
<th>high</th>
<th>low</th>
</tr>
</thead>
<tbody>
<tr>
<td>kinesis</td>
<td>two or more</td>
<td>one</td>
</tr>
<tr>
<td>aspect</td>
<td>action</td>
<td>non-action</td>
</tr>
<tr>
<td>punctuality</td>
<td>punctual</td>
<td>atelic</td>
</tr>
<tr>
<td>volitionality</td>
<td>volitional</td>
<td>durative</td>
</tr>
<tr>
<td>affirmation</td>
<td>affirmative</td>
<td>non-volitional</td>
</tr>
<tr>
<td>mode</td>
<td>realis</td>
<td>negative</td>
</tr>
<tr>
<td>agency</td>
<td>high in potency</td>
<td>irrealis</td>
</tr>
<tr>
<td>affectedness of P</td>
<td>totally affected</td>
<td>low in potency</td>
</tr>
<tr>
<td>individuation of P</td>
<td>highly indiv.</td>
<td>unaffected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>non-indiv.</td>
</tr>
</tbody>
</table>

Highly individuated patients are opposed to less individuated patients in the following way:

Table 2

<table>
<thead>
<tr>
<th>individuated</th>
<th>non-individuated</th>
</tr>
</thead>
<tbody>
<tr>
<td>proper</td>
<td>common</td>
</tr>
<tr>
<td>human, animate</td>
<td>inanimate</td>
</tr>
<tr>
<td>concrete</td>
<td>abstract</td>
</tr>
<tr>
<td>singular</td>
<td>plural</td>
</tr>
<tr>
<td>count</td>
<td>mass</td>
</tr>
<tr>
<td>referential, definite</td>
<td>non-referential</td>
</tr>
</tbody>
</table>

Hopper & Thompson also show that cross-linguistically, morphosyntax is often sensitive to the overall level of transitivity of a clause, rather than just to the number of arguments present. Morphological marking in many languages differentiates "transitive" and "intransitive" on bases other than number of arguments, singling out e.g. past or perfect two-argument verbs only, or two-argument verbs with individuated patients only, rather than marking all two argument verbs as "transitive". Their study includes a number of Austronesian languages in which the referential status of the patient is more important than the presence or absence of a patient with regards to morphological differentiation from "intransitive" or one-argument verbs.

Hopper & Thompson go on to argue that in discourse, high transitivity correlates with foreground, and low transitivity with background. That is, they claim that in the main event line of a narrative text, there will be a preponderance of high transitivity clauses, while in the background and descriptive material there will be a preponderance of low transitivity clauses. They state that in Tagalog +AT clauses (with no patient or an indefinite patient and imperfective aspect) correlate with background, and -AT clauses (with a definite patient and
perfective aspect) correlate with foreground. Hopper (1979a, 1979b) also applies this analysis to Old Javanese and Malay, and claims that foreground, perfective aspect and definite patients all correlate with the -AT verb forms.

I examined their hypothesis with respect to both Tagalog and Toba Batak. These two languages are generally believed to belong to the same first order subgroup of Austronesian, although they almost certainly do not belong to the same immediate subgroup. Thus similarities between them will be of interest for both synchrony and diachrony.

The Toba Batak texts (4 long and 11 short) were all oral texts, collected during a UCLA field methods course. They were produced by a single speaker, and represent a variety of text types, including narrative, procedural, descriptive, and expository. The Tagalog texts (8 in number) included both written (formal and informal), oral and dictated texts. They were from three different speakers, and all are basically narrative in nature.

For every potentially two-argument verb in the corpus I tabulated the results for foreground vs background, aspect, and syntactic and semantic individuation of the patient. In determining foreground vs background, I applied Hopper & Thompson's definitions of foreground and background as much as possible. In the non-narrative texts there was no sequential event line, so I divided clauses into event vs non-event. To investigate aspect, I first coded all irrealis clauses in both languages, and non-finite ones in Tagalog in such a way as to exclude them from consideration, since the aspectual distinction is neutralized in those cases. The remaining Tagalog clauses all had either perfective or imperfective morphology. In Batak I originally distinguished four categories, based on a combination of semantics and morphology: general past, perfective, habitual and progressive. The general past and progressive categories proved too small to use, so I combined habitual and progressive as imperfective, and general past and perfective as perfective. Syntactic individuation of the patient was determined by coding, no patient or a bare noun being contrasted with an individuated NP, one that was either modified in some way or was anaphoric to a previously modified NP. Semantic individuation was based on the referential status of the patient (definite, specific, non-referential, null) as determined by first or prior mention. I suspected that the presence of a verb of
cognition or speech was relevant, as they appeared on preliminary examination to be preponderantly -AT, so I tabulated that information as well. There are a number of situations in which trigger choice is not free. In both Batak and Tagalog within a relative clause the NP coreferential with the head must be the trigger. In Batak, typically a predicate initial language, topicalized initial NPs are found, but only the trigger NP can be found in this position. These clauses I excluded. After tabulating all these factors, wherever data sets were sufficiently large I analyzed the results using BMDP log-linear analysis, a program that determines the presence and statistical significance of interaction between factors in accounting for variation. Table 3 gives the total number of clauses for each language, and shows the high frequency of -AT constructions.

Table 3  Clause Totals

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>+AT</th>
<th>-AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tagalog</td>
<td>222</td>
<td>60</td>
<td>162</td>
</tr>
<tr>
<td>Batak</td>
<td>218</td>
<td>71</td>
<td>147</td>
</tr>
</tbody>
</table>

Table 4 gives the figures for verbs of cognition and speech.

Table 4  Verbs of Cognition and Speech

<table>
<thead>
<tr>
<th></th>
<th>C&amp;S verbs</th>
<th>not C&amp;S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tagalog +AT</td>
<td>6</td>
<td>54</td>
</tr>
<tr>
<td>-AT</td>
<td>40</td>
<td>122</td>
</tr>
<tr>
<td>Batak    +AT</td>
<td>2</td>
<td>69</td>
</tr>
<tr>
<td>-AT</td>
<td>50</td>
<td>97</td>
</tr>
</tbody>
</table>

As Table 4 shows, the vast majority of verbs of cognition and speech had -AT morphology. This proved to be statistically significant in both languages, with a probability of chance occurrence of .0 in Batak, and .0387 in Tagalog. All later tests were done both considering all clauses and excluding the clauses with verbs of cognition and speech. Since the presence of these verbs did not correlate significantly with any of the other relevant factors for trigger choice, I concluded that this should be considered a separate case of almost completely grammaticized trigger choice. In this paper, therefore, I will not discuss the further results that included verbs of cognition and speech.

Foreground and background proved to have absolutely no correlation with trigger choice, either
statistically significant or otherwise, as the figures in Table 5 show.

<table>
<thead>
<tr>
<th></th>
<th>Trigger Choice &amp; Foreground/Background</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Foreground</td>
</tr>
<tr>
<td>Tagalog</td>
<td>+AT</td>
</tr>
<tr>
<td></td>
<td>−AT</td>
</tr>
<tr>
<td>Batak</td>
<td>+AT</td>
</tr>
<tr>
<td></td>
<td>−AT</td>
</tr>
</tbody>
</table>

In both languages −AT is almost evenly split between foreground and background. +AT is less evenly split, but the difference is still fairly small, and the greater quantity is background in Batak but foreground in Tagalog. Foreground and background are terms most appropriate to narrative, so it is not surprising that there is no correlation in Batak, where the texts were of mixed genre, but it is somewhat surprising that there is no correlation in Tagalog, where all the texts were narratives. If −AT is indeed the high transitivity form, then Hopper & Thompson’s hypothesis that high transitivity correlates with foreground does not hold up. Their hypothesis assumes that the basic type of discourse is narrative. It is more likely that conversation is the basic type of discourse, and conversation presumably does not have the same kind of foreground vs background distinction that narrative does. If transitivity marking has a discourse function, that function should be relevant to the needs of conversation, not of narrative.

Aspect did prove to be statistically significant in Batak, but not in Tagalog. The figures are given in Table 6. For interpretation, the irrealis and non-finite columns may be ignored.

<table>
<thead>
<tr>
<th></th>
<th>Trigger Choice and Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>irrealis imperfect perfect non-finite</td>
</tr>
<tr>
<td>Tagalog</td>
<td>+AT</td>
</tr>
<tr>
<td></td>
<td>−AT</td>
</tr>
<tr>
<td>Batak</td>
<td>+AT</td>
</tr>
<tr>
<td></td>
<td>−AT</td>
</tr>
</tbody>
</table>

In Tagalog the ratio of imperfect to perfect is the same in +AT and −AT, approximately 1-to-3 and it is not clear from this data that aspect contributes to trigger choice. In Batak aspect proved significant with a probability of .0088. The probability measurement means there is only .0088 possibility of
chance occurrence of a correlation between trigger choice and aspect, but does not indicate in what way trigger choice correlates with aspect. An examination of the raw figures shows that +AT is approximately 65% imperfective, and -AT is approximately 70% perceptive. However, there is also a statistically significant (.0403 probability of chance occurrence) correlation between trigger choice and the interaction of aspect and patient syntactic status. This means that part of the apparent effect of aspect on trigger choice is likely to be due to the way aspect correlates with patient syntactic status.

I will argue that -AT correlates highly with individuated patients, that is patients whose presence and identity are of sufficient importance to the situation described for them to be modified or identified in some way, while +AT correlates with non-individuated patients. It is generally the case that in perceptive actions the patient tends to be individuated, whereas with habitual actions the patient is often not individuated and indeed non-referential. It seems possible to me that the observed correlation between aspect and trigger choice might be the result of the small number of perceptive actions in which the patient is not individuated, and the large number of habitual actions in which the patient is not individuated. In fact, In Batak 62% of all +AT realis verbs are habitual, as opposed to only 23% of all -AT realis verbs. Indeed, the transitivity hypothesis predicts that aspect and patient status are not independent, and the data from Batak bears this out. Thus, there is no evidence that aspect contributes directly to trigger choice in either language.

Interestingly, there is a statistically significant correlation (probability .0) between aspect and foreground/background in Tagalog, as predicted and claimed by Hopper, although not in Batak, as Table 7 shows.

<table>
<thead>
<tr>
<th>Table 7</th>
<th>Foreground/Background &amp; Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>irrealis imperfect perfective non–finite</td>
</tr>
<tr>
<td>Tagalog</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>irrealis imperfect perfective</td>
</tr>
<tr>
<td>Batak</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>B</td>
</tr>
</tbody>
</table>

In Tagalog, foreground verbs are predominantly perfective (91.5%), while background verbs are more or
less evenly divided among aspects. However, in Batak perfective is only slightly more common than imperfective in foreground (61.5%). It might be argued that this reflects the fact that the Batak texts are not all narratives. However, a separate count of only narrative texts did not show any better correlation. This difference between Batak and Tagalog is interesting in view of the fact that aspect is obligatorily marked in Tagalog, but optionally marked in Batak. Perhaps a strong correlation between foreground and perfective aspect can only be expected when aspectual marking is obligatory.

Patient individuation proved to be the most important factor in both Batak and Tagalog trigger choice. For both languages, both syntactic and semantic criteria proved statistically significant. The two languages proved to differ with respect to whether correlation was better with semantic or syntactic criteria. Table 8 gives results based on syntactic criteria, and Table 9 gives results based on semantic criteria.

<table>
<thead>
<tr>
<th>Table 8</th>
<th>Patient Syntactic Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no patient</td>
</tr>
<tr>
<td>Tagalog</td>
<td>+AT 15</td>
</tr>
<tr>
<td></td>
<td>-AT 0</td>
</tr>
<tr>
<td>Batak</td>
<td>+AT 24</td>
</tr>
<tr>
<td></td>
<td>-AT 6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 9</th>
<th>Patient Semantic Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no ref</td>
</tr>
<tr>
<td>Tagalog</td>
<td>+AT 15</td>
</tr>
<tr>
<td></td>
<td>-AT 0</td>
</tr>
<tr>
<td>Batak</td>
<td>+AT 24</td>
</tr>
<tr>
<td></td>
<td>-AT 6</td>
</tr>
</tbody>
</table>

For Tagalog the syntactic criterion (individuated patient) seems less useful. Close to one sixth of the individuated patients are in +AT clauses, and unindividuated patients are almost evenly split between the two clause types. The semantic criterion gives much better results. 95% of all definite patients are found in -AT clauses. Specific and non-referential patients are problematic, since they are split between clause types. One possible explanation would be in terms of aspect. That is, we might expect that when a patient is not definite, perfective versus non-perfective aspect will be the
deciding criterion. This did not prove to be the case. Indefinite patients are fairly randomly distributed with respect to aspect.

For Batak the syntactic criterion seems a better predictor. There are, after all, more non-referential patients in -AT clauses than there are definite ones. There are, however, very few -AT clauses with no patient or an unindividuated patient, and only 12 +AT clauses with an individuated patient. Again, aspectual differences cannot explain the cases which do not go according to prediction. In both languages there is a certain amount of variation that cannot be explained with reference to patient status.

There is a simple explanation for the variation, in both Batak and Tagalog. I propose that -AT morphology does not directly correlate with any observable phenomenon. It correlates directly with the speaker’s choice, or judgement, that a certain referent expressed by a patient NP is relevant to the discourse. It is something that a listener should pay some attention to in evaluating a speaker’s utterance. I propose to refer to these NP with the term salient. A salient patient is simply one whose referent the speaker judges to be of some importance, and this fact is signalled by using a -AT structure. Thus, all thematic referents (highly continuous) will be salient, but the reverse is not true. A referent can be salient, but only present in a short portion of the text, or indeed only mentioned once.

In both languages, salience correlates highly with definiteness, zero anaphora and syntactic elaboration, which are other means of signalling the relative importance of an NP. +AT morphology correlates most highly with absence of a patient, and next with minimal individuation. The correlation is not 100%, however, because the process is not a grammatical one. There can be variation even at the two ends of the scale, definiteness and absence of patient. But most of the variation comes in the middle ground, among the non-definite patients. This is true in both Batak and Tagalog.

The greater predictive value of definiteness for Tagalog and syntactic elaboration for Batak probably has more to do with the difference in text types than a difference between languages. Participants in a narrative will generally be referential if they have any importance. This is not necessarily true of non-narratives.

I have attempted to show that -AT structures correlate with salient patients. The use of
descriptive material and zero anaphora represent speaker judgements as to the greater salience of those participants, in comparison with participants that are neither of sufficient interest to describe, nor sufficiently in the consciousness of the hearer to express with zero anaphora. I will now try to explain why that should be the case. I claim that the grammatical function of the trigger system is to distinguish intransitive (or low in transitivity) from transitive (or high in transitivity). This system is then used in discourse to signal the salience of the patient, since high transitivity generally correlates with salience of the patient, and low transitivity correlates with no patient or non-salience of the patient.

There are two kinds of evidence that the grammatical function of the trigger system is to indicate level of transitivity in Hopper & Thompson's sense. The first kind has to do with Hopper & Thompson's transitivity parameters. Several of them co-vary with -AT. -AT verbs usually have two or more participants, have a patient which is syntactically or semantically individuated, have perfective aspect, and involve volition. They are more often realis, affirmative and punctual than irrealsis, negative and durative. This is not to claim that intransitive verbs, or +AT verbs cannot have these characteristics. In fact, it is even possible that lower transitivity verbs will have these characteristics more often than they will not. But the opposite characteristics - less than one participant, an unindividuated patient, imperfective aspect, etc. - will be true of a larger proportion of all +AT verbs, and of a smaller proportion of all -AT verbs. And this is indeed the case in my data. The second kind of evidence has to do with the actual morphology. The morphology used for +AT in Tagalog overlaps with the morphology of one-argument verbs. One-argument verbs usually take the -um- infix, and a few take mag- or mang- prefixes. While this is no longer true in Batak, there are a few one-argument verbs which show an alternation between initial /m/ in the indicative and /p/ in the imperative and causative. The /m/ is probably a historical relic of -um-. It is also true that other languages in the same first order subgroup as Batak and Tagalog, but which do not belong to the same immediate subgroup as Tagalog, such as Old Javanese and Chamorro (Fox, 1982), use similar morphology for +AT two-argument verbs and for at least some one-argument verbs. It seems very likely that at
an earlier stage Batak did so as well.

As I mentioned before, Toba Batak and Tagalog almost certainly belong to the same first order subgroup of Austronesian, Malayo-Polynesian. They also probably belong to the same second order sub-group, Western Malayo-Polynesian, but to different branches of that sub-group. On the basis of this study, I tentatively reconstruct a syntactic stage (corresponding to Proto-Western Malayo-Polynesian) in which -AT morphology was used for clauses that were high in transitivity, and +AT morphology for clauses that were low in transitivity, with individuation of the patient as the main parameter for determining high transitivity. This transitivity marking is used today in both Tagalog and Toba Batak as a means of signalling the salience of the referents of patient NPs in discourse.

References


Language Convergence Between Closely Related Languages: A Case Study in Yuman

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In this paper, it will be shown that closely related languages that are in contact undergo a good deal of convergence, and that this convergence can often complicate attempts at reconstruction. The examples presented here will serve to illustrate the fact that reconstruction does not represent the speech patterns of a homogeneous speech community at a point in time, but rather is the sum result of an accumulation of traits that have been gained over time by a set of languages or dialects, in contact, that may already be quite divergent over the latter part of this period. Illustrations will come from the Yuman language family, shown on the map in figure 1.

Related languages are apt to influence each other quite differently than unrelated languages. In a family like Yuman, where recognizable cognates abound, if two languages have different sounds these sounds have a one-to-one correspondence with each other—for example, if one language has ɬ and another has s in the same words, ɬ and s will be considered to correspond to each other by a speaker familiar with both languages. (Speech patterns that differ only dialectically are of course the extreme case of correspondence; but the correspondences are present to some degree for all Yuman.) There are many interesting influences on the process of language change that can be predicted on the basis of the fact of correspondence. One is that assuming the appropriate sociolinguistic conditions are present for this convergence, we can predict that, in our example, the language without ɬ will derive it by a shift from the corresponding s— not from some other source. However, if two unrelated languages come into contact, one of whom has ɬ and one of whom has s, but without correspondences between them, there is no special reason why these two segments should begin to converge. The language without ɬ is just as likely, in a situation of convergence, to develop ɬ from t, for example (perhaps more likely, since t is more similar to ɬ than s is, in terms of distinctive features.)

Unrelated languages, then, may develop convergent structures in conditions of contact, but may undergo quite different sorts of shifts in order to do so. Related languages, on the other hand, are more likely
Figure 1: Map of the Yuman Languages

Figure 2: Internal classification of the Yuman languages
to undergo identical sound shifts and identical grammatical changes. The resultant structural similarities, then, are not always possible to distinguish from inherited similarities. This sort of process is probably most important in what I will call a "community of dialects"—defined as groups of interacting speech communities which maintain a constant degree of dialect similarity over time—not because the dialects do not change, but because when one dialect changes, pressure operates to either wipe out that change over time, or for the other dialects to follow suit. Thus communities of dialects undergo constant convergence even at the same time that they maintain a certain degree of difference.

The Yuman language family

The favored subgrouping within the Yuman family is shown in figure 2. There are four quite clearly defined branches of the Yuman family—Pai, River, Delta-California, and Kiliwa. Kiliwa is an isolate within the Yuman family, but the other three branches have within them several communities of dialects that probably do or once did have the stable, mutually-converging relationship that I introduced above. Upland Pai is such a community at the present time and probably has been for many centuries. The River languages used to be such a community, although historical events over the last couple of centuries have served to isolate Mojave. Diegueño, on the other hand, seems to have more internal diversity than the other two groups of dialects, and appears to have been following a pattern of divergence.

The prehistory of Yuman appears to be quite complex, with much migration of Yuman peoples within the geographic range of the family, and with various extensions and contractions of the range at different periods in time (Hinton, ms.) The clear genetic subdivisions within Yuman probably derive from periods of relative isolation of various branches. The examples of convergence between languages within the Yuman family that I will show here point to a present areal division between the Northern part and the Southern part of the Yuman range. I will refer to these areal divisions as Northern Yuman and Southern Yuman. This areal division is made clear by the fact that members of some of the subbranches of Yuman are found in both areas. For example, Mojave shares certain traits with the Upland Pai languages (Havasupai, Hualapai and Yavapai) that it does not share with its close relatives Yuma and Maricopa. Similarly, Paipai, located
in the Southern area, is distinguished from its Upland Pai relatives by certain traits that it shares with its neighbors.

Northern Yuman phonological traits

The following traits are shared between Upland Pai and Mojave.

(1) Proto-Yuman *ɡ and *s shift to ɡ and ɡ respectively. This shift is one I have studied in some detail previously (Hinton, 1979, 1982). Since all Upland Pai underwent the shift, it has previously been thought to be reconstructable for Proto-Upland Pai, with Paipai correctly supposed to retain the older form. It also seemed possible to conclude that Mojave underwent the sound shift as a result of contact with Upland Pai. Looking at 19th century documents, however, has shown us that this sound shift did not take place until the latter half of the nineteenth century, long after the Upland Pai dialects were already separated from each other, and that it was Mojave that first underwent the sound shift, which spread from that language across the Upland Pai languages—first to Hualapai, then to Havasupai and the Yavapai dialects. Were it not for these documents, the true facts of the history of this sound shift would have been impossible to ascertain.

(2) Alveolar flapped ɹ as primary variant. All Upland Pai probably used to have it (but Havasupai and Hualapai has since shifted to ʃ); Mojave has a flapped ɹ now; the other River languages have a trill instead. Again contact between Mojave and Upland Pai is indicated. Kroeber described ɹ for Mojave as a trill in the early 20th century, although as he said, "the tip of the tongue is flicked (only) a few times against the top of the gums". This is in contradistinction to Maricopa and Yuma, which are always described as having an extremely strongly trilled ɹ. More recent fieldworkers—Wares in the '60's and Munro in the '70's—have found Mojave ɹ to be a simple flap. It appears, then, that Mojave completed a shift from a trill to a flap in the 20th century. Mojave is most like Yavapai with regard to this trait: both Yavapai and Mojave have the flap as the primary variant, and both have a trill as a stylistic variant.
(3) Proto-Yuman *x and *xʷ shift to h and hʷ. This occurs in Upland Pai and Mojave; all other Yuman languages retain x and xʷ. I have less information on the time-depth of this shift than on the others. It may be old in Upland Pai, but I am not prepared to commit myself to that stance, since it is obvious from the previous examples that a sound shift can travel very fast in this community of dialects. Since of the River Languages, only Mojave has undergone the shift, it is likely to be recent for Mojave.

Notice that most of the convergence that has taken place between Mojave and Upland Pai can be demonstrated to have been quite recent, around the 19th century, and even the 20th. Contact between Hualapai and Mojave was greatly increased beginning in the mid-nineteenth century, due to historical events involving mounting pressure from Anglos. In the case of the sibilant shift, Hualapai underwent the shift as a result of contact with Mojave, and then in turn provided the contact impetus for the change in Havasupai and Yavapai. What I am calling the Northern Yuman area, then, is really quite young—perhaps a century old. But by studying such recent areal influences as these, we begin to develop an understanding of how important it is to incorporate areal considerations into the process of comparative reconstruction.

One thing that Northern Yuman teaches us is that language convergence may often proceed in bursts, as the result of short-term intensified contact. Such contact may last for a generation or two, due to all sorts of imaginable social and environmental factors, and then de-intensify again. Alternatively, contact may be more stable and more long-term, of the sort found between the various members of the Upland Pai community of dialects. The sort of convergence that we see between Upland Pai dialects is probably a process that has been going on for many centuries, where a change occurring in one speech community gets transferred to other members of the community of dialects, thus maintaining a constant high degree of similarity, at the same time that other language groups in a social situation of lesser or no contact will diverge radically.

Furthermore, the Northern Yuman area illustrates something that we already know well: convergence may be the result of "indirect" contact.
Southern Yuman phonological characteristics

As we turn to Southern Yuman, we see that it does not show the homogeneity of areal influence that we see in Northern Yuman. We see various traits held in common between different groups of languages, rarely between all of them. In Southern Yuman, then, we are probably viewing an accumulation of independent "bursts" of convergence, occurring during periods of intensive contact between various Yuman languages, along with other features gained through more stable contact situations—the latter probably being those between members of communities of dialects.

(1) lenition of subject suffix, reconstructed as \(*_C^V\) in Proto-Yuman.
Mesa Grande has \(C, V, d\), as variants for the subject marker;
Cocopá has \(C^V\) for subject markers;
La Huerta has \(V\) for subject marker;
Paipái has \(C^V\) or \(V\) for subject marker.

Other Yuman languages have not lenited the subject marker appreciably. This trait is especially interesting because of the fact that while the process of lenition is held in common between these languages, the phonetic character of the subject marker is not identical across languages. What we observe is increasing lenition from north to south among the languages affected.

(2) change of \(C\) (other than in subject marker).
Kiliwa \(*_C^V > T\) before European contact;
Cocopá \(*_C^V > 9\) before European contact;
Yuma \(*_C^V > 9\) in the 19th and 20th century.
Maricopa \(*_C^V > g\) in the 19th and 20th century.

Once again we see a sound shift that has much in common across languages but which does not result in identical segments.

(3) development of \(t^V\) and \(t^V\).
Cocopá and Díegueño have \(t^V\) and \(t^V\) well-installed;
Yuma has \(t^V\) fairly well-installed (but no \(t^V\));
Kiliwa has \(t^V\) and \(t^V\) in sound symbolism;
Paipái has \(t^V\) in loan-words.

Other Yuman languages do not have it.

(4) fricative \(r\)
Cocopá has it as one variant;
Mesa Grande Diegueño has an alveolar approximant with slight frication as the most common r morpheme; Kiliwa has a uvular fricative for r.

We see here an indication of a possible alveolar or retroflex fricative held in common at one time, with subsequent independent changes.

(5) loss of ḵ. This occurs in Cocopa, Diegueño, and Kiliwa.

Lexical and syntactic traits

I have concentrated so far on phonological traits, but of course lexical and grammatical traits in Yuman also have an areal distribution of interest. I will present only a few of these.

Numerals

In Langdon and Munro's paper on Yuman numerals (1980) they show that 1, 2, and 3 are clearly cognate in all Yuman languages (although with some problems). 4 and 5 are reconstructible except for Kiliwa. No other numbers can be reconstructed for Proto-Yuman. They write,

"In general, the Upland [Pai], Mojave, and Kiliwa systems may all be described as additive, while the Diegueño, Cocopa, and Yuma-Maricopa systems are multiplicative. Paipai has a mixed system synchronically, which can be accounted for by its having recently borrowed the terms for 'seven', 'eight', and 'nine' from neighboring Diegueño."

Similarly, one of the Mojave counting systems shares the word for 9 with Havasupai, Hualapai, and Yavapai. In general Mojave higher numbers are not cognate with Upland Pai, but the system is identical (i.e., additive) until 10.

Auxiliaries

Langdon (1978) reconstructs auxiliary verbs in the Proto-Yuman verb phrase as shown below.
Thus the Proto-Yuman verb phrase had a primary inflected verb which was suffixed by $-k$ if it took an auxiliary; this verb was optionally followed by an inflected locative auxiliary or by an inflected behavioral auxiliary, or both. The locative auxiliaries are verbs such as "sit", "stand", etc., used to indicate position of the subject while doing an action; these are obligatory in some modern languages. The most common behavioral auxiliaries translate roughly as "be", "do", and "say", according to the semantic class of the main verb. They play various modal or aspectual roles in the verb phrase, or sometimes function simply as utterance-final markers.

Some modern Yuman languages display the postulated Proto-Yuman constructions, while some have specialized, losing one or the other of the auxiliary types, or displaying it uncommonly. A brief summary of the auxiliary constructions in modern Yuman follows.

Mojave preserves all constructions postulated for Proto-Yuman. It has an $-m$ ending common on the behavioral auxiliary.

Yuma double auxiliaries are rare; locationals are by far more common than behaviorals. Maricopa shows $-m$ on the behavioral auxiliary like Mojave, and has the full set of options. I believe the double auxiliary is very rare. (Gordon, 1980.) Cocopa has the full set of options.

Diegueño exhibits the loss of the same-subject marker. It has an obligatory locational auxiliary, but lacks the behavioral auxiliary.

Kiliwa preserves all of the options. Palpai has the full set of locational auxiliaries. The behavioral auxiliary is less common.

Havasupai, Hualapai, and Yavapai locational auxiliaries are very rare. There is an obligatory behavioral auxiliary. Yavapai has sentence-final $-m$ after the behavioral auxiliary, anomalous in Pai, and remarked upon by Langdon as follows: "[It] may in fact be attributable to Mojave influence since it is in that language a very common predicating morpheme, particularly on verbs of the behavioral set"(p 123).
Langdon goes on to say,

"...The behavioral constructions of Paipai would be hard to account for as an innovation since they so clearly parallel those of the River subgroup. The only possible argument would have to consider influences from its closest neighbor, Diegueño, with which it does in fact share a number of features. But it should be remembered that the Paipai behavioral construction is unlike the Diegueño one in a number of fundamental ways which would then have to be explained." (p. 123.)

Several patterns of similarity emerge across Yuman branches:

(1) Mojave, Maricopa, and Yavapai share an -m on the behavioral auxiliary;

(2) Paipai shares with Diegueño and Yuma an emphasis on the locational auxiliary and de-emphasis of the behavioral auxiliary;

(3) the use of the double auxiliary is uncommon or nonexistent in Pai, River and Diegueño; it is apparently standard only in Kiliwa and Cocopah. This suggests the possibility that the double auxiliary construction was not common in Proto-Yuman.

I would like to suggest an alternative to Langdon's analysis of Mojave and Paipai as retaining the earlier state. In Mojave, double auxiliary constructions occur only with "be", not "do" or "say"; "do" or "say" appear in single auxiliary constructions lacking a locational auxiliary, making them look much like Upland Pai. Thus Mojave and Upland Pai share much in common, while the more closely related languages, Mojave and Yuma, are different in that Yuma does not have such a common behavioral auxiliary construction. Given the close genetic relationship between Mojave and Yuma, it seems likely that the Mojave trend toward greater use of the behavioral auxiliary at the expense of the locational auxiliary may be result of contact with Pai. Also the Paipai emphasis on the locational auxiliary is probably the result of recent contact with Southern Yuman. Differences between Diegueño and Paipai auxiliary construction can be seen as the result of the latter's Pai
heritage.

Indefinite pronouns

All Yuman languages either have a ma root or a ka (or ki) root for the indefinite pronouns, or a root consisting of both. Standard techniques of reconstruction suggest reconstructing the Proto-Yuman form as having both. But the pattern is really interesting: Havasupai, Hualapai, and Yavapai have only ka; Cocopa, Diegueño, and Kiliwa (two different branches) have only ma (Kiliwa also has a p element we won't discuss here); Paipai, Mojave, Yuma, and Maricopa have both. Geographically, we find the north has ka, the south has ma, and the central area of Yuman has the combination. The standard rule of thumb for comparative reconstruction would be that both were present in Proto-Yuman, that the central area is the most conservative, and that the peripheral areas have changed. However, it is clear that Paipai has borrowed some of the indefinite pronouns from its neighbors, especially Diegueño, with whom Paipai shares some identical forms. The reconstruction of *ma-k for Proto-River is indicated here, but there is no evidence that we can take it further back in Yuman prehistory than that. Instead, I am inclined to suggest a Proto-Pai *ka, and a general Southern Yuman *ma (without making claims as to whether it is to be reconstructed for Proto-Yuman), and that the combined forms are the result of contact.

CONCLUSIONS

I believe I have shown ample evidence that various subsets of Yuman languages have undergone many instances of convergence. In some cases, this convergence is easily observable because it has taken place between members of different branches of Yuman. In other cases, we have observed that all members of a subbranch have undergone convergence, an event which would be impossible to reconstruct without documents. Similarly, it is quite probable that many traits that we label as "Proto-Yuman" were in fact acquired through language contact between already divergent languages at various periods in Yuman prehistory.

We must keep in mind, then, that when we reconstruct a Proto-language, we are not reconstructing the language of a homogeneous speech community at a certain point in time. Instead, we are reconstructing a set of shared traits accumulated over time by a set of closely related languages or dialects in contact. Even as they diverge, new traits may sweep across the
languages, driven by social forces that govern contact and linguistic attitudes between speech communities.

FOOTNOTES

1. I would like to thank Pamela Munro for her helpful comments on this paper. Discussions with Margaret Langdon also helped to form my ideas on this topic.

2. An "additive" system is one in which the higher numbers are expressed as some constant with a number added to it — for example, in Havasupai the number seven is hwaâkspé, that is, "2 plus 'spé'" (the meaning of 'spé' need not concern us here). A "multiplicative" system is one in which the higher numbers are expressed in terms of numbers multiplied together: for example, 3 x 3.

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From Comparative to Relativizer:
The Case of Icelandic sem*

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A substantive theory of linguistic change must begin with consideration of what Weinreich, Labov & Herzog (1968:101) call the constraints question. In its most basic form, this may be phrased as follows: First, what are the conditions for a potential linguistic change in a structure of a given type; and secondly, once these conditions are met, what are the possible changes that may occur? This paper examines a linguistic change in Icelandic and the other Scandinavian languages, in which the old pan-Nordic relativizer er (inherited from Common Germanic) was replaced, within historic times, with a new relative particle, sem. What is interesting about this change from a typological point of view is the unusual historical source of the new relativizer: While the most common sources for new relative markers, cross-linguistically, are the demonstrative and interrogative systems (cf. developments in W. Germanic languages, eg. Gn. der, Eng. which), relative sem originated as a comparative particle meaning 'as' or 'like'. Examples (1a and b, from Old Icelandic (OlI,1100-1400) illustrate the use of sem in comparative constructions:

(1a) rauðr sem bláði red as blood
    b. svá vitrið mann sem þú ert so wise man as you are
       'red as blood'     'as wise a man as you are'

(Cleasby 1957:522)

In examining the shift of sem to a relativizer in the history of Icelandic (Icel.), I address the following questions: 1) In what way is this change understandable in light of what we know about linguistic change; and 2) What do the answers to this question allow us to predict with regard to the potential of comparative particles, across languages, to be a possible source for new relativizers?

1. Historical evidence for the change

The written history of Icel. shows three stages in the change of sem to a relativizer (REL). In the first, er is the only REL in use, as evidenced by two early texts: a) the linguistically archaic poetic Edda [1], and b) the Libellus Islandorum (LIB), by Ari Þorgilsson (citations and line numbers from Hermannsson 1930). LIB (sometimes called Islendingabók), is both the earliest composed (ca. 1120) as well as the most reliably transmitted of the surviving Icel. prose texts (cf. Hermannsson 1930:intro.). As a prose text, it is preferable to the poetic Edda as a source of examples illustrating the uses of er at Stage I of the change.[2] Example (2) illustrates a relative construction (RC) from this first stage.
(2) Eiríkr inn rauði hæt maðr breiðfjirzkur er
Erik the red was-called man Broadfjorder REL
för tærð hann þangat ok nán þar land
went out-from here thither and took there land

'Erik the Red was the name of a man from Broadfjord who went there from here and took possession of the land' (LIB 127)

At stage II of the change, er and sem appear in variation in relative function. (3)a and b are taken from a text composed during this period (Hoensä-Thóris Saga, ca. 1380; page and line numbers from Vigfusson & Powell 1905).[3]

(3)a. à skickjonne er Gunnarr hafðe yfer sér on cloak-the REL Gunnar had over himself
'on the cloak that Gunnar wore' (Hoens. 27;16)

b. þat fóð sem hrossum var þetlat hár
that fodder REL horses-the was intended before
DAT
'the hay that had been intended for the horses' (Hoens. 13;9)

The final stage in this development is represented by Modern Icelandic, in which sem is the only REL in use in the spoken language.[4]

2. Relative clauses in Old Icelandic

As (2) and (3) show, Icel. RCs follow the familiar Gmc. pattern of head NP followed by a REL and the body of the relative clause. Relative er, like its successor sem, was a particle indeclinable for number, gender, person, and case. Very often, however, the particle was strengthened or 'reinforced' with a preceding demonstrative pronoun, agreeing in case with the head noun in the matrix S (cf. Heusler 1932:158ff.). Thus, in (4), the pronoun beirra appears in the genitive case in agreement with the head N manna.

(4) ok annara spakra manna beirra er til þess váru teknir
and other wise men those REL to this were chosen
GEN GEN GEN GEN GEN

and of other wise men who were designated for the task' (LIB 306)

These strengthened relative clauses appear to alternate freely with RCs containing only the bare REL er. The demonstrative frequently appears in cases where the relative clause has been extrapolated, i.e. follows sentential material outside the noun phrase. Instead of signalling the relation of the relativized NP to the verb in the embedded sentence (as in languages like Latin and German), the demonstrative seems simply to have been a kind of focussing element, anaphorically referring back to the head noun
and signalling that more information about it was forthcoming. I will return to this subject in Section 3.

From a syntactic point of view, the function of a REL is to tie together a constituent and a sentence into a single syntactic entity: namely, an NP. The embedded sentence can be considered a complement of the head it modifies in the same sense as the embedded sentences following declarative verbs are complements of those verbs (Bresnan 1972; Stahlke 1976). Er (and other Gmc. RELs) may thus be termed a complementizer (COMP). The syntactic structure of OI RCs can therefore be represented as:

(5)

The node (DEM) in this structure represents the optional strengthening demonstrative mentioned above.

A defining characteristic of RCs, from the viewpoint of a universal semantic characterization, is the presence in the modifying clause of a "nominal which is coreferential with a nominal outside the clause" (Downing 1978:378). The semantic function of a REL is to relate (specifically, to identify) these two nominal elements. In Icel. and the other Gmc. languages, the nominal inside the embedded clause has no surface representation; i.e., it is realized as a gap. (6) shows the tree representation for the RC in (2), with the missing NP constituent (in this case, the subject of the embedded clause) indicated by [e].

(6)

3. Other uses of er in Old Icelandic

Before turning to a syntactic description of constructions containing the comparative particle sem in OI, it will be useful first to give a fuller description of the uses of er at Stage I. In addition to RCs, er could also be used after temporal and locative (cf. note 2) adverbs to introduce sentential complements:
(7) ok hafði xciii vetr þá er hann andaðisk
and had 94 winters then COMP he died

'and [who] was 94 years old when he died' (LIB 265)

(8) En sléðan er menn kómu í bæir þá
and after COMP men went into booths then
lagðaði hann níðr þorgeirr
lay-himself he down Thorgeirr

'And after the men had gone back to their booths,
Thorgeir lay down' (LIB 181-182)

(9) shows a number of other noun and adverb expressions in which
er also appeared:

(9)a. hvatki er 'whatever'

b. hverki er 'whoever'

c. hvargi er 'wherever'

d. eptir er 'after'

e. medan er 'while'

f. í pvíer 'at the moment when'

Each of these, like the er expressions in (7) and (8), contains an
indefinite pronominal or an adverbial head, which is then linked
to a following embedded clause by er. Such constructions are
syntactically and semantically very close to RCs, although for
lack of space I will not demonstrate this here. Suffice it to say
that er is best considered a COMP in these uses as well.

Of the eight er expressions in (7)-(9), it may be noted that
five are temporal in meaning. The frequent use of er in temporal
clauses, particularly in the expression þá er, is most probably
the source of the use of er alone to mean 'when', as in (10):

(10) þat mun verða satt er var slíttum í sundr
that shall become true when we break asunder
lógin at var munun slíta ok fríðinn
law-the that we shall break also peace-the

'It will prove true that when we sunder the law we will
also sunder the peace.' (LIB 199)

Later texts show unspecified er in temporal clauses much more
frequently (cf. Cleasby 1957:132). This suggests that er in OI
was in the process of taking on a more specialized function as a
temporal adverb, at the same time that its REL function was being
taken over by sem.

So far we have considered three uses of er in early OI: first
as a REL, second as a COMP in adverbial clauses, and finally, as
an adverb with the meaning 'when'. Space restrictions do not
permit enumeration of all uses of er; however, it may be noted
that er occasionally appears in certain other complementizing
functions more frequently served by the general COMP at 'that'
(cf. Cleasby 1957:132; Heusler 1932:156-164). If we consider in
addition that the word for the copula 'is' (etymologically not related to the REL) also happens to be er, it becomes apparent why er is such a ubiquitous word in OI texts, sometimes appearing as many as five times in a single sentence.

Against this background we might recall the frequent use, discussed in Section 2, of a reinforcing demonstrative pronoun preceding relative er. As mentioned above, the demonstrative appears to have served as a focussing element, with the discourse function of referring back to an NP, foregroun- ding it and signal- ling that it was to be further modified. Sankoff & Brown (1976) pointed out that just such a focussing property is one of the main discourse functional characteristics of RELs. If this is so, we may ask why a language would have a possible strategy of doubly focussing an NP, as if one focussing element were insufficient. Considering the heavy functional load of er as described above, it seems reasonable to suggest that this element had, by the end of Stage I, become weakened in its functions (characteristic of RELs in general) as an identifier and focuser of NPs, and therefore needed reinforcement in these roles.

It would seem from the above description that the linguistic situation at Stage I contains at least the potential for a change in REL to occur. This brings us to the question of why it was that the comparative particle was selected as the new REL—in other words, what was it about sem which made it a likely candidate to supplant the bleached relativizer er?

4. Comparative Sem

Syntactically, comparative sem in Old Icelandic patterns very similarly to its semantic counterpart as in English. As illus- trated in (1) above, it may appear in adjective and noun phrases, introducing either an NP or a clause. In addition, sem occurs in adverbial phrases corresponding to English-like constructions; these will not concern us here.

An examination of NPs containing sem found in texts composed at various dates throughout the OI period shows that the basic structure of comparative NPs was quite stable during this time. This structure is essentially that found in cognate constructions in the other Gmc. languages: it consists of one of a small set of comparative determiners, together with the noun it modifies; following these are sem and either a clause (cf.(11)) or an NP.

(11)a. en slíka svívirping...sem Kjartan hefer ypr gört but such humiliation as Kjartan has you done NOM NOM DAT

'but such a humiliation as Kjartan has subjected you to'

b. þat var et sama sem hann hafpe honum greitt that was the same as he had him paid NOM NOM

'it was the same [price] as he had paid him'

(a & b from Heusler 1932:153)
Where an adjective or quantifier appears in the head NP, the degree adverb *svá* 'so' appears in place of a determiner:

(12a) *svá* óvænt efne *sem* komet var
in so hopeless position as come was
DAT
'in such a hopeless position as things had come to'

b. *svá* morgum...koppom *sem* bar var saman skipat
so many warriors as there were together assembled
DAT DAT
'to as many warriors as were assembled there'
(a & b from Heusler 1932:152)

The syntactic function of *sem* in (11) and (12) is to link an NP with a clause which modifies it. *Sem* serves, in other words, to combine an NP and a sentence into a syntactic unity which may then function as a term in the matrix sentence. (Note that the NP-*sem* constructions occur in subject (11a), predicate complement (11b), prepositional object (12a), and indirect object (12b) position in the matrix S.)

Recalling the syntactic description of relative *er* given in Section 2, we can see that the comparative particle in NPs functions exactly like a REL: both introduce sentential complements of an NP head. If we compare the tree representations of relative and comparative constructions (CCs), a further syntactic parallel becomes evident: each contains a gap in its embedded sentence, corresponding to a missing term in that sentence. (13) represents the syntactic structure of the CC in (11a) (where COMPAR is the syntactic category containing *sem* and the other OI comparative particle, *en* 'than'):

(13)

```
NP       S'
  NP       S
   DET   COMP   NP
  NP      VP
     slíkka svívirping *sem* K. hefer yér [e] gört
```

Note that the trees in (6) and (13) are isomorphic in their basic structure.

In view of the close syntactic parallel between the comparative and the relative particle in Old Icelandic, we might expect there to be semantic similarities between these elements as well. And in fact, this is exactly what we find. The REL, as we saw in section 2, semantically links two nominal terms, one of which is
syntactically represented by a gap, in a relation of identity. In a CC, there must also be a semantic relation holding between the head nominal and the "gapped" element in the embedded S. As the term 'comparative' implies, however, in these constructions a comparison is set up between two entities. When a quantifier is present (eg. svâ 'so', mikill 'much', margv 'many'), the comparison is one of equality of degree, amount, or number. The determiner slâkr, on the other hand, expresses a comparison of identity of kind, or more generally, similarity. (This is its meaning in its original sense, since it derives from svâ lâkr, 'thus like'.) In the case of sama, 'same', and jofn 'equal, same', the comparative relations which it is possible to indicate seem to include both identity of kind and absolute identity, like Eng!. same.

It is apparent from this that there is some overlap between RCs and CCs with regard to the specific semantic relations they may contain. The main semantic difference between sem and er is that er is a direct indicator of the identity relation, while sem indicates only that some type of comparative relation is present, which may or may not be resolved as an identity. The precise relation between the two semantically linked terms in a CC is specified by the comparative determiner or adverb in the head NP.

A final point of similarity between the REL and comparative sem concerns their discourse functions. Like er, sem refers the hearer back to a preceding NP and introduces further material modifying it. As such, it too has as one of its main discourse functions that of focussing the head nominal of the construction.

5. The change of sem to a relativizer

Having observed the syntactic, semantic, and functional similarities between sem and er, we are now in a position to consider the role these similarities played in the change of sem to a REL.

First, we may note that since sem already occurred in NPs as a COMP, its extension into RCs was no great change from a syntactic point of view. If we accept that linguistic changes tend to conform to existing structural models (cf. Meillet 1916:168), then the fact that the change could occur while preserving phrase structure seems likely to have been a facilitating factor in its realization.

To understand the actual motivation behind the change, we must look to the semantic and discourse functions shared by er and sem. We have seen that er, already by Stage I, shows signs of having been weakened in its roles of focussing an NP and identifying (or more generally speaking, establishing a semantic relation between) two nominal elements. Since sem also served both as a focusser and as an establisher of a semantic link, it could be pressed into service in these roles in constructions normally requiring er—i.e., in those cases where the semantic relation present was one of identity, and in which there was no overt comparison indicated. Viewed in this light, the change of sem to a REL is an instance of renouvellement, or renewal (Meillet 1916). In this type of change, a semantically more expressive item re-
places a 'bleached' one, and in turn becomes bleached itself. Comparative sem was a more explicit focussing element than er, since unlike er, it was unambiguous in this role. Sem was able to take on the final, identifying, function of a REL because its meaning of indicating a comparison of similarity (and hence identity of kind) between two entities is semantically very close to indicating an identification—as evidenced by the fact that Icelandic, like many other languages, does not in every case formally distinguish between these two meanings (cf. Jespersen 1927:170 on Eng. 'the same as' vs. 'the same that') Once sem was used in place of er to indicate identification in constructions in which there was no overt comparison (i.e. in which no comparative determiner was present), it lost its comparative meaning in these constructions and was grammaticalized to a semantically 'emptier' relative particle.

Another factor which seems to have facilitated the appearance of sem in RCs is the concomitant bleaching of the comparative determiner, slíkr, from comparative to purely demonstrative function. English such shows the effects of a similar bleaching in certain forms of discourse, as in 'Bring such materials with you as you need', where the meaning of such...as closely approximates 'those which'. The OE example in (14) illustrates the bleaching of slíkr:

(14) slíkt līd sem hann fæk
    such aid as he received

    'such aid as he received [was not willingly granted]
    (i.e. 'the aid that he received...')(Cleasby 1957:568)

Since the DET slíkr selects sem as its complementizing particle, the effect of this development is to place sem in constructions with no comparative meaning. The slíkr...sem construction thus offers one possible path for sem to enter into the relative system.

6. Conclusion

In this paper I have shown, on syntactic, semantic, and discourse functional grounds, that the change of the OI comparative particle sem to a REL is explainable in terms of historical linguistic theory. Several distinct motivating and facilitating factors for the change were identified, operating on various levels of linguistic structure. In view of the apparent naturalness of this change, we might expect that it is not simply one isolated occurrence, but instead a specific instance of what may happen when general principles of linguistic change operate on languages which have the prerequisite structures (e.g. comparative complement constructions) and which present an appropriate set of conditions for change. In fact, there is evidence that similar developments occurred independently in at least two other non-Scandinavian languages. In Old High German (OHG), and in certain varieties of present-day British English, a comparative particle
semantically and syntactically analogous to sem also took on relativizing function, as shown in (15) and (16):

(15) OHG: *Uber daz *sō demo cheisere lieb was over that REL to-the emperor pleasing was 'over that which was pleasing to the emperor'
(Lockwood 1968:250)

(16)a. Let them marry you, as don't know you
b. him as I have made mention on (Jespersen 1927:173)

Although these and the Icel. development occurred in closely related languages, it is unlikely that all three are reflexes of one and the same change; first, because they seem to have arisen at widely different time periods, and secondly, because the particles involved are not all cognate. These independent changes were doubtless facilitated, however, by the structural parallels between RCs and CCs described in Section 2, which are characteristic of the Gmc. languages in general. Jespersen (1927:Ch.9) noted these parallels in English; Bresnan (1972:Ch.4-5) enlarged on his observations and formalized the analysis within a generative framework. Dehaghel (1928:279), too, mentions the close resemblance between solch 'such' constructions and RCs in German.

Interestingly, there is evidence that some degree of structural similarity between the two construction types exists outside the Gmc. family as well. Bresnan (1972), in arguing for the parallel syntactic treatment of RELs and comparative particles in English, cites the following observation from Greenberg (1966): He notes that in languages with clausal comparatives, the comparative and the relative markers appear to occur in the same position in the clause, i.e. either clause-initially or clause-finally. If, as seems reasonable, the semantic and discourse functional properties of comparative markers parallel those of RELs on a more general basis, we might suppose that the potential for the change of a comparative to a REL may not be confined to Germanic.

The possibility that a change of this nature may occur cross-linguistically raises a number of questions for further exploration. First we may ask, what is the extent of the similarity, on all three levels of linguistic structure, between RCs and CCs outside of the Gmc. language family? Does this similarity go deep enough to suggest that such a change should be added to a universal typology of possible changes in relative markers? Secondly, why is it that the comparative seems to be a much less common source for RELs than other sources (e.g. demonstratives or interrogatives), even among languages exhibiting the necessary prerequisites for such a change to occur? Does this give us an indication of the relative 'cognitive distance' between the conceptual structures underlying these various grammatical structures? The present study, it is hoped, will provide an impetus toward investigation of these important questions.
NOTES

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1. The archaic features of the Edda (including the exclusive use of er as REL, cf. Heusler 1932:153) indicate that although the Eddic verses were committed to writing relatively late (ca. 1270), they probably had a much longer history of oral transmission; some parts may date back as far as the ninth century (T. Anderson, p.c.; cf. also McTurk 1981).

2. There is some evidence in LIB that the change may have already been underway; however, indications of this are very few, and LIB remains a good representative of the state of the language at Stage I. Of the 75 RCs in LIB, only one contains sem. I considered as RCs those constructions consisting of an NP and a subordinate clause serving to characterize or determine that NP, with no comparative determiner or adverb present (e.g. slíkr 'such', svá 'so'). Sem also appears twice in the clause introductory locative expression par sem, 'there where', versus two appearances of par er, the more usual construction in the Edda. Such locative expressions are similar to RCs in that the locative adverb can be considered a pro-form, deictic to a particular place, thus behaving syntactically like a noun head in an RC. These early occurrences of sem seem to indicate that its first appearance with relativelike function was in locative adverbal expressions; it later may have spread to other, more canonical RCs (i.e. those with full noun heads) by way of RCs in which the head N was locative (cf. 'the place where'). It may be noted that this goes against the assumption of Keenan and Comrie (1977) that use of a REL in a locative construction presupposes its use in more "basic" functions, such as in relativizing subjects or objects. A similar case is the Tok Pisin REL hia (< Engl. here), which also made its first appearance in locative constructions (cf. Sankoff & Brown 1976).

3. Hoensa-Thoris Saga contains 17 instances of relative sem vs. 36 of relative er; in addition, there are 11 occurrences of par sem, versus 2 of par er. Although the number of examples is small, there are certain apparent tendencies which a more fine-grained study should pursue: one is its frequent use in locative expressions (see note 2); another is its appearance as a REL in quantified NPs (e.g. those containing allir, 'all'). Other texts in Stage II show sem often occurring in 'generalizing' RCs ('whoever', 'whatever' etc.), which also have quantifier-like properties (as pointed out by W. Croft, p.c.). On the connection between quantifiers and relativization in English, see Carlson 1977. These early uses of sem, along with the slíkr sem construction (see §5),
seem to indicate points of its entry into the relative system.

4. It is difficult to determine even an approximate date for the loss of REL er in spoken Icel. The written tradition is so conservative that er appears as a REL even today in certain formal texts. A tentative suggestion, based on a superficial examination of late medieval and early modern texts, is that the change was essentially complete by the end of the 16th century (A. Liberman, p.c.).

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FROM VERB-MEDIAL ANALYTIC LANGUAGE TO VERB-FINAL SYNTHETIC LANGUAGE:

A CASE OF TYPOLOGICAL CHANGE

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0. Introduction

According to the traditional classification of languages into analytic and synthetic types, Chinese is always cited as an extremely analytic language. The language has no inflection. There are no morphological markers or processes denoting number, gender, person, tense, grammatical role or parts of speech. There is no concordance between parts of a constituent. Affixes are relatively scarce. Despite the great diversity and multitude of dialects in the Chinese language family, this isolating status is the hallmark of all Chinese languages.

The classification of Chinese within the word order typology of Greenberg (1966) is more problematic than its classification as an analytic language. Traditionally, Chinese is considered a verb-medial language because the verb occurs in sentence-medial position in most sentence types. However, standard Mandarin Chinese has some important verb-final constructions involving co-verbs, especially bā.1 Partly because of the bā-construction and partly because of the noun phrase structure of standard Mandarin, Tai (1973) has suggested that, synchronically, Mandarin Chinese may be considered a verb-final language. Furthermore, Li and Thompson (1976) have pointed out that for centuries Mandarin Chinese has been shifting towards a verb-final word order, although the fact remains that the verb-medial word order is not only predominant in simple sentences but is also nearly the exclusive word order in serial verb constructions in standard Mandarin Chinese.2 Among the southern dialect families, Wu, Min, Yue and Hakka, the verb-medial status has never been questioned because the co-verb sentences are either absent or insignificant.

In this paper, I will present a sketch of a Chinese dialect from western China which is considerably removed from the typological norm of the Chinese language family. The dialect is spoken by the Hui people of Línxīa in southern Gānsū province.3 I will

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first outline the salient characteristics of the phonology of
this dialect. Then, its case system, word order and postposi-
tions will be discussed. Finally, I will examine Hui's typolo-

gical transition from the Chinese norm, in view of linguistic
as well as social and historical information.

I. The phonologic features of Hui

I.1 The initials and finals

The initials and finals of Hui are, for the most part, typical
of a northern Mandarin dialect. The initials include the usual
series of three stops at the bilabial, alveolar and velar posi-
tions, as well as the series of three fricatives and affricates
at the alveolar, palatal and retroflex positions. Aspiration is
phonemic for both the stops and the affricates. Voicing is
phonemic only for the labio-dental fricative and the retroflex
fricatives. Table 1 provides the initials of Hui.

\[
\begin{array}{cccc}
\text{p} & \text{t} & \text{k} \\
\text{p}^h & \text{t}^h & \text{k}^h \\
\text{f, v} & \text{ts} & \text{t}^s & \text{ts}^s \\
\text{ts}^h & \text{t}^s & \text{t}^h & \text{ts}^h \\
\text{m} & \text{n} & \text{l} \\
\emptyset
\end{array}
\]

Table 1: Hui initials

The voiced pharyngeal fricative [?] occurs non-contrastively
in Hui as an initial co-occurring with the high, back, unrounded
vowel [w] as in [?]w] 'two'. The occurrence of [?] in a Chinese
dialect is unusual. Its presence in Hui, however, can be viewed
as an areal feature since it occurs in all of the languages,
Chinese as well as non-Chinese, of the geographical area sur-
rounding Linxla. Its presence in Hui is predicted by rule (1):

(1) \( \emptyset \rightarrow [?] / \_ [w] \)

Like most Chinese dialects, Hui has few phonological rules
affecting its initials. One notable rule predicts the occurrence
of labio-dental affricates which are the allophones of aspirated
and unaspirated bilabial stops:

(2) \( \left[ /p/ /p^h/ \right] \rightarrow \left[ pf \right] / \_ [ə] \)

Some examples are:
Both [pf] and [pfʰ] are aspirated. Their difference rests with the degree of aspiration. [pfʰ] was consistently articulated by my Hui consultant with heavier aspiration. As unusual as this phonetic contrast between [pf] and [pfʰ] is, it is also found in the Chinese dialect of Xi-an. However, in Xi-an, these affricates correspond to standard Mandarin retroflex affricates in the context of the high, back, rounded vowel /u/, whereas in Hui, the labio-dental affricates correspond to standard Mandarin's bilabial stops in the context of the mid-central vowel /ə/. Furthermore, the labio-dental affricates are phonologically contrastive with other initials in Xi-an but not in Hui.

The finals of Hui, in general, exhibit the standard features of the northern Mandarin dialect group. For instance, the only syllable-final consonants of Hui are the alveolar and velar nasals [n] and [ŋ]; neither the unreleased stops [p], [t], [k] nor the bilabial nasal [m] of the finals of Ancient Chinese are present. In the speech of my Hui consultant, the syllable final nasals [n] and [ŋ] are often but not consistently dropped, leaving the vowel nuclei of the syllable heavily nasalized. For example, [fáŋ] 'noodle soup' alternates with [fǎ], and [súán] 'garlic' alternates with [súə]. It appears that the syllable-final nasals in Hui are following the universal diachronic pathway of being dropped. Since their loss is still in progress, as evidenced by the free variation in my consultant's speech between retaining and dropping them, they are included in the list of finals below.

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Table 2: Hui finals

Although the Hui finals have the general characteristics of the northern Mandarin Chinese dialect group, there are several uncommon phonetic realizations of the Hui vowels. First, the high, back, rounded vowel /u/ is articulated with spirantization at the labio-dental point if the vowel stands alone as a final. The symbol with which I choose to represent the labio-dental vowel is [u']. The relevant rule and examples follow:

(3) /u/ → [u'] /\left[\text{c}\right]#

e.g. [u'] 'fog' [tʃu'] 'pig'
\[ x^\nu \] 'lake' \[ t^h^v u \] 'earth'
\[ m^\nu u \] 'female (designating the gender of animals)' \[ p^h^v u-t^h_\omega \] 'grapes'
\[ l^\nu u \] 'deer' \[ t^h_\omega-k^h^v u \] 'kitchen'
\[ k^\nu u-l^\nu u-\text{iian} \] 'wild goose'

This labio-dental vowel is not phonemically contrastive with the sequence \(/v\nu/\). Thus, the morpheme for 'fog' may be represented phonemically either as \(/v\nu/\) or \(/u/\). It is worth noting, however, that the voiced labio-dental fricative \(/v/\) does exist as an independent initial. Some examples showing the initial \(/v/\) are:

(4) \[ v\z \] 'roof tile' \[ v\z-vi \] 'bib'
\[ v\z-e-i\z \] 'maternal grandfather' \[ v\z-\sw \] 'hunter'

Another uncommon phonetic value concerns the high, front vowels, \([i]\) and \([y]\). When they occur alone as finals, they are spirantized at their point of articulation, the palatal region. The symbols designating the spirantized palatal vowels are \([i_\z]\) and \([y_\z]\). The phonologic rule and examples follow:

(5) \[ \begin{array}{c}
[i]/ \\
[y]/ \\
\hline
\hline
[i_\z] \\
y_\z \\
\hline
\end{array} \]

\[
\xrightarrow{C \emptyset \#}
\]

\text{e.g.} \[ i_\z \] 'one' \[ n^i_\z \] 'mud'
\[ y_\z \] 'fish' \[ l^i_\z \] 'donkey'
\[ m^i_\z \] 'honey' \[ p^h^i_\z \] 'skin'
\[ f^i_\z \] 'fly'

The mid-back rounded vowel \([o]\) in Hui is realized phonetically as a mid-central rounded vowel \([\theta]\) except when it occurs with \([u]\). This mid-central rounded vowel is rare for a Chinese dialect. Here are some examples illustrating the vowel \([\theta]\).

\[ s^\varsigma\theta \] 'hand' \[ t^\varsigma\theta \] 'head'
\[ k^\varsigma\theta \] 'dog' \[ t^s\varsigma t^s\varsigma \] 'spider'
\[ t^s^h^\varsigma\varsigma \] 'vinegar' \[ t^\varsigma \] 'bean'
\[ i^\varsigma \] 'oil' \[ d^z^i^\varsigma \] 'wine, liquor'

In order to obtain a more systematic representation of the vowels of the language, one should postulate \([o]\) as the phonemic vowel. This is because the language already has a series of back rounded vowels. In order to obtain a more natural phonological rule, one should postulate \([\theta]\) as the phonemic vowel and predict the occurrence of \([o]\) through assimilation with \([u]\). Because of a third factor, vowel harmony with respect to the accusative/dative/benefactive case suffix, I have chosen \([\theta]\) as the phonemic form and rule (6) predicts the occurrence of \([o]\).
(6) /o/ $\rightarrow$ [o] /u ____

I.2. The tones
Hui has only three tones in isolation:

(i) A rising tone which may be represented by 24 on the
tone scale. This tone generally corresponds to the
Yin Ping and Yang Ping tones of standard Mandarin.

(ii) A high level tone, 44, which generally corresponds to the
Shang tone of standard Mandarin.

(iii) A high falling tone, 42, which generally corresponds to
the Qu tone of standard Mandarin.

The following examples are illustrations: \(^6\)

/feŋ/ 24 'wind'  /y/ 44 'rain'
/biŋ/ 24 'ice'  /ha/ 44 'sea'
/gan/ 24 'steel'  /ma/ 44 'horse'
/ũ/ 42 'fog'  /fan/ 42 'noodle soup'
/tɕe/ 24 'eggplant'  /tê/ 24 'head'

In terms of number of tones, three is the lowest among Chinese
dialects with tone. But the most interesting phenomenon of the
tone system of Hui is that all three tones change to a low level
tone, 22, when the syllable is "de-stressed". The best way to
clarify the phonetic nature of "de-stressed" is to compare it
with a Mandarin example. In Mandarin, the third tone on a
syllable such as /mâ/ 'horse', is realized as the 213 tone only
when it is stressed. When it is "de-stressed", it is realized as
a 21 tone. Thus, the tone of a de-stressed syllable in Hui is
not equivalent to the neutral tone in Mandarin. The 22 tone of
a de-stressed syllable in Hui is a full tone without any devoicing
of the segments of the syllable or any weakening of the syllabic
structure. The majority of compounds in Hui involve a destressed
syllable. Here are some examples.

/sun-dzi/ 22-44 'grandson'
/hâ-dzi/ 22-44 'box'
/tšuan-tɕan/ 24-22 'spring season'
/mi-ren/ 24-22 'match-maker'
/tɕe-tɕa/ 22-44 'iron fork'
/da-i/ 44-22 'overcoat'
/fu-lun/ 44-22 'rich peasant'
/dzi-dzu/ 44-22 'landlord'

Sentences (7) and (8) are examples illustrating de-stressed
tones in sentences:
Finally, the 42 tone of Hui syllables in isolation is merged with the 44 tone if it is followed by another syllable. The 42 tone may occur only in the final position of an utterance. In the following examples, the syllable which has the 42 tone in isolation, but is realized as the 44 tone either obligatorily or optionally, is underlined:

\[
\begin{align*}
/t\text{i}-t\text{e}/ & \quad 44 - 22 \quad \text{'automobile'} \\
/e\text{n}-f\text{en}/ & \quad 44 - 24 \quad \text{'envelope'} \\
/p\text{u}-d\text{z}a/ & \quad 44 - 22 \quad \text{'shop'} \\
/t\text{an}-d\text{en}/ & \quad 44 - 24 \quad \text{'electric light'} \\
/g\text{ua}-f\text{u}/ & \quad 44 - \{44, 22\} \quad \text{'widow'} \\
/m\text{a}-d\text{e}/ & \quad 22 - \{44, 22\} \quad \text{'a sack made of hemp fibre'} \\
/l\text{o}-\text{gu}/ & \quad 44 - \{44, 42\} \quad \text{'an old tree'} \\
/y\text{e}-\text{li}" & \quad 22 - \{44, 42\} \quad \text{'moon'}
\end{align*}
\]

In this section on the phonological features of Hui, I have briefly described the segmental phonology and the tones of Hui. The segmental phonology of Hui contains several unusual phonetic segments which are rarely found in Chinese dialects. The tone system appears simpler than that of any other Chinese dialect except Wutun. The overall picture of the phonology of Hui is that while it bears the unmistakable mark of a northern Mandarin Chinese dialect, it also contains features which set it apart from other members of the northern Mandarin dialect group.

II. The case system, word order and postpositions of Hui

II.1 The case system

Hui has a suffixal case system signalling various grammatical roles of nominal complements in sentences. Each of the case suffixes will be discussed below.

a.) The nominative case is unmarked. Sentence (9) is an example of a simple sentence showing the nominative case being unmarked.
(9) եձան դա ա
old Zhang big exclamatory
particle
'Old Zhang is tall/big.'

b.) The accusative and dative complements have the same case marking if they occur before the verb. Only the accusative complement may occur after the verb, and when it does it is unmarked with respect to case. Thus, the accusative case is grammatically distinct from the dative case even though they have the same case marker in pre-verbal positions. I will return to this point in later discussion on the word order of Hui.

The vocalic suffix marking the dative/accusative case has three allomorphs: /α/, /ɛ/ and /ə/. The allomorph /α/ is used if the final syllable of the nominal complement ends in a back vowel or a nasal; /ɛ/ is used if the final syllable of the nominal complement ends in a front vowel, and /ə/ is used if the final syllable ends in a mid-vowel or an apical vowel, [i] or [ɨ]. If the final syllable of the nominal complement ends in a vowel identical to the case suffix, then the vowel of the noun syllable is lengthened. Here are some examples:

(10) տա տէձակ - ə
s/he car - accusative sell - perfective
'S/he sold the car.'

(11) տծα:
tea - accusative drink question
drink - accusative
particle
'Will you drink some tea?'

(12) եձան եձակ - ա գին - ա գե ձե
Old Zhang - dative letter - accusative write stative
attitudinal
particle
'I write letters to Old Zhang.'

(13) եձան ինյե:
old Zhang music - accusative listen - stative attitudinal
drink - accusative
particle
'Old Zhang is listening to music.'

If /α/ is postulated as the underlying form of the accusative/dative case suffix, the occurrence of the other two allomorphs, /ɛ/ and /ə/ can be predicted according to the vowel of the last syllable of the nominal complements. Thus, Hui has a restricted manifestation of vowel harmony, which has never before been found in a Chinese dialect. It is interesting to note that none of the
languages spoken in the vicinity of Línxìa, except Hui (including languages belonging to the Turkic family, Mongolian family, Chinese family and Tibetan family) show vowel harmony. Only a vestigial trace of the phenomenon, which plays a major role in the morphology in Classical Mongolian and is still functional in modern standard Mongolian, is found in Santa, a Mongolian language of the area.

c.) The genitive case is marked by the suffix /dʒi/ which is cognate with the standard Mandarin genitive marker /de/. There is, however, a difference between the use of the two cognate suffixes in the two dialects. In standard Mandarin, the genitive marker is normally dropped in inalienable possession. In Hui, the occurrence of the genitive marker is obligatory in all contexts, e.g.,

(14) nə ṭa - dʒi _ amo: ran dʒi
I s/he - genitive mother recognize
'I recognize/know his/her mother.'

(15) nə - dʒi _ dʒə landʒə - lə lı - dʒi
I - genitive home Lanzhou - from distant - nominalizer
'My home is far from Lanzhou.'

(16) nı - dʒi _ te _ ten lə _ ?
you - genitive head ache question particle
'Does your head hurt?'

far


d.) Hui has a comitative case suffix /lə/. The presence of this case suffix in Hui seems to be unique among all Chinese dialects. Here are some examples:

(17) tomen - lə _ bo _ van!
they - comitative don't play
'Don't play with them!'

(18) nə amo - lə _ ge _ sən təli
I mother - comitative street - on go attitudinal
particle
'I went out with my mother.'

The source of this case suffix in Hui may be connected with Santa. The comitative case suffix in Santa is /lə/. Baonan, another Mongolian language in close contact with Hui, has a comitative case suffix in the form of /wa:lə/. For reasons to be discussed in Section III, I am reluctant to suggest that the /lə/ in Hui is borrowed from Santa, although that is a tempting hypothesis.

e.) The benefactive noun, which is obligatorily pre-verbal, is marked with the dative/accusative case suffix /ə/. Structurally, the benefactive noun and the dative noun are not distinct since both occur before the verb and both are marked with the same
case suffix. Sentence (19) is an example with a benefactive noun.

(19) pjo - a ŋə lɔdʒəŋ - a məi - dəŋ
ticket - accusative I old Zhang - benefactive buy - reach
'The ticket, I bought it for Old Zhang.'

f.) The subject/topic of an existential construction or the 'double-subject' construction is marked with the dative/benefactive/accusative suffix. Sentences (20) and (21) are examples of the existential construction and sentences (22) and (23) are examples of the 'double-subject' construction.

(20) nəmən - a ʂən - gə fəndʒə ɨw ɬi
we - dat./acc. three - classifier house have attitudinal particle
'We have three houses.'

(21) lɔdʒəŋ - a ɨ - gə go ɨw ɬi
old Zhang - dat./acc. one - classifier dog have attitudinal particle
'Old Zhang has a dog.'

(22) lɔdʒəŋ - a dudʒə teŋ - dəŋ ɬi
old Zhang - dat./acc. belly ache - stative attitudinal particle
'Old Zhang, (his) belly aches.'

(23) lɔdʒəŋ - a tueidʒə duəŋ - liə
old Zhang - dat./acc. leg break - perfective
'Old Zhang, (his) leg is broken.'

The pronouns of Hui are inflected according to the case system described above. The only idiosyncrasy of the pronoun inflection is that the accusative/dative/benefactive suffix always appears as /ə/ regardless of the vowel of the pronoun. The nominative and accusative/dative/benefactive forms of the pronouns are listed below.

<table>
<thead>
<tr>
<th></th>
<th>1st person</th>
<th>2nd person</th>
<th>3rd person</th>
</tr>
</thead>
<tbody>
<tr>
<td>singular</td>
<td>ŋə</td>
<td>ŋə</td>
<td>ni</td>
</tr>
<tr>
<td>plural</td>
<td>nəmən</td>
<td>nəmən-ə</td>
<td>nimən</td>
</tr>
</tbody>
</table>

Table 3: Pronouns
II.2. Word order

The word order principles of Hui are stated in (i)–(iv) below.

(i) In sentences with two-argument verbs, the verb-final word order is strongly preferred. The verb-medial alternative is considered odd by my native consultant, e.g.,

(24)  
\[ \text{ŋə lɔdzəŋ} - \text{ŋə nai} \]  
\[ \text{I old Zhang - accusative love} \]
\[ ?\text{ŋə nai lɔdzəŋ} \]  
\[ \text{I love old Zhang} \]
\[ '\text{I love old Zhang.'} \]

(ii) The dative and benefactive complements always precede the verb. In sentences with three or more complements, the accusative is the only nominal complement which may follow the verb. e.g.,

(25)  
\[ \text{ŋə lɔdzəŋ} - \text{cɛ cɛn dʔə} \]  
\[ \text{I old Zhang - dative write letter stative attitudinal particle} \]
\[ '\text{I write letters to Old Zhang.'} \]

(26)  
\[ \text{ŋə lɔdzəŋ} - \text{cɛn} - \text{cɛ dʔə} \]  
\[ \text{I Old Zhang - dative letter - accusative write stative attitudinal particle} \]
\[ '\text{I write letters to Old Zhang.'} \]

(27)  
\[ \text{ŋə lɔdzəŋ} - \text{su} - \text{kə -(dʔi)} - \]  
\[ \text{I old Zhang - dative book - accusative give -(reach)- perfective} \]
\[ '\text{I gave a book to Old Zhang.'} \]

(iii) Object complement clauses typically occur in the sentence-initial position, but my native consultant accepts sentences with a post-verbal object complement clause, although she never volunteered them. The following examples illustrate pre-verbal complement clauses marked with the accusative case suffix.

(28)  
\[ \text{tə dzw} - \text{dʔi} - \text{ɛ nə mi tɕindo} \]  
\[ s/he leave - nominalizer - accusative I not hear \]
\[ '\text{I have not heard that s/he left.'} \]
(29) ta meigue ren bu si dizi - e ne zuo
s/he American person not be nominalizer - accusative I know
'I know that s/he is not an American.'

The subject noun /ŋə/ 'I' may occur before the object comple-
ment clause in both (28) and (29). However, when the
object complement clause is long as in (29), it is prefer-
able not to place the subject noun of the sentence before
the clause.

(iv) Equational sentences are verb-final. This word order,
however, is being replaced by the verb-medial construction
in the speech of the young people because of the influence
of standard Mandarin. The copular verb in the verb-final
equational sentence is /dzw-si/. It becomes /si/, which is
a cognate of the copular verb in standard Mandarin, only in
negative equational sentences. e.g.,

(30) ta dzongue ren dzw-si
s/he Chinese person be
'S/he is a Chinese.'

(31) ta dzongue ren bu si
s/he Chinese person not be
'S/he is not a Chinese.'

II.3. Postpositions/Suffixes
Where standard Mandarin uses the co-verb construction in-
volving a co-verb/preposition phrase, Hui typically employs a post-
position or suffix on the noun phrase. In the following examples,
each Hui sentence is presented along with its standard Mandarin
counterpart in order to contrast the use of suffixes in Hui with
the use of co-verbs in Mandarin.

(32) (a) cong zhe bian zou (Mandarin)
from this side go
'Go from this side!'

(b) dzu mian - da dze (Hui)
this side - from go
'Go from this side!'

(33) (a) wo jiao li laizhou hen yuan (Mandarin)
I home leave Lanzhou very far
'My home is far from Lanzhou.'

(b) ne - dzi dzia landze - la li - dzi (Hui)
I - genitive home Lanzhou - away leave - nominalizer
jyan
far
'My home is far from Lanzhou.'
(34) (a) wǒ dūi zhè - ge wèntí méiyǒu yījiàn
   I to this - classifier problem have: not opinion
   'I have no opinion on this problem.' (Mandarin)

   (b) nǐ dí - ge wèntǐ - e idān mi
   I this - classifier problem - dative opinion have: not
   'I have no opinion on this problem.' (Hui)

(35) (a) wǒ bèi lǎozhāng dǎ - le yǐdùn (Mandarin)
   I passive old Zhang hit - perfective once:over
   'I was beaten up by Old Zhang.'

   (b) lǎozhāng nǐ dā - dā - lǐc idūn (Hui)
   old Zhang me hit reach perfective once:over
   'I was beaten up by Old Zhang.'

(36) (a) wǒ qī nǐ dào chá (Mandarin)
   I for you pour tea
   'I pour tea for you.'

   (b) nǐ niǎo tīgào: dō - dā (Hui)
   I you (benefactive) tea - accusative pour - reach
   'I pour tea for you.'

(37) (a) wǒ qīn tāmen wán (Mandarin)
   I with they play
   'I play with them.'

   (b) nǐ tāmen - la van lǐ (Hui)
   I they comitative play attitudinal
   particle
   'I play with them.'

(38) (a) tā bā píngguǒ chī - diāo - le (Mandarin)
   s/he apple eat complete perfective
   'She ate the apple.'

   (b) píngguǒ: tā tā - cān - lǐc (Hui)
   apple accusative s/he eat up perfective
   'S/he ate the apple.'

The Hui sentence (35) (b) is not a passive construction as (35) (a)
is in standard Mandarin, because in (35) (b), the agent, lǎozhāng/
'Old Zhang', remains the subject, and the patient, nǐ/ 'me', is
in the accusative form. But the verb suffix /dā/ 'reach' in (35)
(b) highlights the fact that the action denoted by the verb im-
pinges on the patient. It is the presence of this verb suffix
that imparts onto (35) (b) a passive feature. Sentence (39) below
is identical with (35) (b) except the verb suffix /dā/ is removed.

(39) lǎozhāng nǐ dā - lǐc idūn
   Old Zhang me hit - perfective once:over
   'Old Zhang beat me up.'
(39) and (35) (b) have different pragmatic functions. (39) describes the event from the point of view of the agent, 'Old Zhang'. (35) (b) takes the perspective of the patient, 'me', as the recipient of the action.

Sentence (38) (a) is an example of the widely discussed bā-construction of Mandarin Chinese. In a bā-construction, the patient noun is marked by the co-verb/preposition, /bā/, and placed before the verb. Hui does not have a bā-construction. The patient noun of a transitive verb in a pre-verbal position is simply marked with the accusative case suffix, as shown in (38) (b).

The foregoing discussions on the constituent ordering and the case system of Hui make it clear that the language is considerably removed from the well-accepted typological classification of Chinese. I have shown that the predominant word order in Hui is verb-final, and a synthetic grammatical structure functions as an important component of the grammar of the language.

In recent years, several articles have appeared in China reporting on the verb-final word order and the presence of an object marker in the Chinese dialect of Qinghai province. During my fieldwork in western China, I also collected in-depth data on Wutun, a Chinese language in southeastern Qinghai, which, under the influence of Tibetan and Altaic languages, has lost its tones and acquired a rich agglutinative morphology as well as strict verb-final word order. Thus, Hui is not the only language among western Chinese dialects which has deviated from the typological norm of Chinese. In the case of Wutun, however, the data clearly show that its change from the typological norm of Chinese is due to the influence of the surrounding non-Chinese languages. It has a large number of Tibetan loan words and borrowed grammatical forms. In the case of Hui, it is not at all clear that its synthetic, verb-final features are borrowed from neighboring languages. I will discuss this issue in the next section.

III. Borrowing or substratum interference

It is well known that most of the languages spoken in western China belong to the Mongolian family, the Turkic family and the Tibetan family, and until the last two or three decades, Chinese speakers constituted a minority of the population in western China. Even in today's western China, the Chinese population tends to be concentrated in a few urban centers, outside of which the non-Chinese population and their languages remain dominant. Given this multi-lingual situation in western China, let us now consider the ethnic and linguistic make-up of the area surrounding Linxia.

Within a radius of one hundred kilometers of Linxia, a total of seven ethnic groups co-exist: Baonan, Mongour, Santa, Salar, Amdo Tibetan, Hui, and Wutun. Each ethnic group has its own language. Baonan, Mongour and Santa belong to the Mongolian
language family; Salar is Turkic; Amdo Tibetan is an atonal Tibetan language; Hui and Wutun belong to the Chinese language family. All seven languages are mutually unintelligible. Hence, multilingualism is common and language contact and linguistic interference are intense in this small area. Linguistic borrowing, in particular, is common in all directions. For example, Wutun has borrowed so extensively from Amdo Tibetan, both grammatically and lexically, that on first encounter, one hardly recognizes it as a Chinese language, whereas Baonan, a Mongolian language which was the main object of my fieldwork in 1982, has approximately 50% Chinese loan words in its lexicon and numerous syntactic structures heavily influenced by Chinese. Typologically, the languages of the Línxìa area fall into two groups. One, represented by Chinese, is analytic and verb-medial; the other, which includes the Mongolian languages, Salar (Turkic) and Amdo Tibetan, is synthetic and verb-final. Since Hui is unmistakably a Chinese language, are its synthetic and verb-final features the result of borrowing? Let us examine the available information on the history, the culture and the language of the Hui people as we seek an answer to this question.

The Hui people are Moslems. They have been considered an ethnic group in China, distinct from the Han Chinese for centuries. At present, the Hui people live in various parts of China and each group speaks the local Chinese dialect of the place in which it lives. However, the majority of the Hui people are concentrated in southern Gānsū, where Línxìa is located, and in a neighboring province called the Nínxì Hui Autonomous Region, a province set aside by the Chinese government for the Hui people in order to guarantee their cultural autonomy. Traditionally in Línxìa, the Hui people lived on the outskirts of the city, whereas the Han Chinese lived inside the city wall. Hostile clashes between the Han Chinese and the Hui were not uncommon until the establishment of the People's Republic of China. Today, the city wall of Línxìa no longer exists and Línxìa is the seat of the district government of the Línxìa Hui Autonomous District. However, one can still tell a Hui from a local Han Chinese in Línxìa by listening to his/her accent, their dialects being different in phonologic as well as grammatical features.

The ethnic identity of the Hui people of Línxìa remains strong. They believe they are the descendants of immigrants from Moslem countries to the west of China. Circumstantial evidence seems to suggest that the Hui people's belief in their central Asia origin might be correct. If so, it follows that the Hui people originally were speakers of a non-Chinese language (probably Altaic) and the non-Chinese features of the present day Hui of Línxìa would be the relics of their ancestors' native language which interfered with the immigrants' attempt to acquire the local Chinese dialect in western China.

The linguistic evidence also lends support to the above hypothesis. But before delving into the linguistic evidence, we must
first distinguish between the two types of contact-induced language change: borrowing and substratum interference. As noted by Thomason (1982), borrowing is the incorporation of foreign features into the native language of a community, whereas substratum interference is caused by the native language of a group of speakers in their acquisition of a target language with which they are in contact.

In borrowing, vocabulary from the source language is inevitably the first and the major item to be taken. For instance, in Wutun, a Chinese language which has borrowed extensively from Amdo Tibetan, we find a large number of Tibetan loan words, and in Baowan, as previously noted, we find that 50% of its vocabulary consists of Chinese loan words. Hence, if the non-Chinese features in Hui were borrowed from the Altaic and Tibetan languages with which it is in contact, we would expect to find a substantial quantity of Altaic and Tibetan loan words in Hui. The fact is that Hui has few loan words. The few it does have are religious terms of Persian origin, e.g., /oxun/ 'priest, /asman/ 'heaven'. It is highly unlikely that the Hui people eschewed the vocabulary and concentrated on morphology and syntax in their attempt to borrow linguistic elements from languages with which they were in contact. While the borrowing hypothesis runs counter to the Hui data, substratum interference seems to fit the data perfectly. As an immigrant group attempts to acquire the language of their new homeland, the sounds and grammatical structures of their native tongue are most likely to interfere with their acquisition process. In other words, their pronunciation of the target language is likely to contain speech sounds and certain phonologic features from their original language and they may very well impose certain grammatical structures of their original language upon the target language they are acquiring. The restricted case of vowel harmony and certain phonetic segments of Hui are alien to both Chinese and the non-Chinese languages around Linxla. The possibility of substratum interference not only accounts for the presence of those phonetic segments and the limited case of vowel harmony, but also explains the typical Altaic features of synthetic grammatical structure and verb-final word order found in Hui even though it has practically no Altaic loan words. It is, therefore, very likely that the Hui people originally spoke an Altaic language before their immigration to western China. At this juncture, the substratum interference possibility remains a conjecture, even though it is a strong one favored by the linguistic facts and supported by circumstantial evidence. The information that could confirm this conjecture will have to come from a study of the history and ethnography of the Hui people, which presents a challenge to scholars interested in the language and the culture of the Hui.
Notes

1. Co-verbs form a syntactic category of morphemes which are historically derived from verbs. Some of them function as full-fledged prepositions; some still retain a certain number of the properties of verbs. For a full discussion of co-verbs, see Chapter 9 of Li and Thompson (1981). The bà-construction is a widely discussed verb-final construction in standard Mandarin. The construction typically involves a transitive verb with an object noun phrase introduced by the co-verb bà before the transitive verb. For more detail, see Chapter 15 of Li and Thompson (1981).

2. In zero-anaphora languages, of which Chinese is an example, sentences in discourse context rarely occur with their full nominal complements. Therefore, where data are drawn from discourse, the distinction between verb-medial and verb-final word orders will be difficult to uphold in zero-anaphora languages.

3. I will refer to this dialect as Hui in the remainder of the paper.

4. The tradition in the study of Chinese phonology calls for the analysis of each syllable in terms of its syllable-initial consonant and its final, that is, the remainder of the syllable.

5. See Hányǔ fǎngyán cíhú (A Comparative Lexicon of Chinese Dialects). Xi-an is approximately 600 kilometers east of Línxīa. Interestingly, none of the Mongolian, Turkic or Tibetan languages in contact with Hui in the Línxīa area have the labio-dental affricates.

6. In the phonemic transcription for Hui, the symbols /b/, /d/, /g/ represent the unaspirated voiceless stops [p], [t], [k], and the symbols /p/, /t/, /k/ represent the aspirated voiceless stops [pʰ], [tʰ], [kʰ].

7. Wutun, an atonal Chinese dialect, is heavily Tibetanized. It is spoken in a few villages in southeastern Qinghai province, approximately 100 kilometers to the west of Línxīa. Features of Wutun which are alien to the Chinese language family are discussed in Li (forthcoming) and Chen (1982).

8. The so-called 'double-subject' construction refers to a traditional term in Chinese linguistics for a special type of topic-comment sentence. For more detail on the construction, see Chapter 4 of Li and Thompson (1981).


10. This percentage figure for Chinese loan words in the Baonan lexicon is based on approximately 3,000 morphemes I collected during my fieldwork. See Li (forthcoming) for more information on the sinicization of Baonan.

11. Not all Moslems in China are Hui. For instance, the Baonan people in the Línxīa area are Moslems belonging to the Baonan ethnic group.
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Parallels between language acquisition and language change: The Portuguese future subjunctive

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To what degree do the stages in language change parallel the steps in language acquisition? This question has long interested linguists and I will pursue it here by describing the case of the Brazilian Portuguese future subjunctive, which provides ideal circumstances for investigating the relation between morphological change and acquisition.

There is evidence that Brazilian children acquire the inflection of irregular verbs in the future subjunctive by first regularizing the paradigm and gradually using the irregular stems. At the same time, adult speakers reveal a tendency towards regularization of the irregular paradigm. The data indicate that the same factors operate both in acquisition and change. In particular, phonetic saliency appears to be an explanatory principle in both cases. In this case, phonetic saliency is defined by the degree of phonetic differences between the infinitive and the future subjunctive.

In the following sections I will present first a description of the structure of the future subjunctive in Portuguese and then a description of the methodology used for obtaining and analyzing the data (variation theory, Labov, 1972). I will present the results of the experiment with a discussion of the influence of the phonetic saliency in relation to the use of morphological inflections. Finally I will focus on some general aspects of the relations between language change and language acquisition, and will summarize my remarks.

The structure of the future subjunctive

Future subjunctive verb forms are employed in Portuguese in subordinate clauses introduced by conjunctions such as quando 'when', como 'as', se 'if', enquanto 'while', assim que 'as soon as', etc., when there is reference to future time in the main clause:

(1) a) O professor não vai gostar se você não trouxer o dever.
'The teacher will not like it if you don't bring the assignment.'

b) Vai ser bom quando você vender a casa.
'It will be nice when you sell the house.'
The future subjunctive can only be identified in the so-called "strong" irregular verbs that have allomorphic stems in tenses derived from the Latin perfectum, like trazer-trouxer in (1a). For the great majority of verbs the future subjunctive is identical to the infinitive, like vender-vender in (1b). The phenomenon of regularization by both children and adults that is being referred to can be illustrated by the sentence in (2):

(2) Os homens só vão parar de fazer guerra se eles fizerem amizade com outros países. (ML, 9 y/o).

(Fazerem, with the infinitive stem was used instead of fizerem, the irregular stem).

'Men will only stop making war when they establish friendly relations with other countries.'

Children begin to use the future subjunctive at around 4 years of age. Late acquisition can be attributed to the fact that the form occurs in complex subordinate structures, involving notions such as condition, cause, and temporal sequence, which are acquired later than independent or main clause constructions. Younger children prefer to express in successive clauses what adults express in main and subordinate clauses. I have been observing my own daughter, who at 4.6 of age increased the use of future subjunctive, but used only the regularized forms, like in (2). Gradually she began to use the irregular stems and now, at 9 years of age, she is in an advanced stage in the use of the morphological irregularity of the future subjunctive.

Psycholinguistic research on children's regularization of paradigms describe that in a first step, children tend to repeat the irregular form without analysis. In a second step, they overgeneralize the regular form and finally they learn the irregular cases (Karmiloff-Smith, 1981, Slobin, 1973). For the future subjunctive, the process seems to start with the second step, probably because at the age of 4 they are also making attempts at partial analysis for other structures (Marchman, 1983).

Methodology

I collected data by oral and written tests given to a cross-section sample of children between the ages of 5 and 10, and adults of different generations: young speakers, from 12 to 19 years old, and old speakers, more than 60 years old. A total of 18,209 items in the future subjunctive were obtained: 2,227 by children, 13,692 by young adults and 2,290 by old adults.
The oral test included sentences with regular and irregular verbs. The informants were required to say whether they would like or dislike the event described in each sentence. This provoked an obligatory transformation of sentences like (3a) into (3b):

(3) a) O sapato não coube no pé.
'\text{The shoe did not fit my foot.}'

b) Não vai ser bom se o sapato não couber no pé.
'\text{It won't be good if the shoe doesn't fit my foot.}'

The children as well as the adults carried out the exercise with no special difficulty. Only oral tests were given to children.

The written test had an equivalent design: A model sentence like (3a) was followed by a sentence like (3b) with a slot to be completed by using the verb in the future subjunctive.

The quantitative approach to variation theory was used to describe the variable use of the morphological irregularity (Labov, 1972). The programs SWAMINC 4 (Naro, 1978) and VARBRUL 2 (Sankoff, 1975) were used to measure the influence of social and linguistic factors in the inflection of the irregular future subjunctive. I will focus on the effect of age and the effect of the inherent nature of the verb. A list of the irregular verbs analyzed is shown in table 1, with the infinitive and future subjunctive inflections (1st and 3rd persons singular).

I define as phonetic saliency the degree of phonetic alteration between a neutral or uninflected form, represented in this case by the stem of the infinitive, and the irregular stem of the future subjunctive (see Naro & Lemle, 1977).

Results

Tables 1 and 2 show the use of each verb by children and adults respectively, with a sharp difference between the highest and the lowest values.

Some items, like dar 'to give', estar 'to be', ir 'to go' and fazer 'to make' show high indices of irregular inflections, while dizer 'to say', poder 'can', caber 'to fit' and haver 'there be' have lower values. Even lower are ver 'to see' and the compound verbs with ter and pôr (conter 'contain', obter 'obtain', compor 'compose', dispor 'dispose') which are mainly regularized.

Comparisons between different age groups are indicated in table 3. On the left side is the frequency of use of irregular stems by children, divided into
three age groups. On the right side are the results for the adults, divided into young speakers (from 12 to 19 years old) and old speakers (more than 60 years old).

Older children have displayed a more frequent use of the irregular forms than younger ones. On the other hand, old speakers use the irregular forms twice as often as young speakers.

The process of acquisition has been discussed in previous pages. Among adults, I am assuming that the results in table 3 indicate a tendency to change, according to the notion of apparent time (Labov, 1972), towards the regularization of the paradigm. This means that even accepting that the acquisition of linguistic skills continues throughout life, I assume that the young speakers, in the future, will still display a less frequent use of irregular forms than the old ones do now. For further evidence, see Macedo (1981).

Phonetic saliency in the acquisition and change in morphophonology

I claim that the ranking in tables 1 and 2 can be explained by the degree of phonetic saliency of the irregular stem, the verbs with the salient stems having a higher probability of occurrence in the irregular inflection than the less salient ones, which tend to be regularized.

Some verbs with very low values, like por, ver and the compound verbs, are regularized for other reasons:

The verb ver 'to see', a very common verb in the language, has the inflectional form vír, which is identical to another verb vir 'to come' in the infinitive. As vír also tends to be regularized, merging with the infinitive, this form becomes ambiguous. Adult speakers, even those with a high level of formal education, largely use the regularized form ver as the future subjunctive of the verb ver to solve this problem.

Compound verbs like conter (con-ter)'contain' are no longer perceived as compound by adults, who have practically restructured the items in all the other tenses derived from the perfectum. Children frequently substituted other verbs for them during the test.

The verb por 'to put', being very irregular in the whole paradigm, tends to be replaced by other semantically equivalent regular verbs (like botar and colo-car). Votre (1979) and Rivas (1980) found a low frequency for por in the region of Rio de Janeiro. In addition, the homonymous unstressed preposition por 'by' may influence the low frequency of this verb and the preference for semantic approximants.
In ranking the phonetic saliency of each item in tables 1 and 2, I compared the irregular future subjunctive stem with its infinitive counterpart and considered four features: Alterations in the number of syllables (more syllables or no change in syllables), monosyllabic (monosyllabic or non-monosyllabic), changes in vowel (anteriorization and/or height of the tongue in l, 2, 3 or more degrees) and changes in consonant (same consonant, homorganic consonant or different consonant). I gave 1 point for each feature of phonetic alteration between the two forms of the verb, as shown in table 4. 

Tables 1 and 2 have a significant correlation with table 4, indicating that table 4 may be used as a reliable predictor of the use of the irregular forms. 4

After listing the verbs according to their features, I have measured separately the influence of each of these features in the use of the future subjunctive. 

Changes in the vowel (table 5), in the number of syllables (table 6) and monosyllabicity of verbs (table 7) lead to the more frequent use of irregular stems. Changes in the consonant have the same effect to a lesser degree: Table 8 reveals a prevalent influence of homorganic consonants in the use of the irregular inflection by children. It may be the case that changes in the consonants do not intervene as much as the other features in the perception of phonetic saliency and this problem suggests a need of further studies.

The relation between language acquisition and language change

Linguists have long posited the possible relation between the process of language change and the steps in language acquisition (see Kuryłowicz, 1948; Manczak, 1958; Kiparsky, 1972; Venneman, 1972; Slobin, 1977; Naro, 1979 and Hooper, 1979). None of these authors affirm that one process causes the other. They also acknowledge that any principle suggested should not be considered absolute. Nevertheless, some striking similarities between the processes make this subject reappear frequently in the literature.

The case of the Brazilian Portuguese future subjunctive is an excellent one for testing some of the predictions made about morphologic change and language acquisition. The gradualness by which children acquire the forms allows the linguist to investigate some of the factors conditioning the variation. Furthermore, the instability of the paradigm among adults permits change over generations to be examined.

Consider some of the principles and predictions made by historical linguists and psycholinguists concerning these relations: Manczak, for example, predicts that
the indicative forms will induce the reconstruction of the other modes, but not vice versa. In fact, the future subjunctive shows a tendency to regularize towards the infinitive, which has the same stem as the indicative (see Wherrit, 1977) as has already happened in French. The counterpart for the process of acquisition is the fact that the indicative is the first acquired by children.

According to Kuryłowicz, the stem of the semantically unmarked form of the paradigm serves as the base form in language change. This is also within the scope of what has been examined: Adult regularization tends to make the future subjunctive merge with the infinitive stem, which is unmarked. The children follow the same process in reverse.

Slobin (1973) and Peters (1983) propose an operating principle in language acquisition that a child will mark a semantic notion earlier if its morphological realization is more salient perceptually. Underlying semantic relations marked overtly and clearly will be the ones acquired first. If we extend Slobin's principle to language change, the future subjunctive forms should be more subject to change. We can say that they are not clearly and overtly marked in Portuguese because they can be substituted, in many contexts, either by the indicative mood or by similar constructions using the personal infinitive. Furthermore, the form of regular verbs is already similar to that same indicative, which makes the structure even more vulnerable to a merger. The future subjunctive is an instance of a semantically subtle and abstract relation, conditioned mainly by the conjunctions. These factors lead us to predict both late acquisition and vulnerability to change.

On the morphological level, the findings about phonetic saliency suggested by the case of the future subjunctive may be generalized to processes of acquisition as well as to processes of change of other morphemes.

The study of variation in verbal concordance (Naro & Lemle, 1977) and in nominal concordance (Braga, 1977; Scherre, 1978) in Portuguese indicates that for both phenomena there is a tendency for singular forms to be used in contexts where normative grammar prescribes the plural. This means that (4a) is used instead of (4b) for verbs, while (5a) is used instead of (5b) for nouns:

(4) a) Eles com. 'They eat'
    b) Eles comm. 'They eat'

(5) a) As casa. 'The houses'
    b) As casas. 'The houses'

The degree of saliency in verbal concordance was measured by comparing 3rd person singular to 3rd person plural. In nominal concordance, it was measured by com-
paring singular to plural nouns. The results of these studies showed that the more distinctive inflections are more frequently employed and maintained in the process of language change.

Emmerich (1977) pointed out that the acquisition of the Portuguese inflection of first and third persons in verbs also follows the principle of phonetic saliency. She observed that the acquisition of the 1st person inflection by children was parallel to the gradual acquisition of the same inflection by Brazilian Indian speakers who were learning Portuguese as a second language. In the first stages, both groups would say (6a) instead of (6b):

(6)  
a) Eu bebe. 'I drink' (inflection of 3rd person)  
b) Eu bebo. 'I drink' (inflection of 1st person)

Phonetic saliency was measured by the morphophonological distinctions between the first and the third persons.

Summing these facts to the case of the future subjunctive, I am also claiming that the diffusion of both morphophonological change and acquisition originate in environments where there is minimal differentiation and fewer changes in superficial forms. To quote Naro (1976, p.76), due to the similarity of forms, "at some moment one may still admit only one analysis". This analysis extends to other points following the path of the fewer phonological differentiations towards the more salient or more perceptive ones.

Conclusions
The following points summarize what has been discussed:

1. The acquisition of the future subjunctive in Portuguese seems to be a case where morphophonological irregularities are learned from the total regularization of the paradigm to the gradual use of the irregular adult forms. This probably happens because its late acquisition coincides with the phase when the child is regularizing other structures of the language. It represents an exception to other processes of paradigm regularization discussed in the literature.

2. Generational differences indicate that adults are gradually regularizing the verb forms in the direction of the total merger of the future subjunctive and the personal infinitive in Portuguese. Several forces appear to be behind this direction of change: Future subjunctive inflections are identical to the infinitive for the great majority of verbs. This tense can be replaced by semantically similar structures that require the personal infinitive. This tense occurs in subordi-
nate complex structures and is semantically subtle.
3. Some verbs, like the composite verbs, the verb pôr 'to put' and the verb ver 'to see' have been practically regularized in the language, either by restructuring (the composite verbs) or to avoid ambiguities with other forms (pôr and ver).
4. The rest of the strong irregular verbs show an order of acquisition or change of inflected forms which obeys a general principle of phonetic saliency between the marked and the unmarked inflections: The more salient items are acquired first and tend to resist in the process of change.
5. Detailed analysis of these phenomena was made possible by the quantitative approach of variation theory. The future subjunctive turns out to be an ideal case for studying relations between language change and language acquisition: On one side, it is learned late and slowly, permitting the linguist to observe the gradual process. On the other hand, it is an unstable structure in the adult language.
6. The results presented constitute more evidence of Slobin's and Peter's proposed operating principles, which are also related to the acquisition of salient items. Slobin refers to the saliency of the items per se. I have studied the saliency between two morphemes. The most perceptually salient features appear to be the changes in the number of syllables, the changes in the quality of the vowels and the monosyllabicity of the item.
Table 1 - Ranking probabilities of use of irregular stems by children.

<table>
<thead>
<tr>
<th>Stem</th>
<th>Apl./Total</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ter - tiver</td>
<td>182/246</td>
<td>.84</td>
</tr>
<tr>
<td>'have'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dar - der</td>
<td>143/195</td>
<td>.82</td>
</tr>
<tr>
<td>'give'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estar - estiver</td>
<td>136/180</td>
<td>.81</td>
</tr>
<tr>
<td>'be'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ir - for</td>
<td>96/195</td>
<td>.73</td>
</tr>
<tr>
<td>'go'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saber - souber</td>
<td>80/143</td>
<td>.66</td>
</tr>
<tr>
<td>'know'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fazer - fizer</td>
<td>53/108</td>
<td>.60</td>
</tr>
<tr>
<td>'make'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tazzer - trouxer</td>
<td>77/136</td>
<td>.60</td>
</tr>
<tr>
<td>'bring'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vir - vier</td>
<td>50/104</td>
<td>.59</td>
</tr>
<tr>
<td>'come'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser - for</td>
<td>60/131</td>
<td>.56</td>
</tr>
<tr>
<td>'be'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Querer - quiser</td>
<td>52/96</td>
<td>.51</td>
</tr>
<tr>
<td>'want'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poder - puder</td>
<td>63/134</td>
<td>.50</td>
</tr>
<tr>
<td>'can'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dizer - disser</td>
<td>50/109</td>
<td>.46</td>
</tr>
<tr>
<td>'say'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haver - houver</td>
<td>26/68</td>
<td>.44</td>
</tr>
<tr>
<td>'there be'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caber - couber</td>
<td>36/122</td>
<td>.38</td>
</tr>
<tr>
<td>'fit'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pör - puser</td>
<td>16/60</td>
<td>.23</td>
</tr>
<tr>
<td>'put'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conter - contiver</td>
<td>13/189</td>
<td>.08</td>
</tr>
<tr>
<td>'contain'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ver - vir</td>
<td>2/71</td>
<td>.04</td>
</tr>
<tr>
<td>'see'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2 - Ranking probabilities of use of each verb in the irregular stem among adults.

<table>
<thead>
<tr>
<th>Verb</th>
<th>Young Apl. Total</th>
<th>Prob.</th>
<th>Verb</th>
<th>Old Apl. Total</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estar</td>
<td>117/129</td>
<td>0.93</td>
<td>Ser</td>
<td>128/129</td>
<td>0.94</td>
</tr>
<tr>
<td>Fazer</td>
<td>33/39</td>
<td>0.88</td>
<td>Ter</td>
<td>72/74</td>
<td>0.80</td>
</tr>
<tr>
<td>Ir</td>
<td>59/69</td>
<td>0.88</td>
<td>Fazer</td>
<td>105/109</td>
<td>0.78</td>
</tr>
<tr>
<td>Querer</td>
<td>32/42</td>
<td>0.86</td>
<td>Haver</td>
<td>62/65</td>
<td>0.75</td>
</tr>
<tr>
<td>Saber</td>
<td>120/157</td>
<td>0.82</td>
<td>Estar</td>
<td>118/121</td>
<td>0.75</td>
</tr>
<tr>
<td>Vir</td>
<td>113/141</td>
<td>0.81</td>
<td>Querer</td>
<td>104/113</td>
<td>0.70</td>
</tr>
<tr>
<td>Ser</td>
<td>112/147</td>
<td>0.81</td>
<td>Dar</td>
<td>179/186</td>
<td>0.69</td>
</tr>
<tr>
<td>Dar</td>
<td>47/59</td>
<td>0.78</td>
<td>Ir</td>
<td>95/101</td>
<td>0.62</td>
</tr>
<tr>
<td>Trazer</td>
<td>89/138</td>
<td>0.72</td>
<td>Caber</td>
<td>118/125</td>
<td>0.58</td>
</tr>
<tr>
<td>Caber</td>
<td>101/149</td>
<td>0.70</td>
<td>Saber</td>
<td>128/129</td>
<td>0.56</td>
</tr>
<tr>
<td>Poder</td>
<td>84/154</td>
<td>0.54</td>
<td>Dizer</td>
<td>132/149</td>
<td>0.52</td>
</tr>
<tr>
<td>Dizer</td>
<td>104/215</td>
<td>0.49</td>
<td>Trazer</td>
<td>85/97</td>
<td>0.42</td>
</tr>
<tr>
<td>Ter</td>
<td>3/7</td>
<td>0.46</td>
<td>Poder</td>
<td>104/118</td>
<td>0.35</td>
</tr>
<tr>
<td>Haver</td>
<td>58/74</td>
<td>0.38</td>
<td>Vir</td>
<td>113/130</td>
<td>0.35</td>
</tr>
<tr>
<td>Pôr</td>
<td>68/215</td>
<td>0.24</td>
<td>Pôr</td>
<td>98/156</td>
<td>0.08</td>
</tr>
<tr>
<td>Dispor</td>
<td>17/76</td>
<td>0.16</td>
<td>Conter e outros</td>
<td>197/399</td>
<td>0.05</td>
</tr>
<tr>
<td>Obter</td>
<td>15/90</td>
<td>0.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conter</td>
<td>19/128</td>
<td>0.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ver</td>
<td>14/142</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reter, Deter</td>
<td>7/72</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compor</td>
<td>8/149</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 - Influence of age in the use of irregular stems.

<table>
<thead>
<tr>
<th></th>
<th>Children Apl. Total</th>
<th>%</th>
<th>Adults Apl. Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 - 6 y/o</td>
<td>118/258</td>
<td>45.74%</td>
<td>young 7906/9531</td>
<td>.38</td>
</tr>
<tr>
<td>7 - 8 y/o</td>
<td>487/854</td>
<td>57.03%</td>
<td>old 1539/1653</td>
<td>.66</td>
</tr>
<tr>
<td>9 -10 y/o</td>
<td>498/794</td>
<td>62.72%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 4 - Ranking of the verbs by phonetic saliency.

<table>
<thead>
<tr>
<th>Verb</th>
<th>Increases syllables</th>
<th>Changes consonant</th>
<th>Vowel changes</th>
<th>Monosyllabic</th>
<th>Degree of saliency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estar - estiver</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Ir - for</td>
<td>-</td>
<td>+2</td>
<td>+3</td>
<td>+1</td>
<td>6</td>
</tr>
<tr>
<td>Ter - tiver</td>
<td>+1</td>
<td>+2</td>
<td>+1</td>
<td>+1</td>
<td>5</td>
</tr>
<tr>
<td>Ser - for</td>
<td>-</td>
<td>+2</td>
<td>+2</td>
<td>+1</td>
<td>5</td>
</tr>
<tr>
<td>Dar - der</td>
<td>-</td>
<td>-</td>
<td>+2</td>
<td>+1</td>
<td>3</td>
</tr>
<tr>
<td>Fazer - fizer</td>
<td>-</td>
<td>-</td>
<td>+3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Querer - quiser</td>
<td>-</td>
<td>+2</td>
<td>+1</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Trazer - trouxer</td>
<td>-</td>
<td>(homorg.)+1</td>
<td>+2</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Vir - vier</td>
<td>+1</td>
<td>-</td>
<td>-</td>
<td>+1</td>
<td>2</td>
</tr>
<tr>
<td>Saber - souber</td>
<td>-</td>
<td>-</td>
<td>+2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Haver - houver</td>
<td>-</td>
<td>-</td>
<td>+2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Gaber - couber</td>
<td>-</td>
<td>-</td>
<td>+2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Poder - puder</td>
<td>-</td>
<td>-</td>
<td>+1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Dizer - disser</td>
<td>-</td>
<td>(homorg.)+1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

### Table 5 - Influence of alterations in the number of syllables.

<table>
<thead>
<tr>
<th></th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>More syllables</td>
<td>368/530 (.63)</td>
<td>1864/2115 (.57)</td>
</tr>
<tr>
<td>No change in syllables</td>
<td>733/1372 (.37)</td>
<td>7581/9069 (.42)</td>
</tr>
</tbody>
</table>

### Table 6 - Influence of vowel changes.

<table>
<thead>
<tr>
<th></th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vowel changes in 3 or more degrees</td>
<td>345/577 (.58)</td>
<td>2808/3108 (.63)</td>
</tr>
<tr>
<td>Vowel changes in 2 degrees</td>
<td>362/664 (.60)</td>
<td>3525/4126 (.58)</td>
</tr>
<tr>
<td>Vowel changes in 1 degree</td>
<td>294/448 (.51)</td>
<td>1803/2194 (.46)</td>
</tr>
<tr>
<td>Vowel does not change</td>
<td>100/213 (.30)</td>
<td>1309/1756 (.33)</td>
</tr>
</tbody>
</table>

### Table 7 - Influence of monosyllabicity.

<table>
<thead>
<tr>
<th></th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monosyllabic</td>
<td>531/834 (.58)</td>
<td>3524/4029 (.52)</td>
</tr>
<tr>
<td>Non-monosyllabic</td>
<td>570/1068 (.41)</td>
<td>5921/7155 (.48)</td>
</tr>
</tbody>
</table>

### Table 8 - Influence of consonant changes.

<table>
<thead>
<tr>
<th></th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Different consonant</td>
<td>526/811 (.46)</td>
<td>3257/3677 (.54)</td>
</tr>
<tr>
<td>Homorganic consonant</td>
<td>127/245 (.57)</td>
<td>1350/1785 (.49)</td>
</tr>
<tr>
<td>Same consonant</td>
<td>448/846 (.47)</td>
<td>4838/5722 (.47)</td>
</tr>
</tbody>
</table>
NOTES

1 I would like to thank Susan Bremner, Lucinda Ferreira Brito, Katherine Demuth, Paul Kay, Andrew Pawley, Fortunee Kayra-Stuart and Charles Thornton for their criticisms of my formulations and for their help with my English.

2 Similar facts occur in Continental Portuguese as well as in Portuguese dialects in Africa and Asia (see Macedo, 1981).

3 The VARBRUL 2 program calculates the probability of contribution of each variable restriction to the global probability of application of a given rule. In this case, the variable rule was the inflection of the future subjunctive in the irregular stems, in environments where both irregular or regularized forms would be possible. The global probability of occurrence of a given form would be equal to the product of the probabilities respectively associated with each factor studied. For the present paper, only the influence of the verbs and the influence of age were illustrated. For full information, see Macedo (1981), Sankoff (1975) and Rousseau & Sankoff (1978).

4 The data on the left side of table 2 refer to a group of young speakers whose parents had elementary school level of education and were obtained by oral tests. The results on the right refer to oral and written tests together. The oral and written tests displayed similar results (see Macedo, 1981).

5 Age and education were interdependent factors. We were able to measure the influence of age by calculating separately the overall frequency for each group of children shown in table 3.

6 The rank order correlation coefficient was statistically significant at .01 level for table 1, at .03 level for table 2 (young speakers) and at .01 level for the old speakers in table 2. I would like to thank Ann Kalinowski for these calculations.
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The 'Rung' Languages:
A Major New Tibeto-Burman Subgroup

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0. Introduction. The purpose of this paper is to argue for the existence of a major new Tibeto-Burman subgroup on par with the six major subgroups mentioned below. Although the evidence presented below is speculative rather than definitive, it does establish the 'plausibility' of a 'Rung' subgroup. The evidence organizes itself into two independently-supported but mutually consistent sub-grouping schemas: the schema produced by a careful collation of various 'suggestions' in the literature as well as the schema established on the basis of an interlocking network of shared innovations. Nonetheless, gaps exist in the data and its interpretation.

1.0 The current subgrouping. A dependable classification schema is central to any broadly-based historical work, since correct determination of which systems or parts of systems are retentions from the common proto-system and which are more recent innovations rests crucially on accurate knowledge of the subgrouping. However, Tibeto-Burman subgrouping is in its infancy; not only does the composition of lower-level units still pose numerous questions, but the composition of higher-level units remains almost completely open. Thus, while major subgroups such as Bodish, Kiranti, Mirish, Burmese-Lolo, Kuki-Naga, and Bodo-Garo are well-established, it is far from well-understood how they relate in turn to one another.

Within the subgrouping literature, the languages to be placed in Rung are particularly varied in their representation in the literature. For instance, Benedict (1972:5-8) suggests that Dzorgai [=Qiang], Lepcha, and Magari are 'perhaps' in Tibetan-Kanauri [=Bodish-Himalayish], Digaro [=Taraung] and Kaman [=Miju] are 'perhaps' in Abor-Miri-Dafla [=Mirish], and Nungish is 'perhaps' connected to Burmese-Lolo [=Burmish], and Kadu-Andro-Sengma [=Luish] are 'perhaps' connected with Jinghpaw. In short, Benedict classifies albeit speculatively the languages of the proposed Rung subgroup into at least three of his six major sections. However, it should be noted that elsewhere in the same body of text, Benedict notes Bodo-Garo and Jinghpaw affinities (pp. 6-7; cf. also Burling 1983), Lepcha and Jinghpaw affinities, and Bahing-Vayu affinities for Magari; further, throughout the relevant section, Benedict makes the tentative nature of his speculations quite clear. Shafer (1966-7, 1974) establishes Gyarung as a separate branch within his Bodish Section, while he leaves Dzorgai [=Qiang], Digaro [=Taraung], and Miju [=Kaman] as in the Bodic Division but otherwise unclassified; within his Burmic Division, he put Lepcha in his Northern Naga branch of his
Kukish section, classified Jinghpaw, Nungish, and Luish as parallel independent sections, and placed Tangish in the Burmese-Lolo section. In short, Shafer classifies these languages into six separate lower-level sections and two separate higher-level divisions. Within his Tibetan, Egerod (1974) classifies Gyarung as Bodish, Digaro and Miju as 'Other Tibetan', and Magari as 'perhaps' as Kirantiish; within his Burmic, he classifies Ch'iang as Burmese-Lolo but with the comment that it stands (798) "in a not clearly defined relationship to Lolo", Jinghpaw as a separate branch of Burmese-Lolo, and Lepcha as Northern Naga but with the comment that it (ibid.) "has Baric and Himalayish affinities". In short, Egerod classifies these languages into five or six different subgroups within his two supergroups, but he like Benedict makes the tentative nature of the classifications abundantly clear. In addition, he specifically notes the Jinghpaw affinities not only of the Luish languages [Andro, Sengmai, Kadu, Sak, and perhaps Chairel] and of the Nungish languages [including Rawang and Trung]. Throughout all of the above, the lack of consensus and the tentative nature of the proposed classifications testify to the speculative nature of the conclusions.

2.0 Lower level groupings. Nonetheless, the situation is not as chaotic as it initially appears. In large part, the proposed Rung supergroup is composed of a number of smaller subgroupings many of which are well-established and relatively uncontroversial at least at the lower levels:

The Nungish languages include Trung (Sun 1979, 1982) and Rawang (Morse 1965, Barnard 1934). To this group, Taraung [=Digaro] has been added.

The Gyarung languages are explicitly grouped together throughout the literature cf. Chang and Chang (1975), Nagano (1983, 1979ab). This group includes Tusu, an eighteenth-century Chinese-Gyarung bilingual text apparently related to the modern Soso-mo dialect of Gyarung (Nishida 1973 in Chang and Chang 1975: 393), as well as Wolfenden's (1936) Kham-to.

The Qiang languages, including the two dialects of Qiang found in Sun (1981b) have long been recognized as a group cf. e.g. Wen (1941), Chang (1967).

3.0 Intermediate level groupings. In turn, suggestions of close subgrouping affiliations between these established groups also exist in the literature:

Nungish, Luish, and Jinghpaw. A collation of the standard subgroupings strongly suggests such a subgrouping. Shafer (1966-7, 1974) classified Jinghpaw, Nungish, and Luish as parallel independent sections within his Burmic Division. Egerod (1974) went further, specifically noting a special connection between Jinghpaw and the Nungish languages [including Rawang and Trung] and between Jinghpaw and the Luish languages [Andro, Sengmai, Kadu, Sak, and perhaps Chairel]. Benedict (1972:5-8) suggests that Kadu, Andro, and Sengmai [=Luish] are 'perhaps' connected with Jinghpaw. In fact, suggestions that the Nungish (and the
Luish languages (Bernot 1966)) are connected to the Jinghpaw languages are scattered throughout the literature. For instance, Sun (1979:303, fn. 2) explicitly connects Trung [Nungish] and Jinghpaw noting that they share basic vocabulary and grammar.

Gyarung and Qiang. The inclusion of Gyarung and Qiang [=Qiang, Primi, Kaman [=Miju]] in an 'Tibetanoid' grouping is found explicitly in Qu (1983);5 in fact, the assumption that Gyarung and Qiang are genetically close is implicit in much of the work coming from the mainland of China.

Gyarung and Qiang: direction marking. Throughout these languages a system is found providing a "morphosyntactic indication of deictic orientation of a verb" (DeLancey 1983:101), something immediately recognizable as an example of the 'directive' system described in detail by Wolfenden in his classic Outlines of Tibeto-Burman Linguistic Morphology (1929). Gyarung and Qiang share one such highly marked system (DeLancey 1983: 106-7, fn. 8): "Qiang and rGyarong have elaborate demonstrative and directive systems incorporating geographical categories such as 'upstream', 'downstream', 'toward the mountains', 'toward the river'." Cf. Chart 3.0 below:

<table>
<thead>
<tr>
<th>Gyarung</th>
<th>Pumi [=Primi]</th>
<th>Qiang [=Mami]</th>
</tr>
</thead>
<tbody>
<tr>
<td>'straight up'</td>
<td>to to</td>
<td>tx</td>
</tr>
<tr>
<td>'straight down'</td>
<td>na na</td>
<td>nx</td>
</tr>
<tr>
<td>'upstream'</td>
<td>ko ko</td>
<td>---</td>
</tr>
<tr>
<td>'downstream'</td>
<td>di nx</td>
<td>---</td>
</tr>
<tr>
<td>'toward mountain'</td>
<td>ro ro</td>
<td>khx</td>
</tr>
<tr>
<td>'toward the river'</td>
<td>ri rx</td>
<td>xE</td>
</tr>
<tr>
<td>'away from center'</td>
<td>dzx dx</td>
<td>dx</td>
</tr>
<tr>
<td></td>
<td>tha thÉ</td>
<td>t'x</td>
</tr>
</tbody>
</table>

Chart 3.0: Directive systems in Gyarung and Qiang languages. [Gyarung, Primi, Qiang: Sun 1981a:39]

Not only are the categories similar, but in many instances the specific morphemes are obviously cognate.

Gyarung-Qiang and Tangut. Also suggested in the literature but without much hard evidence is a connection between either Gyarung or Qiang and Tangut. As early as 1936, Wolfenden speculated that Gyarung might be a "moderately near surviving relative of Si-hia [=Tangut]" (1936:168). Similarly, DeLancey (1983:101) noted that Qiang is also "long reputed to be a likely close cousin, both linguistically and ethnically, to Tangut [=Hsi-hsia, Si-hia]". Quite obviously, these alternative couplings are the result not of conflicting opinions but rather of the
closeness of the Gyarung and Qiang language groups. However, convincing hard evidence for a Gyarung-Qiang connection with Tangut is lacking.

4.0 Higher level subgroupings.

Gyarung and Nungish. The Gyarung affiliations were expanded in another direction by Chang and Chang (1975), when they first accepted Wolfenden's coupling of Gyarung and Kham and then went a step further by providing evidence in support of their suggestion that Gyarung and Trung were closely connected. Quite obviously, this implies more than just a close affiliation between Trung and the Gyarung languages; indeed, the addition of Trung was tantamount to connecting the Gyarung languages and the Nungish languages.

The assimilation rule for the first person singular. Chang and Chang (1975:398) noted the assimilation rule for the first person singular among the features shared by Gyarung and Trung [=Nungish]. In Gyarung, the first person singular adds -ng to open syllables, while stop-final syllables replace the final stop by the homorganic nasal (Qu 1983); in Trung, the first person singular adds -ng to open syllables [ṅg 'I'], while stop-final syllables replace the final stop by the homorganic nasal followed by a glottal stop (Sun 1979:296; 1982:84-5).

Gyarung, Trung [=Nungish], and Kham: the preverbal yes/no interrogative marker < PTB *ma 'not'. For subgrouping Gyarung, Kham, and Trung together, one of the strongest pieces of evidence is a unique preverbal interrogative *mx- (DeLancey 1978b:4; Watters 1973:104ff; Sun 1982: 105-6), which they all share. The presence of a *mx- yes/no interrogative marker represents a shared innovation, and the presence of a *mx- general interrogative marker represents a shared 'secondary' innovation. However, equally significant is the fact that the Rung languages have innovated this *mx- interrogative particle in an otherwise totally unprecedented preverbal position. It is exceedingly unlikely that all this is the result of 'independent but parallel development'.

While Simon (1942) noted that the -m of the Classical Tibetan interrogative marker ham was ultimately to be derived from the negative marker PTB/PST *ma / *mi 'NEGATIVE', it remained for DeLancey (1978ab; cf. also Thurgood 1983a) to lay out the path that the derivation must have taken. Thus, while the *ma 'NEGATIVE' is found abundantly attested throughout Sino-Tibetan and unquestionably reconstructs to the earliest stages of the language family, the *ma interrogative marker is an innovation, whose origins are to be found in the syntax and semantics of disjunctive questions. Such disjunctive questions e.g., A not-A questions are the rule rather than the exception in Tibeto-Burman and were the source of the widespread *ma interrogative markers. In those cases where everything in the not-A tag but the negative was dropped, the negative was left in sentence-final position; this sentence-final negative was then reinterpreted as a yes/no-question interrogative marker. Then, in at least some cases, this
*ma yes/no interrogative marker was secondarily generalized from use with just yes/no questions to use with all questions.

5.0 Other possible connections. Other remarks in the literature also suggest expansion one or more of the above groups in one direction or another. As a minor point, Chang and Chang mention the possible addition of Lepcha [=Rong] to their Gyarung-Trung complex. Sun (1979:303, fn. 2) suggests connecting the Xi-fan [=Hsi-fan, Si-fan; =Hsi-fan: Horpa, Manyak [=Menia], Muli; Horpa in Migot 1957:557-60; Hodgson, B.H. Sifan and Horso... JASB 22.1853:117-51; [=Xi-fa'n]] languages to Trung and then this complex to his 'Tibetanoid' (i.e., Gyarung, Qiang, and Kaman) languages. Qu (1983) also suggests the inclusion of Gyarung, Kaman [=Miju], Primi, and Qiang in an 'Tibetanoid' grouping.

Other potential linguistic relationships are implied by the overall membership of the larger subgrouping. Kham (Watters 1973), a language which evidence presented below shows to be part of the Gyarung-Nungish complex, has 'affinities' (presumably genetic) to Magar (Shepherd and Shepherd 1973).

6.0 Systems reconstructable back at least to proto-Rung.

6.1 Agreement systems. The agreement system has not yet been reconstructed, but even a rudimentary examination makes it clear that the bulk of the system was inherited even at the proto-Rung stage (cf. Fig. 6.1). In Figure 6.1 below, the systems of Gyarung (a Rung language), proto-Gyarung (as reconstructed by Qu 1983), and Thulung (a Kiranti language) are compared. Just from this data, it appears that all the first person forms except for the Thulung first person exclusive marker -ku date from a common origin; further, such an origin dates back at least to a point where proto-Gyarung and proto-Kiranti were one. The second person forms, however, based on this and other data, show Gyarung innovation in the second person prefix tx- and in the second person singular transitive stem suffix -u; the prefixal tx- in particular is a characteristic of certain Gyarung languages and is presently the only major evidence suggesting the inclusion of Chepang in within Gyarung. The plural forms -ny/*-ny/and -ni are cognate, as are the -tsh' of the Gyarung dual and the -ci of the Thulung dual. The third person forms here, as in much of Tibeto-Burman, are so varied as to be of little help; however, if Chepang is Gyarung, the lack of either a *kx- reflex or a *wx- must be accounted for.

6.2 Causative formation. The oldest layers of Tibeto-Burman causative formation historically are a derivative of the concatenation of subordinated motion verbs with main verbs found in the proto-Tibeto-Burman directive system; more recent layers have developed out the syntax and semantics of other types of verb concatenations. The Rung languages are notable in this respect for their strikingly faithful retention of large chunks of the original directive system as well as for their retention of the transitive/causative portion of that directive system.

Within the Rung languages, a variety of distinct causative
constructions exist. However, certain of these are clearly common to the subgroup as a whole, while others may be restricted to just a subgroup of Rung. What is of interest here is the parts that go back to at least a common proto-Tibetan/proto-Rung if not proto-Sino-Tibetan stage.

<table>
<thead>
<tr>
<th>Gyarung (Zhuo-ke-ji)</th>
<th>proto-Gyarung (Qu 1983)</th>
<th>Thulung (Allen 1975)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
<td>TV</td>
<td>IV</td>
</tr>
<tr>
<td>1S</td>
<td>-ng</td>
<td>-ng</td>
</tr>
<tr>
<td>1PI</td>
<td>-i</td>
<td>-i</td>
</tr>
<tr>
<td>1PE</td>
<td>-i</td>
<td>-i ku</td>
</tr>
<tr>
<td>1DI</td>
<td>-tsh'</td>
<td>-tsh'</td>
</tr>
<tr>
<td>1DE</td>
<td>-tsh'</td>
<td>-tsh'</td>
</tr>
<tr>
<td>2S</td>
<td>tx- -n</td>
<td>tx- -n</td>
</tr>
<tr>
<td>2P</td>
<td>tx- -ny</td>
<td>tx- -ny</td>
</tr>
<tr>
<td>2D</td>
<td>tx- -ntsh'</td>
<td>tx- -ntsh'</td>
</tr>
<tr>
<td>3S</td>
<td>---</td>
<td>u^9</td>
</tr>
<tr>
<td>3P</td>
<td>kx-</td>
<td>wx-</td>
</tr>
<tr>
<td>3D</td>
<td>kx-</td>
<td>wx-</td>
</tr>
</tbody>
</table>

Figure 6.1: Agreement systems.

Notes: Phonetic symbols: \(<x>\) indicates a shwa, \(<ny>\) indicates palatal nasal. IV indicates a form added to intransitive verb stems, and TV indicates a form added to a transitive verb stem. The first person forms -ng/ *-ng/ and -ngu are immediately recognizable as relics of proto-Sino-Tibetan *ngä 'I'.

Gyarung, Trung, Kham, and Jinghpaw: prefixal and suffixal -s. Gyarong causatives. The most frequent marker of the causative in Gyarong is -sA-, which becomes -se- before unrounded front vowels and -su- before rounded low-back vowels. In addition to marking causativization, -sA- also serves to mark transitivization (Nagano 1983). A much more rare use of -sA- is found in its co-occurrence with certain adjectivals. A clearly related form -syA- is used to establish the patient as a stated or unstated beneficiary. All these prefixal uses have in common that they mark movement in the direction of an action, result, or goal; that they are etymologically connected and that they ultimately derive from an earlier 'directive' system cannot be doubted. In suffixal position, the morpheme -s occurs, which indexes what Nagano (1983:100) terms 'perfect'; this, I suspect, has the same ultimate
etymology as the prefixal s-causative.

Trung causatives. Transitivity differences are marked in a number of distinct ways in Trung (Sun 1982:101-3). The most common marker appears to be the prefix \textit{tw} 21 / \textit{sw} 21; \textit{tw} 21 occurs before s- and ç- initialled forms, while \textit{sw} 21 occurs elsewhere; this morphophonemic alternation is strikingly similar to the sha/ja alternation of the Jinghpaw causative marker described below. However, no obviously related suffixal particle has been found.

Kham causatives. The Kham prefixal causative is fairly accurately characterized by Wolfenden's description of the original PTB *s- (sec. 42, para. 2):

It is probably that originally -s- was a directive indicating simply either (a) general direction into the condition or state named by the verb root itself, or (b) (as its fullest extension in an object direction) action to, towards, for, etc., an indirect object. As a later development (c) the so-called transitive or causative verbs in -s- arose.

Within the Kham use of the s- prefix, one can still see the intensifying, directionalizing, transitivizing, and causativizing continuum. In addition, Kham has a number of suffixal -s elements that are relatable to the prefixal s-.

Jinghpaw causatives. The Jinghpaw prefixal mechanism is \textit{sha}, which before a verb beginning with a voiceless fricative or a voiceless aspirated stop becomes ja (Maran and Clifton 1976). The parallel with Trung above is striking and compelling. In addition, Jinghpaw has a suffixal mechanism—the addition of the verb shangun, part of which Maran and Clifton suggest is relatable to the prefixal sha.

Tibetan causatives. Still preserved in the orthography of Written Tibetan are both s- prefixes indicating transitive/causative meanings and -s suffixes indicating the perfective. Once these are viewed in conjunction with the proto-Rung features described above, it is clear that both the prefixal and the suffixal s must be reconstructed to a considerable time depth. In addition, the range and scope of their distribution in Rung should give us a way to reconstruct their original form and function.

7.0 Conclusion. An immediate appeal of this subgrouping is that it would provide a solution to the question of the genetic affiliation of a number of languages; however, a more valuable result in the long run may be in the syntactic reconstruction which should follow the realization that these languages group together. As one consequence of a partial reconstruction of the syntax of this group, it is possible to reconstruct the older verbal pronominalization system in a little more detail and to a little greater depth. However, a potentially far more valuable product of this subgroup lies in its retention of most of the
component parts of the once fully-productive Tibeto-Burman system of direction marking and causative marking (Wolfenden 1929), which has been largely reduced to fossilized remnants elsewhere in the family (cf. the prefixes of Written Tibetan). In particular, the prefixal and suffixal components when analyzed together make it obvious, as Wolfenden contended, that the more recent causative-marking systems had their ultimate origin in direction-marking systems; further, the suffixal components found both in Gyarung, Kham, and Jinghpaw of Rung and the suffixal -s marking the perfective in Written Tibetan look to have their origins as part of the same original directive system. These contentions, of course, remain to be proved.10

Footnotes

1 I shall be astonished if all my errors should prove minor and grateful to readers for their corrections. This material is based upon work supported by the National Science Foundation under Grant No. BNS-8203882.
2 These six subgroups are those of Benedict 1972 minus Jinghpaw, which is not treated here as a separate subgroup.
3 Lu (1980:58) places Primi [=Pumi; 'white men'] with the Qiang languages, but whether it is closer to Qiang or to Gyarung is not yet clear. The name itself suggests the possibility that the Primi [=Pumi] are the descendants of the long-sought Pyu of Burma.
4 However, it should be noted that elsewhere in the same body of text, Benedict also speculates on Jinghpaw and Bodo-Garo affinities (pp. 6-7; cf. Burling 1983) as well as suggesting that Nungish is 'perhaps' connected with Burmese-Lolo.
5 The inclusion of Kaman [=Miju] in this complex still needs to be proven.
6 A much broader range of data than that in Figure 6.1 supports this analysis (cf. Bauman 1974, 1975; DeLancey 1980, 1981; Thurgood 1983a).
7 Despite the apparent phonetic similarity of the various second person nasal initialed suffixes, it is unclear whether they are one and the same piece. The -n- of the Gyarung dual -ntsh' may simply be the remnant of the *-ni plural marker followed by the dual marker. At least typologically, a dual from an older plural plus a dual would not be unexpected. Alternately, it could be argued that this -n- is simply a relic of the proto-Tibeto-Burman (PTB) pronoun *nang 'you'. It is also possible that a third alternative exists. Thus, the status of the remaining second person elements is not apparent—at least not to me.
8 The intransitive verb (IV) form appears to have been generalized to the transitive verbs (TV), but in the western dialects e.g., Danba the the -u of the proto-system is still found with the
transitive verbs (Qu 1983).

A comparison with the eastern dialects shows this -u to be an extension of the second person -u (Qu 1983:37-8).

It is particularly imperative that the lexical evidence in Benedict (1972) and Burling (1983) linking Jinghpaw to Bodo-Garo and Konyak be dealt with.

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The Role of Verb Serialization in Word-order Change

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Introduction. The Tibeto-Burman (TB) languages are, generally, cast from the "verb final" mould: verbs are consistently clause final; case marking is by post-position; modality morphemes usually follow the head verb; and genitive phrases - and frequently, other modifiers as well - precede the head noun. The higher grouping of Sino-Tibetan (ST) includes Karen and Chinese, languages in which verb-medial patterns predominate in the clause, while the modifier-before-modified pattern is retained in the noun phrase. Language-internal factors may have played a role in Karen and Chinese developments, but sources for verb-medial patterns are found in the Tai (once spoken farther to the north and east than now) and Mon-Khmer families, and it is likely that Karen and Chinese were influenced by contact with languages within these groups.

Besides Karen and Chinese, there are two languages - one actually a cluster of closely related dialects - that have broken with the verb-final tradition of their TB congers. One is Yi (formerly called "Lolo"), spoken in southwestern China; the other is Angami Naga, a language spoken in eastern India. Both have developed grammatical patterns that cannot be attributed directly to contact. The syntactic changes attested by Yi and Angami seem to have sprung from within, and for this reason, the two languages stand to contribute to our understanding of the processes of word-order and typological change.

1.0 From "OV concatenating" to "OV serializing". The Yi languages are spoken at the eastern reaches of the TB family. They form a northeastern subgroup within the Loloish branch. Other important members of this branch are Lisu, Lahu, and Hani (known as "Akha" outside China). The three "non-Yi" Loloish languages exhibit the typical TB pattern of optionally marked noun phrases freely ordered to the left of a string of verbs and "auxiliaries". The following Lisu sentence is representative:

1. LĪ\(_{H}(140)\) ása nya alě lá áyá vů̀ yè -ä
   Asa TOP fowl sell give DECL
   Asa sold some chickens to Ale.

This polarized arrangement of clause constituents, frequently seen in OV languages, can be regarded as the reduction of multiple-clause constructions - whether temporally or logically successive clauses, as in this case, or embedded clauses, as in others - to the format of a single clause.

The Yi dialects retain many of the OV features seen in the non-Yi. But in a large number of cases, they eschew the rigid separation of nominals and verbs for the even interchange seen in our second example, from the Yi dialect described by Gao (1958):
2. YI(100):

t'a\textsuperscript{31} vi\textsuperscript{55} \textsuperscript{33} və\textsuperscript{22} t's\textsuperscript{31} t'u\textsuperscript{24} t'a\textsuperscript{31} \textsuperscript{33} dzə\textsuperscript{213} t'i\textsuperscript{31} dzə\textsuperscript{44}

er her sis. a-measure take rice one catty weigh her give

With a measure, her sister measured out a catty of rice for her.

Structurally, this sentence cannot be distinguished from a complex sentence containing two consecutive clauses and a result clause - the Yi languages are highly paratactic, and clausal boundaries are not explicitly signalled. There is no alternate way of expressing the instrumental or the benefactive, however, and the comparative evidence, some of which is presented below, shows that the Yi construction regularly corresponds to a single clause in the non-Yi languages. Clearly, we are dealing with an extension of multiple-clause syntax into single-clause semantics, i.e., a classic example of what is generally called "verb serialization". The Yi languages, then, we will label "OV-serializing". For the non-Yi type, in which nominals cannot intervene in the verbal string, we may appropriate Matisoff's term, "verb concatenation", and label the languages "OV-concatenating". The Yi languages reflect a change from OV-concatenating to OV-serializing structure.

To show the extent of the Yi developments, I have selected six Yi sentences and matched them with semantically comparable (though not identical) sentences from the non-Yi languages:

3a. YI(29) \textsuperscript{31} na\textsuperscript{213} jε\textsuperscript{33} b'ε\textsuperscript{33} t'v\textsuperscript{44} sî\textsuperscript{33} tsî\textsuperscript{31} kw\textsuperscript{44} ts\textsuperscript{44}

my mother clothes put trunk inside be-at

b. LH \textsuperscript{31} \textsuperscript{33} pà b'ε\textsuperscript{33} gà\textsuperscript{33} thà\textsuperscript{33} ta-qo\textsuperscript{33} kà\textsuperscript{33} ve\textsuperscript{33} yò

my mother clothes OBJ box inside put PT PT PT

Both: My mother put the clothes in the trunk.

4a. YI(112) t'i\textsuperscript{31} t's'i\textsuperscript{33} t'a\textsuperscript{31} ge\textsuperscript{32} tsî\textsuperscript{31} mî\textsuperscript{33} ne\textsuperscript{44} t's\textsuperscript{44}

his dog one time run field mouth reach

b. LH yò ve phî hê u-qo\textsuperscript{33} yì\textsuperscript{33} lò\textsuperscript{33} e ve

his GEN dog field top run enter PT PT

Both: His dog immediately ran to the top of the field.

5a. YI\textsubscript{M}(66) tsà\textsuperscript{33} by\textsuperscript{44} hê\textsuperscript{33} t'i\textsuperscript{11} ma\textsuperscript{44} gu\textsuperscript{33} z\textsuperscript{33}

run temple one CLF enter go [He] ran inside a temple.

b. LI\textsubscript{H}(147) ãsa nya hipywë khwù wa tɔ dwû ye-a

Asa TOP shack inside to run enter go DECL

Asa went running into the shack.

6a. YI(49) na\textsuperscript{31} dɔ\textsuperscript{55} a t's\textsuperscript{44} a si\textsuperscript{31} ɔ\textsuperscript{55} a dç\textsuperscript{44} na\textsuperscript{31} mu\textsuperscript{33}

you speech this phrase who by tell you teach

Who explained this phrase of yours to you?

b. LI(61) e\textsuperscript{14} li\textsuperscript{3} ma\textsuperscript{3} nu\textsuperscript{5} t\textsuperscript{1} la\textsuperscript{5} fù\textsuperscript{3} t\textsuperscript{31} wù\textsuperscript{3} ma\textsuperscript{1} go\textsuperscript{3}

principles PT us to completely tell teach give

Explain the principles to us thoroughly. (abbreviated)
7a. YI(107) a44p'i33 mo44ky32 t'a31 dy44 p'i33 ji31 mo24 t's55
g'mother feeble one CLF change orangutan become
The feeble grandmother turned into an orangutan.

b. LI(133) nga1tMhu6 nga1thy3 thi'thy3 pu1li4 gu4 ua3
abalone one CLF change became complete ASP
[The young girl] changed completely into an abalone.

8a. YI(22) t'i33 va33 t'so33 tsi33 va55 to32 ts3
her husband make pig pen build
[She] made her husband build a pigpen.

b. LH(245) yə5 òa thà? naM-mà šë7 cì1 là ve
he me OBJ oil spill make PT PT
He made me spill the oil.

These sentences, like the first two examples, all contain noun phrases whose semantic role can be subsumed under the heading of "goal" or "end point": inner locatives, destinations, benefactives, purposes, "transforms" (#7), and "causated entities" (#8). As before the Yi sentences differ from the non-Yi in that these goals are always separated from agents and patients by a verb.

Core constituents other than goals are not treated serially in Yi, and they appear together to the left of the verb, just as in the non-Yi languages (cf. #3). As for adjuncts, some are treated serially in Yi, others not. Regardless of the way they are encoded, the order of constituents in Yi tends to be fixed; for nominals, goals appear last, and others appear in the order shown in the following sentence:

9. YI(31) a31vi55 a31ku44 t'so32 t'a31 ge32 t'i31 te55
sister house be-at one strike him hit
His sister struck him at the house.

While it might be difficult to account for the relative order of, say, "range" and "patient" in #9, it is clear that the order of core constituents in Yi is highly iconic; verbs are serialized in temporal or logical order and they retain the nominals with which they are semantically connected. Indeed, it is for this reason that goals - "end points" - appear towards the end of the sentence. In the non-Yi languages, while concatenated verbs tend to follow temporal or logical order as well (though cf. #8b), nominals are freely ordered, and even the most pragmatically neutral ordering of noun phrases differs from that seen in Yi: in Lahu, for example, datives and benefactives tend to precede patients rather than follow.

1.1 Verbs or co-verbs? Since the serial configuration provides relatively direct access to the semantic-grammatical roles of nominals, it is not surprising to find that there is a tendency, attested by languages in different parts of the world, for verbs that appear regularly as one member of a serialization to be reanalyzed as case markers, and concomitantly, to shed some of the morphosyntactic properties characteristic of ordinary verbs. Such categorial shifts have been inferred for Chinese (Li and Thompson 1974) and for Niger-
Congo languages (Givon 1975 inter alia). Such a shift is probably under way in Yi as well. Verbs such as ts'132 'be at', ve232 'take', and tsi33 'cause to', which occur as first members of serializations, and tsy44 'be at', dze44 'give' and tze213, which occur as second members, appear regularly with the semantic roles of "outer locative", "instrumental", "causee" and "inner locative", "dative/benefactive" and "destination" respectively. Syntactic evidence for the grammatical value of the morphemes is hard to come by; in the texts there are very few examples of either verb in a series being modified for aspect, and where modality morphemes are found, they can be considered to be in constituency with the whole of the rest of the sentence rather than with just the preceding verb. But the fact that several of the verbs have obviously undergone semantic broadening shows that the grammaticalization process is under way in Yi. In the following sentence, dze44 cannot have its literal meaning of 'give':

10. Yi(104) ni44 sa33 xa24 uo213 ti31 dze44
two three night stay-awake him "give"

[He] kept him awake for several nights.

"Co-verb" is an appropriate name for such morphemes; they are like post-positions in function, but unlike them in not being themselves deletable, while allowing their objects to be anaphorically deleted.

2.0 Causes of Yi developments. How are we to account for the development of serialization in the Yi languages? External sources can be ruled out - at least as a direct influence - because even though the Yi have been in contact with languages that may be loosely called serializing - Chinese and Tai languages, for example - these are without exception verb-medial; nominals follow their governing verb rather than precede.

If contact is ruled out as an explanation, then we must look for causes within the language. Givon (1975 §3.2), along the lines of Vennemann (1973) and others before him, regards the development of serialization in certain Niger-Congo languages (VO serialization in most cases, OV in one) as a functional adjustment to the phonetic attrition of nominal case-marking morphology. But in Loloish languages, post-positions are constantly being reinforced by the doubling up of morphemes with similar functions. It is more tempting to see the origin of the massive restructuring of the clause in Yi in the perceptual complexity of the OV concatenating pattern, which requires the listener to infer the semantic relations between several nominals and verbs simultaneously. Though the concatenating pattern is stable in languages such as Lahu, Lisu, and Hani, it may well be closer to the limits of human processing abilities than other patterns. If so, the intensive mixing of speech communities, that is known to have taken place in the history of the Yi, may have strained processing abilities to the point of encouraging the use of a periphrasis that avoids the "self-embedded" pattern. The initial source of the new pattern - eventually to become the
verb serialization of modern Yi—was, presumably, sentences containing consecutive or purpose clauses; but if the Yi languages were, at the same time, becoming paratactic, the adaptation of multiple-clause syntax to single-clause semantics could have spread without the necessity of passing through a complex-sentence stage.11

3.0 Serialization in Angami Naga. Angami Naqa is spoken in the Kohima district of Nagaland in northeastern India. Kohima is approximately 300 miles west of Yi speaking territory, across mountain ranges and river valleys occupied mainly by other TB or Tai speaking peoples, so developments in Angami and Yi are very likely independent of each other.

We speak with much less assurance about Angami. Published accounts have little to say about syntax, so our information is based solely on material gathered from a single native speaker in an intensive "field methods" class given at Berkeley in the spring of 1975.12 This material shows verb serialization in Angami functioning very much as it does in Yi. In fact, in two of the three examples we cite, the verbs associated with the goal phrase (tse 'give' in #11 and tso 'reach' in #12) match the equivalent Yi morphemes in form as well as function.

11. AN (cf. #2) zu se mye tse tsys
beer fill man give IMPER
Serve the man some beer!

12. AN (cf. #4a) u-nye vo rekʰro-ra tso kɔ-mo-nu ...
they-two go Rekhr̩o-village reach NZR-not-at
Before the two of them arrived at Rekhr̩o ...

13. AN (cf. #8a) pwo bu nyoranyo-yo kʰr̩̬̂̄a wa lye
he "call" child wash ASP IMPER
Make him wash the baby!

My impression is that serialization is not quite so prevalent in Angami as it is in Yi; in some cases there are other options. And more information is needed before we can consider the grammatical value of morphemes such as tse and tso. Still, it is fair to conclude that at some point in its history, Angami, and perhaps closely related languages as well, underwent changes comparable to those that occurred in Yi. Whether the causes were the same or not, we cannot say. The linguistic map of eastern India is complex, and it is difficult to rule out an external source for the OV serializing pattern. But if no external source is found, then the fact that Angami and Yi both appear on the peripheries of the TB speaking region may not be irrelevant; it is there, where hillsman meets lowlander, that social disruption on a scale large enough to have the linguistic consequences that we infer can be expected.

4.0 Change of word order: the TB evidence. Li and Thompson (1974) for Chinese, and Givon (1975 §4.4), for various Niger-Congo languages, argue that the grammaticalization of first verbs in series has introduced verb final patterns into otherwise verb medial serializing languages, i.e., using the dative pattern, $S \ V \ O_{\text{pat}} \ V \ O_{\text{dat}}$ >
S CV-Opat V Odat. Hyman (1975 §2.3) observes that the same process in a verb-final setting, this time affecting the second verb, would introduce verb-medial patterns into otherwise verb-final serializing syntax, i.e., S Opat V Odat V > S Opat V Odat-CV. In both cases, the OV and the VO – either verb may be grammaticalized, but only the grammaticalization of one in each case will lead to the introduction of a novel word order. Grammaticalization of second verbs in VO-serializing languages restores VO non-serial patterns; grammaticalization of first verbs in OV-serializing languages restores OV non-serial patterns. Which verb is affected seems to depend on the semantics of the sentence.

Paradoxically, except for the position of the co-verb, the word order introduced by the grammaticalization process is the same regardless of whether the language is VO- or OV- serializing to begin with. It is a mixed order, with patients on the left of the verb and goals on the right, i.e., SOVG.

TB developments illustrate the path envisioned by Hyman; in Yi, if ts44 in #3a, tc'e213 in #4a and dac44 in #2 have, indeed, lost their verbal identity, then those sentences are, of course, no longer verb-final; goals now follow the verb, while patients remain in their original position before it.

We should not overlook the role played by the development of serialization in the process of introducing novel word order. In Yi and Angami, it is the serializing process – the remaking of the sentence along the lines of temporally or logically successive clauses – that separates goals from patients (among other constituents) and sets the stage for the isolation of the former on the right of the verb in the event that grammaticalization of the second verb takes place. So, too, in Chinese and the Niger-Congo languages, where serialization appears in a verb-medial context. Again, it is the serializing process that ensures that certain constituents will be in a position to be stranded on the left of the verb should grammaticalization of the first verb occur.

The process of serialization followed by grammaticalization, attested by the Yi languages, is unlikely to be the only route by which verb-medial features can be introduced into a verb-final language, but it is a remarkably effective one; it creates a breach in the final barrier of the verb large enough for the processes of analogy to work on, and it does not presuppose a great time depth. Chinese and Niger-Congo are also thought to have been of the OV type originally – Chinese is, after all, ultimately related to TB through ST. Since verb serialization is also characteristic of both groups, it would be interesting to consider whether these languages could have taken the TB route in shifting from OV- to VO-typology.

First of all, Chinese: Li and Thompson deal with relatively recent changes that have restored OV features to Chinese; though they discuss it (1974: 206-10), they do not attempt to explain the earlier "pre-archaic" change from OV to VO. Chinese, at various times in its history, has developed VO-serializing patterns, but there is no evidence for an OV-serializing stage. An explanation for the Oy to VO
shift along TB lines, then, would involve the development of OV serialization, followed by its demise in the grammaticalization process, and its eventual reemergence after the language had shifted to verb-medial clause patterns. But is a double-dose of serialization any more far-fetched than the shift from OV to VO and back that has taken place in certain types of sentence in Chinese? It would be interesting to find out if there is any evidence for an OV-serial-stage in the earliest Chinese records.

What of the Niger-Congo developments? The mixed SOVX order seen in Niger-Congo languages such as Kpelle and Bambara (Mande group) suggests the serializing route; but the significance of this feature is mitigated by the fact that post-verbal nominals in these languages are marked by post-positions whose derivation - if known - seems to be from nouns rather than verbs (Givon 1975: 49-50 and Hyman 1975: 127). But the main reason that the serial-verb route has been rejected as an explanation for the shift in Niger-Congo seems to be because the OV-serializing pattern is so rare in that group. Only one language, Ijo, is OV serializing; the other serializing languages in Niger-Congo are VO. Moreover, like Chinese, Niger-Congo would also require a double-dose of serialization.

Explanations involving other processes have been proposed for the Niger-Congo developments. Givon, along the lines of Vennemann (1973), views the shift of the verb from medial to final position as a functional adjustment to the phonetic attrition of nominal case marking, while Hyman, though he recognizes the potential of the serializing route (1975: 124), rejects it in favor of an explanation involving the reinterpretation of "afterthoughts" as unmarked post-verbal nominals. Hyman's hypothesis, it should be noted, predicts an SOVX stage; afterthoughts are most likely to involve constituents other than patients. However, it does not predict that goals be the first nominals to appear post-verbally, and this might be a criterion for choosing between the afterthought and serialization routes.

At present, then, the serialization route for the OV to VO shift is strongly supported by the TB evidence, but is, as yet, unsubstantiated for Chinese and Niger-Congo.

4.1 SOVG to SVO. As Hyman notes, if further change takes place in a language with SOVX order of constituents, it is likely to involve the competition of the verb-final pattern with the verb-medial. In the Yi case, goals might be drawn to the left of the verb by analogy with patients, in which case the language reverts to the OV type; or patients might be drawn to the right of the verb by analogy with goals, in which case, the language will have moved a step closer to the VO type. Yi data shows that one place that the movement of objects from pre- to post-verbal position could begin is in complex sentences in which a higher object is identical to a lower subject. In Yi, a few members of a class of "causative" verbs that would normally be expected to take a nominal object and an embedded subjectless clause ("make him go"), treat the nominal as subject of the lower clause ("make he go"); in other words, some members of the class of verbs that generally induce "object-controlled equi-noun-phrase deletion", induce, instead, "backwards equi". Rather than the
pattern seen in #14a, with the nominal appearing before the higher verb, we find that of #14b, with the nominal placed after it:

14a. YI(22)  
\[ a^{31} v^{55} n^{31} g^{u^{31}} p^{u^{44}} k^{u^{33}} n^{31} g^{u^{31}} \]
[My] sister  doctor  call illness treat

[My] sister asked the doctor to treat the illness.

14b. YI(31)  
\[ x^{44} t^{55} i^{33} d^{44} t^{a^{55}} g^{o^{32}} l^{e^{24}} \]
lead dog  place on  play  come

Take the dog outside to play!

The pattern represented by #14b probably reflects Chinese influence, for it has the form of a Chinese construction known as the "pivotal construction" (Chao 1968 §2.13), so called because it contains a nominal "pivot", shared by higher and lower verbs. The nominal, \( t^{55} i^{33} \) in post-verbal position, might easily be interpreted as the object of \( x^{44} \) - following its governing verb. It may be possible to identify other structures vulnerable to reinterpretation of this kind, which will allow changes harmonic with the medial position of the verb to leak slowly through the language.

NOTES

1. My views on this topic have been greatly clarified in the course of discussions with Orin Gensler, Jim Matisoff, and Graham Thurgood.

2. Lisu is abbreviated LI, Lahu, LH; Yi remains YI. Subscripts indicate the source: LI, without subscript = Xu and Ou (1958); LI_H = Hope (1974); YI, without subscript = Gao(1958), called "Nasu"; YI_M = Ma (1951), called "Sani". LH is either Matisoff (1973) or personal communication. All examples are cited in original transcription, except that for Yi, "tone letters" are written numerically. Abbreviations for grammatical functions and classes should be self-evident, except: TOP(ic marker); DECL(arative marker); NZR = nominalizing particle; CLF = classifier; PT = particle.


4. Cf. Givon (1975 §4.2) for a similar, semantically based definition.

5. Agent may follow patient in Yi, but if so, it must be marked by the post-position \(-a^{31}\), as in #6a.

6. Cf. Givon's discussion of the re-analysis of verbs as co-verbs or ad-positions in §4 of his 1975 article.

7. Cf. Burmese -mou, -moulou, -caummoulou, all 'because, since'; -caun and -laou are derived ultimately from nouns.

8. Just how complex the semantic structures underlying concatenated verbs can be is shown in detail in Matisoff's study of the Lahu verb phrase (1969, 1973).


10. Paradoxically, the argument of avoiding the perceptually difficult concatenating pattern was used by Givon (1975: 98) to explain the
apparent rarity of the OV serializing type. Givon's argument is based on the fact that in OV-serializing languages, such as Ijo, verb concatenation continues to be found. This is true of Yi, as well. But it is also true that the incidence of such strings is much reduced in an OV-serializing language compared to an OV non-serializing one.

11. Cf. Givon (1975, note 34): "... even though a syntactically coordinate ('consecutive') construction may have been always used to initiate serial-verb constructions, the semantic relationship between the clauses in series is probably sub-ordinate (i.e., structured, hierarchized) to begin with." (Givon's emphasis)

12. Supervised by Jim Matisoff, with the assistance of Mr. Vikuosa Nienu, a native speaker of Angami. Verb serialization (though not under that heading) is discussed in Martine Mazaudon's paper written for that course, entitled, "The structure of the Angami sentence," which includes the three examples I have cited. I wish to acknowledge Mazaudon's invaluable contribution while myself taking full responsibility for the toneless transcription and the glosses. I would also like to thank Boyd Michajlovsky for reminding me about the Angami data.

13. By labeling the nominals 'patient' and 'dative', I imply that the first part of the formula represents verb serialization like that seen in Yi, rather than a complex sentence.


REFERENCES


JOINT JOKING
IMPROVISATIONAL HUMOROUS EPISODES IN CONVERSATION
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Linguistic analyses of humor have dealt with the topic from many different angles, including: grammatical ambiguity at the sentence level (Nilsen 1970), linguistic reversals in connection with a general semiotic theory of humor (Milner 1972), transformational operations in the production and comprehension of a joke (Bradshaw 1978), semantic schema theory (Raskin 1979), the violation of constitutive and regulative speech act rules (Hancher 1980), the violation of pragmatic conventions as the most common humor strategy (Dolitsky 1983); but with the exception of work by Watson (1975), Philips (1975), and Tannen (1979), there has been no treatment of joking as an interactive communicative process, consideration of differences in joking styles, or application of a multi-dimensional linguistic analysis to joking in context among speakers of American English. Ethnomethodologists (Sacks 1973, 1974; Jefferson, Sacks and Schegloff 1976), symbolic interactionists (Emerson 1969), and anthropologists especially within the traditions of the ethnography of speaking and folklore as performance (Basso 1979, Gossen 1976, Brukman 1975, Roper 1981, R.D. Johnson 1973) have come closer to an investigation of joking as communication, but many of the analyses deal with speech events in other cultures, and those which do deal with joking among American English speakers do not bring the resources of linguistics to bear on the data.

My approach uses a multi-dimensional close linguistic analysis of joking which is aimed at a particular interpersonal rapport goal, in order to identify different joking styles among speakers of American English (cf. Davies 1983 for an extended discussion of the theoretical background). I began my investigation by gathering linguistic data which constituted speakers' attempts at positive politeness through joking (Brown and Levinson 1978). The data were drawn from tapes of natural conversation, television and radio talk shows, and scripted television shows; participant observation; interviews with jokers and others; and literary sources. I determined the basically friendly intent of the joking from testimony of the participants and/or the judgment of members of the same speech background, or from the demands of the situation (e.g., that a talk show host create at least the illusion of cordiality). Discovering that there were different styles of friendly joking,
I selected examples of joking which were jointly constructed within a joking "footing" (Goffman 1981), the joint construction simultaneously demonstrating the existence of a shared style and displaying the features of the style in the interactive process.

In this paper I will illustrate three joking styles by presenting in-depth analyses of particular joking footings which represent prototypical examples. My analysis considers multiple levels of linguistic organization and the interplay of different aspects of context in order to demonstrate coherence and to reveal basic principles and improvisational dimensions of the styles. I will then relate the styles back to the theoretical work on rapport, differentiating them in terms of conveyed meaning; discuss how misinterpretation is predictable between two of the styles; and consider the analyses I have done in relation to current theories of humor.

Example #1
1 Ed: I'll pay for it.
2 Joyce: No, I already got it.
3 Ed: You shouldn't pay for my coffee.
4 Joyce: Oh, that's OK... you're worth every penny.
5 Ed: (laughs) I see your opinion of me has gone up.
6 Joyce: Not really. I'm coming back later to take fifteen cents out again.
7 Both: (laugh)

This joking incident involves two faculty members who are meeting in the department lounge. Ed had previously paid for a couple of cups of coffee. They disagree about who should pay for the coffee, and then the shift into the joking footing is initiated by Joyce in line 4, where after a pause she says, "you're worth every penny." Ed laughs and responds. Joyce responds to Ed, and both laugh, ending the joking footing as they get back to their discussion. This piece of data was reconstructed afterward by one of the participants and then checked with the other for general accuracy.

With this joking style the pragmatic guidelines dictate that one may attack only at mutually recognized strengths, thereby conveying that whatever constitutes the insult is believed by the speaker not to be the case. Thus in the example Joyce has a good opinion of Ed, and she believes that Ed knows that she has a good opinion of him.

In this joking style a smile is possible, but so is a straight face. The deadpan is the extreme form of removal of facial cues, and it may be used as well.
However, this joking style requires careful monitoring of reactions and if the joker is in doubt, non-verbal channels are intensified for a very clear signal of intention to joke. Typical paralinguistic and prosodic characteristics are: a nasal tone, exaggerated stress, and a slower tempo relative to previous utterances outside of the joking footing. Laugh particles, as explored by Jefferson (1979), may or may not be used.

Frequently in this style a basic thematic principle is contradiction. At the most obvious level it occurs in overtly marked form between utterances, as from 5 to 6. There is also contradiction within utterances, arising in 4 out of the use of the conventionally complimentary set phrase, "you're worth every penny" in an inappropriate context. In line 5, "I see your opinion of me has gone up," Ed matches Joyce's utterance; his utterance is also overtly positive in terms of evaluation, but given the established situation, that what is at stake is twenty cents together with the presupposition that Joyce's opinion was previously even lower, the covert meaning is negative. The principle of contradiction is displayed in the contrast between overt and conveyed meaning. Contradiction as a thematic principle is consistent with the competitive feeling of this style of joking, and is reflected in the interactional moves (which actually begin at 2). Thus Joyce insults Ed at 4; Ed simultaneously acknowledges the insult and rejects it by redefining Joyce's move at 4 as complimentary; to continue the game Joyce has to reject the redefinition at 6 and escalate (in a downward direction, so to speak). Further, the situation itself represents a contradiction of traditional gender role expectations concerning who buys the coffee and who initiates joking. Finally, an ideological contradiction is expressed in the theme of materialistic evaluation of persons.

Turning to a consideration of syntax, what is typical in this style is a series of relatively short statements. These utterances tend to be self-contained, in that the syntactic units are not developed across turn boundaries. The only instance of ellipsis in this example is at the beginning of line 6. Although it is not exemplified here, questions are a common form for insults, used to exploit presuppositional possibilities. Also in this style overt negation is frequent, as is parallelism across turns.

The participants in this example were able to create a joint improvisation within the joking footing, grasping and following the principles of the frame: the pragmatic principle that one should attack only at mutually recognized strengths; the kinesic, paralinguistic and prosodic principles concerning clear signalling of
the intention to joke; the thematic principle that one
should express contradiction in any and all possible
ways; and the syntactic principle that one should keep
one's syntax to oneself. These principles seem to con-
stitute the basic pattern of the joking style, against
which the jokers improvise such things as the nature of
the insult and the devices for expressing contradic-
tion, guided by situational resources, cultural schemas,
and knowledge of each other.

Example #2
1  Randy:  What's the E.T.E. on your cake, Mary?
           (laughter)
2  Mary:  Estimated Time . . . ?
3  Randy &
       Others:  of Eating. (laughter)
4  Mary:  35 minutes in the oven, 20 minutes to cool
5  Frank:  and 10 minutes to get eaten. (laughter)
6  Sid:   Is that one minute per person? (laughter)
7  Alice:  So all return in . . . an hour and a half.
8  Sid:   Or you can return in 35 minutes and steal
          it out of the oven and ice it yourself.
9  Bruce:  Quickly . . . quietly . . .
10 Donna:  (laughter) uuhh . . .
11 Earl:  Probably reduce the cooling time by throw-
         ing ice cubes in it.
12 Sid:   What, in the batter? (laughter)
13 Frank:  Yes, start out with ice cubes in the batter.
14 Bruce:  But put asbestos around them so that they
don't get melted in the oven. (laughter;
           Alice speaks inaudibly)
15 Earl:  Just pick out the asbestos . . . (laughter)

This example is from Hall (1974) and was tran-
scribed from audiotape. The participants are student
housemates who have just walked into the kitchen where
one of their number is baking a cake. The joking foot-
ing begins probably at "E.T.E." in the first question,
and continues through to the end of the transcription
here, shifting frame halfway through, at 11. Randy
initiates the joking, but then others take over. There
are a few apparently "non-joking" utterances within the
footing (at 4 and 7) but they are added on to in a jok-
ing way in each case, incorporating them into the joking
footing. The joking turns are taken collaboratively by
six different people. Laughter occurs frequently.

For this joking style the pragmatic principles
seem to be: build on what others have done; demonstrate
ability and willingness to participate in the joint ef-
fort; keep it impersonal.
The danger potentially involved in misinterpretation is not as great as with style #1, so the distinctive paralinguistic, prosodic and kinesic cues are not as evident. In this style there is typically more use of laugh particles than in style #1. There may be more latching between utterances as participants build on each other's contributions.

A basic thematic principle is elaboration. Lines 2 through 9 are an elaboration of the basic question in 1: first, just in the full forms of the words "Estimated, Time, Eating;" then, in that 4 through 15 can be seen as an elaboration of the answer to the initial question, which is apparently given in 7. At the level of cultural schema what is elaborated is the introduction of a mock technological efficiency into the domestic world of cake-baking at home: E.T.E. evoking E.T.A. (Estimated Time of Arrival) of the world of air travel; the jargon of the efficiency expert; the absurd calculation of eating time of the cake by the number of eaters; the ridiculous suggestion of cooling the cake faster by starting before it has been baked, thereby creating much more trouble than it would be worth given that cakes cool quickly. There is the further dimension that a substance known to be hazardous to human health is being proposed for use in the interest of efficiency. The mock efficiency is elaborated and escalated in its self-defeating absurdity. A further schematic overlay is that 13 through 15 is presented in the format of a recipe, again referring to the domestic context. A reflection in the situation is that a woman is baking the cake, and the joking is all constructed by the men; the participants enact gender stereotypes as they play on them.

In this style, in contrast to style #1, there is a great deal of lexical repetition and other forms of semantic linking between utterances: from 4 to 5: "minutes," to 6: "minute," to 7: "an hour and a half," to 8: "minutes"; from 7 to 8: "return"; from 8 to 11: "ice" to "ice cubes," to 13: "ice cubes," to 14: "they," and "them"; from 12 to 13: "batter" (with retroactive definition of "it" in 11 as "batter"); from 14 to 15: "asbestos".

This style is characterized by phonetic play: alliteration, rhyme, puns. In this example there is an instance of a play on two meanings of a word which serves as the pivot on which the frame shifts within the joking footing. In 8 the word "ice" is a verb meaning "to coat with frosting" within a cake-baking schema. 3id shifts the meaning to the less specialized "frozen water," which interestingly enough does have relevance
here within a cake-baking schema in that cakes do need to cool. But Earl initiates an absurd application of the alternate meaning which is picked up on by Sid, who redefines "it" which up to line 8 had stood for "cake."

Syntactically, elaboration and collaboration occur in: the completion of a phrase at lines 2 and 3; the addition of a third parallel clause to a previous utterance at lines 4 and 5; the use of conjunctions to begin utterances at lines 5 (and), 7 (so), 8 (or), and 14 (but). The adverbs in line 9 are added presumably to the end of utterance 8. There is an interesting use of questions in this joking style which is exemplified at lines 1, 6 and 12: the exploitation of adjacency pair force toward a response, so to speak, to keep the elaboration going.

My impression is that this style is less constrained in terms of basic principles than is style #1. Because it is more likely to be a group activity, drawing on the resources of more than two people, it is also probably better able to tolerate shifts in the frame within the joking footing. In fact, one of the basic principles of this joking style may be that jokers must continue to shift the frame within the joking footing (Farrer 1981).

**Example #3**

1 Ann: I've been busy doing twenty-five other things but now, finally, I'll turn my attention to these courses.

2 Kay: Do you ever feel fragmented?

3 Ann: Who me? Fragmented? (with simultaneous contortion of arms, face)

   (laughter: Kay and Sue, joined by Ann)

4 Kay: What do I do next?

5 All: (laughter)

This joking footing was written down shortly after the interaction by the participant who laughed but did not joke. The jokers here are fellow teachers who have just gotten together to work on a common project. The shift into the joking footing is initiated by Kay at 2. The intonation here is falling rather than rising. Ann responds, both verbally and non-verbally. Everyone laughs. Kay makes another contribution, there is more laughter, and the shift occurs out of the joking footing.

The pragmatic principles for this style seem to be: display understanding of what the other person is feeling or thinking, using allusions to shared symbols; give the other person a chance to express further; use incongruity; if possible, shift perspectives in such a way that the other person will be released from a rigid
psychological position.

A small smile (as opposed to a broad smile) is used more frequently in this joking style. Laugh particles are used frequently.

The thematic principle is paraphrase. In line 2 "Do you ever feel fragmented?" paraphrases what was expressed in the first part of utterance 1 and offers a supportive response to the semi-apology that that utterance represents, in effect conveying that Kay understands what Ann has been feeling and going through. A direct lexical repetition in 3 might seem to be inconsistent with my claim that the thematic principle is paraphrase, but only superficially, because in 3 Ann is literally embodying an additional paraphrase. Her questioning of the label as she contorts her body represents the idea of fragmentation: if one were fragmented one would display it while remaining unaware of it. In 4, Kay offers a paraphrase of a different sort: the internalized speech of a fragmented person.

An interesting feature of this particular joking footing is the use of the word "fragmented." It has been pointed out to me that this is a fashionable word right now; such a paraphrase has favorable connotations, suggesting that one is in tune with Twentieth Century Intellectual Developments. Consider the contrast with a choice of word like "scatterbrained," or an expression like "going to pieces." But the word "fragmented" also has a mechanical connotation to it which creates an incongruous juxtaposition of the mechanical and the human—which Ann then acts out through the distortion of her body.

The theme of fragmentation is also reflected in the use of rhetorical questions in 2, 3 and 4, all of which have, in effect, the function (that of statement) split off from the form (that of question). In another sense the rhetorical question is appropriate to this style in that it is tentative: suggesting a definition without imposing it (as a statement might) or questioning directly.

One of the most striking characteristics of this joking style is that the joking initiator may actually assume, linguistically, the point of view of the person empathized with. In this case, I am referring to Kay's use of the pronoun "I" in utterance 4: that "I" represents Ann.

In terms of the situation, each of the teachers is very busy and they have a difficult time getting together to work. Each feels to some degree that she treats herself like a machine, expecting superhuman accomplishments. In the last analysis, existentially
speaking, we are all "fragmented," in the sense that we are not aware of everything about ourselves, and in that what we do know consciously we cannot hold in awareness simultaneously.

Summarizing the paper so far: detailed analyses have been presented of three joking footings which represent prototypical examples of three joking styles. In each case, improvisational dimensions have been discussed and basic principles of the style have been identified. The manifestations of these basic principles serve as contextualization cues (Gumperz 1982) which shift in their constellation according to such things as the setting, the mood or degree of intoxication of the participants, and the topic.

The three styles represent sociolinguistic skills, and my impression is that competence is differentially distributed in a complex interrelationship of regional, gender, social class, and ethnic differences. Status differences in a particular situation may also be related to the choice of style. An individual's repertoire may include from none to all of these styles, and an individual will have different degrees of proficiency. The styles may also be learned and displayed at different stages in a person's life cycle. The styles may also be used at different stages in a relationship.

Referring now to the chart in the appendix, I would like to suggest that the different styles of friendly joking that I have identified can be organized theoretically along a continuum in terms of conveyed meaning. Style #1 is a reflection in everyday conversation of the well-studied phenomenon of ritual insults (see, for example, Labov 1972). Within Brown and Levinson's framework this style represents an exploitation of the relation between on-record strategies and intimacy. In other words, I can say things to you that I wouldn't dare to say if we weren't close; an exchange of insults becomes a display of the strength of our friendship bond (often in front of an audience). In addition, we display a common expertise at this particular linguistic game. But whereas with, for example, "the dozens," the insults about certain approved topics must be obviously untrue and preferably as fantastic as possible, in style #1 one should attack only at strengths.

Style #2, which I have considered calling "cognitive frame," is less personal than either of the other types. The style stresses group identification and displays sociocultural knowledge along with expertise in the creation of an intersubjective fantasy world. This style evokes for me the image of a Steinberg cartoon in
which the speech of a group of people would be intertwining in the air to create a fantastic edifice in the middle of the group.

Style #3 is the most intimate positive politeness style, one which to my knowledge has not been studied. It is used to display understanding of another person's internal state, i.e., empathy, so that that person knows that she is not alone in what she is experiencing. It can also serve to shift perspective for the other person so that distress may be rendered manageable. As might be predicted, this joking style is often initiated in response to a personal statement which constitutes a request for support (as in the example).

To understand how misinterpretation of communicative intent is predictable between people who are primarily or habitually style 1 or style 3 jokers, we need to think in terms of levels of interpretation. Usually the shift into the joking footing is interpreted as part of a coherent style at various levels of linguistic organization. For a habitual style 3 joker, non-verbal cues signalling a shift into a joking footing together with manifestations of the other principles of style 1 joking are not interpretable as a display of a friendship bond. The style 1 joker intends the joking frame to mean: "Let's play!"; the style 3 joker interprets it as: "I hereby deny responsibility for what I'm saying." The style 1 joker intends the insult to mean: "Here's something we both know is a strength of yours;" the style 3 joker interprets it as: "Here's some criticism I can tease you with and deny responsibility for at the same time." On the other hand, the habitual style 1 joker may experience style 3 friendly joking as getting too close, as a communication that feels like exposure in the guise of friendliness.

The strong affective dimension involved in joking can make it difficult to accept cross-stylistic joking as it is intended; even when we have an intellectual understanding of what is happening the gut level emotional experience related to the habitual perception of criticism or exposure may get in the way. There is also the reality to consider that in practice people often do exploit the potential ambiguity between style 1 joking and veiled criticism.

Finally, looking at the joking discussed above in terms of some current theoretical work on humor (Johnson 1976) which asserts that the dominant theories of humor have in common the recognition that the joke form is the product of some kind of bisociation between two frames of reference or realms of meaning, it is clear that in each of the examples bisociation occurs: in example #1
it is set off by the use of a set phrase, "you're worth every penny," in an anomalous context; in example #2 the basic bisociation is of two cultural schemas, the domestic and the high tech; in example #3 it is set off by the introduction of the term "fragmented," which introduces several other realms of meaning. Johnson suggests that a joke may involve not one but many layers of bisociation; I have demonstrated how the bisociation reverberates within the complex interplay of levels of linguistic organization and other aspects of context.

The study of joking and the identification of different joking styles has important theoretical and practical implications. In terms of theory, it represents an opportunity to explore a complex and ambiguous mode of communication, forcing us to consider the full range of levels of linguistic organization, the situatedness of communication, and multiple levels of interpretation. It also raises some problems for the identification of units in discourse. Further, humor is an important dimension of a grammar of style as discussed by Lakoff (1979). In terms of application, the study of joking is a subtle way of differentiating people who share sociocultural knowledge. To the extent to which friendly joking is a salient element in sociable conversation among native speakers of American English, ESL teaching and cross-cultural training should include ways of developing awareness of this phenomenon.

Bibliography


**APPENDIX**

"Camaraderie"  
(Lakoff 1979)

\[ \begin{array}{c} 
\text{Friendly Joking} \\
\text{Ritual Insults} \\
\text{"Bald-on-Record"} \\
\text{\textit{(Labov 1972)}} \\
\text{\textit{(Brown and Levinson 1978)}} \\
\text{\begin{cases} 
\text{display of} \\
\text{friendship bond} \\
\end{cases}} \\
\text{\begin{cases} 
\text{display of} \\
\text{expertise in} \\
\text{creation of} \\
\text{intersubjective fantasy world} \\
\end{cases}} \\
\text{\begin{cases} 
\text{display of} \\
\text{empathy} \\
\end{cases}} \\
\end{array} \]

Style #1  Style #2  Style #3
A UNIFIED VIEW OF TOPIC*
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1. Introduction
When a child is just learning to speak, no matter what the language, a natural clustering of concepts would seem to be that, in the presence of a hearer,
- the child would wish to speak about something
- what the child wishes to speak about is something the child is attending to; it is the focus of the child's attention
- it is present in his or her immediate environment at that moment
- it is concrete and visible
- it is something the child is interested in
- it has also been made to be the focus of the hearer's attention
- it ipso facto has already been introduced into the hearer's consciousness
- this focus of the child's attention is the entity which is the important element in the child's view of the event — it is the entity from the point of view of which the child views the event.

For example, if a child says (from Ochs Keenan and Schieffelin 1976:340f.),
1. Allison IV, 22 months
   a. Allison: (looks in box, finding calf) cow/
   b. Mother: A cow!
   c. Allison: (holding calf) moo/†
   d. Mother: Moo, cow says moo.
the child usually either is confident that the hearer is attending to the box and to what is in it or has first secured the attention of the hearer on the box (ibid.:355), either verbally or with gestures. The calf is present, concrete and visible, and is the element from whose point of view the child is viewing the event.

In this paper I will argue that this clustering of concepts is universally the prototype for what we mean by the topic of a discourse or utterance for adults as well as for children. For adults as well as for children, the clustering of most if not all of the above characteristics is more natural than a lack of such a clustering. Many acute observers have discussed one or more of these concepts as attributes of topics, and have made real and accurate observations about the relation between topichood and one or more of these attributes. But the work was only partial: like the blind men with the elephant, they did not capture the whole truth about the nature of topics. With a prototypical view of topic, all these attributes can be combined into one definition of topic, and the relations between them can be studied. When all these attributes do not cluster in a certain entity, languages have recourse to less usual, more marked syntactic constructions, and there are constructions whose job it is to separate out
elements from this clustering of attributes when not all of them hold (see Van Oosten 1984).

Many observers have also noted certain correlations between topics and formal aspects of languages, specifically with subjecthood and with initial position in the sentence. It is harder to argue that having these attributes is a universal property of prototypical topics, because of difficulty with the notion that there may be universal prototypes for syntactic constructions, as I will discuss in Section 4. I tentatively claim, nevertheless, that the prototypical topic bears a close relation to subject and claims initial position in the sentence.

In this paper I will also argue that there are different types of topics analogous to the different levels of natural categories (Rosch 1978), namely that there are superordinate, basic-level and subordinate topics. The distinction I propose here is different from that between sentence topics and discourse topics (Ochs Keenan and Schieffelin 1976, van Dijk 1977). By recognizing discourse topics one is able to understand how there can be a succession of different sentence topics in a discourse which remains "on topic." The discourse topic is, as it were, the umbrella which unifies the different sentence topics. Similarly, there can be layers of discourse topics. Each higher discourse topic regulates the succession of the discourse topics in the next lower level in a discourse which remains on topic.

Whereas discourse and sentence topics are topics (of different levels) actually occurring in a discourse, superordinate, basic-level and subordinate topics are a categorization of topics. Distinguishing between superordinate, basic-level and subordinate topics makes it possible to describe one more way in which sentence topics can change while the discourse remains coherent. Not only can one change basic-level topics within one superordinate topic, but one can also switch from the basic level to the subordinate level (as well as to the superordinate level) and back again.

In the next section I will discuss the layering of topics and the relation between on the one hand superordinate, basic-level and subordinate topics, and on the other hand discourse and sentence topics. In Section 3 I will discuss the structure of prototypical topics and the semantic correlates of the pragmatic attributes of topics. In Section 4 I will discuss the possibility of there being syntactic characteristics like initial position and subjecthood in the universal prototype for topic.

2. The Layering of Topics
Consider the following sentence[1]:

2. Your cup is on the table.
Imagine that the hearer is having tea at the speaker's home. The cup in question is then probably the teacup that the speaker has designated for the hearer's use for the duration of the visit. Speakers of English and members of the English/North American culture (at least) have a cognitive schema for this kind of
situation, which we shall call the tea-party schema. Topics for a
discourse where 2 might be used are concerns like the location of
the hearer's cup, getting tea, enjoying oneself, being sociable
and polite, etc. The sentence topic of 2 picks a salient entity
-- in fact, two -- from the given actualized schema, or scene, in
"your cup."

By a "discourse topic" I mean a schema, scene or other
semantic network previously evoked in the discourse and which is
still "relevant." Discourse topics are of the following types:
- cognitive schemata (standard, hypothetical knowledge
  structures that human beings use to interpret their
  environment) and parts of cognitive schemata;
- actualized scenes (actualized schemata) or parts of
  actualized scenes;
- evaluations or opinions about schemata or scenes that are
  operative at the point in discourse under consideration (see
  Schank 1977:426);
- generalizations on a set of schemata or scenes which includes
  one or more of the schemata or scenes which are discourse
  topic(s) at the point in discourse under consideration
  (ibid.);
- examples of relevant schemata, scenes, evaluations or
  generalizations.

Discourse topics are layered: each higher discourse topic has the
next lower discourse topic as a part or as an example, or is an
evaluation or generalization of the next lower discourse topic.
In the above example, the cognitive schema is the tea-party
schema, by which a certain set of expectations and judgments is
aroused in the participants in the actualized tea-party scene.
Any element of this discourse topic can be focused on and become
the sentence topic, although because of human beings' "egocentric
bias" (Zubin 1979) the human participants in the scene (actualized
schema) are the most likely to become sentence topic.
Nevertheless, other important or less important elements in the
scene, such as the teacup in 2 above (with its relation to the
person designated to use the teacup), can also become sentence
topic. By "sentence topic" I mean a constituent inside a sentence
which constitutes the locus, or "active zone"[2], of the discourse
topic evoked in the current sentence.

The division of topics into superordinate, basic-level and
subordinate topics is a categorization of topics. Cognitive
schemata, actualized scenes, generalizations and evaluations are
types of superordinate topics. Individual participants or
elements inside the schema or scene are basic-level topics. Major
participants inside the schema or scene are more prototypical
basic-level topics than minor participants. Subordinate topics
are the aspect or aspects of the basic-level topic that are
relevant at the given point in the discourse. In the example
above, the discourse topics are superordinate topics. The guest
and the teacup are basic-level topics. Other possible basic-level
topics are the host, other guests, and other accoutrements of the
tea-party schema or scene. Subordinate topics in the example above are the guests' appearance and clothing, the handle of the teacup, etc. [3]. For example, the sentence topic of 3b is a subordinate topic:

3a. I can't use that cup.
   b. The handle's broken.

Further examples of subordinate topics are found in 4b,c,d:

4a. When John came to the tea-party, he was a mess.
   b. His shirt-tails were hanging out,
   c. his hair had engine-oil in it,
   d. and his pants were ripped.

When the sentence topic moves from John to his shirt-tails, the move is from a basic-level to a subordinate topic. It is possible, under certain conditions which space considerations preclude me from going into here, to move from a basic-level topic to a subordinate topic which is an aspect of the basic-level topic without loss of coherence. When the sentence topic is a subordinate topic as in 4b,c,d, then the lowest discourse topic — here, John — is a basic-level topic.

An example of superordinate topics at the sentence level is found in the following passage from the Judiciary-Committee version of the Watergate Tapes (Rodino 1974:4):

5. President: (a) Goldwater put it in context, he said
   "Well, for Christ's sake, everybody
   bugs everybody else. We know that."
   Dean: (b) That was, that was priceless.
   Haldeman: (c) Yeah.
   (d) I bugged--
   President: (e) Well, it's true.
   (f) It happens to be totally true.

One of the discourse topics of the section that this fragment is in is the Watergate-bugging scene, including the Watergate hearings, and an evaluation about this scene, something like "All the ruckus about these buggings is ridiculous." Relevant schemata, and thus further discourse topics at this point, are the American government and the presidency. The Watergate-bugging scene matches part of a schema of government officials' illegal activities, and perhaps part of a schema of the American government, if our schema of the American government includes the evaluation that it is corrupt.

In 5, these are the discourse topics. It in 5a refers to the Watergate buggings and the attendant upset; this is the sentence topic. Goldwater, the subject, is not the sentence topic but the locus or active zone of an example of an evaluation on the schema of government officials' illegal activities, specifically their bugging operations, which has not been mentioned before. That Goldwater becomes the active zone of this example has to do with the fact that a human being or an agent is, for humans with their egocentric bias, the most salient part of a scene and so becomes the entity that is mentioned in order to bring the whole scene into consciousness (cf. Zubin 1979). The discourse topic, a
superordinate topic, is brought down to sentence-topic level in the form of the pronoun it. Later it will become a discourse topic again.

In 5b exactly the same thing happens. The scene of Goldwater offering an opinion on bugging has been mentioned and can become a topic and a sentence topic, which it does, referred to by the demonstrative that. In 5c and 5d Haldeman begins to offer an example of Goldwater's evaluation, with himself as the salient entity, the active zone. (Because of the egocentric bias, speaker -- and hearer -- can always become sentence topic.) In 5e and 5f, the president is still on the superordinate level, with it referring to the superordinate-level notion "Everybody bugs everybody else," an evaluation on the schema of government officials' illegal activities[4].

In example 5, then, a superordinate topic becomes the sentence topic three times, whereas the sentence topic is a basic-level topic only once. It is in narratives, in the sections of the narrative that are concerned with the actual recounting of events, that sentence topics most frequently are basic-level topics. In evaluatory or philosophical settings in everyday speech, you find more superordinate topics, encapsulated into pronouns without precise antecedents, or into nominalizations or other abstract nouns, or into complex noun phrases. Labov (1972) has analyzed the structure of oral narrative to potentially include, in addition to the actual recounting of the events, an abstract -- a summary of the whole story -- and an orientation, an evaluation, and a coda. Most superordinate sentence topics occur in narratives at the points of evaluation and orientation and at the coda.

The following (from a personal tape recording) is an example of a narrative in which all sentence topics are basic-level topics, except at points of orientation and evaluation (including coda). The story concerns a periodontist, his dental assistant, named Joan, and a patient. Example 6 gives the beginning of the narrative: the orientation. The underlined sentence is the orientation; its sentence topic is the last thing that happened. Right after that the speaker launches into her story and the sentence topics become basic-level topics: the periodontist.

6. J. [...] he was-- ... quite attractive but--
   from what Joan tells me...
You know from the stories she tells me about how
   he is as a boss
he's- he's got his real creepy side too.
G. What's "creepy" mean.
J. Well I mean the way he treats he:::r
   I mean I- you know I could--
   the last thing that happened for example
he went out for lunch...
   and he was supposed to be back at one,
   and he had two patients [...]
In the rest of the narrative, it is only at points of evaluation and at the coda that we have sentence topics which are other than the human protagonists in the story. Example 7 contains a point of evaluation:

7. J. And...she was sure that he [the patient] would be less nervous in the waiting room...you know reading a magazine than—sitting in a chair with— you know all this unfamiliar stuff and [listening to her sharpening instruments.

G. mhm

J. So, .. that made a lot of sense.
=So,...twenty:...well after two-thirty.
Her boss came back.

The underlined section is a point of evaluation in the narrative. At two other points of evaluation, and again at the coda, superordinate topics show up. The other sentences all have basic-level sentence topics.

It is remarkable in this narrative how consistently non-basic-level sentence topics come up only at points of evaluation. But judging from other narratives presented in the literature, it is not at all unique in this way. Up until now, theories about topichood have been tested almost exclusively using narratives, and then mostly with the part of the narrative dealing with the actual events. This has made it seem as if most sentence topics are basic-level topics and has made it impossible to consider the interplay between basic-level and superordinate topics at the sentence level, as well as the interplay between sentence and discourse topics.

But even though a superordinate sentence topic comes up frequently in certain positions in a discourse, some of which are quite well-defined, this type of topic is not prototypical. For example, it seems to be something which is learned later. Labov (1972) argues that the ability to use increasingly complex evaluatory comments improves with age and varies with the cultural environment, and facility in the use of superordinate topics as sentence topics is no doubt correlated with facility in the use of evaluatory comments, since the former are greatly used in the expression of the latter.

In other words, up until now, people have concentrated mostly on the most prototypical type of topics — basic-level topics. This is a bit of weak evidence that basic-level topics are indeed the most prototypical.

Discourse and sentence topics are then a different kind of notion than what I mean by superordinate, basic-level and subordinate topics. The former are a designation of topics with regard to their role in a discourse, whereas the latter are a categorization into types of topics regardless of how they are used. The advantage of categorizing topics into superordinate, basic-level and subordinate ones is that it gives us a better understanding of the structure of discourse on the one hand, with
its recounting and its evaluatory sections, and the progression of
topics in a discourse on the other hand, by enabling us to talk
about the interplay between these three. It also enables one to
see the interplay between discourse and sentence topics; how a
discourse topic can become a sentence topic and then move back up
to resume its status as a discourse topic.

3. Prototypical Topics
In the Introduction I suggested that the characteristics of
prototypical topics clustered naturally: what a person speaks
about is the focus of the speaker's attention and of the hearer's
attention and thus in their consciousness; it is something that
the speaker is interested in and that is the point of view from
which the speaker is viewing the event; and it is present in the
immediate environment, concrete and visible.

Prototypes tend to have a small set of attributes which are
necessary conditions for membership in the category, along with a
number of other characteristics which are neither necessary nor
sufficient but which in the simplest case cluster with the
necessary conditions. Prototypical topics are no exception. With
prototypical topics, the necessary attribute is aboutness; and
being in the speaker's consciousness and the focus of the
speaker's attention is a natural consequence of what it means for
someone to say something about something else. The other
attributes are not necessary conditions for topichood. Thus the
entity referred to by the topic does not have to be the hearer's
focus of attention or even in the hearer's consciousness. Nor
does the entity have to be in speaker's and hearer's immediate
presence; nor does it have to be concrete: as we saw in Section 2,
discourse topics tend not to be concrete but tend to be
superordinate topics, that is, semantic networks like schemata or
scenes, or evaluations or generalizations on schemata or scenes.
And a topic does not have to be the entity from whose perspective
the speaker views the event or state, though this attribute
clusters with the necessary conditions for topichood more
consistently than the others do (cf. Kuno 1976).

These pragmatic notions involved in the characterization of
prototypical topics have semantic reflexes. Semantic notions
often associated with topichood are in the first place,
referentiality and definiteness (Li and Thompson 1976; Schachter
1977), and in the second place, agency (Hawkinson and Hyman 1974;
MacWhinney 1977; Bates and MacWhinney 1982). In the third place,
the above description of a prototypical topic implies that the
prototypical topic is a basic-level topic.

Let us first look at agency as a reflex of the discourse
characteristics of prototypical topics. The correlation of agency
with topichood is related to what Zubin (1979:476) calls speakers'
normal "focus of interest," which is as much like themselves as
possible (their egocentric bias). This makes human beings the
most likely thing human beings would want to talk about. We saw
in the narrative presented in 6–7 that indeed, most of the
sentence topics are human beings. Further, among human beings agents are "cognitively salient" to humans, and as such more likely to be things that the speaker will want to speak about. So the relation of agency to topichood is based on humans' predilection for concerning themselves with, and thus for speaking about, entities as much like themselves as possible.

Referentiality is a reflex of the fact that the prototypical topic is concrete and visible, and definiteness is a reflex of the fact that the prototypical topic is the focus of both the speaker's and the hearer's attention. It is clear, of course, that much adult discourse is about entities that are not in the immediate presence of the speakers. However, the more referential a topic is the more it resembles the prototype -- so prototypical topics are referential and definite.

The prototypical topic is a basic-level topic. Human beings tend to focus on entities at the basic level, whether the actual entity that is being referred to by it is larger or smaller than the basic level. We saw in example 5 that Nixon refers to Goldwater in order to evoke the scene of Goldwater offering an opinion on bugging. When Haldeman, in 5e-d, wants to offer an example of the truth of Goldwater's statement, he moves right down to the active zone of the example: I in 5d. And we saw that in the narrative presented in 6-7 most of the sentence topics were basic-level topics, except in the evaluatory and orientation parts of the narrative.

Examples of active zones being used to evoke entire schemata, scenes or examples are all over. The passage below offers a very obvious example, from the Judiciary-Committee transcript shortly after the passage quoted in 5:

9. P: (a) What is the situation on your, uh, on the, on the little red box?
   (b) Did they find what the hell that, that is?
   (c) Have they found the box yet?
D: (d) Gray has never had access to the box.
   (e) He is just now going to pursue the box.
   ...

P: (f) They -- The Bureau better get over pretty quick and get that red box.
   (g) We want it cleared up. [Unintelligible]
D: (h) That's exactly the way I, I gave it to Gray.
   (i) I, uh, uh --
P: (j) We want it cleared up.
   (k) We want to get to the bottom of it.
   (l) If anybody is guilty over here we want to know.

At the beginning of this passage the president brings up another embarrassing situation for the White House on which he wants action. He refers to this situation throughout by its active zone, the little red box. (Between 9e and 9f are twelve clauses in which the scene is only referred to via the little red box.) That this basic-level object has evoked an entire scene is shown by the fact that Nixon can bring the scene, a discourse topic,
down to the sentence-topic level with the pronoun it in 9g, j,k without previously referring to the scene in any other way than via the little red box. It is only because the little red box evokes a whole scene that hearers have no problem fixing on a referent for they in 9b,c, as shown by Dean's response in 9d.

Similarly, the topics in topic-prominent languages like Chinese, Japanese or Korean are frequently the active zones of the discourse topics to which they allude. The following examples are taken from Li and Thompson 1976:462, 468 (see, however, note 1):

9a. Nêi - chang huǒ xìngkui xiāofang-duī láide that-classifier fire fortunately fire-brigade come kuài quick
"That fire (topic), fortunately the fire-brigade came quickly."

b. Sakana wa tai ga oisii. (Japanese) fish top. red snapper subj. delicious "Fish (topic), red snapper is delicious."

c. Pihengkĩ - nín 747 - ka khǹ - ta airplane - top. - subj. big - stative "Airplanes (topic), the 747 is big."

In 9a the topic nêichang huǒ evokes the entire scene of the fire; the subject xiāofang-duī picks out the part of the scene that is going to be talked about in the sentence. In 9b, the topic sakana evokes the fish-eating schema, and the subject tai picks out the particular fish that is going to be talked about in this sentence. Similarly for 9c: the topic pihengkĩ evokes the discourse topic of airplanes and flying; the subject 747 picks out the particular (type of) airplane.

I suggest that in the topic-prominent languages of the type exemplified in 9 it is also the case that in spite of the presence of a syntactic topic in the sentence another element in the sentence can also have topical properties. In the three examples looked at here, it is the subject which has topical properties, but I do not wish to suggest that this always has to be the case; nor do I wish to suggest that there must always be another topical element in the sentence. In the Chinese examples in 10 (from Li and Thompson 1976:479), for example, the rest of the sentence is (most likely) all comment:

10a. Huáng - sè de tǔ-dì dàfen zuì hēshi yellow - color rel. soil manure most suitable "The yellow soil (topic), manure is most suitable."

b. Nêi - zuò fǎngzi xìngkui qù - nián that - classifier house fortunate last - year méi xià xuě not down snow "That house (topic), fortunately it didn't snow last year."

c. Dōngwu wǒ zǔzhang bào - shǒu zhèngce animal I advocate conservation policy "Animals (topic), I advocate a conservation policy."
In all three sentences of 10, it is very possible that the whole rest of the sentence is brand-new and no element is the particular focus of the speaker's attention (it is impossible to know for sure, of course, without context). Each of these examples is striking, however, by the way the syntactic topic is the active zone of the relevant schema or scene and is used to evoke the entire schema or scene. In spite of the existence of sentences like those in 10, nevertheless sentences like those in 9 show that in topic-prominent languages the syntactic topic is not the only element in the sentence which can have topic properties.

4. Syntactic Reflexes of Topics
In previous sections we have seen a little of the nature of topics in language. It now remains for us to see if topics have any regular connection with any syntactic structures or elements. This question can be asked on a language-specific level and on a universal level. In discussions of both questions, the syntactic characteristics which have come up most frequently in connection with topics have been subjecthood and initial position in the sentence.

As alluded to in the Introduction, because prototypes are claimed to have psychological reality, there is a problem with claiming that there may be universal syntactic prototypes for syntactic constructions, (cf. Dahlstrom 1984). It is not a problem language-internally to postulate psychological reality for a certain syntactic construction, since one can make the psychological reality contingent on knowledge of the language. And the requirement of psychological reality is no problem universally as far as discourse notions like "topic" are concerned, if one assumes that the human race is more or less homogeneous as regards its psychological make-up and needs. However, even a universal prototype for "topic" becomes problematical as soon as one adds to the prototype syntactic notions like sentence-initial position or subjecthood. When one adds syntactic facts to the prototype, then one must deal with the question "For whom is this a prototype?" because syntactic facts vary so drastically from language to language.

For example, it may be argued that topics are prototypically sentence-initial for Chinese speakers. Certainly syntactic topics are sentence-initial in Chinese and other topic-prominent languages (cf. 9 and 10 above; and Li and Thompson 1976:465). However, topics are treated syntactically quite differently in English. In spite of that fact, do Chinese speakers and English speakers have the same syntactic prototype for topics?

It is difficult to conceive of a universal syntactic prototype, then, because syntax is too language-specific. There are, as far as I know, no syntactic facts, such as "prototypical topics are sentence-initial," which are universal. All typological studies are concerned with trends and implicational universals rather than absolute universals. The need for a particular construction in a particular language is usually very
much dependent on what G. Lakoff has called (personal communication) the "ecology" of the language, that is, the structure of the language as a whole. And in any case the particular form and function of a construction in a particular language is constrained by the rest of the ecology of the language. It is well-known that for every language, many constructions do not have equivalents in every other language, and some constructions — particularly minor ones — do not have equivalents in any other language. And relations between syntactic and semantic categories are never exactly the same across languages.

Thus, for example, the relation between the syntactic category subject, the semantic category agent and the discourse category topic, depends on the "ecological niche" of the syntactic subject in the language, that is, the place that the syntactic subject takes up in the ecology, or structure of the language. An obvious factor in the place of the syntactic subject in the ecology of a particular language is the question whether there is a syntactic topic in the language. This syntactic topic might then take over at least some of the topic function that a syntactic subject might have in another language. Conversely, a language without a syntactic topic will obviously have to find some other means of coding a pragmatic topic than via the syntactic topic (Bates and MacWhinney 1982:204). It must be remembered here, though, that syntactic topics in e.g. Chinese code discourse topics whereas subjects in English code sentence topics (see on this Van Oosten 1984). Other factors also influence the ecological niche of the syntactic subject; for example word order.

Further, there are problems with the claim that the universal topic prototype clusters with the formal properties of initial position and subjection in the face of such languages as Malagasy, where the unmarked position for the subject is final position in the sentence, though even so the subject is claimed to have some topic properties (Keenan 1976a).

On the other side of the problem is the fact that the connection of subjects, initial position, agents and sentence topics is remarkably consistent across languages, even if not universal. As concerns the relation between topic and initial position, both topic-prompted languages like Chinese, Japanese and Korean, and subject-prompted languages like Dutch (Van Oosten 1984) and Czech (as discussed by Prague School linguists), exploit this possibility. As concerns the relation between (sentence) topic and subject, many people have noted the remarkably consistent relation between the two (cf. e.g. Keenan 1976b and all of Li 1976, and Bates and MacWhinney 1982). Similarly, people have noted a relation between subjects and agents, which cluster naturally with (basic-level) topics, while we have seen in Section 3 that there is a natural correlation between agents and topics. These correlations are too frequent to be coincidental. If the topic prototype does not contain mention of syntactic
characteristics like subjecthood or initial position, then these correlations are not accounted for.

But other factors, such as conventionalization of structures and conflicting and nonprototypical demands on a linguistic interchange (Bates and MacWhinney 1982:190ff.), make the correlation between subjects, topics and agents less direct, even in languages like English for which such a prototypical correlation can fairly easily be argued. Problematic languages for the claim that topics are prototypically in initial position are verb-first languages (assuming that active zones of topics are prototypically entities of the type referred to by nouns) and Malagasy, where subjects do have topic properties but typically occur sentence-finally (Keenan 1976a). Classes of problematic languages for the claim that topics are prototypically subjects are topic-prominent languages, and ergative languages (cf. Dixon 1979 and Keenan 1976b:321). But note that I have shown in Section 3 that even in Chinese, Japanese and Korean, languages with syntactic topic, subjects are more topical than other elements in the sentence besides the syntactic topic, and that the syntactic topic usually does something different than the syntactic subject or the sentence topic does, for example, in English.

It is logically possible but practically inconceivable that speakers of one language (a verb-initial one) would consistently have verbs as their sentence topics and speakers of another language would consistently have nouns; or that speakers of one language (an ergative one) would consistently choose patients as the active zone of their topics and speakers of another language would consistently choose agents. The problematic languages should be studied again, now that there is more clarity on the nature of topics. Sentences should be studied in context, taking account of the progress of both discourse and sentence topics. It may very well be that precisely these problematic languages will advance our understanding of the nature of topics and their progress in discourse the most.

For now, I propose that the question whether there are syntactic reflexes in the universal prototype for topics be answered with a cautious "yes." It seems, after all, to be the most natural case to first express (the active zone of) what one is talking about and then say something about it; and given the correlation between agents and subjects, and the natural correlation between agents and topics, it would seem also to be the most natural case for a sentence topic to be a subject.
NOTES

* I wish to thank George Lakoff, Gary Holland, and Tom Whitmore for their contributions to the ideas in this paper. Any errors or infelicities are of course my own. This paper has been revised since it was presented at the conference, to improve presentation and to reflect reactions from the audience.

1 I consider it very bad form to talk of the topic of a single sentence. It seems to me impossible to determine the topic of any sentence without knowing its place in the accompanying discourse. However, for the sake of simplicity we will start with a single sentence, being careful to create a discourse around it, and remaining aware there is danger of misrepresenting the true state of affairs in this method.

2 I am using the notion "active zone" in a way somewhat different from the way Langacker (this volume) usually uses it, but still, I believe, in a way that is in the spirit of Langacker's notion. In Langacker's examples, what is mentioned is usually larger than an active zone and has an active zone as part of it, rather than that what is mentioned is the active zone of the entire network or scene that is called up by the mention of the active zone: the opposite, in other words. Langacker gives the example in (i):

(i) Susan has a cigarette in her mouth.

The active zone of Susan is her mouth, and the active zone of the cigarette is one end of it.

In spite of the fact that our uses of the term "active zone" seem to be opposite to each other, nevertheless I believe that these are but two sides to the same coin. See also Section 3 below, where I discuss the fact that the prototypical topic is a basic-level topic because of the tendency of speakers to pick out active zones out of more complex topics. I would also point out that Langacker requires my notion of "active zones" in order for his to work. In his example (i) above, note that our understanding of what the active zones of the participants Susan and cigarette are, depends on our knowledge of the cigarette-smoking schema. But what brings this schema to mind is the mention of participants in (an instantiation of) this schema, namely the cigarette and Susan's mouth: these are the active zones of the schema. In order to know that the active zones of Susan and the cigarette are, respectively, her mouth and the cigarette's end, therefore, we have to know of what schema Susan and the cigarette are (instantiations of) the active zones.

3 I am grateful to George Lakoff for this interpretation of the notion "subordinate topic."

4 The situation is a little more complicated. The proposition "everybody bugs everybody else" is itself not an evaluation but it implies an evaluation. We will ignore this complication here, as tangential to the topic at hand.
REFERENCES


Linguistic Advance and Cognitive Style in Language Acquisition

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Stanford University

Studies investigating factors which affect language acquisition have typically considered one, or at most two, linguistic domains as an index of a given child's relative advance - most often syntax (e.g., Furrow, Nelson, & Benedict 1979), sometimes with the addition of a measure of size of lexicon (e.g., Newport, Gleitman, & Gleitman 1977). Barnes, Gutfreund, Satterly and Wells (1983) included measures of semantic and pragmatic range as well as of syntax, but no estimate of lexical advance. Studies of individual differences in language acquisition strategy, similarly, have tended to concentrate on one domain, such as syntax (Horgan 1981) or phonology (Leonard, Newhoff, & Mesalam 1980). It will be our first concern in this paper to compare relative progress in our subjects across the four domains of phonology, morphology, syntax and lexicon, in order to examine the extent to which a child's language advances as a unified whole. Since we will show that the domains of phonology, morphosyntax, and lexicon in fact need not be acquired at the same rate, we will then go on to ask whether there is a unifying style that remains constant across domains even when overall levels of advance differ.

Method

We audio- and video-recorded the speech of ten 36-month-old first-born children, five boys and five girls, in their own homes in two settings, in conversation with the mother and with a familiar peer, for half-an-hour each. In addition, we ourselves interviewed the children, with audio-recording only, for approximately one hour during each of two visits within the same week, administering the McCarthy Scales of Children's Abilities (McCarthy 1972) as well as various phonological, morphological, and metalinguistic probes. All the audiotapes were transcribed by the second author and then checked by the first author against both audio and videotapes.
Measures of Language Advance

We based our phonological analyses on the full audio recording for each child. The scoring followed the three-part evaluation devised by Magnusson (1983) in her work with Swedish language disordered children. The three parts are (1) a phonological process score, with a ranking as to developmental level (see Appendix I), (2) a range-of-application score, reflecting the number of contexts in which a process is applied by the child in question, and (3) a frequency-of-application score, differentiating between sporadic, inconsistent (25% to 75%), and regular use of a given process, in the contexts where it applies. The scoring for each part ranged from 1 to 3 and the separate scores were multiplied to arrive at a rating for each process; the sum of all these ratings was the child's overall phonological score.

In addition to the phonological analysis we established the relative intelligibility of the children through a blind rating procedure. Three-minute segments were chosen from two designated portions of the mother-child interaction recordings, one about 10 minutes into the session, the other 10 minutes later. These 20 samples, two from each child, were randomly ordered and copied onto two sides of a 30-minute tape so that each child was represented once on each side. Three coders with varying familiarity with children's speech but no knowledge of our subjects tallied fully intelligible and partially or wholly unintelligible utterances for each child. The proportion of unintelligible to total utterances was calculated; the children were then ordered by mean percent intelligible for each coder. Rank position points were assigned, with half-points for ties; the final ranking was based on the sum of rank position points for the three coders.

A picture book was used to elicit the plurals of 29 nouns, while a puppet game was used to elicit the past tense of 32 verbs exhibiting a variety of morphophonemic patterns (see Bybee and Slobin 1982). In assessing morphological advance both elicited and spontaneous forms were counted, using the full three hours or more of audio tape.

Syntactic measures included Mean Length of Utterance, based on the best of two sequential 100-word samples, longest utterance, and several noun phrase and verb phrase complexity measures, all based on the mother-child interaction session only. A complex
sentence score was arrived at by counting all multi-propositional sentences (excluding from this count auxiliaries, participial constructions, simple conjunction with and, and let's, look, and see plus sentence) and dividing this sum by the total number of multimorphemic utterances.

In order to assess lexical advance a composite lexicon was constructed for all the words produced spontaneously during the mother/child interaction session (excluding inflectional and colloquial variants of a single word, words used only in recitations, and words that could not be interpreted in the given context). A "unique" lexicon was then made up for each child, consisting of all the words used by that subject alone or by one other child as well. A "core" list was also constructed, consisting of words used by 8, 9, or all 10 subjects. From the number of words in each child's "unique" lexicon we then subtracted the number of words on the core list which that child did not use. The "diversity" score thus arrived at was divided by that child's total lexicon, as represented by the mother-child session, to yield a measure of lexical advance which was biased as little as possible by differences in volume of talk during that session.

Results: Language Advance

Correlation of the phonological rating with the results of the blind coders' assessment of intelligibility proved highly significant ($r = .77, p < .005$). The phonological score alone will be used for comparison of advance across domains, as it seems to reflect the children's relative phonological progress most directly.

Errors in both past tense and plural formation were calculated as a percentage of total past tense and plural tokens used in an effort to assess morphological advance; the two scores failed to be significantly correlated, however ($r = .45$). Errors in plural formation occurred only during the elicitation task for 6 of the 10 children, and overall only 14% of the errors occurred in spontaneous speech, though half again as many plural forms were used spontaneously as were elicited, on average. In contrast, all of the children made some spontaneous errors in past tense formation, though overall fully 79% of the errors were made during the past tense probe in spite of the fact that twice as many past tense forms were used spontaneously, on average. The past tense score thus seems
somewhat more representative of the children's morphological abilities and will be used for comparison here.

Figure 1 shows the intercorrelation of several commonly used syntactic measures. Our three-year-olds are generally quite advanced (mean MLU = 3.97, range 2.4 to 4.62, i.e., nearly Stage V [Brown 1973], while mean upper bound or longest utterance is 16.1 morphemes, range 11–23). Thus the measures based on simple morpheme count are not really adequate for all the children, as relative disposition to communicate may affect the results as much as syntactic ability (see Vihman, Simmons, Carpenter and Langman, in prep.). The number of complex sentences, though correlated at a relatively low level with MLU and not at all with longest utterance, is highly significantly correlated with number of main verbs per utterance \( r = .86, p < .001 \) and it is marginally correlated with number of noun phrases per utterance. It is the complex sentence score that seems to capture syntactic ability or relative advance most directly for these children, with the least influence from irrelevant situational factors and differences in volubility.

<table>
<thead>
<tr>
<th></th>
<th>longest U</th>
<th>main Vs/U</th>
<th>NPs/U</th>
<th>complex S/multimorph.U</th>
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<td>MLU</td>
<td>**.79</td>
<td>+.49</td>
<td>**.75</td>
<td>.42</td>
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<tr>
<td>longest U</td>
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<td>main Vs/U</td>
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<td>NPs/U</td>
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Figure 1. Correlations between syntactic measures

\( ** \) \( p < .01 \), \( * \) \( p < .05 \), \( + \) \( p < .10 \)

Figure 2 presents the results of a comparison of the phonology score, the number of past tense formation errors over all past tense forms attempted, the complex sentence score for the mother–child interaction session, and the lexical diversity score also based on the mother–child interaction session. The only significant correlation is that between morphology and syntax \( p < .05 \), one-tailed.) Thus, relative advance does not appear to be even across domains.

morphology    syntax    lexicon
Figure 2. Correlations across domains of language
advance
** p < .01, * p < .05, + p < .10

It was not the case, then, that the children who used a particularly high proportion of complex sentences were also the children who used the most diverse vocabulary or who made the fewest phonological substitutions. Nevertheless, it was our impression that the individual children could be recognized through a characteristic language style or strategy across domains. To test this impression we analyzed two aspects of what may be viewed as individual style in language acquisition: relative consistency in the application of linguistic rules or processes and a gestalt or holistic approach to language production as against a more analytic or systematic approach.

Measures of Language Style

It was a straightforward matter to establish relative consistency in the application of phonological processes, given the phonological scoring system used. For each child we simply calculated the number of "two-point" or "inconsistent" frequency ratings out of all cluster reduction and segment substitution processes applied and ranked the subjects accordingly. The prosodic or "whole word" processes were not included in this analysis because there was no way to objectively assess consistency in this case. In fact, "regular" use, or "3", was virtually never scored for these processes, and sporadic use was the rule.

For syntax the way to assess consistency was less obvious. In order to create a parallel with the phonological score, however, it was decided to assign each child a rating of 1 to 3 with respect to each of the major independent areas of application of syntactic processes. The areas scored are listed in Appendix II.

Error analyses were based in all cases on the entire transcript for each child. Copula use was assessed on the basis of the proportion omitted relative to the number of opportunities the child's total
recorded utterances afforded. WH-constructions in-
cluded both questions and relative clauses. Ordering
errors and do-omissions were scored as WH errors, but
not copula omission. Intrasentential agreement errors
included mass-count errors (e.g., those hundreds of
food), subject-verb and modifier-noun number agree-
ment, and tense and pronoun agreement across clauses.
The assessment of functor-omission errors was based on
obligatory functors other than the copula and auxilia-
ry do, including omission of articles, prepositions,
particles, and pronouns. The only remaining error
types of any significance were lexical and redundancy
errors, both of which will be discussed below.

For the copula, 90% or higher use — Brown's cri-
terion level for establishing acquisition (1973) — was
scored "regular use", or 1, while 25% or less was
scored "sporadic", or 3. Inconsistent use fell in
between. For past tense formation, where the error
range was considerably wider and no standard acquisi-
tion point has been established, we set 25% to 50% use
as the "inconsistent" range. Errors in WH-construc-
tions ranged from zero to about 13%. Accordingly,
"inconsistent use" was set at a lower level here.

For the two remaining areas there was no apparent
way to gauge "opportunities". Assessment of the pro-
portion of all errors represented by each type would
not be enlightening with regard to consistency of use.
Though some such standard as total utterances used
during the mother-child session — or total re-
corded utterances — might have been used to control
for differences in volubility, we concluded that raw
numbers of errors would not be misleading in these
instances, since in effect virtually every multi-word
utterance provides the opportunity for agreement er-
rors or omissions of some kind, and the most complete
consistency can clearly be displayed through silence.
In the absence of any other natural range, we used the
mean and standard deviation to establish a consistency
rating for each of these areas: Numbers of errors
half a standard deviation or less above and below the
mean were scored as "inconsistent use". A syntac-
tic consistency summary score was then arrived at by
tallying, for each child, the number of "inconsistent"
ratings out of the five areas considered.

Table I shows a few examples of WH errors alongside
error-free constructions of the same kind by the same
children. Notice that our method of assessing "incon-
sistency" in syntax essentially by picking out the
children with a range of errors that is intermediate
relative to the group as a whole is workable only where the errors of particular children fail to fall into specific patterns or subtypes. Thus, if all of Sean's WH errors involved DO-omission in HOW-questions, say, it would be wrong to interpret his intermediate error rate of 8.2% as representing inconsistency in the application of WH inversion and/or DO insertion rules. Inspection of the data shows that no such consistent subpatterns obtain in these areas.

Table I. Inconsistency in the formation of WH constructions.

<table>
<thead>
<tr>
<th>Name</th>
<th>WH Construction</th>
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| Deborah | *I will show you where are they.  
I don't know where they are.       |
| Emily  | *Now what we're gonna do with them?  
Now what are we gonna do?           |
| Jonah  | *Why we need the other boxes?  
Why did you put these here?          |
| Sean   | *How you open this?  
How do you get the man on?           |
| Susie  | *Know what's my dad's name?  
Know where my picture blocks are?     |

The prosodic phonological processes were taken to be characteristic of a gestalt approach to phonology, in which words tend to be perceived, stored, and produced as a whole, with minimal analysis into segments. Prosodic errors affect whole words, syllables, or phonotactic positions rather than specific segments and they often involve changes in the ordering of segments or even syllables within the word. Consonant harmony, which is applied with some regularity by English-speaking two-year-olds (a range of 5% to 32% has been reported for three subjects; cf. Vihman 1978), was still being used sporadically by all but one of our subjects, while metathesis, consonant insertion, syllable deletion and final consonant deletion were used by 5, 6, 7, and 8 subjects, respectively; the remaining prosodic processes listed on the handout were used by one child each. A "gestalt phonology" score was obtained by calculating for each child the proportion of the total phonological error score represented by the prosodic processes.

A sample of the lexical errors found in our data is presented in Appendix III. We included semantically-based malapropisms (microphone for stethoscope), blends (thermophene for thermometer, with probable
influence from telephone or microphone or both), missed collocations (do a joke for make a joke), missed derivation (stopped), and phonologically based errors (softer guy for faster guy, quite in his mouth for right in his mouth). In addition, we included compact innovations or "compressions" used in lieu of longer conventional expressions (I can make a own house for him in lieu of I can make him a house of his own) as well as the reverse, paraphrases of expected words or idioms (be a friend together in lieu of be friends, the flipping thing in lieu of spatula). Finally, we also included a number of errors in choice of functor, particularly the WH words (WH errors alone account for 15 out of 107 lexical errors, or 14%). Excluded were errors of omission (e.g., Are you love?, where 'in love' seemed to be intended, or forever ever, with missing and), since these were included in the syntactic error analysis, and errors followed immediately by self-correction, since these suggested on-line analysis, the antithesis of gestalt style as we are conceiving of it.

The lexical errors seem to us to reflect a holistic approach to language production, in which precision or even conventional usage in lexical choice is given a relatively low priority. In syntax a phenomenon we would expect to be related to gestalt style is the incorporation of unanalyzed formulas into sentences, sometimes in ill-designed combination with one another (cf. R. Clark 1974), e.g., from different children, How about this will be a nice one?, What all of it has sugar in it? (protesting the idea of eating candy), or I wondered how to looking for this game. Though formulas clearly play an important role in everyday speech production (cf., e.g., Bolinger 1976, Fillmore 1976), it is their misuse or miscombination that stands out as an error and that may suggest overreliance on the holistic strategy. Only 26 such utterances could be identified with any confidence on our transcripts.

Finally, we view redundancy errors, in which the same word, concept, or grammatical function is expressed twice in a single utterance, as characteristic of the opposite approach, reflecting an effort at on-line analysis and control of the utterance as it is being produced. Some examples, from three different girls:

Mommy, could I have another cup to put one cup here? Now you're sick now.
Bought some a little ice cream.

For comparison we used raw numbers of lexical errors and of instances of gestalt syntax and percentage of redundancy errors over all errors. The latter appeared to offer the best insight into analytic strategy in syntactic production.

Results: Language Style

Figure 3 shows the results of our statistical comparison of the several measures of consistency and gestalt style. Comparison of the phonological and syntactic "inconsistency" ratings, first of all, yields a marginally significant correlation ($r = .62$, $p < .05$, one-tailed). Gestalt phonological style is related to the lexical error score at roughly the same level ($r = .61$), while gestalt syntax shows a marginally significant association with the number of lexical errors ($r = .47$). Syntactic redundancy shows a marginally significant inverse correlation with gestalt phonology ($r = -.47$) and tends to be negatively associated with lexical errors as well, though not at a significant level ($r = -.44$). Inconsistent phonology is also inversely related to syntactic redundancy at a significant level ($r = -.61$) and is associated with gestalt phonology and lexical errors at a marginally significant level ($r = .50$ and .54, respectively). It should be mentioned, finally, that of the cognitive style measures, none correlate significantly—either positively or negatively—with any of the measures of linguistic advance, with the exception of the lexical error ranking, which correlates significantly with the lexical diversity ranking ($r = .55$).

<table>
<thead>
<tr>
<th>Measures</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
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<tr>
<td>A inconsist. phonology</td>
<td>* .62</td>
<td>.50</td>
<td>.54</td>
<td>.12</td>
<td>* -.61</td>
</tr>
<tr>
<td>B inconsist. syntax</td>
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<td>.26</td>
<td>.00</td>
<td>-.09</td>
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<tr>
<td>C gestalt phonology</td>
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<td>.16</td>
<td>-.47</td>
<td></td>
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<tr>
<td>D lexical errors</td>
<td>.47</td>
<td>-.44</td>
<td></td>
<td></td>
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</tbody>
</table>
E gestalt syntax

F redundancy (=analytic syntax)

Figure 3. Correlations between measures of language style
** p < .01, * p < .05, + p < .10

The correlations confirm our impressions of a common approach to the separate domains of phonology, morphosyntax, and lexicon. Inconsistency in the use of phonological processes is related to inconsistency in the application of grammatical transformations; a holistic approach to phonology is related to a holistic approach to word selection. Inconsistency in phonology is also inversely related to the analytic approach to syntax represented by our redundancy measure.

Conclusion

Studies of aptitude in second language acquisition have suggested that "phonetic coding", "auditory" or "phonological" abilities are independent of grammatical ability, which may well have a separate cognitive base (cf. Snow and Hoefnagel-Hohle 1979, Caroll 1981). Our data support the idea that phonology and grammar, or morpho-syntax, depend on somewhat different abilities, and suggest further that progress in lexical development may draw on yet a third relatively autonomous set of skills, or perhaps simply on an independent configuration of those skills which underlie phonological and grammatical development.

Beyond that, our analysis of possible relatively unified cognitive approaches to these separate domains or tasks has yielded suggestive results. It has traditionally been held that children who are acquiring a linguistic form add it progressively to their speech, with percentages of correct usage mirroring directly their level of competence with that particular form (cf. Brown's 90% criterion). The notion of "across the board" changes has been challenged in the realm of phonology, however (cf. Macken 1980, Vihman 1982), and our data further suggest that children can add new linguistic devices in different ways, depending on
how consistently they try to apply their new knowledge to the task of speaking. Furthermore, children with high error rates need not be those with less mature language but may instead sometimes be those who are less conservative in the application of newly acquired rules or forms: Recall the correlation between number of lexical errors and the lexical diversity score, and see also Horgan (1981).

Gestalt style has been identified in the past in the language of one child each in connection with phonology (Waterson 1971, Macken 1979), morphology (Vihman 1982), syntax (Peters 1977), and the lexicon (Vihman 1981). Work by Stoel-Gammon and Cooper (1981) on phonology and by Bretherton, Snyder, McNerw and Bates (1983) on syntax and the lexicon suggests that stylistic differences can be identified in groups of children as early as the one- to two-year-old stage. Little formal work has been undertaken to date on individual style in adult speech, though Fillmore (1979) and others have suggested areas that might profitably be investigated. If our identification of relative consistency in rule use and of analytic vs. holistic strategies across domains can be confirmed on a larger sample and if either stylistic factor can be traced from an earlier stage to the period we have examined here, we would look next to adult language, where individual differences in "fluency" in the broadest sense are well known to exist, but where precise documentation may be considerably more difficult to arrive at.

References


Clark, R. 1974. Performing without competence. JChLg. 1.1-10.


Processes affecting sequential structure

(a) Prosodic (or 'whole word') processes

- syllable deletion (3)
- final consonant deletion (3)
- reduction of variation (3)
- consonant insertion (3)
- metathesis (3)
- consonant harmony (2)
- contiguous assimilation (2)

(b) Cluster reduction

- Cr clusters (3)
- sC clusters (3)
- Cl clusters (2)

Segment substitution processes

- lateralization (3)
- deletion of medial D (flap) (3)
- velar fronting (3)
- stopping (2)
- affricate reduction (2)
- palatal fronting (2)
- gliding (2)
- interdental fricative substitutions (1)

Appendix II. Consistency in Syntax

1. Copula use
   % omission/all opportunities
10%-25% = 2  
mean 11.61, SD 10.4 (range .9%-35.3%)  

2. Past tense formation  
% errors/all attempted (tokens)  
25%-50% = 2  
mean 34.9, SD 17.6 (range 5.9%-73%)  

3. WH constructions  
% ordering errors + DO omission/all attempted  
5%-10% = 2  
mean 7.93, SD 3.85 (range 0-12.8)  

4. Intrasentential agreement  
raw number of errors  
8.0-14.4 = 2  
mean 11.2, SD 6.5 (range 5.5-23)  

5. Omission of functors (articles, prepositions, particles, pronouns)  
raw number  
15.5-23.5 = 2  
mean 19.5, SD 8.03 (range 15.5-40.8)  

Appendix III. Sample of Lexical Errors  

unmarked semantic error  
B blend  
D derivational error  
G grammatical functor  
P paraphrase  
ph phonologically-based error  
* compression  
n = total lexical errors  

<table>
<thead>
<tr>
<th>Subject</th>
<th>Word used</th>
<th>Word intended</th>
<th>Type</th>
<th>n</th>
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<tr>
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<td>keylock</td>
<td>lock (X keyhole)</td>
<td>B</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>where</td>
<td>how</td>
<td>G</td>
<td></td>
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<tr>
<td></td>
<td>sports</td>
<td>stones</td>
<td>ph</td>
<td></td>
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<tr>
<td>Deborah</td>
<td>roadtrack</td>
<td>railroad</td>
<td>B</td>
<td>16</td>
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<tr>
<td></td>
<td>very</td>
<td>way (over here)</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td></td>
<td>be a friend</td>
<td>be friends</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td></td>
<td>together</td>
<td>...a house of</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(I can make) a</td>
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<td></td>
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<tr>
<td>Name</td>
<td>Word 1</td>
<td>Word 2</td>
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<td>---------</td>
<td>-------------------------------</td>
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<tr>
<td>Emily</td>
<td>own</td>
<td>house for him</td>
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<td></td>
<td>his own</td>
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<tr>
<td></td>
<td>own</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Jonah</td>
<td>needle (X thread)</td>
<td>B</td>
<td>6</td>
<td></td>
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<td></td>
<td>until</td>
<td>after</td>
<td>G</td>
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<td></td>
<td>at nighttime</td>
<td>tonight</td>
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<td>test</td>
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<td>because</td>
<td>so</td>
<td>G</td>
<td></td>
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<td></td>
<td>from here</td>
<td>that goes here</td>
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<td></td>
<td>sometime</td>
<td>once</td>
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<tr>
<td></td>
<td>quite in his mouth</td>
<td>right in his mouth</td>
<td>ph</td>
<td></td>
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<td>iceskate</td>
<td>ski</td>
<td>17</td>
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<td></td>
<td>sticker</td>
<td>stamp</td>
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<tr>
<td></td>
<td>toward</td>
<td>near/by</td>
<td>G</td>
<td></td>
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<td>the flipping thing</td>
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<td>P</td>
<td></td>
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<td>send</td>
<td>lend</td>
<td>ph</td>
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<td>wires</td>
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<td>thermophone</td>
<td>thermometer</td>
<td>B</td>
<td></td>
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<tr>
<td></td>
<td>(X telephone, microphone?)</td>
<td></td>
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<td></td>
<td>why</td>
<td>what</td>
<td>G</td>
<td></td>
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<tr>
<td></td>
<td>another thing</td>
<td>something else</td>
<td>P</td>
<td></td>
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<tr>
<td></td>
<td>ripping</td>
<td>wearing ripped/torn</td>
<td>*</td>
<td></td>
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<tr>
<td>Thomas</td>
<td>paper</td>
<td>page</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dandeflower</td>
<td>dandelion</td>
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<td>where's</td>
<td>who's, what's (X4)</td>
<td>G</td>
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<td>angry</td>
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<tr>
<td></td>
<td>stoppened</td>
<td>stopped</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>softer guy</td>
<td>faster guy</td>
<td>ph</td>
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</tbody>
</table>
Intonational Signals of Subordination

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I start with a claim and a disavowal. The claim is that intonation is autonomous and one can speak of intonational subordination without reference to the segmental side of language. The disavowal is that intonation has any direct connection with subordination in syntax, however this is to be defined. Syntax nevertheless benefits handsomely from the games that intonation plays with it.

We must of course define what we mean by subordination, and that can only be done in reference to superordination. I see anything that is tributary to something else as subordinate to it. In syntax this means not only the classical dependent clauses in relation to main clauses, but also their reduced counterparts: adjectives as well as adjective clauses in relation to nouns, adverbs and adverb clauses in relation to verbs, and so on; and also, probably, themes in relation to rhemes, tags in relation to questions, and parentheses in relation to the matrix sentence. Parentheses will include more or less formalized elements such as vocatives, ascriptions (things like he said, she asked) and tentations (things like perhaps, I suppose), as well as an almost unclassifiable assortment of asides that may be anything from a complete sentence to a snort. In Gestalt terms, what is superordinate is the figure; what is subordinate is all or part of the ground.

As this includes practically everything, I obviously can't touch on all the intersections with intonation. So I invite you to look first at subordination in purely intonational terms without reference to syntax except for illustration, and then to make a selection from among its contacts with words and syntax.

Intonation has two modes of action where subordination is concerned: contrast and configuration. Contrast simply delivers things at different levels of prominence: what it plays down of course is subordinated. An illustration is the spelling chant used in old-time spelling bees, which had three levels of prominence plus a terminal or cut-off level. The speller for instance would be given the word Constantinople to spell, and it went like this:
What seems to be going on is a top level in real time, so to speak, where the letters get spelt out, and then two lower levels, a kind of short-term memory filing system, which is played down intonationally.

I said that intonation has two methods of subordinating, contrast and configuration. The example I just gave is one of contrast. But contrast in turn divides two ways. Look at your diagram:

```
  Intonational subordination
     /-----\     /-----\
    Contrast   Configuration
       /-----\     /-----\
      Accent   Key
       /-----\     /-----\
      Interest  Power
```

The Constantinople example is an instance of what Brazil, Coulthard, and Johns (1980) call key, recognizing high, mid, and low. On the side opposite key is accent. This is an all or none matter: an item is either accented or not. What is not accented is subordinated, in the most straightforward sense of subordination. Normally the old or the expected or the presupposed is subordinated to the new or the unexpected or the asserted. If someone asks you what you think of the plan and you reply I'll tell you what I think of it, the whole clause what I think of it is subordinated accentually because it is repeated; in a case like The volcanoes are erupting or The volcanoes are dormant we have certain presuppositions about the background; Either can answer the question What's new? but The volcanoes are erupting pictures a background of dormancy interrupted by an explosion, while The volcanoes are dormant pictures a background of activity interrupted by a deafening silence. The most noteworthy fact about accentual subordination is that a speaker can accent only so much, and as a result a lot of important stuff gets relegated to the background. To answer Why do you despise Wilson? one may say Look at all the careers he ruined when he pushed his way to the top. The speaker subordinates everything after the accent not be-
cause it is unimportant but because it is less important.

Though accent and non-accent are a matter of all-or-none, there is another side to accent pertaining to a different form of subordination which is not all-or-none. Accents serve a dual purpose: to highlight individual items that are interesting, and to give impact to an utterance—all accents of interest and accents of power. Power comes partly from multiplying the number of accents. The intent is to foreground not just the individual items in the utterance, but the utterance as a whole against the background of the discourse. The speaker in effect is refusing to subordinate himself. He may even add words to have extra accents. If I want to rebut the charge that I paid too much for something, I may say It didn't cost me a cent. Or I may say It didn't cost me one cent. Or I may say It didn't cost me one red cent. On the other hand, we have now not only introduced gradience in the number of accents, but we have reintroduced key, since relative subordination also depends on how much the accents stand out from their background and whether they are arranged climactically or anticlimactically. If I say

I have gone almost the limit in foregrounding my part of the discourse and subordinating yours.

I won't dwell further on the accentual part of subordination because it has less to do with syntax, which is where I assume our interest lies. But let me emphasize that I am not setting it aside because it involves emotion, affect, and ego-tripping, on the theory that that sort of thing is irrelevant to the linguistic purity of syntax. I hold that intonation always manifests affect, whatever else it may do at the same time. A question, for example, is subordinated to an answer because the questioner is subordinating himself to the authority of the addressee. He approaches that authority as a suppliant and his intonation takes the appropriate shape.

We turn now to configuration. A variety of patterns are involved, and there is a sort of hierarchy of subordination among them that I won't have time to do more than mention. First I want to dismiss a form of configurational subordination that applies to all configurations in that it can be part of any of them without attaining to the status of independent configuration itself. I refer to the pro-
ceedure of submerging something within a configuration. If I say

people you see friends
The are of mine.

the adjective clause you see is intonationally just an extension of the same intonational profile that would occur alone on

people friends
The are of mine.

The same profile could be extended further by saying

people you see over there friends
The are of mine.

This swallowing-up kind of subordination is a consequence of there being no accent on the element in question, causing it to become part of the background of a nearby accent. It is the lack of independent pattern that marks the subordination.

What about independent patterns as marks of subordination? If someone asks your appreciation of something and you reply

Mmmmmmm
mmmMmmmm

I think it is safe to say that the first part is incomplete without the second part, but the second part might well be complete without the first part. To some extent that is because first parts are always incomplete without their mates, but if the pattern is reversed, being the second part is no help—the whole thing sounds incomplete. There is something in the intonation itself that signals or can be used to signal incompleteness, and it is obviously the terminal rise. Incompleteness is a way of marking subordination, and when we put words to that tune we come out with classical subordinate-superordinate sentences, such as
catch him,

If you can  

spank him!

The unfinished first part of the sentence need not be a full clause—the same pattern is heard in the Hyatt Lake Tahoe refrain

fall down in the

I like to  
snow

w!

so we can see right off that what the intonation is marking is the incompleteness, not the subordinate-clauseness. At the same time we can still speak of subordination: snow is the actor center-stage, fall down is the supporting actor, and the rest is props.

The configuration I've just described, the one in the clause If you can catch him, or in questions like Will you do it?, or in threats like I'll get you for this!, and other applications, is the one I call Profile B. When nothing is missing it has a preparatory low pitch followed by a jump up to the accented syllable and then a tail which does not fall appreciably. Usually it rises, and the overall effect is that of being left up in the air—I like to speak of up-in-the-airness as its metaphorical significance. That's what makes it useful for subordinate clauses, and this becomes more apparent when we reverse the order of the clauses, putting the subordinate one last. The intonation goes along with it:

spank him, if you can  
catch him!

An example like this forces one to ask whether the intonation is only an automatic consequence of the subordinating conjunction if: does it have any independent significance—could it for instance convey the condition without the if? Try this. Imagine a police officer hesitating to arrest someone caught red-handed. As a public-spirited citizen you admonish him saying
With

Now turn it around and see how the intonation follows suit just like before:

The B profile enables us to infer the condition, in either order, without the if: 'If he had all that loot, I'd arrest him.'

But now what about the claim that I made earlier, that intonation is autonomous, from which it should follow that there is no "intonation of" conditional clauses? If that is true, the intonation is doing something more general, and doing it with its own internal dynamics. If we look at that conditional sentence--indeed, if we look at most sentences containing subordinate clauses--we see that the main clause is generally associated with the rheme of the sentence and the subordinate clause with the theme. So perhaps making a theme-rheme distinction comes closer to the basic function of the intonation. This can be tested with a simple sentence. If you ask me why I took Larry rather than Max along on my vacation I can say

\[ \text{Max}^x \]
\[ \text{I don't like.} \]

Or, turning it around,

\[ \text{I don't like} \]
\[ \text{Max}^x. \]

Max is thematic, and the B profile goes with it. This accords with our intuitions about subordination, since if information is presented as known, it goes in the theme.

At the same time, if intonation is truly autonomous it ought to be able to override the grammatical subordination and make a main clause thematically subordinate—that is,
simply reverse the expected theme-rheme relationship. Looking again at our spank him example we see that that can easily happen. Take it as an answer to the question Under what circumstances should I spank him?—

catch

        spank

        him

        if you can

        him.

or, in the opposite order,

catch

        If you can

        spank

        him.

This brings us back to the unfinished nature of the profile with the terminal rise, its general up-in-the-airness. No more is needed as a cue to our inferential powers: given the right circumstances it can tell us that we have a subordinate clause, or a theme, or a question, or a keyed-up admonition such as

Leave it alone!

I suggested earlier that there is another way of subordinating an item intonationally, which is to bury it within a profile. Compare this with the configurational way as answers to the question What shall I do with him? The configurational way using a B profile gives

        spank

        him, if you can catch him.

The other way incorporates the subordinate clause in the tail of the preceding profile:

        spank

        him, if you can catch him.
Here the if clause is subordinated not by treating it as something incomplete but as something of little importance.

Looking further at the interaction with syntax, we find that intonation can be used as a test for degrees of subordinateness. It helps us to answer the question "How subordinate is a given type of subordinate clause?" That there are degrees of subordination can be seen in the extent to which supposedly subordinate clauses of certain types can be used as independent utterances. Take causatives, for example. A clause beginning with because is less subordinate than one beginning with since, as, inasmuch as, or now that. You ask me why I didn't go to the party and I reply Because I was sick; I can't use *Inasmuch as I was sick. Intonation shows a parallel difference. In answer to Are you going to the party? I can say Yes, I'm going, well again.

now that I'm

with a B profile on the final clause. I'm not apt to say because I'm well again with that same intonation; the usual thing is with a terminal fall,

cause I'm well
be
again.

The subordinating intonation matches the more subordinate of the two clauses. The conjunction because makes a similarly striking contrast with if; the two are at opposite extremes of the subordination scale and the intonations behave accordingly. If you ask me Are you going to the funeral and I reply

No, if it's not necessary.

the fully subordinate if clause takes a fully appropriate B profile—the terminal rise requires no other motivation than that the sentence is incomplete. But if I reply

No, because it's not necessary.
I normally use that terminal fall. And if I try to say

No, because it's not necessary.

with the terminal rise, the up-in-the-airness requires some other explanation than mere incompleteness. It will probably be taken in some sense of Why do you ask? Perhaps I'm genuinely puzzled at your asking; or I may imply 'what right have you to ask?' which translates into 'What business is it of yours?' In the case of genuine puzzlement I might elaborate with

No, because it's not necessary—did you feel otherwise about it?

In the case of Why do you ask? I could elaborate with

No, because it's not necessary, and I hope that answer will satisfy you—too bad if it doesn't!

containing a string of B profiles. The point of this comparison is that the intonation signal remains constant: what makes it appropriate for subordination is the same up-in-the-airness that makes it appropriate for questions.

But the fact that it has a broader meaning does not signify that it is any less important to subordination. It may be the only overt signal we have. This again is clearest with conditions, as we saw in the with all that loot example earlier. It is the regular thing with conditional imperatives and other conditions without an expressed if. To answer Why are you so stingy where your boy is concerned? one may say

Give him money,

he spends it on do pe.
or (using the same intonation) You give him money, he spends it on dope, or I give him money, and he spends it on dope. A few other clause types without explicit conjunctions behave the same. When, for example: Winter comes, we trot out the boots and parkas; I get home, everybody starts scolding me. Here again we observe a difference between degrees of subordination. An unexpressed if is more subordinate than an unexpressed even though, and the intonation carries the contrast fairly well: You try with all your might, nobody appreciates you with terminal rise suggests 'if you try'; with terminal fall it suggests 'even though, in spite of the fact that'.

I've tried to show that some clause types are more subordinate than others, and that intonation is to some degree clued in with the difference. But intonation also serves as a clue to degrees of subordination within a given utterance. This was noted by Pierre Delattre (e.g. 1965, 25), who gave the intonation signals the names major continuation and minor continuation. I can illustrate with a sentence that is ambiguous without the intonational contrast, which we generally mark simply with a comma at the major break:

If you need it, when you get there call me.
If you need it when you get there, call me.

I've given B profiles to both subordinate clauses, but the subordinate subordinate one has a lower terminal pitch. This use of relative height is quite widespread—Delattre found it in several languages.

But again, as with all the other syntactic uses of intonation, the syntactic meaning, which in this case is the bracketing of clauses, is a byproduct of subordination in a much broader sense, which may have nothing to do with syntax but only with how the speaker feels about his utterance. The sentence may be one in which the embeddings are irrelevant, yet the lower rise will be subordinate in terms of its importance. Here is an example in which I am going to permute both the relative heights and the order of the elements:

know
You'll think about it.
that I'm telling the truth, if you

With this arrangement the speaker puts in first place your giving the matter your careful attention. Reverse the heights of the two subordinate clauses, and thinking about the matter becomes incidental to truth-telling. To permute
the clauses themselves I must paraphrase, but that does not affect what the relative heights tell us:

If you think about it, my truthfulness will be obvious.

First place goes to truthfulness, but with the heights reversed it goes to thinking about it.

Actually the B profile is not the most frequent way of showing relative subordination where American English is concerned. We are more apt to put a fall-rise at the major break (I'll illustrate in a moment), and this points the way to intonational configurations as being themselves rankable in terms of which ones subordinate the most strongly. I've been leaning heavily on the B profiles, as they are the best subordinators, being the most up in the air. The fall-rise is also handy for subordination because of the terminal rise, but the rise usually does not go very far and the falling part tones it down further. Listen again to the major and minor continuation example, with fall-rise substituted for one of the B profiles. I'm going to exaggerate, and you can see that no matter how high the simple rise of the B profile goes, the fall-rise is still the major break, which means that it is not as strong a subordinator:

If you need it, when you get there, call me.

We can generalize that the major break comes at the point of greater completeness, and that completeness is manifested in two ways: by relative height in B versus B, and by configuration in B versus other profiles.

The subordinate clauses we have been looking at have been mostly adverbial clauses. What about adjective clauses? The most important distinction with these is between restrictive and nonrestrictive clauses. Intonation plays a role, but not in the way we are apt to expect. Nonrestrictive clauses are sometimes termed parenthetical, and in general such clauses are treated as parentheticals, with the pitch brought down. So we have the distinction between

People from Guam who are not required to have passports may take Corridor B.
People from Guam, who are not required to have passports, may take Corridor B.
The second normally has lowered voice on its nonrestrictive clause. But notice now what happens when we do exactly the opposite:

People from Guam, who are

pass

ports, may take Corridor B.

In this case the nonrestrictive clause is not an explanation but a sharp reminder, perhaps to warn immigration officials that they must treat the people from Guam with special consideration. What the intonation has done in both places is introduce something at a different key. It's as if a new voice were chiming in on a conversation, creating a tracking problem—the cocktail party phenomenon. The tracking of the two voices is accomplished by the relative height of the overall levels, and whether the new voice is higher or lower makes no difference. It's true that in the majority of cases a nonrestrictive clause is lower in pitch than its surroundings, and the same can be said of parentheses in general; but that's all it is—a majority. Higher or lower depends on the speaker's intent.

Finally, what about degrees of subordination not among clauses but among the intonation profiles themselves, which I touched on a moment ago in the contrast between B and the fall-rise? I've pretty much stuck to one profile, which happens to be the one where rising pitch is almost in a pure state and consequently serves best for subordination. Without going into the details of the other configurations, I can say that the best subordinators are the ones that give the greatest play to terminal high pitches. A simple test is to take an if clause by itself as an answer to a question and imagine that the speaker turns his back and walks away as soon as he has given the answer. The profile that is most appropriate for that cutoff is the one that is least appropriate for subordination. So imagine that someone asks you Shall I eat it? and you reply in any of four different ways. I'm going to give the patterns from best to worst as a way of breaking off the conversation, as my ear judges them:

like you
If you
it. If it.
like
like it.
If you like it.

The best subordinator is the last one, Profile B, where the only direction is up. And even within Profile B the amount of terminal upmotion counts. When I say If you like it at a relatively low overall pitch and without much terminal rise, I am more apt to be caught at the moment of turning away than when I say the same words on the same pattern but with a higher range and more rise. It isn't that the difference is going to be significant all or even fifty per cent of the time. But it is available. And that is as much as we can say about intonation in general. It is not married to syntax. But it is always available.

Note

1 See various papers by Jiří Nosek, especially Nosek 1974.

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Subordinate Tones of Voice
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1. Issues. For some years now the notion that grammar and intonation constitute separate sub-systems of English has been championed by Dwight Bolinger. In 1972 he wrote "Whether one tries to set up prosodic rules for syntax or syntactic rules for prosody, the result is the same: two domains are confused which should be kept apart" (p. 644). Elsewhere he proposed using the term "cooperation" in preference to "interdependence" as an appropriate descriptor for the interrelationship between intonation and grammar, adding that we could probably assume that "if a given intonation is possible at all, it will be possible with any syntactic category" (1982, p. 4). The number of supporters for this view has grown in recent years. D. R. Ladd and Mark Liberman, among others, have adopted modified versions of the position. Ladd has in addition recently stressed the critical importance of separating structural descriptions of intonational phenomena from the functional and semantic goals they effect (1983). He has built on the work of researchers such as Pierrehumbert, 't Hart (with colleagues) and others, particularly in adopting their standards of phonetic explicitness, while attempting to remedy the inability of these approaches to express phonological and functional generalizations. As I am sympathetic to both of these goals as well as to the maintenance of a hearty if not complete separation between intonation and grammar, these are the broad positions supported by this paper.

Numerous non-grammatical functions have been proposed for intonation, among them emotional expression, semantic contrast, definition of social relations, and discourse cohesion. It is the last of these we will explore here. We will in fact consider evidence that the production of discourse cohesion is the most pervasive use of pitch -- that discourse concerns are continuously and unavoidably expressed in speakers' intonational decisions. These concerns are not in competition with other pitch functions but define the ways those other functions relate to one another in the production of coherent messages. States of emotional excitation and highly informative speech are no more exempt from requirements of coherence than are other, less marked utterance types, and thus no conflict is involved in accepting these roles simultaneously. What we will attempt to do here is uncover a few of the structural devices called on to relate individual pitch gestures in larger segments of meaning. Many of our findings are consistent with those reported by Chafe and summarized in his hierarchical and flow models of narrative construction.

2. Method. Given the uncertainty in the field as to which entities are significant and thus which notational devices should be adopted, I have chosen a notational system which I believe begs as few theoretical questions as possible. The system that seemed capable of recording pitch levels as reliably and consistently as possible was a kind of musical transcription; the system also provides an intersubjectively comparable base. A group of four of us (two musicians and two
linguists) listened to recorded speech samples and then (humming along if necessary) submitted the pitch record to a musical staff, comparing perceptions with notes on a keyboard. We hoped in this way to retain the subjective essentials of pitch interpretation.

During the initial stages of data analysis I was surprised to find speakers or listeners (or both) regularizing pitch behaviors I had expected to be more random. Specifically, speakers were heard to rise and fall methodically to "notes" they had previously used for similar purposes (i.e., as rise or fall targets). These speakers were not returning to variable embodiments of a concept "high" or "low"; they were returning, for example, to F, F#, and G, and their chosen targets made semantic sense in relation to one another. An onset of G might introduce a new discourse direction, whereas an onset one step lower, at F, would announce follow-up material. Initially it was suspected that only very gifted speaker-listener pairs would be able to track tones in this orderly manner. That suspicion turned out to be unfounded, as all pairs produced similarly patterned regularities. (This does not mean that listeners agreed on every point of the transcriptions; we did not. Listener agreement/disagreement is currently under study.)

3. Upper bounds. Many of the regularities in pitch patterning seem best explained by hierarchical unit-building motivations. The highest, presumably most informative pitches produced by each speaker were located at sentence onsets — if not on the first syllable, then within the first contour. Even where speakers made emphatic points later in the sentence, pitch levels accompanying these points rarely surpassed the standard set at the onset of that sentence. Moreover, some speakers returned to the same note or one of a small set of notes repeatedly for initializing sentence-type utterances. Speaker 7, a female psychology lecturer who had received a student award for her lecturing, was extremely methodical in this respect. Over half of her sentence onsets were recorded precisely at D#, and the others fell within one half-step to either side of this level. Presumably the listeners appreciated systematicity in this form. Although not as consistently as speaker 7, all speakers exhibited preferences for particular notes in onset position. These were few in number (3–5) and were spread over no more than about two steps on the scale.

We would like to claim that these regularities stem from the speakers' use of pitch to denote major discourse sectors. We must acknowledge, however, an alternate explanation for high pitch at sentence onsets. It has been proposed that initial high pitch on sentences derives from increased subglottal pressure following inhalation. This makes high onsets an involuntary feature of the respiratory system and possibly not a semantic gesture. In fact, this explanation for high onsets no doubt has merit. On the other hand, it fails to acknowledge speakers' apparent abilities to discriminate and recall pitches with greater delicacy than simply recognizing them as "high". The following sequence of sentence onsets from an anthropology lecture illustrates the discrimination pattern found commonly in our data:
1) I'd say talk first about Eskimo economy....

2) one of the things that stands out about aboriginal eskimos....

3) the areas a/ in rich areas like Alaska.... b/

Note that peaks rise to D in sentence 1 but only to A in sentences 2 and 3. This represents a 2.5-step lowering between 1 and 2 but no equivalent lowering between 2 and 3, ruling out the interpretation of drift. If the sample could have been longer, it would be obvious that onsets continue at and slightly to either side of A, exhibiting no further falls. Nothing as high as the initial D occurs in the transcript until the speaker begins summarizing his major point, and there we find:

'Pygmies do not spend their lives working; they work no more than a three-and-one-half to four-day week, and the rest of the time they spend doing what they'

4) want to do a/ and and sleeping a lot b/

These observations summarize a contrast developed throughout the lecture between our conception of the good life and the conceptions of certain "undeveloped" cultures elsewhere on the globe. As there were no instances of pitches higher than D in the transcript, we see clearly that this speaker chose to dispense his highest notes on initializing and summary accents. The choice implies a significance for major-sector onset marking which is almost equal (given correction for S-internal downdrift) to that of the lecture focus. The two demarcators together form upper bounds over this coherent sector of discourse. The specific functions of these markers would be undiscernable within systems that recognize all high pitches as equal -- and the respiratory explanation is among these. We can accept it as a partial explanation for onset heights while still recognizing semantic functions for these pitches at a more precise level of analysis.

4. The single drop. We noted that in the above example the extra-high paragraph marker was adjusted downward in a single step -- at the onset of the second sentence. Subsequent sentence onsets were approximately equal, indicating that the speaker had purposely deviated from a pattern in order to produce the one-time marker. A similar configuration was often found sentence-internally. We observe it in the following sentence produced by Jessica Savitch during a televised news report:
5. a) social security has ordered its judges to follow

b) yet another policy

c) what the agency calls non-acquiescence

d) with decisions of the federal courts.

The initial pitch at A# is not repeated, although pitches on "another" and "agency" are only one-half step lower. The second contour peak is adjusted downward to a G, after which all remaining peaks are uttered at G or A. An abstract of peak heights illustrates clearly the adjustment pattern:

Peak abstract sentence 5

The shape of this adjustment has in common at least two features with that among the onsets of a cluster — the single high pitch initially with subsequent highs that never quite reach the onset level again, and smaller variations between subsequent peaks. The presence of these variations suggest that the hierarchizing process might be repeated at lower levels. There is no downward drift of the type believed by many researchers to characterize English statements. A few examples of downdrifting sentences were recorded but they were much less common than those with a single downward adjustment. Our sentences did of course exhibit terminal falls, but these usually were realized on a single word or pair of syllables in the last contour. This finding was a surprise. I believe the phenomenon is related to the relatively long sentences produced by most of our speakers and the need to keep pitches in a viable production range. Downward drift was controlled largely by returns to normative levels at the ends of contour phrases.

5. Contours and phrases. "Contour" and "phrase" have evolved into technical terms during this analysis. Contour is the name given to any pair of directional pivots, such as a "rise-fall" or a "fall-rise". The rise-fall contour shape was used far more frequently in our data, and thus most of my norms and interpretations are derived from it. More data will have to be collected (probably from different discourse types) before claims can be made about the similarities between these two contour shapes. Here we will refer largely to rise-fall events when mentioning contours. Rises and falls are viewed as accomplishing different functions here as in many descriptions of intonation, although the functions are demarcative and relational rather than semantic in some other sense. Generally speaking, rises are associated with significance and falls with boundaries.

We have seen onset "highs" used to signal new discourse sectors and new sentence-type units. These highs may be viewed as rises from a norm
level which is calculated quickly during an utterance production. Classifying them as rises will allow a consistent treatment of these highs with other rises that occur sentence-internally. Rises within a sentence are correlated with informationality. As Bolinger (1983) says, we go up on what interests us. Or alternately, as suggested by Brazil, Coulthard, and Johns (1980) in their more socially oriented analysis, we use high key for information we want to be taken as contrastive (and thus informational). Falls are viewed as demarcating sectors of speech. These sectors come in many sizes; the basic ones can be as short as syllables (rare) or as long as several words. All are defined by the falls that terminate them. Basic sectors are called contours in this study. A contour occasionally rises and does not fall but levels off (as in Bolinger's B accent). These gestures are also counted as complete contours, and such flattening serves the same demarcative function as a fall. Flats or "planes" as I refer to them can be formed by any two or more syllables uttered on a common pitch.

Earlier we interpreted onset rises as demarcating sectors of speech such as sentences and sentence clusters. Now we must modify this interpretation slightly, since it is falls, not rises, that are principally demarcators. Onset rises, like others, should imply significance. They do, but they point to significance in environments where speakers' points almost never occur. The rise message is thus interpreted as applying to a string and not to the lexical item on which it occurs. The principle is similar to that of using capital letters both to signify personal names and sentence onsets.

The critical relational features of any contour are its onset level, its peak level, and the level to which it falls. We will consider below examples of how these pivot elements serve to define a subordinate relational network within a discourse.

6. Open and closed contours. First, however, we need to consider one functional property of the contour itself, separate from its individual rise and fall components — its open or closed status. A contour that begins on C, rises to E, and then falls again to C can be considered closed. The pitch has returned to the level from which the deviation occurred, signaling an intention to continue as before. Examples of this contour type are extremely common in our data. A few are included here:

6) in particular if we're dealing with tree structures

7) and the very basic distinction that he makes is between the explicit and the implicit (contour)

(ex. 7: whole step scale)

The contours in both 6a) and 6b) allow for local accents which appear as isolated events. There is a consistent starting level from which these deviations depart and return in serial fashion. Their status as separate gestures is made clear intonationally. In 7a), the planes and contours
are somewhat less transparent as separate gestures, but we can separate
them from one another by noting the sequences of B's in initial position
and then 'noting' where the note B occurs again in the sentence. It is at
the onset of the next important contour. We further note that the NP
completion on "makes" is marked intonationally by a return to the B on
which it began. We can say that the NP has been marked as a closed
discourse constituent by the application of a broad pitch contour over
the entire string. The contour is counted closed on the basis of its
return to the note on which it began. Note that the grammatical phrase
is actually divided into two parts by its pitch contours but that the
first part, which ends on the word "basic", does not return to B. This
contour is considered "open" — pending additional material for its
completion. Applying a closed contour to a string of material gives in
a kind of autonomous status. It announces that the speaker wishes the
former constituent to be considered finished, and that a new element
will follow. I think it effects on a smaller scale the same type of
closure that characterizes sentence completion.

The phrase is a string of contours bounded in much the same way as
individual closed contours except that it is hyper-closed. The fall that
forms a phrase boundary must be to below the onset level of the unit it
is closing. Phrases formed by these hyper-closures allow still another
hierarchical level of organization to discourse components. Phrases
seem to me to be the entities referred to as "contours" by many
linguists who take the traditional (British) contour approach to inton-
national analysis. Such approaches have never produced, so far as I
know, a definition of the contour, in spite of the widespread use of the
term and the concept. If the phrase as described here continues to
stand up under scrutiny, it could prove to be an important entity for
intonational analysis, since important adjustments seem to be made at
phrase boundaries. Pitch norms may be reestablished at phrase bound-
aries if they have wandered too far up or down. This is possible
because the material following a hyper-closure is not heard as relating
to preceding material as part of the same unit. A fall this size
apparently receives the perceptual interpretation "break". Schematic
representations of the three contour types follow.

\[
\begin{align*}
&\text{open contour} & \text{closed contour} & \text{hyper-closed contour}
\end{align*}
\]

7. Tones in sequence. We will try to apply the basic concepts out-
lined above to a few brief texts to see how they contribute to discourse
structure and cohesion. While doing this, we will compare the effec-
tiveness of these descriptive concepts with a few others proposed by
Crystal and Quirk in 1964. Theirs was some of the earliest work in
this area. C & Q noted that tone units in sequence often form distinc-
tive patterns and proposed that "even if such relationships did not
force themselves on our attention through configurations in substance
itself, one might set up the existence of higher-order patterns (above
tone units) as a hypothesis in view of the hierarchic structure of
prosodic features that it is found necessary to postulate for other
aspects of speech data" (p. 52). They insisted that subordination be defined solely on prosodic grounds, identifying what they considered the primary characteristic of the subordinate tone-unit: "its pitch contour, while having a complete and independent shape within itself, falls broadly within the total contour presented in the superordinate tone-unit" (ibid.). Such units could either precede or follow the superordinate nucleus, singly or in combination.

Certain similarities between this view and the hierarchical approach being investigated here are at once obvious: both subscribe to the notion that contour sizes can be used to imply subordination between segmental elements; both attempt to analyze prosodic data on its own terms. In fact neither succeeds fully in this, but I think the effort should be made as far as possible. There are also differences in the two views -- the greatest being the overall conception of how pervasive relational pitch gestures are within linguistic constructs. There are some less substantial but still important differences in the descriptive devices proposed by the two approaches as well. These will be considered conjointly with a few lines from an old-time medicine show pitchman, Doc Bloodgood:

\[ \text{a} \] actually I'm really not a doctor; I did attend Northwestern for two years
\[ \text{b} \] I'm not licensed  \[ \text{c} \] I'm not allowed to make calls

In (b) we have clauses in sequence -- temporally and semantically. The first receives a rising or open contour, the second a closed contour. The open contour on (b) signals an incomplete constituent and the speaker's wish to have the following matter considered part of a unit with it. By my reckoning, the contour on (c) implies subordination to (b). Both begin on the same note, A, but whereas "licensed" rises to D\# (and stays two syllables, giving the peak extra prominence), "make" rises only to D for one syllable. This interpretation is in keeping with the semantics, which propose a cause-effect relationship between (b) and (c): I'm not allowed to make calls because I'm not licensed. The unitary status proposed for (b-c) may derive from the fact that both elaborate on the earlier statement "I'm really not a doctor": 'Here is the reason I can't claim to be one and the consequences of not being one.'

Crystal and Quirk's stipulation that contours be directionally similar to be considered pairs will not permit the interpretation of (b) and (c) as subordinate relatives. The contour on (b) will almost certainly be considered a rise and that on (c) a fall. This is unfortunate, because the first part of (c) -- "I'm not allowed" -- does actually meet the directional requirement by matching the rise in (b). It is also appropriately reduced, creating an even stronger case for subordinative status. But it cannot be admitted. Similarly, in the following example, also from Bloodgood,
9.a) But I would prefer to go down the highways and into the byways

b) in an attempt to allay the sickness and suffering that

the words "highways" and "byways", obviously semantic coordinates, are interpreted intonationally as coordinates by being raised and lowered to exactly the same notes. The set of potential coordinates following -- "sickness" and "suffering" -- are given different intonational treatment. The second of these words is both lower and narrower in contour than the first, indicating subordination as in example 8. This subordination cannot be admitted using C & Q's criteria either, if by having the subordinate contour fall within the superordinate they would disallow the low extension on "suffering". I think the contour similarity is in this case creating a subordinate relationship which is better accounted for by the matching contour shapes, descending peaks, and return to B on "suffering", which creates a unit of the sequence "allay the sickness and suffering".

8. An analysis. We will see how the concepts of open and closed contours and of tone-matching are applied to semantic interpretation in the following example sentences. The speaker, Charles Osgood, is introducing a psychologist whose work is to be reviewed on Walter Cronkite's "Universe". Osgood's voice is heard while views are shown of Liv Ullman in "Scenes from a Marriage":

10a) she's just acting

put it another way b/ she's using her facial muscles
to express emotions c/ she's only pretending to feel
d/ so is Doctor Paul Ekman e/ of the University of

California f/ San Francisco g/ he's less artistic

about it than Liv Ullman h/ but more scientific

i/ Doctor Ekman has developed what he calls
The highest pitches (A and B) are used for "put it" in b), "so is" and "Ekman" in f), "more scientific" in j), and "Doctor" in k). Of these all are sentence onsets except "more scientific" — which soon reveals itself as one of Osgood's main points. Note that the high reached on "more scientific" is equal to the onset high for the preceding two sentences, which places it on a high local norm. It is higher, however, than its own sentence's onset. Onset (i) is lower than the others in this speech sector by 2.5 steps — an unusually large variation. Its content, however, was clearly meant as a humorous aside by Osgood, as it accompanied footage of Ekman making faces one after the other. On (j) he returns to the discourse theme, and the high norm at A is readopted. Onset (a) is at a low F and reflects the status of that sentence as a completion on a preceding set of remarks. The onset in (b) ranks as a new cluster marker due to its rise from the preceding onset. In sum the speaker has used his high pitches to divide and punctuate the speech string into sentence-like units and larger.

Not only are the onsets of sentences signaled intonationally; terminations also signaled — perhaps more dependably than onsets. Sector (a) ends in a fall from G to C, a 3.5-step fall across the short span of two syllables. This, as we have mentioned, was the preferred method of closing sentences for most of our speakers. The most typical contour is much the same as that in (a) — a flat body rising about 1 step and then falling 3.5 steps, forming the pitch equivalent of this figure:

```
\[ \pm 1 \]
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Occasionally the falls were spread over several syllables, although this was less common. An example of a gradual falling termination is available in (e). Whether the fall was abrupt or spread it fell a characteristic distance, 3.5 steps, a large majority of the time. This falling interval was used so regularly in conjunction with statement terminations that I now regard it informally as a morpheme. It is likely, since the interval formed by 3.5 steps is a half-octave and is thus harmonious and easily learned, that this pitch interval has been adopted in English as a terminal marker. In this sample it is used on (a), (e), (f), (j), and (l): every sentence. (To count intervals allow .5 steps for each line and .5 for each space on the graphs.) Recognition of a learned interval in terminal environments could account for the often expressed intuition that English statements have a "distinctive kind of falling pitch" (Chafe, 1979).

Not only are the onsets and terminations regular in their behaviors in this passage; rise and fall levels on individual contours are extremely methodical. Note that the short introductory "Put it another way" is given its own contour which ends on D. The two contours in c), both open, await closure which occurs at the end of d) — on the same note as the preceding closed contour. Sector e) includes 3 contours,
the second of which closes again on D, just prior to the terminal contour. Thus all phrase boundaries in this sentence are made on a single note with the exception of the terminal closure, which is lower.

A glance at the rise levels shows them to be no less regular. After the initial contour, every phrase contains peaks at the same high G. The resemblance between rise patterns in the sentence interior units is striking. On each of the sectors (1) "she's using her facial muscles", (2) "to express emotions", and (3) "she's only pretending", there is an onset at E and a subsequent rise to F and then to G. The similar number of syllables within each of these sectors in combination with the pitch patterns gives a strong rhythmic integration to the whole. On each side of this set of structural triplets is a slightly aberrant contour; the first marks the onset and the last the termination of the encompassing unit. Since d) and the first phrase of e) begin and end on precisely the same notes, they are classified coordinate structures — elements given equal significance as subparts of the sentence. The two contours in c), however, differ slightly. They use the same onset notes and together form the same F-G rise pattern, but the fall, is short of closure. This prevents their being construed as completed units while keeping up the rhythmic organization of the sentence's elements. The unit of which they are a part ends in D), and it is that entire element (c-d) which is held in equivalence with the final closed contour and termination elements. The speaker's strategy has been to grant equal status to the two clauses but to dilute the strength of this division with a triplet rising pattern.

Finally, having considered that phrases are internally structured by contours, we can see the entire process being reiterated at a higher level: the sentence is internally structured by the phrase units which in this case are presented as equals. And at levels above the sentence the process occurs again. Paragraphs contain clusters which contain individual sentences. The cycle is bounded ultimately by the width of speaking ranges which can no longer accommodate wider intervals.

Summary. We have seen examples of both coordination and subordination created through the use of a simple iconic device. Equal pitch height has been applied in equivalent environments such as sentence or contour onsets to imply equivalent significance. Unequal pitch height in equivalent environments signals subordination. Subordination can also result from conjoining similar contour shapes and lowering or compressing the pitch range on one. Structural parameters which have been found relevant to the constituent-building process include relations between absolute pitches in critical environments (at pivot points, for example) and interval relations between concatenated pitches.

It appears from all this that incredible burdens are being placed on speakers' and listeners' tonal memories. In order to control pitch heights used for sentence onsets, for example, one would have to recall precisely the pitch on which the last onset occurred. I doubt, however, that they are being recalled without the aid of some more local reminders. We probably cannot recall absolute pitches well enough to
reproduce them over more than about one or two intonational phrases at a
time. It appears to be one of the functions of phrase boundaries -- as
distinct from simple contours -- that they release the memory from its
call obligations on absolute pitch levels used for contour perception.
Contours, once processed, may be stored as configurations with a few
salient attributes. Speakers probably do not control pitch levels by
recalling absolute pitches of former contours so much as by recalling
critical aspects of the immediately preceding contour and setting them
into relation with comparable aspects of the current contour. Critical
features that may be recalled in this way are onset levels, peak levels,
and fall levels. There is no doubt also that some part of this "tonal"
memory is reconstructed through semantic cues provided by the segmental
information.

We have attempted to represent an outline of the pitch network that
binds units into discourse coherence. Since our data were taken prima-
rily from monologue, in some ways a speech situation that privileged
speakers (to plenty of time, freedom from interruptions, etc.), it will
be interesting to learn whether the analysis techniques generated from
this data will transfer to conversation.

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26-29.
The Linguistics of Particularity:
Interpreting Superordination in a Javanese Text

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"A definition of language is always, implicitly or explicitly, a definition of human beings in the world"

---- Raymond Williams (1977:21)

The term which titles this essay, the linguistics of particularity, I first heard from Kenneth L. Pike many years ago. Most of my own academic life has been spent exploring that term, with a growing sense of its importance. At first it seems perverse, this substitution of particularity for the pursuit of generality or universality as the goal of our craft. Is it any more than an instance of the general heuristic principle (mathematical or rhetorical): always invert?

For Pike, I think, the motivation toward a linguistics of particularity is part of his strong conviction that one's understanding of another language, or another person, is a movement from an etic perspective --- an outsider's perspective --- to an emic understanding, a more fully contextual understanding. This change is not just an increasing awareness of regular patterns in the language, but a change in what Pike calls the observer. That is, the particularity involves both the observer and the text: both are in history. What we call a text --- some remembered bit of language is the trace, often a very faint trace, of some event in some world in which somebody wanted to say something to someone about something, and that someone and somebody and something are particular. Likewise, that linguistic observer is a particular observer, full of biases he or she is never fully aware of --- the biases of his or her own language, and his or her understanding of that language. Like the horse's hoof and the prairie grass, the observer and the text co-evolve.

In the years since Pike first talked about a linguistics of particularity, I seemed to hear similar kinds of statements from several very disparate sources: from Gregory Bateson (1979:17) who wrote that "contextual shaping is only another term for grammar"; from the post-structural hermeneutic tradition in France --- most clearly, perhaps, from Paul Ricoeur (1981); from the late Wittgenstein (1958) in his understanding of language as a form of life; from Raymond Williams (1977), whose penetrating Marxist critique of linguistics begins with the sentence quoted above as an epigraph; from the interpreters of Heidegger like Grassi (1980) and Ortega (1957:242) who proposed an interpretive linguistics which the latter called, "una nueva filologia;" or from Clifford Geertz (1983:19) who describes a "laws and instances" approach in the social sciences being replaced by a "cases and interpretations" one.

I do not cite all those people to endorse a particular brand
of linguistics. A truly interpretive linguistics, a linguistics of particularity, has yet to appear. All of them, however, if not in unison then at least in harmony, suggest alternatives to a structuralist view of language — and I mean generative as well as taxonomic structuralism. These alternatives share a resemblance in their view of language as activity in a particular context, co-evolving along with that context, in part constitutive of it.

In the unfinished job of projecting "una nueva filología", Ortega (1959) gives two axioms of this discipline:

1. Every utterance is deficient — it says less than it wishes to say.

2. Every utterance is exuberant — it says more than it plans.

The philologist helps us correct our deficiencies and exuberances in understanding those we have trouble understanding, in distant cultures or right at home. The goal is not a theory of language, but something more like usefulness — usefulness in helping us make the adjustments necessary to understanding the Javanese, the Cree, our own neighbours, and ourselves. And the rigor here is not the rigor of theory (with particular bits of language as examples) but the rigor that comes from the particularity of the text-in-context.

The best method I know for doing this is what has been called "back-translation," starting from a translation and then seeking out the exuberances — those things present in the translation but not in the original — and the deficiencies — those things in the original but not in the translation. For most linguists, the translations are glosses, i.e. English substitutes for words and parts of words (including labels for linguistic categories). This is an English appropriation of the text under study. And, of course, we appropriate not only the words, but also a context for them. I would argue that most of the analysis is accomplished by the glossing. In "back translation" one reverses that process, not necessarily to improve the translation (one may be starting from what is already the best possible translation), but rather to get closer to that particular text-in-context, and see it as a reasonable and sane way of being in the world.

An Episode from a Javanese Wayang

The rigor in this essay comes from a written version of a scene from a Javanese shadow play. It is taken from a pakem, an interesting Javanese genre of models for shadow play performances. Sometimes they are quite abstract, other times (as here) rich with detail and very lively vocabulary. It's good data for studying Javanese discourse, since it has a full Javanese past, unlike some of the new language games for which the prior texts are non-Javanese. I had been reading the whole work with a fellow Javanist, Alan Feinstein, who was working on a translation. Every
week we would do back-translation --- trying to find the ex-
uberancies and deficiencies of his English interpretation. The
passage I've selected for close inspection here is one we worked
on. Later I sent the translation to a Javanese linguist, Bambang
Kaswanti Purwo, and received many corrections.

The passage is a typical episode from a wayang used to "clean"
a village of a variety of real and potential evils --- in people
and in the air. It's the life story of the demon Kala. His
name in Javanese means "time" --- as well as "destruction." Wayang
is a means of coping with Kala; indeed, as the story recounts,
wayang is used as a way not to defeat the demon but to constrain
it. The demon is limited in his prey to children of various
sorts --- an only child, twins, a girl born between two boys,
and several other categories. These constraints on the demon
were imposd by his father, Siva, who conceived Kala in a moment
of anger.

In this episode, Kala is chasing an orphan boy, Jaka
Jatusmati, Whenever he stops to hide from Kala, the boy escapes
but a traditional taboo is broken. Here a steamer of rice is
upset, which saves the boy but breaks a taboo and requires a
very interesting remedial act.

Let us go through the story, lightly parsing, with a bit of
commentary when it gets obscure. I hope the reader will be patient
and read bilingually.

Dandang Rubuh

An episode form the Pakem Pangruwatan Murwa Kala by Kyai
Demang Reditanajja, arranged here in lines, to be read from English
to Javanese. (The spelling has been brought up to date, and some
clear typographic errors corrected. The punctuation is as in
the original.)

1. There was a woman steaming (rice) inside of her house,
   Be person female steaming at inside of house
   Ana wong wadon adang ing sajroning omah,

2. the doors were all closed,
   door art. all closed
   lawang kabei diinebi,

3. while the one who looked after (it) - her grandfather
   while who look-after related-as grandfather
   dene kang tunggu kaprenah kakekne
   was outside of the house,
   be outside of house
   ana sajabaning omah,

4. concentrating on what he was doing so it happened
   while absorbed-in thing so happen-unnoticed
   sinambi anggegeb barang temah katungkul
5. Jaka Jatusmati entered the house,
   Jaka Jatusmati lumebu ing omah,

6. and watched over the steaming
   banjur unggu dang-dangan

7. and arranged the wood of the fire
   kalawan angutik geni

8. Bathara Kala --- something made him stop walking
   Bathara Kala kandheg lakune

9. And he sought the one who had put the steamer on the stove,
then tried person who put-on-stove steamer
   nuli ngupaya wong kang ngenteb dandang,

10. And met her in the garden picking vegetables,
    meet be in garden pick vegetables
    ketemu and ing tegalan lagi remban janganan,

11. And urged her to order away
    and urged to order go-away to
    banjur sinraban supaya akon lunga marang
    the child who watched over the steaming,
    child who look-after steaming
    bocah kang tunggu dangdangan,

12. But he was not paid any attention
    but not be-reacted to
    nanging ora dipaelu

13. Bathara Kala then returned impatiently.
    then return not patient
    Bathara Kala nuli bali ora saranta.

14. Jaka Jatusmati was enjoying himself, sitting, embracing his knees,
    Jaka Jatusmati still enjoy
    Jaka Jatusmati isih ngenak-enak
    embrace knees
    ngrangkul dhengkul

15. looking after the fire.
    and look-after fire
    karo tunggu geni.

16. Bathara Kala opened the door
    Bathara Kala mbukak lawang

17. and entered the house
    then enter in house
    nuli lumebu ing omah

18. Jaka Jatusmati was spied on
    Jaka Jatusmati kadingkik

19. then seen to go hide behind the steamer,
    then evade conceal steamer which erect
    wis angocati ampingan dandang kang ngadeng,

20. and he grabbed at him but he slithered away around the steamer
    intend be-seized slip away circle steamer
    arep cinandak marucut ngubangi dandang
    (marucut - state of being 'loosed', as when you catch a fish
    and the fish is slippery.)
21. Bathara Kala said
   Bathara Kala ngandika.

22. Hey, slippery child!
   Hey child slippery
   Heh boca kesit!

23. You just give up --- don't hide behind the steamer
   you follow just don't go-in-shade of steamer
   kowe nuruta bae aja ampingan dandang

24. Don't you feel you got enough from this steamer?
   ques. you not feel that get full from steamer this?
   apa kowe ora rumasa yen nggonmu wareg saka ing danding iki?

25. and he pounced.
   banjur nubruk.

26. Jaka Jatusmati escaped and went out,
   Jaka Jatusmati ngoncati metu,

27. The steamer fell over.
   dandange rubuh.

28. Bathara Kala slipped and fell, smeared with rice, his head mov-
   ing continuously from side to side, and his legs jogging quickly
   to shake off the heat.
   Bathara Kala slip fall smeared shake-head jog
   Bathara Kala kapleset tiba galumprut gobag-gabig, kicat-kicat
   (kicat-kicat= uncomfortable feeling in feet from walking on a hot place)

29. The woman who owned the house came home and saw that the steamer was upset,
   person who own house come see that steamer knocked-over
   wong kang duwe omah teka sumurup yen dandange gumarimpang,

30. and asked her grandfather who was outside,
   ask to grandfather who be outside
   takon marang kakekne kang ana ing jaba,

31. what had happened that the steamer fell?
   what origin steamer get fallen
   apa mulane dandange nganti rubuh?

32. The one who was asked shared her remorse
   who asked go-with regret
   kang tinakon melu getun

33. and said almost unheard:
   and say very quietly
   banjur angucap lirih:

34. It was because Sang Kala (time) struck,
   that because hit by sankala
   Iku wong kena ing sangkala
35. which is fatal dressed as a woman
get fatal dressed-as woman
nganti tiwas dandananing wadon

36. so then be naked, completely, and dance
so then experience naked expose dance
1ha banjur nglakonana wuda byar njoged
(byar - sudden change from darkness to light)

37. around the house in a ring three times,
circle house join bracelet times three
ngubengi omah tepung gelang kaping telu,

38. and I'll beat the rhythm --dhub, dhub, brag
I beat dhub, dhub, brag
tak tabuhi dhub, dhub, brag

39. And I'll address you as a naked madwoman.
and I address person crazy after naked
sarta tak elokake wong edan bar ndhul.

40. The person who received the instructions instantly then took off
her clothes,
person who receive lesson quickly then take-off clothes
wong kang tampa ujar ing sanalika banjur anrcuat panganggone,

41. And did what her grandfather advised
act advice of grandfather.
anindakake sawewarashing kakekne.

42. Bathara Kala felt mocked by the woman
Bathara Kala felt mocked
Bathara Kala rumasa diiwi-ivi

43. then tried to shake-off the mockery:
and shake-off
banjur angipat-ipati:
(angipat-ipati recalls kicak-kicak in line 28. It means to make
a move to shake off something unwanted, like a cockroach on the arm).

44. Hey my child of the wind
Heh bocahingsun wadu barat!
(The wadu barat are the child-servants of Kala)

45. Besides taking away their wealth,
besides deprive wealth
kajaba elongana kayane,

46. also take away their rice everyday
also deprive rice of every day
uga elongana berase ing saben dina,

47. take away seven in a household,
deprive seven a household/family
elongana pitung somah,
(this line is obscure)
48. Don't let it cease until I have captured my prey, don't you cease if not yet be seized prey—my aja kok uwisi yen durung kacandak bebuonku,

49. Bathara Kala continued pursuing the boy, wherever he had gone, Bathara Kala continue pursue to whichever-direction, Bathara Kala isih nututi ing saparan,

50. but now walking slowly. but pace slow nanging lakune remben.

The purpose in arranging the text this way is to emphasize the direction of inquiry --- from an English translation back toward the Javanese. It is a difficult task to impose on a reader, to figure out how those English words are related to the Javanese and to undo their implicit grammatical interpretation. Here the translation is a starting point, not a goal. The task is to deconstruct the translation, to the end of a greater authenticity or fullness in interpreting the text. It is a self-correction in the direction of emic understanding.

As a first step it is useful to list the exuberances and deficiencies, following Ortega's axioms for a new philology:

1. Every utterance is deficient
2. Every utterance is exuberant.

Note that Ortega says "every utterance," not just some. The paradox works even in the most intimate conversation, but the deficiencies and exuberances are almost overwhelming when one is approaching a distant text. And so it is important to list them. Here is a partial listing. I will focus here primarily on a few grammatical differences, and set aside the numerous lexical, pragmatic, metaphorical, phonological, and rhetorical differences, though these can only with effort be separated, for purposes of comparison.

<table>
<thead>
<tr>
<th>Exuberance of Translation (Only in English)</th>
<th>Deficiency of Translation (Only in Javanese)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Reduplications</td>
</tr>
<tr>
<td>Tense</td>
<td>Focus marked on verb</td>
</tr>
<tr>
<td>Aspect</td>
<td>&quot;Zeroing&quot; for animate anaphora</td>
</tr>
<tr>
<td>Anaphoric pronominalization</td>
<td>repetition for inanimate anaphora</td>
</tr>
<tr>
<td>Third Person inanimate pronoun</td>
<td>...</td>
</tr>
</tbody>
</table>

Each of these differences can be explored, with the goal of attuning oneself to the text by giving up coherences produced by things in column A --- the coherence of tense, of number, of some determiners, of some pronominalization --- and learning to pay attention to the coherences produced by those things in column B --- reduplication,
focus, "zeroing", and repetition. Each of these differences affects the kinds of textures it is possible to produce, since each has to do with coherence, i.e. cross-sentential constraints.

Discourse grammar has to do mostly with paradigmatic relations, with constraints on the fillers of syntagmatic slots. Continuity of topic, tense, or focus binds sentences in quite particular ways. One can follow a topic through a text and see how it changes grammatical shapes and roles and gathers significance in new contexts. Recent studies of topic continuity by Givon (1983) and others help us get these chains (or themes or "paraphrase sets", as we called them twenty years ago.) into clearer focus.

When one examines the topic chains in the Javanese text, several interesting things appear:

1. We can see that "zeroing" (i.e. not mentioning a topic after its initial mention — with "zeroing" in quotation marks lest we forget its English bias) occurs only with animate topics and only when the topic has been mentioned one clause earlier. There are many instances of this.

2. We can see that restrictive relative clauses only re-introduce formerly identified topics after a gap. (There are six instances here: 9, 11, 19, 29, 30, 40)

3. Pronouns are used in direct speech only, and only first and second person are found. There is no number. Topic chaining is not maintained by pronominalization, but by "zeroing" for third person animate topics in adjacent clauses, and by repeating elsewhere, i.e. with animate topics after a gap and with all inanimates. All inanimate chains are sustained by repeating the topic. There is no "it" in Javanese (nor in modern Indonesian, except as a very recent innovation.).

I would like to examine here just this last phenomenon, repeating inanimate topics, and see how it works in building the superordinate chain in the text. Some topic chains are more important than others in two senses:

1. Superordinate chains have a larger scope within a text and hence play a more important role in creating coherence.

2. As centers of coherence, superordinate chains give relevance to subordinate chains, just as a phrasal head gives relevance to its modifiers. Here we are looking at the hypotactic relations of topic chains to each other, in a paradigmatic hierarchy. (See Becker, 1965 and Halliday, 1981)

The topic with widest scope here is marked by the term dang 'to steam' in all its forms. Forms of dang occur twelve times in the text. (The nearest rival, Bathara Kala occurs only eight times.) Until near the end of the story, when the "antidote" episode occurs, this term, dang, appears in every sentence except two, and in these two (14-15 and 28) it is metonymically present, in the fire which produces the steam or the rice which is being steamed. Here is a minor text building strategy, a way of
topic chaining working under slightly different constraints from those we experience in English, since we have "it." Is this a
difference that makes a difference, as Gregory Bateson used to
say? Does it make the sort of difference that, say, the absence
of tense or number clearly makes in text-building? (Becker, 1979)

In answer to this question, let us first see what happens to
dang in each of its manifestations:

1. First it appears as a verb, stative in form: adang.
The woman is steaming something --- rice is the unmarked case.
(Line 1)

2. Then, later in the same long sentence, it is nominalized
via reduplication: dangdangan 'the steaming'.
The boy attends to the steaming. (Line 6)

3. Then it becomes a noun through partial reduplication:
dandang 'steamer'. It occurs in a relative clause reidentifying
the woman who put the steamer on the stove. (Line 9)

4. In the same sentence, it appears again, this time re-
identifying the boy. (Line 11)

5. Next, the term in noun form (dandang 'steamer') appears
twice in one sentence as the object of the verb. Kala sees the
boy hide behind the steamer, and then slither away around it.
(Lines 19 and 20)

6. It occurs twice in the next sentence, still as object.
(Lines 23 and 24)

7. Then, at the center of the story (Line 27), then noun
dandang takes a definite article and becomes subject. The fact
that this episode is traditionally named by this line (dandang
rubuh 'steamer falls') lends weight to this interpretation of the
line as the center of the story. This interpretation is given
further weight by the line which follows it, a clause with a
sequence of five predicates in a row, a common way of marking a
climax. (Line 28)

8. The noun plus definite article (dandang + e ) remains
a subject in two embedded clauses refering back to the incident,
the falling. (Lines 29 and 31)

9. And then (line 35), via a near identity of form (dandang
and dandan 'to dress, be adorned') --- a rhyme pun of
the sort very common in Javanese --- the thematic term dandang
changes to dandan, so that in a formal way the falling of the
steamer gets linked to the women's removing her clothes and hop-
ping naked around the house three times like a crazy person --- a
corrective action for knocking over a rice steamer which Javanese
friends assure me is not unknown in modern Java.

One might note that the topic chain which ranks second in
superordination (in this episode), Sang Kala, is the superordinate
chain for the entire shadow play — that is, it is the topic which gives coherence to the larger whole. Parallel to the pun in the dang chain in line 35, the Sang Kala chain changes, too, in the immediately preceding line, where the proper name, Sang Kala, becomes the common noun sangkala 'time'. Here, too, a sound correspondence is pivotal in linking the two parts of the story, the taboo breaking and the remedy.

By its persistence and repetition in a topic chain a certain term becomes a center around which other terms take subordinate positions — the four characters, the house, the fire, the rice — all of them get their cohesion from that steamer. It is the thing that holds the plot together. In Burkean terms, an instrument becomes thematic and shapes the plot.

The difference between Javanese and English in the management of a non-animate topic chain involves both exuberance of English, while the lack of rich possibilities of reduplication and repetition is a deficiency. In reading Javanese, we drop this form of pronominal substitution from our set of potential cohesion strategies and add reduplications of various sorts — reduplications of whole words or of parts of words. It may well be that reduplication and repetition can best be seen as variants of a single strategy at different levels — strategies of repeating. Repeating a term instead of pronominalizing or "zeroing" can be interpreted as the intersentential manifestation of a very common Austronesian strategy. Pronominal substitution, "zeroing", and repeating are, then, not alternate ways of doing the same thing, since they result in very different textures. It is difficult to generalize about these different strategies, but a list of some of the differences might help us to see how they do "make a difference".

<table>
<thead>
<tr>
<th>pronominal substitution</th>
<th>repetition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Term is nominalized</td>
<td>Term freely changes categories (i.e. we follow it into predicates)</td>
</tr>
<tr>
<td>2. Processing is speeded</td>
<td>Processing is slowed</td>
</tr>
<tr>
<td>3. Sound of term is lost, referentiality is preserved</td>
<td>Sound of term is preserved, even enriched</td>
</tr>
<tr>
<td>4. Sound puns are difficult</td>
<td>Sound puns are easy</td>
</tr>
</tbody>
</table>

In chaining then, zeroing is, as Fred Lupke puts it, a least, repetition a most, and pronominalization somewhere in between. Each has different effects. Note that the effects we are looking at here are not logical, but might better be called esthetic — different modes of creating a satisfying texture. One homology with these differences of texture might be the general Javanese aesthetic of density (corresponding to a strategy of repetition in discourse) in contrast to the general Japanese esthetic of sparsity (corresponding to the strategy of "zeroing" so common to Japanese
discourse). Contrast a Noh play with a Javanese wayang, or a Japanese music ensemble with a gamelan. This kind of non-rational homology is one of the things that binds a culture. (See Becker, 1979.)

Recapitulation

One of the basic differences between interpreting the grammar of clauses and that of discourse is, as many have noticed (e.g. Pike, Burke, and Halliday), that in discourse the patterning seems predominantly paradigmatic, while in clauses it seems predominantly syntagmatic. Chaining is not a central clausal phenomenon, although it appears, of course, in the guise of "Equi-NP" operations, in which mono-clausal phenomena are usually given multi-clausal interpretations (under the strange notion that a clause can have but a single predicate). Nor is discourse predominantly syntagmatic, though we can press stories into tree diagrams, with effort. Following a topic through a chain, studying its continuity and discontinuity, and then studying the relations between chains seems central to the linguistic study of texts. The likeness between many modifiers sharing a single headword and many subordinate topic chains sharing a single superordinate topic chain may be a bit forced; likewise, the likeness between word-level re-duplication and the repeating of a term in a topic chain may be no more than that — a likeness. On the other hand, language, like culture, may be bound by just such homologies.

A final word, then, about particularity. The topic chain we followed here is a particular thread in the texture of a particular tale. All discourse — unlike the study of syntax — is of necessity the study of particularity, as Ricoeur has pointed out. (Ricoeur, 1981: 198) Ortega, too, saw this many years ago, when he wrote: "...the splendid intellectual achievement represented by linguistics as it is constituted today obliges it (noblesse oblige) to attain a second and more precise and forceful approximation in its knowledge of the reality, "language." And this it can do only if it studies language not as an accomplished fact, as a thing made and finished, but as in the process of being made, hence in statu nascendi, in the very roots that engender it." (Ortega, 1957: 242) The actual a priori of any language event — the real deep structure — is an accumulation of remembered prior texts just like the one studied here: particular prior texts, acquired from particular sources. From the perspective of particularity, generality is a kind of epiphenomenon produced by the reshaping of a particular prior text to a new context. And our real language competence is access, via memory, to this accumulation of prior text.

Acknowledgements

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chain, Deborah Tannen for very insightful discussions about repetition in text-building, particularly her paper presented at the Linguistic Society of America meeting held in Minneapolis in December, 1983, entitled, "Repetition and Variation as Formality in Conversation," Fred Lupke for insisting on the relevance of leasts and mosts, and Judith Becker for many useful suggestions.

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How People Use Adverbial Clauses
Wallace Chafe
University of California, Berkeley

I am going to deal here with a subtype of the clauses that have traditionally been called "subordinate". Specifically, I am going to discuss those clauses which have often been called "adverbial", presumably because at least some of them relate to main clauses in the same way that adverbs do. To judge from the data on which this discussion will be based, the most commonly used adverbial clauses express either a time, a condition, a cause, a concession, a manner, a purpose, or a result. Although it would be interesting to examine the behavior of each of these kinds separately, I will treat them here as a single, undifferentiated category.

I want to call attention to two ways in which English adverbial clauses may vary. One has to do with their position with respect to their main clause: an adverbial clause may come before its main clause, or it may come after. With reference to this distinction I will speak of "preposed" and "postposed" adverbial clauses. The other distinction has to do with how tightly the adverbial clause is bound to its main clause. This distinction requires a little more discussion than the first: in particular, it needs to be defined differently for spoken and written language.

When people speak, they typically do so in spurts which have a mean length of about 2 seconds, or approximately 6 words. These spurts are characterized above all by having a single coherent intonation contour, and for that reason I will refer to them as "intonation units". (In earlier publications I have called them "idea units"; e.g. Chafe 1980, 1982.) They are usually separated from each other by at least a brief pause. I have hypothesized (Chafe 1980) that an intonation unit is the expression of what I have called a single "focus of consciousness". That is, it represents a brief perching of the speaker's consciousness, attention, or short-term memory on a particular small chunk of information. The amount of information that can be included in a focus of consciousness appears to be limited by a wired-in constraint on how much a person can attend to at one time. When people try to focus on more information than short-term memory can handle, they are likely to get into trouble, both conceptually and syntactically. Andrew Pawley and Frances Syder (1983) have called this the "one-clause-at-a-time hypothesis", supposing that people are cognitively unequipped to deal smoothly with more than one clause at a time.

If we look at the syntax of intonation units, we find that typically they contain a single clause: one verb, along with whatever nouns and other associated material there may be. Some intonation units contain less than a clause, and are often nothing more than a prepositional phrase or a noun phrase. We are not interested in them here. What we are interested in is the
possibility that an intonation unit can contain more than a single clause; in other words, that two clauses can be included under a single intonation contour with no pause separating them. Here we are especially interested in the fact that it is possible for an intonation unit to include both a main clause and an adverbial clause. I will call an adverbial clause in such a situation "bound".

In written language, of course, there is neither intonation nor pausing as such. However, although the equation is not entirely straightforward, it is roughly true that the intonation units of speech are mimicked in writing by what I will call "punctuation units". A punctuation unit is any stretch of written language between punctuation marks. It seems that earlier writers of American English used punctuation to imitate intonation units more consistently than many recent writers do. In the following example it is apparent that Mark Twain (1962:311) created punctuation units which bear a close resemblance to intonation units:

Once I dined in San Francisco with the family of a pioneer, and talked with his daughter, a young lady whose first experience in San Francisco was an adventure, though she herself did not remember it, as she was only two or three years old at the time.

(Here and elsewhere I will use a convention of writing each intonation or punctuation unit on a separate line.) In the 19th century written language was often read aloud (Ong 1982:115-116), and punctuation helped. There is a current fashion which tends to obscure the relationship between intonation units and punctuation by suppressing commas. Nevertheless, the relationship remains close enough to allow us to make fruitful comparisons.

What is interesting to us here is the possibility that in written language both an adverbial clause and its main clause may be contained within a single punctuation unit. I will extend the term "bound" to those written adverbial clauses which find themselves in this situation. Thus, from now on when I speak of a bound adverbial clause, if the context is spoken language it will be a clause which is not separated by a prosodic break from its main clause. If the context is written language, it will be a clause which is not separated from its main clause by a punctuation mark (usually a comma). Adverbial clauses which are not bound, in speaking or in writing, I will call "free".

In these terms, then, there are four different kinds of adverbial clauses: those which are preposed and bound, those which are postposed and bound, those which are preposed and free, and those which are postposed and free. The following are some preliminary examples of these four types. They are made-up examples, because I want to provide first an idea of how the four types compare with each other, holding the wording of the clauses
constant. When we take a closer look at each of the four types individually, I will supply some real examples. Imagine I have been talking about buying a personal computer, and that I say to you one of the following:

(A) Preposed and bound

Because it has such a big memory I decided to buy it.

(B) Postposed and bound

I decided to buy it because it has such a big memory.

(C) Preposed and free

Because it has such a big memory,
I decided to buy it.

(D) Postposed and free

I decided to buy it,
because it has such a big memory.

The findings I am going to try to explain are summarized in the chart at the bottom of this page. The data come from a project in which we collected samples of two styles of spoken language and two styles of written language from each of 20 people, and analyzed these samples for the occurrence of a variety of features which we hypothesized to have different distributions in speaking and writing. I am reporting here only on the distributions of the four kinds of adverbial clauses in two of the styles: dinnertable conversation ("S" for spoken) and academic writing ("W" for written). In some respects these two styles represent extremes of spokenness and writtenness respectively. In terms of overall frequency, there were almost twice as many adverbial clauses in academic writing as in conversation, a fact which seems attributable to the greater ability of writers to deliberate on and edit what they are producing (Chafe 1982).

<table>
<thead>
<tr>
<th></th>
<th>Preposed</th>
<th>Postposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>S: 2</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>W: 1</td>
<td>S: 27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W: 37</td>
</tr>
<tr>
<td>Free</td>
<td></td>
<td></td>
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<tr>
<td>C</td>
<td>S: 40</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>W: 39</td>
<td>S: 31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W: 23</td>
</tr>
</tbody>
</table>
The figures given in this chart are percentages of the adverbial clauses in each sample. That is, of all the adverbial clauses in our conversational sample, 2% were preposed and bound, 27% were postposed and bound, and so on. Of all the adverbial clauses in our sample of academic writing, 1% were preposed and bound, 37% were postposed and bound, and so on. I have included the letters A, B, C, and D in the four boxes to correspond to the four examples given above, and for future reference.

The most obvious property of this chart is that, in both spoken and written language, the box labeled A contains almost no examples. There are very few adverbial clauses which are preposed and bound. Example A above belongs to a rare type. Perhaps the best way to state this finding is to say that if an adverbial clause appears in the same intonation or punctuation unit with its main clause, then the ordering of the two clauses is almost always with the main clause first and the adverbial clause second.

An explanation of this conspicuous gap, and in fact of all the phenomena summarized in the chart depends on an appreciation of the dynamics of the flow of information as language is being produced and understood. This is a subject which has been probed by Czech linguists under the name "functional sentence perspective" (e.g. Firbas 1964), by Michael Halliday (1967) in terms of "given and new information" and "theme", and certainly by many others. Here I will try to present as much of my understanding of this area as is necessary to explain the position and boundness of adverbial clauses, beginning with the lopsided preference for bound clauses which are postposed.

It would seem that in English and many other languages, though not in all (some American Indian languages are conspicuous exceptions), the information in an intonation or punctuation unit flows from that which is more familiar, expected, or predictable to that which is more unfamiliar, unexpected, or unpredictable. (In Czech terms, this progression is characterized as an increase in "communicative dynamism".) In our present discussion, we need to see the intonation/punctuation unit as the domain of this progression, rather than the clause. Evidently it is unlikely that two clauses under a single intonation contour will both convey unfamiliar information. When an intonation or punctuation unit contains more than a single clause, the flow is from familiar information in the first clause to unfamiliar in the second. If we add the hypothesis that adverbial clauses typically convey unfamiliar information, then it is clear why Type B examples far outweigh Type A in frequency. English speakers usually create intonation/punctuation units which begin with familiar information. Main clauses, but not adverbial clauses, may very well express familiar information, and thus the normal progression is one which moves from a main to an adverbial clause.

But just what is involved in the distinction between familiar and unfamiliar information? Apparently there are some things in language which are best explained in terms of information which has been evoked by what has already been said in a discourse, or
which is at least inferrable from what has been said (cf. Prince 1981:236-237). Suppose we call such information "familiar". Then, of course, information which has not already been evoked, or which is not inferrable, can be called "unfamiliar".

Instead of "unfamiliar" one might like to use the more positive term "new" information. Unfortunately, in my own mind at least, that term has already been preempted. When I have spoken in the past of "given" and "new" information, I have referred to the question of whether a speaker or writer thinks that something is already in the consciousness of the hearer or reader (Chafe 1974, 1976). The given vs. new distinction shows up in language especially as it affects stress and pronominalization. The familiar vs. unfamiliar distinction shows up in the very different phenomenon we are presently examining, and perhaps in other ways.

I can offer a few examples which may make the distinction between familiar and unfamiliar information a little clearer. For this purpose it is not enough just to look at the sentence which contains the adverbial clause: we have to back up in order to see what it is that has made something familiar. I will begin with some examples from academic writing, where the greater degree of planning allows this point to stand out with greater clarity.

Lewes's and Eliot's statements reveal an awareness of the limits of mimesis and offer another criterion for the truth of representation: reference. Something represents something else "truly" when it successfully refers to it.

The first sentence makes familiar the idea of "truth of representation". The second sentence, consisting of a single punctuation unit with a main and adverbial clause, restates this familiar information in the main clause. It then moves on to add unfamiliar information, having to do with successful referring, in the temporal (or conditional) adverbial clause. Thus this single punctuation unit consists of a main clause expressing familiar information followed by an adverbial clause expressing unfamiliar information. A Type A sentence would certainly be out of place in this context, and our findings suggest that it would be rare in any context:

When something successfully refers to something else it represents it "truly".

The following is an example in which the familiarity of the information expressed in the main clause is established somewhat earlier in the discourse. "He" refers to a Southeast Asian trickster figure named e-qhe:

He causes the death of many people -- a girl who was attracted by his music,
the Chinese traders,
the husbands,
the old codger at the end.
But he never loses our sympathy.
We don't give a damn for the other people in the story.
They are two-dimensional cartoon characters,
mere foils for Trickster.
The traders are greedy and gullible,
the wives are stupid and lascivious,
the girls are empty-headed,
the husbands are impotent cuckolds.
e-qhe can do what he wants with them and we will laugh.
He has the right to destroy precisely because he is the
creator himself.

The last sentence again belongs to our Type B: it contains
an adverbial clause which is postposed and bound. We are
concerned with the question of whether the information in the
initial, main clause can be considered familiar, while that in
the adverbial clause is unfamiliar. It would seem that the
information expressed as "he has the right to destroy" is
familiar on the basis of the first clause in the example: "he
causes the death of many people". That is, the trickster's
destructiveness was established in that clause, and is then
recapitulated in the last sentence as familiar information. The
example is like the earlier one, except that the familiarity of
the information in the main clause was established at a greater
remove from the sentence in question.

The following example shows how inference may play a role:

Subjects searched for instances of target categories,
defined by possessing a prespecified set of properties.
Items contained all, some, or none of these properties.
Assuming a self-terminating search
(i.e., that subjects could reject a word as soon as one
property was found to be lacking),
the number of decisions,
and hence the memorability,
of any item should increase with the number of target
properties it possesses.

We are concerned with the punctuation unit within paren-
theses: "that subjects could reject a word as soon as one
property was found to be lacking". The point here is that the
information in the main clause, "that subjects could reject a
word", is familiar -- not from something explicitly said earlier
-- but from our knowledge of the experimental paradigm in
question. It is understood that as "subjects searched for
instances of target categories", what they did was to accept
or reject each instance as it was presented. The reader of
this passage was expected to know how experiments of this kind
are designed. That being the case, it is again true that the initial main clause expresses familiar information, while the bound postposed adverbial clause expresses something unfamiliar. Examples from conversational language seem to adhere to the same pattern:

but ... there were a few incidents that happened with me just because I was a foreigner.

The context involved incidents which had happened to the speaker, so that again the main clause expresses familiar information. What is unfamiliar is the causal clause "just because I was a foreigner". Similarly:

Probably .. all kids look spoiled when they're two and a half.

where the preceding talk had been about a child who seemed to be spoiled.

The following example is of some interest because it seems to exhibit a pattern which is precisely the reverse of that just described:

.. are they going to put you to sleep when you have it done or, .. do you have to be awake while it's being done?

These questions were directed at someone who was about to have an operation. Each of them evidently contains a main clause which expresses unfamiliar information, followed by an adverbial clause which expresses familiar information (having the operation done). These are, however, questions, and it is intriguing to suppose that questions may exhibit a pattern of information flow which is the reverse of the normal one. Here we find (1) unfamiliar information preceding familiar information, and (2) adverbial clauses expressing familiar information, both contrary to the trends we have just observed in declarative statements.

It is noticeable that the percentage of bound postposed adverbial clauses is somewhat higher in academic writing than in dinnertable conversation (37% vs. 27%). This may be in part because of the already mentioned tendency of modern writers to punctuate less often than they would if, like earlier writers, they were more concerned with mimicking the intonation unit structure of spoken language. That in turn may result from a tacit awareness that one is writing for a modern reader who reads very rapidly to himself, and is not so likely to want to read aloud. The longer punctuation units which are produced by omitting commas wherever possible imply a reader who is capable of taking in more information in one focus of consciousness -- more, that is, than a spoken language listener could be expected to take in. Later, however, I will suggest another possible
explanation for the spoken-written difference observable in Boxes B and D.

Boxes A and B represent cases in which the adverbial clause is contained in the same intonation or punctuation unit as the main clause -- cases of what I have been calling bound adverbial clauses. We can now turn our attention to the free adverbial clauses summarized in Boxes C and D: the cases in which the adverbial and main clauses occur in separate intonation or punctuation units, with their own separate intonation contours, or separated by a comma.

The first observation we can make is that these cases are more numerous than the others. In dinnertable conversation the percentage of adverbial clauses which have their own separate intonation contours is over twice as high as the percentage of those which do not (71% vs. 29%). In academic writing the percentage of adverbial clauses which have their own separate punctuation is not quite as great, but still considerable (62% vs. 38%).

If membership in a separate intonation or punctuation unit is associated with the expression of unfamiliar information, then the fact that main and adverbial clauses occur most often as separate intonation or punctuation units suggests that main clauses, as well as adverbial clauses, usually express unfamiliar information. Adverbial clauses almost always express unfamiliar information. Main clauses do so, apparently, about 70% of the time in dinnertable conversation, or about 60% of the time in academic writing.

We can note also that the percentages in Box C, for both dinnertable conversation and academic writing, are somewhat higher than those in Box D. In other words, given a situation in which the adverbial and main clauses occur in separate intonation or punctuation units, there is some tendency for the adverbial clause to come first. In our samples the tendency was somewhat stronger in academic writing (39% vs. 23%) than in conversation (40% vs. 31%). Although the difference is not overwhelming, it too calls for some explanation.

Let me begin by repeating the concocted sentence which I gave above as an example of Type C:

Because it has such a big memory,
I decided to buy it.

What I am going to suggest is that the adverbial clause in such sentences serves as a kind of "guidepost" to information flow, signaling a path or orientation in terms of which the following information is to be understood. The same function is served by expressions like "however", "anyway", "for example", "on the other hand", and the like. A guidepost par excellence is "meanwhile, back at the ranch". Preposed free adverbial clauses, I am suggesting, do the same kind of thing, providing a temporal, conditional, causal, or other such orientation for the information in the upcoming main clause.
Guideposts, then, come before the information to which they are guides. This is a different principle from the familiar to unfamiliar progression discussed earlier, though it seems to be another manifestation of a more general strategy of providing a frame before providing the contents of the frame. The following are examples of such cases from conversational language:

... uh because I'm an adviser,
I have to be on campus in the afternoons too.

.. But if that .. falls through,
... he was glad to hear that I would be ready to teach that.

... and when we got there,
there weren't any mosquitoes.

In the first example the adverbial clause provides a cause for what is stated in the main clause. In the second example it provides a condition. In the third example it provides a temporal orientation. Similar examples can be found in academic writing:

Because the difference in usage is recognized as a difference,
it is clear that the term has become conventionalized as a proper name.

If we approach the topic of cognitive development from a theoretical point of view,
we are immediately confronted with the question of which theory, or theories, to consider.

When the new information is inconsistent,
the judgment is whether to accept or reject it.

In these examples again we find a cause, a condition, and a temporal orientation (or perhaps a condition masquerading as a temporal orientation), each of which orients the reader to the information about to be expressed in the main clause.

But what about those somewhat less common cases where a free adverbial clause comes second (Type D)? Here are some examples from conversation:

That in itself was scary,
cause I never fainted before.

This was .. um at Wesleyan,
when Wesleyan was still ... a men's school.

These cases resemble the Type C cases to the extent that the main clause and the adverbial clause both convey unfamiliar information; that is why each has its own intonation contour.
Here, however, the adverbial clause hardly provides a guidepost for the information in the main clause. Instead, it adds something to the assertion which has just been made. Of all the four types, this one comes closest to presenting a sequence of coordinate clauses, clauses of more or less equal status, where it happens that one of them states a cause, a condition, a time, or the like. The first example above might be paraphrased:

That in itself was scary, and the reason was that I had never fainted before.

and the second example:

This was at Wesleyan, and Wesleyan was still a men's school at that time.

The following are some parallel examples from academic writing, in which it can be noticed that the writer seems to have focused first on the information in the main clause, subsequently focusing on the cause, or time, or whatever:

A few have suggested that it might be built on the stem in à:share? 'knife', because this was probably where the Mohawk formerly took their axes to have the blades sharpened.

A cult celebration in a remote river, therefore, suggests a return to a formative state of the social order, before things had been standardized and centralized.

One tendency of interest in our narratives is the preference of both English and Japanese speakers for referring to entities by using words of an intermediate degree of abstractness, when a choice is available.

It is especially interesting to find that speakers sometimes produce Type D sequences in which the main clause is actually closed off with sentence-final intonation, and the following adverbial clause has the intonation of a separate sentence:

... And I feel a little bad. Because in some sense her ... I mean her kid's really a ... I think a great kid.

... So .. the purpose of the course is to-- ... create something like that. ... If that's possible.

... I went to the doctor after the first one. ... When I fainted.
In examples like these it would seem that the speaker had at first decided to end his statement after the main clause. Having thus produced a sentence-final falling pitch at that point, he then decided it would be better to add the information in the adverbial clause as a kind of afterthought. The result is a sentence which is syntactically unitary -- a main clause followed by a subordinate clause -- but which is intonationally two sentences. The fact that some Type D sentences are like this supports the interpretation that the producers of such sequences are focusing separately, first on the main assertion and then on the adverbial one.

There is another observation that can be made about Type D sequences. It would seem that often, though perhaps not always, the adverbial clause modifies only part of what was stated in the main clause -- not everything in that clause. In such cases, what is modified is likely to be located toward the end of the main clause. We have, then, a situation in which the speaker or writer could not have stated the adverbial idea until after the main clause had been stated, since a preposed adverbial clause would, inappropriately, have provided a guidepost to all of what followed. In speaking, it may be the case that the modified portion of the main clause was not even clearly articulated in the speaker's mind until the main clause was completed. Inverting the two clauses often has a peculiar effect:

When Wesleyan was still a men's school, this was at it. (?)

Before things had been standardized and centralized, a cult celebration in a remote river suggests a return to a formative state of the social order.

In the last example it is clear that the adverbial clause had to do with locating "a formative state of the social order" in time, and not the content of the entire main clause. Perhaps even more strikingly aberrant is the inversion of another of the above examples:

When a choice is made, one tendency of interest in our narratives is the preference of both English and Japanese speakers for referring to entities by using words of an intermediate degree of abstractness.

In the original sentence the adverbial clause provided a temporal comment on the localized phrase, "using words of an intermediate degree of abstractness".

One last observation we can make is that there are more spoken than written sentences of Type D. Perhaps there is a sense in which this arrangement of clauses is just slightly infelicitous in writing. Perhaps the prototypical use of an adverbial clause
is to present guidepost information for a following main clause, as in Type C. In Type D the adverbial clause, even when it is not strictly speaking an afterthought, nevertheless has the flavor of a separate, added comment. Afterthoughts, and these milder counterparts, are a natural consequence of the way spoken language is produced, and particularly of the "one-clause-at-a-time" constraint. Writers, on the other hand, have more time to think about what they are producing — about how to edit it and elaborate it — and they may not be as prone to afterthought-like creations. Perhaps that has something to do with why they produce somewhat fewer Type D sequences.

To summarize, I began by distinguishing four kinds of adverbial clauses: preposed and bound (Type A), postposed and bound (Type B), preposed and free (Type C), and postposed and free (Type D). I showed the frequency distributions of these four types in dinnertable conversations and academic writing. I then tried to explain these distributions in terms of several factors hypothesized to play a role in the dynamics of information flow. I suggested that when two clauses occur within the same intonation or punctuation unit, as in Types A and B, only one of them is likely to express unfamiliar information, that adverbial clauses typically express unfamiliar information, and that unfamiliar information typically comes at the end of an intonation or punctuation unit. Hence the fact that among bound adverbial clauses there are very few which are preposed and a fair number which are postposed.

To explain the distribution of free adverbial clauses I invoked, first, the notion of guideposts to information flow. Preposed adverbial clauses appear to serve this function, orienting the listener or reader temporally, conditionally, causally, or otherwise, to the information in the main clause which is to follow. Postposed adverbial clauses appear to serve a quite different function, being more in the nature of coordinated clauses which comment on a time, a condition, a cause, etc., relevant to the preceding main clause. Often adverbial clauses of this last type occur as intonationally separate afterthoughts. Often, too, they modify only the latter part of the preceding main clause, not the entire clause. The details of these explanations need some tightening, and more data need to be examined from these points of view. It seems clear, however, that a comprehensive understanding of information flow is what is needed for an understanding of these phenomena.

Footnote

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References


SUBJECT AND OBJECT CONTROL:
SYNTAX, SEMANTICS, PRAGMATICS

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Since quite early in the development of transformational and posttransformational approaches to syntax, linguists have been intrigued by the interpretation of the reference of the covert subject of infinitives in constructions like (1) and (2):

(1) Otto tried to leave.
(2) Otto persuaded Helga to leave.

In recent generative literature, this problem has come to be known as the control problem. In (1), the covert subject must be interpreted as coreferential with Otto, i.e., it is controlled by the matrix subject, i.e., we have 'subject control'. In (2), the covert subject must be coreferential with Helga, i.e., it is controlled by the matrix object, i.e., we have 'object control'. Most of the mainstream literature has been concerned with sentences of these types in English, but more recently Růžička (1983) and Abraham (1983) have also introduced German examples (Růžička also examples from Slavic languages) into the discussion - examples which often differ in subtle but telling ways from their English counterparts; in what follows, I have taken a number of German examples from these two sources.

In the literature, there have been three main kinds of solution to the control problem going beyond arbitrary specification, which I shall refer to as syntactic, pragmatic, and semantic. The syntactic approach was introduced by Rosenbaum (1967). Although a number of different formulations have been proposed, all boil down essentially to the claim that in sentences like (2), with an overt object, this object is closer to the embedded subject than is the matrix subject (e.g., in that fewer nodes separate the two noun phrases, or in that a lower node in the tree dominates both the controlling and the controlled noun phrases). This may be referred to as the 'minimal distance principle'. In sentences like (1), where there is no object, the matrix subject is closest to the embedded subject by default. Thus the controller is always the noun phrase closest to the controlled embedded subject.

One major problem for this approach has been the existence of verbs like promise in English, which (for most speakers) take subject control even in the presence of an overt matrix object:

(3) Otto promised Helga to leave.

Sentence (3) is paraphrasable for these speakers as (4), not (5):

(4) Otto promised Helga that he would leave.
(5) Otto promised Helga that she would leave.

In favor of the purely syntactic approach, even in the presence of examples like (3), is the fact that many speakers of English do in fact interpret (3) as a paraphrase of (5). Chomsky (1969) notes
that young children characteristically give this interpretation, but this interpretation is in fact by no means restricted to children. If promise and the few other verbs that behave similarly were merely arbitrary exceptions to the general syntactic principle of control, it would be readily understandable why some speakers of English would not have this arbitrary exception. Against the assertion that promise is an arbitrary exception, however, stands the observation that many other languages have almost exactly the same distribution as in English sentences (1)-(3), with the translation equivalent of promise as an exception to the statement of control in terms of the minimal distance principle. Examples (6) and (7) are from German and Russian respectively:

(6) Otto versprach Helga wegzureisen.
(7) Otto obėsčal Gel'ge uexat'.

The second approach is the pragmatic approach, originally proposed by Postal (1970), adopted in Comrie (forthcoming, of which the present paper is a further development), and extended by Abraham (1983). This approach tries to account for the difference between subject and object control not in terms of formal principles of syntax, but rather in terms of the interaction of the meanings of the matrix verbs in such constructions and real-world possibilities and probabilities. The matrix verb try requires, in order to make sense pragmatically, that its subject have a high degree of agentivity in the situation referred to by the following infinitive, whence subject control. In this case, both the syntactic and the pragmatic principles make the same prediction: the matrix subject will be controller. For sentences with persuade, or more generally sentences conveying reported directives, the felicity conditions on directives require that the recipient of the directive have high agentivity with regard to the situation encoded by the infinitive, whence object control. Thus the pragmatic approach here predicts coreferentiality between matrix object and embedded subject — correctly so, but the prediction is the same as that made by the syntactic approach.

The differences between the two approaches come to the fore in considering verbs of the promise class, where the purely syntactic principle makes an incorrect prediction (object control). The pragmatic approach notes that, in accord with the felicity conditions for promises, the giver of the promise must have high agentivity with regard to the situation expressed by the infinitive construction. Thus the pragmatic expectation is that the verb promise should have coreferentiality between the matrix subject (even in the presence of a matrix object) and the embedded subject, and this prediction is correct.

If this approach is correct, one would make the same prediction for other verbs that are close synonyms of promise (e.g. vow, swear), and for the translation equivalents of promise in other languages with comparable control phenomena. In fact, one can go further than this and predict that certain other verbs should have
subject control, even in the presence of an overt object, because of their pragmatics, if the language in question permits an infinitive construction at all. For instance, the felicity conditions for threats specify that the content of the threat must be a situation in which high agentivity is exercised by the giver of the threat, thus predicting subject control. In English, the infinitive is excluded after the verb threaten when there is an overt matrix object, so that it is impossible to test the prediction. In German, however, the infinitive is possible, and the prediction is borne out:

(8) Ich drohe dir, dich alleine zu lassen.
    'I threaten you that I will leave you alone.'

(The literal translation of (8) is 'I threaten you to leave you alone'.)

Indeed, the pragmatic approach makes a further prediction, namely that if a given verb can be used to express different speech acts, then both subject and object control may be possible, according to the speech act. English ask, as a verb expressing a polite directive, has object control as predicted:

(9) Otto asked Helga to leave the room.

However, ask can also receive the interpretation 'ask permission to', in which case the pragmatics shifts: in a request for permission, the person who requests the permission is normally asking with reference to his own actions, rather than those of someone else (including the addressee), so one would here expect subject control. For some speakers of English, sentence (9) is in fact ambiguous, with a secondary interpretation paraphrasable as:

(10) Otto asked Helga for permission (for him) to leave the room.

The interpretation possibility becomes much clearer when some overt indication is given of the permission involved:

(11) Otto asked Helga to be allowed to leave the room.

I suspect that both interpretations are in fact latent for all speakers of English even in (9), but that the secondary interpretation tends to be masked unless the context makes it plausible.

The pragmatic approach thus has the advantage of accounting for the crosslinguistic behavior of verbs like promise in a principled way, in addition to making in general the same correct predictions as are made by the syntactic approach. There are, however, especially in English, some other data that might suggest at first blush that the pragmatic approach is not quite so preferable. First, we have the observation that for some speakers of English (12) (= (3)) has only the interpretation where Otto promises Helga that Helga will leave:

(12) Otto promised Helga to leave.

More importantly, English permits a wide range of sentences where
the subject of the embedded infinitive is not, in terms of its most obvious semantic role, an agent, as in the following:

(13) Otto tried to be punished/picked up/X-rayed.
(14) Otto persuaded Helga to be examined by the doctor.
(15) Otto promised (Helga) to receive permission to leave.

In all of (12)-(15), however, the interpretation that is assigned to the sentence is one in which the controlling noun phrase in fact has high agentivity with respect to the situation expressed by the infinitive construction. In (12), for instance, with the interpretation 'Otto promised Helga that she would leave', it has to be the case that Otto has influence over whether or not Helga leaves (e.g. he is keeping her prisoner) - note that this high agentivity holds even though Otto does not appear as an argument of the embedded predicate. In (13), Otto must have influence over whether or not he is punished, picked up, or X-rayed: the version with punished might, for instance, be used in reference to someone who is so guilt-ridden that he believes punishment the only way to rid himself of his sins. In (14), Helga must have influence over whether she is examined by the doctor, and in (15) Otto must have similar influence over whether he receives permission (thus receive has an interpretation like not refuse - imagine that Otto is a political dissident uncertain whether to accept the government's offer of exile).

In English, in terms of the grammaticality of sentences involving control, once one accepts the behavior of the promise class, then the first impression is that syntax rules. The controller can be defined in syntactic terms (with promise etc. as arbitrary exceptions); the controlled noun phrase must be subject of the infinitive: it need not be an agent in the strict sense of a semantic relation between a predicate and one of its arguments; it must be a subject, since a nonsubject is unacceptable as controlled noun phrase even when it is high in agentivity, as in the case of passive agents:

(16) *Otto tried for Helga to be punished (sc. by him).

Once one takes into account observations concerning the interpretation of sentences with control however, it becomes clear that English actually evinces a subtle interplay between syntactic and pragmatic factors: the relation between controller and controlled noun phrase is determined essentially configurationally. However, the interpretation that is assigned to the resulting sentence must be one that makes sense pragmatically in accord with the pragmatic approach to control. And the syntactically exceptional behavior of the promise class remains amenable to explanation only in pragmatic, as opposed to syntactic, terms.

There is one complication with the promise class. If the matrix verb is passivized, for most speakers the resulting sentence is generally ungrammatical:

(17) *Helga was promised (by Otto) to leave.
If, however, an interpretation is forced, then the interpretation is one where Helga, rather than Otto, is understood as subject of leave, even for speakers who do not get this interpretation with the corresponding active sentence *Otto promised Helga to leave*. Addition of explicit indication that Helga is to benefit from one of her own future actions, rather than one of Otto's, makes the sentence acceptable to more, perhaps all, speakers:

(18) Helga was promised (by Otto) to be allowed to leave.

Within the syntactic approach, this could perhaps be accounted for by the minimal distance principle, since in (18) *Helga* is subject of an intransitive predicate, and thus the preferred controller for the covert subject of the infinitive. Within the pragmatic approach, however, it remains unclear why the interpretation of active and passive matrix sentences should differ in this way, although it does remain true that both sentences receive interpretations that are pragmatically coherent.

Interestingly, many of the examples which in English seem to provide crucial evidence in favor of the syntactic nature of control are ungrammatical in German and Russian. In particular, sentences where the covert subject of the infinitive is not readily interpretable as high in agentivity (for instance, in that it is subject of a passive verb) are either totally unacceptable or only marginally acceptable, the latter usually where there is greater plausibility to the covert subject being interpreted as having high agentivity. The following examples are adapted from Ružička (1983):

(19) *Otto versuchte, bestraft zu werden.
    'Otto tried to be punished.'
(20) ?*Otto versuchte, abgeholt zu werden.
    'Otto tried to be picked up.'
(21) (?)*Otto versuchte, gerüttelt zu werden.
    'Otto tried to be X-rayed.'

Likewise, English sentence (14) is ungrammatical in its literal German and Russian translations:

(22) *Otto überredete Helga, vom Arzt untersucht zu werden.
(23) *Otto ugovořil Gel'gu byt' osmotrennoj vračom.
    'Otto persuaded Helga to be examined by the doctor.'

Finally, English sentence (15) is ungrammatical in its literal German translation:

(24) *Otto versprach, die Erlaubnis abzureisen zu erhalten.
    'Otto promised to receive permission to leave.'

On the basis of these observed differences between English on the one hand and German and Russian on the other, one might draw an initial conclusion to the effect that control in English is more syntactic, whereas in German and Russian it is more pragmatic. The difference, of course, would be one of degree — prag-
matics is relevant in English, and syntax is relevant in German and Russian — but the difference in degree is nonetheless clear. Towards the end of this paper, I will try to refine this notion and integrate it into a more general characterization of differences between English and German-Russian.

Before continuing with this discussion, however, I want to examine the third approach to control, namely the semantic approach, as introduced by Růžička (1983). Růžička's approach refers crucially to the semantic (thematic) roles of the controller and the controlled noun phrase. Verbs traditionally described as subject control (including the promise class) are assigned a feature 'thematic identity' (TI), requiring that controller and controlled noun phrase have identical (or at least compatible) semantic roles. Verbs traditionally described as object control are assigned a feature 'thematic distinctness' (TD), requiring that controller and controlled noun phrase have distinct semantic roles. The typical operation of these features can be seen in relation to the following two canonical examples:

(25) Otto promised Helga to leave.
(26) Otto persuaded Helga to leave.

The covert subject of leave is an agent. In (25), the TI condition requires that the controller also be an agent, thus selecting Otto rather than Helga. In (26), the TD condition requires that the controller not be an agent, thus excluding Otto, but permitting Helga. So far, the TI/TD distinction might seem to be simply a reformulation of subject versus object control, and certainly the assignment of the features TI and TD is not given any principled basis by Růžička (remaining as idiosyncratic as that of subject and object control in the purely syntactic approach). In fact, however, Růžička shows that a wide range of data not considered or at least not analyzed satisfactorily by previous accounts fit into place given his account.

First let us examine TI verbs like promise. The TI condition predicts the grammaticality of English examples like (27), since both controller and controlled noun phrase (Helga) are recipients:

(27) Helga was promised (by Otto) to be allowed to leave.

The ungrammaticality of German sentence (28) is explained on the basis that Otto is agent of the matrix clause but recipient of the embedded clause:

(28) *Otto versprach, die Erlaubnis abzureisen zu erhalten.
    'Otto promised to receive permission to leave.'

The same requirement of thematic identity rules out the following sentence:

(29) *Helga versprach, ins Kino gehen zu dürfen.
    'Helga promised to be permitted to go to the cinema.'
If an overt object is inserted into the matrix sentence of (29), however, then this object is a potential controller for the covert subject of the infinitive, since both noun phrases are recipients (of a promise in the matrix clause, of permission in the embedded clause):

(30) (?)Helga versprach ihrem Sohn, ins Kino gehen zu dürfen.
    '(lit.) Helga promised her son to be permitted to go to the cinema.'

Note that (30) refers to Helga's son going to the cinema, not to Helga going there, in the German version. One problem for this approach is that, while it gives a good fit to judgments on the German data, it fits less well to the English data, where sentences (28) and (29) are grammatical (even if requiring contextualization), and (30) has for most speakers only the interpretation 'Helga promised her son that she would be permitted to go to the cinema'. Thus the TI condition fails in general to account for those English data where English is more rigidly syntactic and German more pragmatic.

With TD verbs like persuade, the TD condition predicts the ungrammaticality of examples like German (31):

(31) *Otto überredete Helga, vom Arzt untersucht zu werden.
    'Otto persuaded Helga to be examined by the doctor.'

The noun phrase Helga receives compatible semantic roles as both controller and controlled noun phrase (nonagent), but the TD condition requires thematic distinctness. Once again, however, there is a problem in extending this analysis to the English data: the English translation to (31) is perfectly acceptable.

The great advantage of Růžička's contribution has been to extend the range of data considered. Although this semantic approach does pay due regard to the semantic roles of the noun phrases involved, the features set up are as arbitrary as the purely syntactic notions of subject/object control, and the differences between German and English force the author in his conclusions to return to recourse to pragmatics. In what follows, I am going to assume that the pragmatic approach is essentially correct, although it needs to be supplemented by syntactic principles (many, perhaps all, of which can be viewed as grammaticalizations of pragmatic principles). To the extent that the semantic approach of Růžička's makes correct predictions, this is because the sets of permissible configurations of semantic roles can be predicted from the pragmatics of the sentences in question. Since the pragmatics plays less of a role in English than in German, one would expect to find more exceptions to the predictions of the thematic identity/distinctness opposition in English than in German (or Russian).

Most of the examples discussed so far where English differs from German and Russian have involved constructions which are possible in English (allowed by the syntax) but impossible in German
and Russian (disallowed by the pragmatics). However, there are also some examples where sentences excluded in English are permitted in German and/or Russian, namely where English syntax excludes a certain sentence but pragmatics allows it in the other languages. One example of this has already been presented as (30), repeated below, where in German promise allows object control; inclusion of an expression of receiving permission in the infinitive construction makes it more likely that the situation referred to by this infinitive construction, which by the felicity conditions on promises must be to the advantage of the recipient of the promise, will refer to permission received by the recipient of the promise rather than by the giver of the promise:

(32) (?) Helga versprach ihrem Sohn, ins Kino gehen zu dürfen.  
'Helga promised her son that he would be permitted to go to the cinema.'

In German, provided the pragmatics is sufficiently clear, it is even possible to have characteristically object control verbs showing subject control, as in the following example cited by Abraham (1983:234):

(33) Scipio Überredete den Senat, frei handeln zu dürfen.  
'Scipio persuaded the senate that he should be permitted to have a free hand.'

The literal translation of (33) is 'Scipio persuaded the senate to be permitted to have a free hand'. In English, the syntactic constraint on control permits only the reading, for this infinitive construction, of 'Scipio persuaded the senate that it should be permitted to have a free hand', an interpretation that is barely coherent, requiring that the senate have influence over whether or not it is given permission to have a free hand. The interpretation given in fact to the German sentence (33) is, however, pragmatically entirely coherent: Scipio wants to be given permission to act freely, the senate has the right to give or refuse him this permission, and he therefore persuades the senate to give him this permission. Thus in German, it is possible for pragmatics to override syntax in the assignment of control.

In most discussions of subject and object control, the problem cases have been considered to be instances of subject control in the presence of an overt matrix object. The inverse problem has tended to be neglected, namely that of object control in the absence of an overt matrix object, perhaps because this type is extremely rare in English, at least with infinitives.

I am aware of only one clear instance of this latter phenomenon in English, namely with the matrix verb say, as in (34):

(34) Otto said to come at six o'clock tomorrow.

Moreover, this sentence type is not acceptable for all speakers of English. For those speakers who do find the sentence acceptable, however, the meaning is clearly that Otto told some unspecified
person(s) that that/those person(s) should come at six o'clock to- 

tomorrow - depending on context, the unspecified person(s) might be 
the speaker, a group containing the speaker, the addressee, a 
group containing the addressee, or some third person. Control is 
thus by an object, but by an object which is not specified overtly 
in the sentence. Significantly, in this one clear instance of ob- 
ject control without an overt object the control is as predicted 
by pragmatic principles, given that the sentence expresses a re- 
ported directive, in which the expectation is that the recipient 
of the directive will be coreferential with the person who has to 
carry out the directive. 

It is possible that this class of verbs, in English, also in- 
cludes the matrix verb help, although the data here are particu- 
larly complex. In many instances the subject of help is inter- 
preted as included within the unexpressed subject of the infini- 
tive, as in (35):

(35) I helped (to) exterminate the termites in this house.

A paraphrase of this sentence, on its most natural interpretation, 
would be:

(36) I, together with others, exterminated all the termites in 
this house.

Matrix help would thus seem to fit in with other instances of con- 
trol where the controller is interpretable as included within (ra- 
ther than strictly coreferential with) the controlled noun phrase, 
as in (37):

(37) I want to meet at four o'clock.

If this analysis could be generalized, matrix help in the absence 
of a matrix object would simply be an instance of subject control. 
This analysis would even seem strengthened by the fact that re- 
exflexive pronouns are marginally acceptable in the infinitive con- 
struction, coreferential with the matrix subject, to the exclusion 
of nonreflexive pronouns; contrast (38) and (39), the latter with 
an overt matrix object blocking the reflexive:

(38) You have helped (to) destroy ?yourself/*you.
(39) You have helped your enemies (to) destroy you/*yourself.

However, there are other instances where the subject of help can- 
not be interpreted as included within the unexpressed subject of 
the infinitive, as in (40):

(40) This male nurse has helped (to) give birth to hundreds of 
fine, healthy children.

Such examples seem to be parallel to (34) above with say, i.e. ob- 
ject control in the absence of an overt matrix object. 

While this class of matrix verbs is vanishingly small in Eng- 
lish, some other languages have a much broader class of verbs al- 
lowing coreferential unspecified matrix object and embedded sub-
ject, for instance German and Russian, as in (41) and (42):

(41) Die Mutter bat, das Geschirr abzutragen.
'The mother asked [X] to clear away the dishes.'

(42) Predsedatel' poprosil vojti v komnatu.
'The chairman asked [X] to enter the room.'

In general, any verb which takes object control in these languages also allows constructions of this type. For such languages, the correlation between subject/object control and the absence/presence of a matrix object can be at best one-way as a syntactic principle: presence of a matrix object would require or favor object control, but from the absence of a matrix object nothing would be predicted. Of course, other factors might well enable one to make a prediction, as can be seen by comparing Russian sentences (42) and (43):

(43) Predsedatel' xoet vojti v komnatu.
'The chairman wants to enter the room.'

In (43), an object control interpretation is excluded by the fact that the verb xoet', 'to want' in Russian does not allow a matrix object in addition to the infinitive. (Note that Russian lacks the English type I want him to leave.) In (42), however, the pragmatics of the sentence forces an interpretation with covert coreferential matrix object and embedded subject, since a directive only makes sense if that directive is addressed to someone other than the speaker, this other person being the one supposed to carry out the directive in question.

Such examples thus provide another instance where English is more syntactic than the other languages discussed: in English lack of a matrix object predicts subject control, with perhaps a small set of exceptions, whereas in German and Russian it is necessary to look at the pragmatics of such sentences before subject or object control can be assigned as the correct interpretation.

English does, however, have a means of expressing reported directives where there is an unexpressed matrix object and coreferential unexpressed embedded subject. This involves use of the gerund rather than the infinitive. A good minimal pair is provided by (44)-(45):

(44) I propose writing your dissertation on modals.
(45) I propose to write your dissertation on modals.

Sentence (45) is rather odd, given the accepted ethics of dissertation writing, since the speaker is proposing that the speaker will write the addressee's dissertation, i.e. we have subject control, as expected in the absence of a matrix object. In (44), however, the interpretation of the subject of the gerund (and thus of the recipient of the proposal) is free, thereby allowing the interpretation consistent with dissertation ethics, i.e. that the speaker is proposing to the addressee that the addressee should write a dissertation on modals (in addition to allowing various
unethical interpretations where some other unspecified person writes the dissertation). (For discussion of this gerund construction, see Thompson (1973).)

Interestingly, German and Russian lack a gerund construction comparable to that of English, i.e. in these languages there is no possibility of a distinction between infinitive and gerund constructions, so that for both interpretations there is just the infinitive construction. Compare German examples (46) (= (41)) and (47):

    'The mother asked [X] to clear away the dishes.'

(47) Die Mutter bat, sich erholen zu dürfen.
    'The mother asked to be permitted to rest.'

The situation in English can therefore be summarized as follows. In the gerund construction, there is no strict control, and any interpretation which makes sense is allowed, the choice of interpretation being often left open to be determined by the context. In the infinitive construction, English has strict control, which is largely syntactic. There seems to be some validity to a purely formal principle, where subject control correlates with absence of matrix object and object control with presence of matrix object. A small set of verbs are systematically exceptional (for most speakers) in that they have subject control even in the presence of a matrix object, e.g. promise. The exceptionality of this small class of verbs has a pragmatic explanation, but apart from the exceptional status of having subject control these verbs behave otherwise almost entirely in accord with other syntactic principles of English, for instance in allowing omission of the embedded subject irrespective of its semantic role.

In the body of this paper, I have noted several times that for the phenomena in question English seems to be more a 'syntactic language', whereas German and Russian are more 'semantic', or perhaps 'pragmatic languages', in that in English control principles are determined syntactically to a greater extent than in the other two languages. Of course, the distinction is one of degree, since English does in some instances allow some loosening of syntactic principles where these are in conflict with pragmatics (e.g. subject control with promise), and German and Russian do have some syntactic constraints (e.g. the coreferential noun phrase in the embedded sentence must be subject of that sentence), but nonetheless it is a marked difference of degree. Clearly, this generalization concerning differences between control in these languages would be more convincing if it can be related to other differences between the two classes of languages. The aim of these final remarks is to establish a more general differentiating parameter of which the control difference is a special case.

Recent work by John A. Hawkins and by Comrie (1981:68-78) has argued that one of the major general syntactic differences between
where English has nonagentive transitive subjects, Russian typically prefers to recast the sentence so that the nonagentive causer is not expressed as a transitive subject, but rather as an instrumental, the verb being impersonal, as in (48):

(48) Tanju ubilo molniej.
    Tanya-ACCUSATIVE killed-NEUTER lightning- Instrumental
    'The lightning killed Tanya.'

Where Russian (and German) do allow a given verb to have different semantic roles occupying the same grammatical relation, it is necessary to mark the distinction overtly, for instance by the reflexive in (80) below, whereas English uses the same verb form:

(49) Tanja otkryla dver'.
    'Tanya opened the door.'
(50) Dver' otkryla-s'.
    'The door opened.'

Syntactic processes that change grammatical relations, frequent in English, are either nonexistent or more heavily restricted in German and Russian. Russian, for instance, lacks any formal equivalent to English object-to-subject raising (tough-movement):

(51) *Eta problema legka razresit'.
    'This problem is easy to solve.'

Although Russian has a passive, it is used much less frequently than its English counterpart, being primarily an indicator of a formal written style. Thus (52) is possible in Russian, but much less preferred than its English translation:

(52) Ved'ma byla ubita drovosekom.
    'The witch was killed by the woodcutter.'

Moreover, there are heavier restrictions on what passives are possible at all in Russian: in English, a few transitive (or at least apparently transitive) verbs lack a passive, such as have, cost, but in Russian the list is longer, including many verbs that do passivize in English, e.g. ljubit 'to love'; in particular, the verbs that passivize most readily are those whose direct object in the active is clearly a patient, the undergoer of some action.

The distinction between English on the one hand and German and Russian on the other is of a higher degree, rather than absolute - Russian and German do have passives, and English does have some transitive verbs that do not passivize - but this difference in
degree is quite marked. The difference can also be characterized as one between English as a more syntactic language and German and Russian as more semantic languages, where these terms have the following interpretation: in English, the grammatical relations are more independent from their semantic roles, whereas in German and Russian the grammatical relations are more closely tied to their semantic roles. This generalization now enables us to place the differences in control properties between the two language types in a broader perspective.

Control, in particular the distinction between subject and object control, operates in English primarily on a syntactic basis. The basic syntactic rule is that matrix verbs with an overt object take object control, while those without take subject control. For the majority of verbs this distinction holds absolutely, even where the resulting interpretations are bizarre or completely excluded in the real world. Pragmatics does seem to be at the root of the exceptional behavior of promise (subject control even with an overt object) and say (object control even without an overt object), for those speakers who allow these constructions; yet still the change in control occasioned by the pragmatics here seems to be built into the syntax, so that it again becomes a syntactic subprinciple operating against the direction of the main principle, even where the resulting interpretation is bizarre or excluded in the real world. Thus (53) below is assigned subject control, even though the object control interpretation is much more probable:

(53) Otto promised Helga to be able to leave at six o'clock.

Only in a few instances does pragmatics overrule syntax, as in (54) below, where a number of complicating factors intervene: the fact that the recipient of the promise appears as a subject (and thus, in a sense, is subject of an intransitive matrix predicate) and the presence of the overt modal expression be allowed to, which pushes as the pragmatically more likely interpretation the one where the recipient of the promise is also the recipient of the permission:

(54) Otto was promised to be allowed to leave at six o'clock.

In German and Russian, on the other hand, pragmatic factors play a much greater role in the definition of control properties. Recipients of directives must be readily interpretable as high in agentivity with regard to the situation expressed by the infinitive construction, otherwise the sentence is ungrammatical (rather than nonsensical). The understood subject of the infinitive after promise may be either high in agentivity (in which case it will be interpreted as coreferential with the promiser) - this is the more typical case - or, if it is low in agentivity, it will be interpreted as coreferential with the recipient of the promise. All of these generalizations are consistent with the pragmatics of the corresponding speech acts, in terms of the constellations of se-
mantic roles that are consistent with the definitions of those speech acts.

On the one hand, this can mean that control possibilities are more restricted in German and Russian than in English. Thus English sentence (55) has no literal translation into the other two languages:

(55) The nurse persuaded the patient to be examined by the doctor.
(56) *Die Krankenschwester Überredete den Kranken, vom Arzt untersucht zu werden.
(57) *Medsestra ugovorila bol'nogo byt' osmotrennym vračom.

Rather, German and Russian require some overt indication that the noun phrase has a higher degree of agentivity than would be associated with the subject of a passive verb. In German, the most obvious solution is to make this noun phrase subject of the causative verb lassen:

(58) Die Krankenschwester Überredete den Kranken, sich vom Arzt untersuchen zu lassen.
'The nurse persuaded the patient to have himself examined by the doctor.'

In Russian, there is no systematically substitutable alternative, but in this particular example the expression podvergnut' sebja osmotru 'submit oneself to an examination' enables overt expression of higher agentivity:

(59) Medsestra ugovorila bol'nogo podvergnut' sebja osmotru.
'The nurse persuaded the patient to submit himself to an examination.'

In English, sentence (55) satisfies the syntactic requirements of control, and is therefore grammatical, while the relative looseness between grammatical relations and semantic roles enables an interpretation to be constructed where the subject of the passive nonetheless has a high degree of agentivity.

In other instances, control possibilities are more restricted in English than in German or Russian. For instance, the English matrix verb promise requires subject control, whereas the German matrix verb versprechen allows object control where the understood subject of the infinitive is interpreted more readily as non-agentive, as in (60):

(60) Helga versprach Otto, noch einmal einen Sieg zu erleben.
'Helga promised Otto that he would experience victory once again.'

The literal translation is 'Helga promised Otto to experience victory once again'. In English, the only interpretation of this infinitive construction is the pragmatically unlikely one whereby Helga promises to experience another victory. In German, the primary interpretation is where Helga promises Otto that Otto will experience another victory; an added factor is that a promise must
be to the advantage of the recipient of the promise, and in this sentence experiencing a victory is more likely to be of advantage to the one who experiences the victory.

The main aim of this paper has been to show that in any comprehensive account of control phenomena, syntactic, semantic, and pragmatic factors must all be taken into account. The interplay among them can be quite complex, for instance in the strict grammaticalization in English of subject control with promise, even though this subject control is itself pragmatically initiated. Moreover, the interplay can be different in different languages, as can be seen in the different details of control in English on the one hand and in German and Russian on the other. A subsidiary aim of the paper has been to try and show that the differences between these two types of language with respect to control can be seen as a special case of a more wide-ranging difference, namely that syntactic phenomena in English are more likely to be purely syntactic, abstracted away from semantic and pragmatic considerations, than are their counterparts in German and Russian, which are in this sense more semantic/pragmatic languages. It should be emphasized once again that this typology presents a difference of degree, rather than an absolute difference: in both language types, all three of syntax, semantic, and pragmatics are important.

References
LOCAL COHESION IN CHINESE AND ENGLISH:  
an approach to clause combining

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There is good evidence to suggest the position that the term "subordination", with all of the things that term has been taken to involve, is not one which is useful for linguistic description; this is the position which Haiman and Thompson have taken in their paper (this conference). In this paper I will suggest a new approach to clause-combining which doesn't depend on the traditional "subordination/coordination" dichotomy, and argue that this approach gives us more insight into the universal (both cross-linguistic and cross-channel) basis for clause-combining than the old approach did, as well as highlighting some interesting differences.

It is commonly observed that languages can differ from each other in the amount of "subordination" they use; that is, some languages, such as Chinese, seem to be less hypotactic than others, such as English. In Chinese, while relative, adverbal, and some kinds of complement clauses are marked as being contained within another clause, many other clause types which are reduced or otherwise overtly marked as incorporated[11] in English show no such marking in their Chinese translation. Thus there is no direct evidence for a hierarchial analysis for these clause types. The fact that Chinese allows zero pronominalization compounds the problem, since it can't be determined on the basis of overt criteria whether a missing NP is a syntactically controlled null element, or a pragmatically controlled zero anaphor. In the following examples (from Li and Thompson 1981, chapter 21), each of the two clauses in the Chinese is independent, while the English gloss contains one clause marked as dependent by the morphology. I indicated this in the examples by putting a slash between the clauses in the Chinese, and capitalizing the subordinating morphology in the English.

Purpose clause:

1)  tā shàng lóu / shùjiào  
she ascend story sleep  
"she went upstairs TO sleep"

Gerund:

2)  tā niàn shū / xīn hěn zhuān   
she read book heart very engrossed   
"WHILE studyING, she's very engrossed"
Subject clauses:

3) zài zhèlǐ tíng chē / fànfǎ
   at here park car illegal
   "parkING here is illegal"

4) wǔge rén zuò yījīa mòtōchē / zhēn wèixiǎn
   five people ride one motorcycle really dangerous
   "FOR five people TO ride one motorcycle is really dangerous"

Object clauses:

5) wǒ yào / tā guò lái
   I want she over come
   "I want her TO come over"

6) wǒ jiānchí / wǒ méi fànfǎ
   I insist I not break:law
   "I insist THAT I didn’t break the law"

7) wǒmen jǐnzhī / chōuyān
   we prohibit smoke
   "we prohibit smokinG"

This difference between Chinese and English clearly reflects a difference in the morphological resources the two languages have for marking incorporation. Even within a given language with a given set of resources, however, there may be dramatic differences in the extent to which these resources are exploited under different circumstances. It has often been observed that planned discourse uses more marked incorporation than unplanned discourse, adults use more than children, writers use more than speakers, and so on (Ochs 1979; Chafe 1982). This fact has led several authors to the conclusion that the clause, rather than the potentially multi-clausal sentence, is the most relevant unit of analysis for spoken language (Crystal 1979; Bivon 1982).

The possibility of this kind of difference suggests another question: does a difference in the amount of incorporation reflect a difference in the size of the units that speakers use to encode their ideas, or in the degree of cohesion (or "tightness") which obtains in discourse? I will suggest that the answer to this question is "no". Through the study of the ways in which clauses are grouped into sentences in both spoken and written Chinese and spoken and written English, I will show that in fact all of these text types are very similar in the amount of cohesion they exhibit between adjacent clauses, although there are differences in how this cohesion is
signaled. This suggests that while it may be accurate to say that languages can differ in the amount of overt incorporation they use, they don’t differ nearly as much in the amount of local cohesion they have, and this is true not only across languages, but also across channels in a given language.

It might be thought that the way to express this kind of cohesion is in terms of the traditional alternative to subordination, namely coordination. In a sense this is what I will propose, if "coordination" is taken to refer to "a non-hierarchical relation between adjacent clauses". The problem which remains under this proposal (and which I will address below) is how to identify this relation. When two independent clauses are juxtaposed without overt marking, there is always ambiguity (from a syntactic point of view) as to whether they should be taken as one compound unit or as two separate ones. The presence or absence of "coordinating conjunctions" such as "and", "but" and "however" doesn’t solve this problem for the analyst; these conjunctions are not really clause connecters, but rather rhetorical operators which express relationships between rhetorical elements of any size from NPs to paragraphs, while the kind of relationship of concern in this paper is that which obtains between adjacent clauses. Therefore the traditional sense of coordination is too global to be relevant to the issue of clause-combining.

Thus, we need a way to measure local cohesion which combines aspects of both incorporation and coordination, and is independent of a particular language or a particular channel. In a study of the correlates of intonationally and punctuationally marked groups of clauses (Cumming in press), I found three ways in which a speaker can group adjacent clauses: argument sharing (the relationship between clauses which share an understood argument which is only expressed overtly in one of them), complementation (one clause is understood as an argument of another clause), and cases of incorporation in which one clause is marked by the morphology as a modifying element within another clause, as with adverbial clauses and relatives. (I will refer to clause groups signaled by these devices as "shared argument groups", "complement groups" and "part-of groups" respectively.) Thus the English sentences in (1-7) would all be examples of part-of groups, but the Chinese versions would be examples of either shared argument groups (example 1) or complement groups (examples 3-7). Of these kinds of cohesion, part-of groups and complement groups would traditionally be called cases of subordination, while shared argument groups might be considered either subordination, coordination, or neither. All three kinds of clause grouping can be discovered in any language on the basis of fairly overt criteria[21].

In the texts I looked at, groups of clauses formed by the devices mentioned above tended to overlap to form clusters, which I call "cohesion clusters". The distribution of these
Cohesion clusters is what turns out to be similar across text types, while the internal makeup of the clusters varies. Cohesion cluster boundaries also tended to coincide with "sentence" boundaries marked by punctuation in writing and intonation in speech, which I take to support the view that these clusters represent units real to the speakers of a language. An example of a cohesion cluster:

\[
\begin{array}{l}
(a) \quad \text{zǒu le yī hou} \\
(b) \quad \text{neige... jìushi dàqiú de neige rén} \\
(c) \quad \text{gāngcái méiyǒu dòng} \\
(d) \quad \text{zhè ge shíhou hūrán kàn dào mǎlù zhǒngjian} \\
(e) \quad \text{neige xiǎoháizi gāngcái dàízhe de yī dīng màozi} \\
(f) \quad \text{diào zài neige... lù de zhǒngjian.}
\end{array}
\]

"After he leaves, that guy who was hitting the ball and didn’t do anything a while ago, now (he) suddenly sees in the middle of the road, a hat which that kid was just now wearing has fallen in the middle of that road."

In this example, clauses (a)-(d) form a shared argument group (indicated by the solid circle), since they all share a single argument (dàqiú de neige rén), as do clauses (e)-(f) (yī dīng màozi). Since (a) is marked as a time clause (by yīhou) and (b) as a relative clause (by de) they both form a part-of group (indicated by the dotted circle) with (c); and similarly, the relative in (e) makes it a part-of group with (d). Since these groups overlap, all the clauses together constitute one cohesion cluster.

Having divided the clauses of a text into groups and thus identified the cohesion clusters as in this example, it becomes possible to compare texts in order to determine the relative amount of cohesion they contain. I chose pear film narratives[3] for the spoken texts in both languages and narrative excerpts from fiction for the written texts[4]. The following table gives the results of this comparison. The
values given in the left-hand column represent the number of
groups of each sort divided by the number of clauses in the
text.

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<td>Shared Argument Groups:</td>
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There are several points of interest brought out by these
results:
1. The difference between spoken and written English seems to
be greater than the difference between spoken and written
Chinese, as shown in the figures for all groups except the
complement group. This may well be due to the fact
that the Chinese written texts were taken from modern
authors whose work reflects the influence of a literary
movement (the "May Fourth movement") which, in a conscious
revolt against the archaizing literary language of imperial
China, attempted to keep the written language as close to
the spoken vernacular as possible.
2. Written English has a much higher proportion of part-of
groups than any of the other three text types. This
reflects the observations made above about the relative
predominance of morphologically-marked incorporation in
written English; the relative prominence of the
shared-argument groups in written English reflects this too,
since most subordinating strategies in English involve the
"reduction" of incorporated clauses by eliminating arguments
as well as the addition of morphological markers, as in
examples (1), (2), (5), and (7) above. The fact that spoken
English is very similar to Chinese with respect to the proportion of part-of groups bears out the idea that spoken English is significantly less hypotactic than written English.

3. The high proportion of shared argument and part-of groups in written English accounts at least in part for the fact that written English has somewhat fewer, longer cohesion clusters (and hence more cohesion) than any of the other text types. However, it is striking that the difference in overall cohesion is greater between the written and spoken texts in each language than between the two languages; thus it seems that cross-channel differences are more important than cross-linguistic differences in determining the overall amount of cohesion.

Even with all of these differences, the extent to which the four text types are similar with respect to the overall distribution of cohesion as indicated by the proportion of cohesion clusters is significant, the difference being not greater than ten percent. Thus, it seems that there really is no direct connection between the amount or variety of incorporation a language has in its syntactic repertoire, and the degree to which speakers of the language tend to present groups of clauses as cohesive units.

NOTES

1. In the spirit of Haiman and Thompson's paper, and in order to avoid the multiple connotations of the term "subordinate", I will use the term "incorporated" to refer to certain clauses which are taken to be "part of" another clause, either for morphological or syntactic reasons.

2. Of course, some decisions must be made about which features of a language to compare. Since English doesn't share with Chinese the possibility of zero pronominalization contrasting with the use of a full pronoun, a decision had to be made whether to treat adjacent clauses with coreferent pronouns in the English texts as shared argument groups or not. My counts revealed that in fact English pronouns do act rather like Chinese zeros with respect to the distribution of local cohesion, so I counted them the same way. (See Cumming (in press) for a discussion of the advantages of the two alternatives.)

3. These are oral narratives obtained by showing subjects a short film which doesn't contain any language, designed by Chafe et al. (Chafe 1980), and asking them to tell what happened in it immediately afterwards.

4. The English peer film texts are from the appendix of Chafe 1980; Mary Erbaugh gave me access to the Chinese version, which she collected and had transcribed in Taiwan. English written text is from Beyond This Point Are Monsters, by
Margaret Hillar; Chinese is from Dong Ye by Bai Xian Yong, and Zhu Fu by Lu Xun. My suggestions below concerning the differences between the spoken and written texts should not be taken as suggesting that I consider channel to be the most important factor in distinguishing these text types; there are of course many differences, including degree of planning, formality, audience, etc.

REFERENCES


Performative Subordinate Clauses

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In traditional grammar, a grammatical construction was a syntactic configuration (often a complex configuration), paired with conditions on meaning and use. In classical transformational grammar, transformations were intended to capture the syntactic aspects of constructions. For example, the passive transformation was to account for sentences displaying what had been called passive constructions; the question transformation was to account for question constructions; and so on. Of course, transformational grammar ignored the semantic and pragmatic aspects of constructions. Generative semantics, in part, tried to reconstruct the traditional concept of the construction by including semantic and pragmatic conditions on individual transformations.

Within recent formal theories of grammar, the concept of the construction has almost completely disappeared. Generalized phrase-structure grammar has a degenerative form of construction in which simple phrase-structure rules are paired with constraints on truth-conditional semantics. But the complex construction -- including constraints on pragmatics -- has virtually disappeared from the literature on formal syntax and semantics. Grammatical constructions are at best considered an epiphenomenon, to be accounted for by other, more general, principles; at worst, they are ignored.

One purpose of this paper is to point out an area of English grammar that requires grammatical constructions in their full form -- syntactic configurations paired with semantic and pragmatic conditions. A second purpose of this paper is to revive a rich tradition of grammatical analysis that has waned in recent years -- the tradition of semantically-based syntax. I will attempt to do this by taking a very traditional kind of question in syntax: what kinds of syntactic configurations can occur in what kinds of subordinate clauses? It is a syntactic question of the most basic kind. I will then try to show that a general answer to this question cannot be given in syntactic terms alone, and moreover that it can be given only within a theory that contains grammatical constructions that include semantic and pragmatic constraints.

The phenomenon I'll be discussing can be seen in the sentences:

- I'm leaving, because here comes my bus.
- *I'm leaving, if here comes my bus.

If-clauses and because-clauses are both adverbial clauses. It is usually assumed that whatever can occur in one kind of adverbial clause can occur in another.
These examples indicate that that simply isn’t true. Because-clauses permit constructions that if-clauses forbid.

What is of particular interest in these examples is that the construction that differentiates them, as exemplified by *Here comes my bus*, is usually assumed to be a main-clause construction -- a construction that occurs only in main clauses. What is a main-clause construction doing in a subordinate clause at all? And why does it occur in because-clauses but not in if-clauses? Do other main-clause constructions act in the same way? And if so, which ones do, and why?

A quick look at other constructions that are supposed to occur only in main clauses shows that *Here comes my bus* is not alone. Take, for example, a negative question like *Isn’t it a beautiful day?*. It shows exactly the same behavior:

-We should go on a picnic, because isn’t it a beautiful day!
-We should go on a picnic, if isn’t it a beautiful day!

This shows that whatever is going on, it is not restricted to individual constructions. It must involve some general property of a class of constructions that usually occur only in main clauses. Exactly what property is it?

Before going on to try to answer these questions, one more peculiarity of this phenomenon should be pointed out. Main-clause constructions occur in because-clauses only when they are in final position. Preposed because-clauses do not permit them:

-Because isn’t it a beautiful day, we should go on a picnic.
-If isn’t it a beautiful day, we should go on a picnic.

-Because here comes the bus, I’m leaving.
-If here comes the bus, I’m leaving.

Any adequate account of this phenomenon must explain why this is so.

Some Speech Act Constructions

I would like to suggest, as a first approximation, that what unites the constructions in question is that they are all speech act constructions, that is, constructions that are restricted in their use to expressing certain illocutionary forces that are specified as part of the grammar of English. Let us consider a number of such constructions, together with their illocutionary force constraints.

Deictic *there*-constructions: These direct the hearer’s attention to something
present.

-There goes Harry!

**Negative questions:** These convey positive hedged assertions.

-Didn't Harry leave?

**Inverted exclamations:** These express exclamations.

Boy! Is he ever tall!

**WH-exclamations:** These express exclamations.

-What a good time I had!

**Rhetorical questions:** These convey negative statements.

-Who on earth can stop Bernard?

**Tags:** These convey hedged assertions.

-He's coming, isn't he?

All of the above occur in final because-clauses:

-I'm gonna have breakfast now, because am I ever hungry!
- I'm gonna have breakfast now, if am I ever hungry!

-We should have another party, because what a good time everyone had at the last one!
- We should have another party, if what a good time everyone had at the last one!

-The Knicks are going to win, because who on earth can stop Bernard?
- The Knicks are going to win, if who on earth can stop Bernard?

-I guess we should call off the picnic because it's raining, isn't it?
- I guess we should call off the picnic if it's raining, isn't it?

However, not all speech act constructions occur in final because-clauses. In particular, true questions and imperatives do not.
-*I'm staying because go home!
-*I'm leaving because which girl pinched me?

Why should rhetorical questions like *Who can stop Bernard?* occur in because-clauses, while true questions like *Which girl pinched me?* cannot? The difference is that rhetorical questions convey statements (e.g. *No one can stop Bernard*) while true questions are requests for information. This suggests the following hypothesis:

Only speech act constructions that (directly or indirectly) convey statements can occur in performative subordinate clauses.

This hypothesis predicts that certain overt performatives but not others should be able to occur in because-clauses. The prediction is borne out, since only statements occur:

-*I'm going to vote for Snurdley because I maintain that he's the only honest candidate.
-*I'm staying because I order you to leave.
-*I'm leaving because I ask you which girl pinched me.

The hypothesis also accounts for the range of speech act constructions that do occur. All of the cases cited above happen to convey statements.

-*Here comes the bus!* conveys *The bus is coming.*

-*Isn't it a beautiful day?* conveys *It's a beautiful day.*

-*Am I ever hungry!* conveys *I'm hungry.*

-*What a good time everyone had!* conveys *Everyone had a good time.*

-*Who on earth can stop Bernard?* conveys *No one can stop Bernard.*

*It's raining, isn't it?* conveys *It's raining.*

Thus we can account in a straightforward way for the relationship between the speech act constructions and the semantics of the because-clauses:

When speech act constructions occur in because-clauses, the content of the statement conveyed by the speech act construction equals the content of the because-clause.

Thus, in a sentence like
-I'm gonna have breakfast now, because am I ever hungry!

the exclamation *Am I ever hungry!* conveys the statement *I'm hungry*. Thus, the reason given in this sentence is the same as the reason given in

-I'm gonna have breakfast, because I'm hungry.

Thus performative subordinate clauses perform two functions at once. They perform a speech act that conventionally conveys a statement. And they give the content of that statement as a reason for the first statement.

This general principle covers all the cases given above, and excludes nonoccurring cases, like pure questions and orders. It allows rhetorical questions that convey statements. And it predicts that if an imperative construction were to conventionally convey a statement, it could occur in these clauses. As it happens, there is such an imperative. Compare the pure imperative

-Find out which girl pinched me.

with a sentence of the same syntactic form

-Consider which girl pinched me.

The first is simply an order. The second, however, assumes that the hearer already knows the answer. It directs the hearer to think about the answer, and assumes that if the hearer does so, he will reach a specific conclusion that the speaker already has in mind. It is a roundabout, but nonetheless conventionalized way of conveying a statement which is never overtly mentioned. As predicted, the difference between these two imperatives is reflected in their ability to occur in because-clauses. The second can occur, while the first cannot.

-*I'm staying because find out which girl pinched me.

-I'm staying because consider which girl pinched me.

Thus, we see that it is not the imperative construction per se that is ruled out. Most imperatives cannot occur in such clauses simply because they do not conventionally convey statements. Imperatives that do conventionally convey statements do occur in these because-clauses.

Initial Clauses

We are now in a position to explain why speech act constructions can occur in because-clauses in final position, but not in initial position. Because-clauses in
sentence-initial position are presupposed, while those in sentence-final position are not. Consider the sentence:

- I'm going to vote for Hart instead of Mondale, because Hart can beat Reagan.

In this sentence the speaker is asserting that Hart can beat Reagan. However, in the following sentence, the speaker is taking it as a foregone conclusion that Hart can beat Reagan.

- Because Hart can beat Reagan, I'm going to vote for him instead of Mondale.

This can be seen even more clearly in the following examples.

- Do you think that John left early because he was tired?
- Do you think that, because he was tired, John left early?

- I doubt that John left early because he was tired.
- I doubt that, because he was tired, John left early.

In the first sentence of each pair, it is not necessarily taken for granted that John was tired, whereas in the second sentence of each pair it is.

Given the presuppositional character of initial because-clauses, we can explain why speech act constructions cannot occur in such clauses. In order for speech act constructions to occur in because-clauses at all, they must convey statements. However, it is impossible to both state and presuppose something simultaneously. It is for this reason that speech act constructions cannot occur inside initial because-clauses.

Further evidence for this explanation has been brought to my attention by James D. McCawley. McCawley observes that in certain situations preposed because-clauses do not have to be presupposed. Thus, in sentences like

- My boss wants me to vote for Mondale, but because Hart can beat Reagan, I'm going to vote for Hart.

In this case, the speaker can be asserting, not presupposing, that Hart can beat Reagan. McCawley observes that in such cases speech act constructions can occur in preposed because-clauses.

- I want to stay, but because here comes my bus, I'd better leave.
This shows that the constraint on the occurrence of speech act constructions is pragmatic rather than syntactic. That is, it is not the preposed position of the because-clauses that rules out speech act constructions; rather, it is the presuppositional character of the position that rules out the speech act constructions. When that presuppositional character is removed, then speech act constructions can occur in preposed because-clauses.

The Range of Clauses

Let us now turn to the question of what kind of clauses speech act constructions can occur in. We have seen that they occur in because-clauses. They also occur in clauses that begin with although, except, since and but.

Although

-I'm not going to vote for Snurdley, although I maintain that he's the best candidate.
-I've decided to stay, although here comes Harry — and you know what I think of HIM!
-I'm going to stay on my diet, although could I ever go for a deem sum brunch!

Except

-I'd stay a little longer, except here comes my bus!
-We really shouldn't go on a picnic, except it is a nice day, isn't it?
-I'd go swimming with you, except am I ever tired!

Since

-I'd better leave, since here comes my bus!
-I'm going to cheat on my taxes, since who will ever find out?
-No one's going to be there, since it's going to be boring, isn't it?

(It should be noted, incidentally, that since is formal and many of these constructions are mainly used in informal speech. This can lead to register incompatibility, as in PHe must be a great player, since what a shot he hit! This incompatibility is irrevlevant to the present discussion.)

But

-I really should stay, but here comes my bus.
-I'm on a diet, but am I ever hungry!

In addition to if clauses, all other adverbial subordinate clauses exclude these speech act constructions, e.g., where, when, while, as, etc.
There's Bill where isn't John sitting.
-Harry left when did he ever get hungry!
- John was sitting in his favorite chair reading while was Harry ever sneaking up on him!
- John left as didn't Bill come in?

Speech act constructions occur in two classes of adverbials: reason adverbials (because, since) and concessives (although, except, but). Actually, these two classes form a single more general class for the following reason: In sentences of the form "A although B" and "A but B", B is a reason for NOT A. For example, in a sentence like John stayed up although he was tired, being tired would be a reason for not staying up. In short, concessive clauses give reasons for the opposite of the main clause. The generalization seems to be that speech act constructions occur in clauses expressing reasons of either sort.

What we have arrived at is a single general principle:

Clauses expressing a reason allow speech act constructions that convey statements, and the content of the statement equals the reason expressed.

The observant reader will have noticed that not all of the examples given have been subordinate clauses. But-clauses are coordinate. Yet with respect to this phenomenon they work the same way as other clauses expressing reasons. In fact the general rule does not mention subordinate clauses at all. It only mentions "clauses expressing a reason". Such clauses may be subordinate, and marked with subordinators like because, although, etc. They may be coordinate and marked with but. In addition, coordinate clauses marked with and and or may also take such constructions when one coordinate clause is expressing a reason for another.

-Here comes my bus and so I'd better leave.

Here, the arrival of the bus is a reason for leaving. Incidentally, the reason is given first here. This is required by the reason-interpretation of conjunction, according to which reasons come first (by an iconic principle).

Conclusions

The problem we began with was a conventional syntactic problem: What kinds of constructions can occur in what kinds of subordinate clauses? The solution to the problem requires constructions to be paired in the grammar with the illocutionary forces they express (both directly and indirectly). Once this is done, a general rule can be stated in purely semantic terms. In other words, a complex syntactic problem can be solved by a simple semantic principle -- provided we have the means in the grammar to pair constructions with the meanings they
convey.

This phenomenon therefore provides support for the theory of grammatical constructions, as proposed in Lakoff (1984) and Fillmore, Kay and O'Conner (in preparation). According to that theory, grammatical constructions are holistic structures that allow for a direct pairing of form and content — pairing of syntactic and phonological information with semantic and pragmatic information. In grammatical construction theory, it is possible to find such semantic-pragmatic solutions to syntactic problems.

Of course, grammatical construction theory is not the only contemporary theory that permits the direct pairing of syntactic and semantic information. However, it is the only theory I am aware of that permits the pairing of complex syntactic configurations with the appropriate pragmatics -- in this case, conveyed illocutionary force. Grammatical construction theory permits such pragmatic factors to enter directly into the composition of sentences. Generative theories with an autonomous syntax cannot do this. For example, they have no way of generating speech act constructions in exactly the right subordinate clauses while not generating them in the wrong subordinate clauses -- and still stating the fully general principles governing their occurrence.

References


THE PRAGMATICS OF SUBORDINATION
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If we conceive of discourse as a cooperative activity, one of the responsibilities to be divided between (or among) the participants is that of the determination of meaning. As a convention, we often think of the "meaning" of a text as located in, and wholly determined by, that text itself; but in fact, participants have a great deal to say about what a text, spoken or written, "means," and who is responsible for putting the meaning in it -- the utterer or the recipient.

Evidence for my position can be found in the fact that different cultures, and therefore different languages, utilize linguistic devices to locate the responsibility for meaning with one participant or the other; and while participants themselves are usually unconscious of this fact, their communicative strategies, including numerous details and choices of grammatical organization, militate in favor of one strategy over another. Within cultures, we find different discourse genres sometimes utilizing different strategies, and variations in grammatical rules and choices from one genre to another can be understood at least in part on this basis. Finally, like other aspects of language, the responsibility for meaning changes over time, influencing changes in other, more purely linguistic, aspects of the grammar. In this paper, I want to talk about some of the ways that languages encode meaning, and how a culture's determination about which participant in a discourse is responsible for its meaning affects the form of its language.

It will be useful to make clear at the beginning what I mean by the "meaning" of a text, as I am using the term in a somewhat special sense, to refer mainly to those aspects of the text that involve connectedness -- between ideas in the text, and between participants in the discourse -- rather than the semantics proper, the relation between words and referents, although it should be obvious that these two components of meaning cannot be divorced from each other.

Meaning, then, can be speaker-based or hearer-based. In a speaker-based strategy, explicitness and clarity are primary desiderata. If something is not understood, the assumption is that the speaker is at fault for not being clear, and could have done better. The language provides many clarifying devices, typically different ones in different genres. (Even in a strongly
speaker-based culture, there may be types of discourse which, precisely for the sake of contrast, are hearer-based. But participants in speaker-based cultures learn these genres later in their education, and often achieve at best a passive mastery of them, if they learn to appreciate them at all.) In such a culture, to be unclear or imprecise, except in a genre specifically allowing it, is to be devious and inscrutable, or to be saying something that requires concealment. Imprecision, then, is marked.

In a hearer-based culture, on the other hand, ambiguity and imprecise statement are valued in even the most informal and common types of discourse. To be perfectly clear is to appear childlike, or insulting. There may be speaker-based genres in these cultures, though they are not the same ones that are hearer-based in the speaker-based culture. Explicitness is marked.

It may be useful to identify these discourse types with politeness strategies I have discussed in earlier work (1979). Speaker-based meaning can be identified with distancing cultures; hearer-based, with deference. In a distancing culture, power is the central issue around which relationships (at least in their early stages) are organized, and locating meaning with the speaker (or, perhaps more accurately, the speaker's production, the text) means that there can be, in normal discourse, no possibility of losing control of the discourse, no chance that meaning will have to be negotiated. In a hearer-based culture, on the other hand, the most desirable strategy will be to leave decisions about meaning, as about so many things, at least conventionally up to the hearer.

To suggest that there are cultures which preferentially are inexplicit about the expression of meaning in discourse calls into question the assumptions behind much pragmatic thought. We have assumed that the Gricean (1975) Cooperative Principle, which holds up as an ideal the most explicit expression of meaning in discourse, is universal in applicability, although different cultures may utilize it more or less, or in different contexts (cf. Keenan, 1976). But if we can accept the idea that some cultures do not perceive clarity as an ideal or clarity-based contributions as a norm, we have to rethink our assumption of the univerality of Gricean principles, and perhaps conclude that they, like much of our linguistic theory, are based on too little deep observation and understanding of non-Western cultures, and that the CP may be an ideal only in cultures similar to our own.

Perhaps the differences in strategies can be highlighted if we divide languages into four basic
groups, depending on their preferred format for encoding meaning, though the existence of the third is at this point somewhat conjectural. The distinction is based upon the form in which meaning is most typically encoded. Here as elsewhere, by listing a language or culture in one category, I don't mean to suggest that its speakers have no access to any others; merely that this is the preferred or dominant mode.

First, a language may express relationships at the lexical level. This means that it will have a large vocabulary, with words differentiated from each other according to fine points of distinction. Explicitness is achieved in large part by choosing the word or words with just the right nuance to carry the message. English is an example of such a language.

Second, a language may encode meaning at the sentence level, through syntactic strategies. Such a language will develop and make use of a wide array of types of subordination, and will prefer subordinate structure to coordinate, complex sentences to simple or compound. Semantic relationships are encoded in the syntactic structure, in a way that is more explicit than the first type.

A third possible locus for the encoding of meaning is in the text at a higher-than-sentence, or textual, level. Structures analogous to the paragraph will be more useful as organizational categories than is the "sentence." Such languages, in fact, may not have a clear concept of the sentence, but may jump from clauses to larger, paragraph-like units. If there are formal sentences, such languages will incorporate explicit means of connecting them, often in the form of particles that are not lexically definable but serve to connect one idea to the next. Classical Greek seems to work this way, perhaps in combination with other strategies. Some very speculative evidence suggests that modern written French may be at least partially assignable here, or moving into this category. (My very tenuous evidence for this suggestion has to do with the difficulty speakers of English often have in understanding French styles of argumentation: the notion of "topic sentence," so dear to the organizational principles of writers of English prose, seems to play a much less prominent role, leaving the English-speaking reader disoriented.) (I am speaking here of the written, not the spoken, language.) It may well be the case that written and spoken French are more differentiated from each other in this respect than are their English counterparts.

Finally, a culture may go beyond language to the extra-linguistic context to express its meanings: this is what is meant by calling it "hearer-based."
Paralinguistic factors -- intonation, manner of articulation generally -- might be of especial importance as well; but even more would be conveyed by still less explicit cues: eye contact or its absence, stance, gestures. To be linguistically direct and to the point would be childlike or insulting. Particles may play a significant role here too, but in this type of language, the most useful particles would not be those linking idea with idea in a text, but linking one participant with another, clarifying and further defining their relationship. Many Asian languages would seem, according to descriptions given me by their participants, to fall into this category.

This interpretation of the interrelationships of language and culture suggests a difficulty that may arise in second-language learning, when the learner's native language utilizes a different strategy from the language being learned. A speaker of a lexicon-based language will have great difficulty learning to communicate fluently in a context-based language, for instance: everything may be in order as far as vocabulary and grammar, but the result will be wrong; the learner's over-explicitness will often be perceived as a negative aspect of character, rather than a linguistic difficulty.

Although every language employing a hearer-based strategy will do it somewhat differently, each language will devise ways of encoding meaning as, and to the extent that, its speakers wish to encode it. As with other linguistic phenomena, we can expect to find that these strategies, and the means of encoding them, can change over time. The means, we might surmise, are apt to change more easily than the choice of strategies themselves. A hearer-based culture remains one, and a speaker-based culture is similarly constant.

Having proposed these ideas, for the remainder of this paper I want to concentrate on the choices that have been developed by various speaker-based, Western cultures, in order to illustrate how, within a single general cultural context, the same intention can receive a variety of different forms of execution. By examining several languages, we can detect a number of ways in which meaning is, more or less explicitly, encoded. I want to discuss some of these methods and their effects in detail.

At this point, let me recapitulate the strategies I have identified for the expression of meaning in speaker-based languages.

a. a large and finely-differentiated lexicon (e.g., English), a strategy concentrated within the sentence.
b. semantically-defined particles (e.g., Classical Greek, German), especially likely in strategies focusing at levels beyond that of the simple sentence.

c. a great use of hypotactic syntactic structure (e.g., Latin), with attention focused at the sentence level.

I assume that the choice a language makes among these alternatives is not completely random, but controlled at least in part by linguistic facts, historical and otherwise. English happened to be in a position to receive a large influx of vocabulary, at various times, from various sources. This was serendipitous, but the language or its speakers made the choice to utilize the windfall; Latin, which at the time it was acquiring its classical form, did not have access to the same variety of sources (as later on it would), but was able partly because of its complex morphology to exploit complex syntactic patterns for the encoding of meaning. Its morphology enabled it to develop a relatively free word-order (as English could not) and this in turn contributed to its preference for syntactic complexity.2

This interpretation of differing communicative patterns among languages is a way of understanding a curious difference that has often been observed among languages that are exposed to much external influence and pressure. Under these conditions, some are very open to adopting new vocabulary from outside; others resist the tendency. English and Japanese can be cited as examples of the first type, French and German of the second. To some extent, the choice reflects the structure of the potentially borrowing language: a language with complex inflectional morphology, like French or German, cannot accept new words without making great alterations -- either in the newcomers or, ultimately, in their own structure. But English, which does not make sharp differentiations in form among the parts of speech, nor utilize many inflectional endings, can much more readily accept new forms into its repertoire without doing violence to them or to itself. Of course, at the time of the greatest borrowings into English -- the period of the Norman Invasion -- English was still a relatively inflected language, so morphological structure alone cannot be used to explain the tendency toward borrowing or against it. Still, these patterns clearly have some effect on which devices a language is to use as its primary way of encoding meaning. (Why Japanese is so much like English in its taste for lexical borrowing, yet is hearer-based, is unclear to me at present. Presumably the choice to be, or not to be, a borrowing language is based on different
factors in languages of the latter type.)

In other words, we are viewing the three speaker-based techniques mentioned above as communicative equivalents: the lexical choice exemplified by English; particles, as utilized in Classical Greek; and hypotactic, or subordinating, sentence structure, which was especially well-developed in Latin. Since the other strategies are more or less self-evident, I would like to devote the rest of this paper to a discussion of the non-syntactic functions and consequences of maximal hypotaxis, as exemplified in Latin.

Before proceeding further, it would be useful to clarify what is meant by "maximal hypotaxis." Obviously, even the most "paratactic" language has some hypotactic possibilities, and vice versa; arguments by older generations of historical linguists that the earliest stages of Indo-European were exclusively paratactic are based on misunderstandings of grammar or misinterpretation of the data. To some extent, these hypotheses of proto-language parataxis are predicated on an equally invalid assumption of the greater maturity and sophistication of hypotactic syntax — this in turn based on a perception of Latin as the ideal of the fully-developed language: everything that led to it was "immature," everything developing from it, " decadent." Needless to say, such analyses are based on groundless prejudices.

It is also interesting to notice that, to many traditional grammarians including many current English-language prescriptivists, the use of hypotaxis is seen as the only really respectable way for a language to encode meaning (it goes without saying that speaker-based strategies are the only permissible ones for ethnocentrists like these). Hence the development of new words, or the increasing use of particles like "you know" are perceived only as marks of deterioration; the true Ciceronian periodic sentence is the apogee to which these experts really aspire, realizing, of course, that it is alas! unattainable in the present parlous degeneracy of the language. Yet, compared to any of the other possible meaning-encoding strategies, syntactic subordination is in a real sense the least sophisticated, if by "sophisticated" we mean indirect, assuming knowledge and skill on the part of participants. Hypotaxis spells relationships out to a greater extent than any other strategy: it is maximally explicit. There is nothing inferior about this, of course: but it is a little ironic that it is regarded as the sign of linguistic perfection and maturity, all others being, naturally, a bit brash and in-subordinate.

Actually, as so often in linguistic description,
to attempt to understand a phenomenon in terms of a dichotomy (here, between paratactic and hypotactic structures) is to oversimplify what is in reality a continuum, along which we can trace at least four major levels in the development of hypotaxis. (I mean here synchronic development, of course; I am not implying that hypotaxis necessarily develops from a historically prior paratactic grammar.)

1. pure parataxis, or side-by-side sentences, with nothing explicitly present to indicate any relationship between them: the hearer must infer the relationship, by a procedure such as described in Harvey Sacks' (1972) rule: "Post hoc, ergo propter hoc." (The first example is likewise borrowed from his paper.)

(1a) The baby cried. The mommy picked it up.
(1b) We planned a picnic. It rained.

2. mixed type (to which I will give the name mixotaxis), with the ideas of relatedness expressed via coordinating conjunction. This is traditionally classed as paratactic, but it should be evident that it is quite different in effect. While mixotaxis does not explicitly state the nature of the relationship between the two conjuncts, it does make explicit its existence, as pure parataxis does not.

(2a) The baby cried, and the mommy picked it up.
(2b) We planned a picnic, and it rained.

As these examples illustrate, there is still a great deal of ambiguity in mixotactic utterances. In a way, this strategy highlights imprecisions of meaning that pure parataxis conceals: the presence of "and" is a virtual red flag, signaling to the hearer, "These ideas are related somehow: guess how!"

3. near-hypotaxis, in which one idea, or clause, is subordinated to the other: not only is the relationship between the two made explicit, but also the exact semantic nature of that relationship: temporal sequentiality, cause, condition, for example. Now, if we are to use examples parallel to those of (1) and (2) above, we will have to decide which of the many possible meanings of each of those sentences we wish to express. A partial selection might be:

(3a) The baby cried before the mommy picked it up.
(3b) When the baby cried, the mommy picked it up.
(3c) The baby cried although the mommy picked it up.
(3d) If the baby cried, the mommy picked it up.
Any of (3) could substitute for (1a), merely specifying its meaning. Another way to put this is to say that, in the appropriate context, perhaps with the help of intonation, (1a) can have any of the meanings of (3a) – (3d) -- and more. This type is normally considered fully hypotactic, rather than an intermediate stage. But it differs from the next category, full hypotaxis, in that its two sentences, or clauses, or idea-units, are still syntactically autonomous, while in the fourth type, one clause is totally subordinated to the other, syntactically as well as semantically.

4. pure hypotaxis, in which the subordinated clause loses its full sentential identity. Now, both syntactically and semantically, the relationship between the two original ideas is one of subordination. By deleting syntactic structure from one member of the pair (and thereby, in a sense, losing meaning, although of course it is normally recoverable), the speaker makes clearer the intent of the communication: syntax serves pragmatics.

(4a) After crying, the baby was picked up by the mommy.
(4b) Because of our planning a picnic, it rained.

One construction in particular can be used to illustrate the claim that Latin especially cherishes subordination, even in circumstances where a less hypotactic language would not use it: the Latin ablative absolute. This is a well-known bane of beginners in the language, not only because it does not readily translate into English, but also because it seems ambiguous in a way the speaker of English is not comfortable with. We are, of course, perfectly prepared to cope with the ambiguity of coordinating conjunctions in Latin, which occur just as they do in English; but the ablative absolute seems to us perverse in that it subordinates, but to no semantic end: it provides no indication, unlike other Latin (and English) subordinating devices, of exactly what the relationship between the clauses is supposed to be. This must be supplied by the reader from context. In meaning, the ablative absolute is equivalent to a coordinating conjunction. But syntactically it seems to the speaker of English to be offering clarification of communicative intention with one hand, and taking it away with the other. Yet if we understand Latin’s preference for subordinate syntax, we can begin to understand a preference for hypotaxis even without communicative intent -- an unintelligible combination to a speaker of English.

(5) Caesar, acceptis litteris, nuntium mittit.
(Caesar, the letter having been received, sends a messenger.)

Another construction beloved of writers of Latin can be subsumed under the same explanatory heading -- this too without any equivalent in English. This is the relative pronoun used as a connective -- often translated, at any rate, as a combination of "and" plus demonstrative or personal pronoun. In English, relative pronouns occur only in subordinate (relative) clauses; in Latin, they introduce sentences. Such sentences, very frequent, idiomatic, and impeccable in style, seem to the speaker of English dangerously close to the sentence fragments high-school English teachers warn against. We can understand the frequency of these, too, as attempts to utilize subordinating structure even when there is no desire to subordinate meaning.

(6) Caesar statuit exspectandam classem, quae ubi convenit.....
(Caesar decided that he should wait for the fleet, and when this [lit., which when] arrived....)3

Earlier in this paper, I suggested that even the most militantly speaker-based cultures had forms of communication that were hearer-based. It is probably always the case that "serious" communication in such cultures is maximally explicit (i.e., Gricean): for example, those that hold great significance for the preservation of life, liberty, property, or face of participants. But elsewhere we can afford to be more playful; and going to a hearer-based format is a favorite form of playfulness. Examples are jokes and riddles, which derive much of their point and delight from their contrast with our usual discourse styles, because they make the addressee work harder than usual; and, in writing, poetry, which is always hearer (or reader)-based. (As one poet said,
A poem should not mean,
but be.)

In traditional prose, fictional and otherwise, the norm has always been speaker-based; but interestingly, during the present century, we seem to be moving however tentatively toward a more hearer-based model, at least in avant-garde fiction. (Stream-of-consciousness is hearer-based.) Descendants of traditional fictional modes, such as pulp fiction, remain speaker-based, as does virtually all prose nonfiction. Therefore it is probably premature, and inaccurate, to say that our culture is changing to one that is hearer-based; rather, those who appreciate hearer-based experimental types of
discourse (not by any means the majority of members of
the culture) feel that way in large measure because they
take pleasure in experiencing something radically
different from the norm.

One final example of a place where speaker-based
strategy may be making inroads, perhaps less
aesthetically valued, but probably with greater
influence, in our culture: the increasing tendency of
print advertising to be framed in sentence fragments,
each often isolated so as to resemble a conventional
paragraph. Such incomplete sentences are, strategically,
the inverse of hypotactic structures: they leave a great
deal of decoding up to the reader. In this may lie some
of their effectiveness: they keep the reader actively
participating; and learning theorists know that the best
way to ensure learning and memorization is through
active participation. One could argue, if one wished to
be, or seem, perverse, that advertising is the poetry of
our age: while not utilizing the specific tactics of the
poetic medium, advertising certainly has adopted
poetry's more global strategies; while the communicative
intent is in many ways different, both are intended to
be maximally persuasive, both working on the intellect
via the emotions.

Thinking of discourse strategies in this way
raises an interesting point about something often noted
in child language. Even in a speaker-based culture, the
language of small children looks very hearer-based.
Children leave a great deal up to their hearers; they
are circumstantial and imprecise. Hearers are expected
to do a lot of interpreting -- the younger the child,
the more this is necessary. Similarly, children have
been observed to be unusually "paratactic," -- more
accurately, mixotactic, since they tend to string their
ideas together via coordinating conjunction. (This
tendency can perhaps be explained, as opposed to pure
parataxis, if it is seen as a floor-holding strategy by
the less powerful participant in a conversation:
interruption is less likely in the middle of a conjoined
phrase than between two sentences, at a full stop.)
Assuming child language is hearer-based might lead to
the conclusion that this type of discourse strategy is,
in fact, more "basic" or "primitive." But to make that
assumption is to misunderstand the nature of the
apparent "hearer-basedness" of children's speech.
Discourse can only be truly hearer-based if there is
agreement to that effect between participants, utilizing
implicitly agreed-upon cues, non-linguistic and non-
explicit though they may be. There must be, in other
words, an assumption of mutual intelligibility, of non-
ambiguity at some level. The child's use of mixotaxis,
then, should not be taken as truly analogous to the unclarity of communication typical in a hearer-based culture: it is reaching toward the speaker-based strategy of the child's own culture, but unable to achieve it.4

In this paper, I have suggested that we need to look at a culture's ways of encoding -- or not encoding -- meaning in language as part of its linguistic strategies, an aspect of the pragmatic system that has repercussions in the syntax, and elsewhere throughout the grammar. To understand why languages employ specific kinds of constructions, favoring some ways of expressing things over others, we have to understand these broader and deeper strategies. To assume that syntactic choices are determined purely syntactically, or can be understood without understanding a great deal about other aspects of communicative competence in a culture, is to have only a very superficial understanding of the relation between a language and the people who speak it.

FOOTNOTES

1 An earlier version of this paper was presented to the Language and Reading Development Conference at San Diego State University in March, 1982. Among the many people whose suggestions have improved this paper are: Catherine Davies, Elisabeth Kuhn, Yoshiko Matsumoto, and Margaret Newman.

2 We might contrast the much-noted ability of Latin poetry (as particularly exemplified in the works of Horace) to utilize word-order variations to express what English poetry communicates by a poetic vocabulary much larger and more specialized than that of Latin.

3 The connective relative can also occur in combination with the ablative absolute:

Ratio docet esse deos, quo concesso, confitendum est.... (Reason teaches that there are gods, and once this is granted [lit., which when granted], we must admit....)

4 Another thought occurs to me about the relation between these strategies and other culturally-favored activities. It has been noted that psychoanalysis has never made the gains in Japan that it has here, despite much evidence elsewhere of Japanese eagerness to adopt Western practices. In part, the reason is simple: there is a deep repugnance in many Eastern societies to talk with non-intimates about the darker secrets of one's life: to do so is to lose face. But this was true of Western society until the present century, and if it has
changed significantly, the reason may be attributed to the acceptance of psychoanalysis and psychoanalytic ideas about appropriate presentation of self. So the Japanese might have adapted as well, if the model had been perceived as worth their while, worth undergoing pain for. But Japanese culture differs from ours in being hearer-based. One can argue that Westerners were willing to undergo the pain and privation, and possible humiliation, of the process, because in a speaker-based culture, analysis is one of the few possible interactional hearer-based experiences. For one immersed in a speaker-based culture, the possibility of having someone willing to make a great effort to really understand all that one has to say, however confused it is, is immensely gratifying. We all do this, of course, for those who are powerful, whose utterances we have to interpret if we are not to be destroyed. But few of us are powerful enough to enjoy this as a regular experience -- and even for those who are, it is recognized that the work is done through fear, not love, making it probably less desirable an experience.

BIBLIOGRAPHY


How to Avoid Subordination

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We all know that all languages are created equal. We also know that they are equally adaptable to the needs of their speakers, so that different languages will develop vocabulary in different areas. Basket makers, for example, are likely to develop fine lexical distinctions for their materials, techniques, and finished basketry products. Languages even develop different grammatical distinctions, such as highly individual repertoires of pronouns marking various categories of animacy, gender, and social relationships. Are grammatical constructions like subordination amenable to the same type of adaptation, fluctuating according to the conceptual needs of their speakers, or do they represent fundamental human intellectual constants?

In a study comparing spoken and written American English, Wallace Chafe has found that 34% of the idea units (roughly akin to clauses) in conversation are dependent (p.c.). An investigation of spoken discourse in several other languages reveals that these relationships are not at all universal. Oral texts in Mohawk, an Iroquoian language of Quebec, can show as few as 7% overtly dependent clauses. Similar texts in Gungwinggu, an Australian aboriginal language, show 6%. The same type of oral discourse in Kathlamet, a Chinookan language formerly spoken in Washington state, shows only slightly more than 2%. Do these languages have alternative means for accomplishing the functions performed by subordination in languages like English, or do speakers simply choose to accomplish them less often?

1. How to Avoid Subordination

Mohawk, Gunwinggu, and Kathlamet share a significant typological characteristic: they are all polysynthetic. In particular, their verbs contain obligatory pronominal affixes that mark their agent/subjective/ergative arguments and/or their patient/objective/absolutive arguments, whether independent nominals are present in the sentence or not. The result is that any verb can stand as a complete grammatical clause in itself. Compare the verbs in the pairs of sentences below.

Mohawk (Frank Jacobs, Jr. p.c.)*
(1)a. Ki raksá:'a iaioia'ténhawe ne rohsótha.
    this he-child there-past- the he/him- grandparent

'So the boy took his grandfather there.'
b. Iahoia'ténhawe.
   'He took him there.'

Gunwinggu (Oates 1964:94)

(2)a. Gunubewu namegbe namande biraynbom.
    maybe that devil he/him-spear-past
    'Maybe the devil speared him.'

b. Biraynbom.
   'He speared him.'

Kathlamet (Boas 1901:23)

(3)a. Aqa igigĘtcax iqá:nuq.
    then he-cried beaver
    'Now the beaver cried.'

b. IgigĘ tcax.
   'He cried.'

In each of these languages, the proportion of overtly subordinate clauses was calculated from clause counts across several hundred pages of transcription of oral narratives. All of the texts were accompanied by both literal and free translations. The Mohawk and Gunwinggu free translations were provided mainly by the speakers themselves; the Kathlamet narratives were translated by Boas on the basis of information supplied by the speaker in Chinook jargon. Yet even these free English translations contain more subordination than the original texts. If the percentages of subordinate clauses are so much lower in these languages, what is it that speakers translate into English complex sentences? Most frequently, it is simply strings of formally independent clauses. The sequences below were translated into complement constructions.

Mohawk (Cross p.c.)

(4). Enwá:ton ken enhskerihónnien enkena'tardón:ni?
    it will be ? you will teach I will bread
    possible me make
   'Would you teach me to make pies?'

Gunwinggu (Oates 1964:115)

(5). Beggan nagudji bininj mangun
    she heard one man sugar bag
dedmi'dedmi.
    he was chopping down
   'She heard a man chopping down trees to get the sugar bag.'
Kathlamet (Boas 1901:62)
(6). Aqa ígíxgé:qawaqa' Xá:píX. ILgió:1Xam LgoaLé:1X
then he dreamed at night it said to him a person
'At night he dreamed that a person spoke to him.'

The first verb may contain a neuter subject, object, patient, or absolutive pronoun (often expressed as Ø), referring to the following clause, or it may contain a pronoun referring to some argument of the second clause, yielding constructions somewhat like the results of raising in English.

Mohawk (Montour p.c.)
(7). Ónhka'k wahshakó:ken taiakawenonhátie.
someone past-he/her-see this way-she-go-along
'He saw someone coming'

Gunwinggu (Oates 1964:92)
(8). Benbeggan̓ wuďwuď birí'dirí
he/them-hear-past children they-play-present
'He heard children playing.'

Kathlamet (Boas 1901:59)
(9). Ítćé:qElkEl imó:1lak ité:t.
he-it-see-past an elk it-come-past
'He saw an elk coming.'

Constructions translated with relative clauses in English also often consist simply of strings of independent clauses in these languages. Since the verbs already contain pronominal affixes, additional relative pronouns are not as crucial for maintaining coreference.

Mohawk (Lazore p.c.)
(10). Ísí' na'oháhati rën:teron
over there it is beyond the road he lives

ronaté:n:ro wahrő:ri,...
they are friends to each other he told him

'A friend who lived across the road told him, ...'

Gunwinggu (Oates 1964:104)
(11). Galug bo:gen benevam bene mutual
then two (women) they two went they two tree saw

mangaralaljmayn benebidbm gadum.
cashew nut they two climb up high

'There were two women who saw a cashew nut tree, which they climbed.'
Kathlamet (Boas 1901:59)

look at it its skin the elk he left it as food for me 'Look at the elk skin which he left here for me.'

Ideas translated into English complex sentences containing adverbial clauses are also expressed by simple sequences of formally independent clauses. Temporal clauses are the most frequent sentential adverbials.

Mohawk (Sharrow p.c.)

(13). Wahonthahíta. Iahón: newe' they took up their road they arrived there
ki: ka'k nó:n:we kiohosn'kare:n:ton.
this somewhere there hangs a board

'They walked until they reached a bar.'

Gunwinggu (Oates 1964:110)

(14). Gá:lug mupoy' benedjalbo:ggani then still they two still tracked him

benewam benedju:lenan...
they two went they two shade saw

'They continued tracking him till they came to his camp.'

Kathlamet (Boas 1901:86)

Lá:wa qatcXó:tkakoax, pu pu pu pu ne:xElqó:e:qo-ic; slowly he stepped he farted

'When he stepped with long strides, he broke wind loudly; when he went slowly, he broke wind slowly.'

Other adverbials, such as the purpose clauses below, also appear as overtly independent clauses.

Mohawk (Hill p.c.)

(16). Enhshkenhón:karon ken aontakatska'hón:na? you will invite me ? I would come and eat 'Will you invite me to come and eat?'

Gunwinggu (Oates 1964:105)

(17). Yimeq, "Náre danqi ñaboymań;" he said I go close I antheap gather 'He said, "I am going to gather antheap near at hand."'
Kathlamet (Boas 1901:77)

good we return I will go and take my blanket  
'Let us return to get my skin.'

Does this mean that subordination does not exist in these languages? The figures cited above indicate that each language contains at least some subordination. The distinction between dependent and independent clauses is not always an obvious one, however.

2. The Subordination Continuum

Two factors that complicate the identification of subordination are the gradual nature of two processes: grammaticalization and lexicalization.

Even in sequences of overtly independent clauses, several types of markers can indicate special relationships among the clauses. One of these involves tense and aspect. In Mohawk, Gunwinggu, and Kathlamet, all verbs are finite. Mohawk has three tense markers: past, present, and indefinite. The indefinite prefix a- is used for punctual events occurring at an unspecified time, and is translated variously as 'might/could/should/would'.

Mohawk (Annette Jacobs, p.c.)

(19). Ahoié:nawa'se'.

'He might/could/should/would help him.'

This tense frequently appears on verbs translated into English complement clauses containing infinitives.

Mohawk (Annette Jacobs, p.c.)

(20). Wahori'wanon:tonhse' ne rón:kwe ahoié:nawa'se'

he asked him the man he would help him

tahaiá:ia'ke'.

he would cross there

'He asked the man to help him get across.'

The use of the indefinite tense suggests that the occurrence of those events is contingent upon some other event or condition. Differences in tense and aspect among verbs in a sequence can also suggest that the verbs are fulfilling different roles. Both verbs in the Gunwinggu sequence below are finite, but the first is past continuous, while the second is present.

Gunwinggu (Oates 1964:115)

(21). ... yimi gabun gina.

she thought he is killing crocodile

'... she was thinking he was killing the crocodile.'
In the Kathlamet sequence below, the difference in aspect between the two verbs suggests an overlapping of the events. Note the relative clause translation.

Kathlamet (Boas 1901:89)
(22). Qioa:p itcitox taXi tqá:to:te:nikc, near he came them those boys
   aqa tá:nki itkLil6:qcqala.
   then something they were throwing it with spears
   'He came near boys who were throwing spears at something.'

When all verbs can stand alone as independent clauses, as above, a contrast in tense or aspect would not seem to constitute a formal marker of grammatical subordination in itself. It does seem to suggest some semantic dependency between clauses, however. Furthermore, intonation patterns suggest some link between clauses as well. (In the Mohawk examples, commas were used where speakers paused without a drop in pitch, and periods were used where they came to a full stop with a definite pitch drop. Presumably the same conventions were followed in the Gunwinggu and Kathlamet transcriptions.) These intonation patterns, along with the translations supplied by the speakers, would indicate at least some type of conceptual link between clauses.

A second device for indicating some relationship among sentences is the use of demonstrative and deictic particles as an argument of one clause to refer to another whole clause. In the Mohawk sequence below, the particle ki: 'this' in the first clause refers to the second clause.

Mohawk (Lazore p.c.)
(23). Ō:nen kwah ken' náhe' kiotáhsawen ki:,
   now just bit ago it has begun this
   onkwéhón:we ronhténkie's.
   real person they are leaving
   'Not too long ago people began to leave (the reserve).'

In the following Gunwinggu sequence, the particle gunu 'that' refers to the preceding clause.

Gunwinggu (Berndt and Berndt 1951:37)
(24). ... dja min bu ńadman gadbere gunwo:q
    and not in regard to ourselves our language
    garibi'bi:mbun, gunu gari'wagwan.
    we write that we don't know
    'But we don't know at all how to write our own language.'
Sequences translated with relative clauses can also include demonstratives.

Mohawk (Horne p.c.)

(25). Wísk na'thatí:nerenke' ne kaién:kwire', né five so they bound the arrow this kén:ton tsi ó:nen wísk nihononhwentsá:ke it means so then five so they tribes number ia'thontieste'.

they were joined

'They tied together five arrows, which symbolized the union of the five tribes.'

One clause may contain a temporal deictic referring to the time of an adjacent clause. The Mohawk particle ó:nen, the Gunwinggu galug, and the Kathlamet aqa all mean 'at this time/at that time/now/then'.

Mohawk (Horne p.c.)

(26). Ronaterí:iohkwé' ó:nen ronwatishe'nionhátie', they were fighting at this time they were losing thontaiawénhs'tsi' ken' nahatí:iere', suddenly just they noticed Tharonhiawá:kon wahoké:tohte'. he holds the heavens he appeared

'Tharonhiawakon appeared in one of their battles when it looked like they were going to be defeated.'

Gunwinggu (Oates 1964:98)

(27). ... narbég buni'buni. Galug gumege' bine' procupine he was killing then in that place mangun nąŋ ...
sugar bag he saw

'He was killing porcupines when he saw a sugar bag.'

Kathlamet (Boas 1901:65)

(28). Aqa ió:maqt yaXi iqcxé:Lau. Ictó:pa. then it died that monster they two went out

'When the monster was dead, they went out.'
Deictic or demonstrative particles appear in other adverbial sequences, such as the locatives below.

Mohawk (Sharrow p.c.)

(29). Iahshakoia'ténhawe tsi iontatenhotónkhkhwa'
there he took them to one door closes with it

wahonwatinhó:ton, thóh ki' iehonanón:werehkwe.
they door closed on them there just there they slept

'He took them all to jail where they spent the night.'

Gunwinggu (Oates 1964:93)

(30). Galug wam bebmen gu're ma:m benenarinj.
them he went he came to devil they two saw e.o.

Gumegbe gu:nj mimbigurmen.  
in that place kangaroo alive he left

'So he went to that place and he and the devil each saw the
other. The man left a live kangaroo in the spot where he
was.'

Is this subordination? The intonation patterns of examples
23 – 30 suggest that the clauses might indeed be independent.
Other sequences containing deictics like those above, however,
are both pronounced and translated as single (complex) sentences.
In Mohawk, such constructions are translated into a wide variety
of English subordinate clauses.

Complementation
Mohawk (Annette Jacobs p.c.)

(31). Wà:rehre' ne rón:kwe óksa'k ki' ná:'a
he thought the he-person quickly supposedly

ne ienhará'then ...
that he will climb up there

'Soon after, the man decided to go on up.'

Relativization
Mohawk (Natawe p.c.)

(32). Ō:nen shaía:ta ne rotahséhton wa'thoheń:rehte',
now one male body this he is hiding he called
'Now one of the men hiding spoke loudly.'

Temporal adverbial
Mohawk (Annette Jacobs p.c.)

(34). Kwáh ki' iá:ken, Ō:nen thó:ha
even just it is said at this time almost
ahshakohóntera'ne' ó:nen wa'ohnsá:kaienthe'.
would he catch her at this time she sounded her mouth

'He was right behind her when she gave a loud yell.'

Conditional
Mohawk (Hill p.c.)
(35). Oh:was ná:'a ensakarè:wahte tóka' possibly you will get hurt maybe
tenhsbra'kwénhtara'ne.
you will fall

'You could get hurt if you fall.'

In Gunwinggu, such constructions are often translated into English relative clauses, both nonrestrictive and restrictive.

Relativization
Gunwinggu (Oates 1964:92)
(36). dja djorggun gugbalan'mey yibalirdoreŋ and possum (he) body dropped big dilly bag with

nawu gugodyj gugnorga:ni.
this on head he body was carrying

'and he dropped the possum in the dilly bag which he was carrying on his head'.

Gunwinggu (Oates 1964:96)
(37). Gálu bríweyn navu gured birini bininj then they many those home they sit men

mole'molenj wudwud biriyawam.
women children they looked for him

'Then many of the men, women, and children in camp looked for him.'

Such constructions are rarer in Kathlamet, but they do exist.

Relativization
Kathlamet (Boas 1901:162)
(38). Qá:mta id:ya tau igl̓Xatko:á:mam?
where he went this one he came home
'Where went he who came home?'

Locative adverbial
Kathlamet (Boas 1901:60)
(39). Lgá:pElatikc tÉñEmckc oxwikjweepula
many women they pick berries
'They went to the place where the women are picking berries.'

Constructions like those above do not contain formal dependent clauses. Any of the clauses could stand alone grammatically. The intonation in the Mohawk and the punctuation supplied by those transcribing Gunwinggu and Kathlamet, however, along with the translations, suggest that such constructions have become grammaticalized as markers of subordination, given appropriate intonation. (Compare the use of English that.)

Yet the role of intonation in marking subordination is not as unambiguous as one might wish. These languages share another stylistic characteristic. Speakers often combine overtly independent clauses into single intonation groups that are translated into English compound sentences.

Mohawk (Frank Jacobs, Jr. p.c.)
(40). Orhon'ké:ne wahá:ie' iahatke'tó:ten' tsi in morning he woke up he looked out at tekatsiserá:ton wahonehrá:ko' ... window it surprised him

'He woke up in the morning and looked out at the window and to his surprise (saw the wagon ... )'

Mohawk (Montour p.c.)
(41). Iah tha'tehonatotá:ton ratitakhenóntie's not did they quiet down they run around thihshakotiíé:ron ne akokstén:ha. they tease her the she is old

'The children kept right on making a lot of noise and running, teasing the old lady.'

Gunwinggu (Oates 1964:105)
(42). Benegugnanap balwam they two body fell he went close benbenegułbalibmen. Galug nuye yibalir he them two blood sucked then his dilly-bag benebenegugdagendoy benbenegugpormay, he them two put he them two carried on shoulders, wam bebmen gure gured nuye. he went he came up to camp his
'They both fell down together. He came close to them and sucked their blood. Then he put them in his dilly-bag and carried them on his shoulder to his camp.'

Kathlamet (Boas 1901:220)

(43). Itgi:ya emalixpa tgunat itkto:pie:yalx; Lná:qo:n
they went to the bay salmon they caught sturgeon

they caught then they ate the people

A:, aqa igó:xiik*cem; iqáto:kcem tgunat;
ah then they dried fish; they dried them the salmon

iqálo:kcem Lná:qo:n.
yet they dried them the sturgeon

'They went to the bay and caught spring salmon. They caught sturgeon and they ate. Then they dried the salmon and the sturgeon.'

Such conjunction is of course always motivated, as when events occur simultaneously or in rapid succession, or when clauses are in a type of appositive relation, each enlarging on the last. Intonation can thus indicate that adjoining clauses are considered constituents of the same sentence. It is not an indicator of the difference between coordination and subordination, however. Perhaps such an indicator could not in fact exist. Annette Jacobs, an excellent speaker of both Mohawk and English, commented after much reflection that although sentences like (34) above would indeed be used in contexts where English speakers would use when clauses, it is not completely clear whether the structures are syntactically equivalent. It is not always obvious whether the Mohawk corresponds more closely to 'when X then Y', or to 'then X then Y'.

A second factor that complicates the identification of subordination is the gradual nature of lexicalization. Mohawk, for example, has a highly productive verbal morphology. Normal discourse consists predominantly of morphological verbs, since verbs can function not only as clauses and predicates, but also as nominals, with no modification in form. Such nominals are often verbal descriptions of their referents, like ra'swà:tha' '(he) extinguishes'+'/'+fireman'. A typical way of modifying a noun is to incorporate the noun stem into a descriptive verb. The result is, again, a morphological verb which functions syntactically as a nominal, like kanonhsarâ:ken '(a/the) house is white' = 'white house'. In some cases, the only idiomatic way to use a noun is to incorporate it. If nouns for large, immovable objects, such as houses, are not incorporated into some other verb, they are incorporated into a verb specifying their position. Speakers thus do not normally use the simple noun
kanónhsa' 'house', although it is morphologically well formed. Instead, they incorporate it into a verb, either a descriptive one like that above, or the verb -ote 'stand', yielding kanóhhsote 'house stands' = '(standing) house'. Although such words as ron'swà:tha', kanonhsarà:ken, and kanóhnhsote, are morphological verbs, they are normally used as nominals and have been lexicalized with a primarily nominal meaning. Asked to translate ra'swà:tha', Mohawk speakers would normally reply 'fireman', not 'he extinguishes.'

Now as noted above, subordination in these languages is often marked formally by particles which normally precede nominals, such as determiners and prepositions. When they precede a clause, they indicate that the clause is functioning as a nominal, and is therefore subordinate. In (44) below, the article ne 'the/that' precedes a morphological noun.

Mohawk (Annette Jacobs p.c.)
(44). Wahontkennísá' ne ronón:kwe...
they met the men
'The men had a meeting.'

In (45), the ne precedes a clause functioning as a complement (sentential object).

Mohawk (Annette Jacobs p.c.)
(45). ... teionatonhwentsó:ni ne aontakontiráthen
they want (it) the they would climb up here
here village in they would stay

'... they are trying to climb up the riverside to come into our village.'

Now in the sentence below, the article precedes a morphological verb functioning as the subject. This verb, however, rahtahkón:nis 'he makes shoes', has become lexicalized in modern Mohawk as the normal term for 'shoemaker'. When asked to translate the word into English, Mohawk speakers would normally say 'shoemaker', not 'he makes shoes.'

Mohawk (Phillips p.c.)
(46). Ō:nen ki' ne rahtahkón:nis tahoná:khwe'.
now just the he shoes makes he got mad.
'At this point the shoemaker became angry.'

Is the phrase ne rahtahkón:nis 'the (one) he-shoes-makes' > 'the shoemaker' subordinate or not?

The Gunwinggu particle nawu 'this/that/these/those' presents the same dilemma. Before a noun, it functions as a determiner.
Gunwinggu (Berndt and Berndt 1951:35)
(47). wain' gadhman birigjal'bal'me nahu gundolŋ gadbere.
so ourselves they just shut off that smoke (noun)
(from) us

'As for us, they just stopped our tobacco.'

Before a clause, however, it signals that what follows is functioning as a nominal argument of some other clause. The whole is usually translated into an English relative clause.

Gunwinggu (Berndt and Berndt 1951:41)
(48). Galug bindimane'jime, nahu gondan'gunu gunred then they said to them those here country
biri'jingi'ne, "... they lived,

'Then those who lived here, in this country, said to them:'

Now consider the sentence below. The particle nahu precedes a morphological verb.

Gunwinggu (Berndt and Berndt 1951:34-35)
(49). ... gandijigar'garmere gadbere ḡa:d nahu they keep it for us ours us these
garigugbu'lere.
our bodies are dark

'they look after our (language) for us Aborigines.'

Does the term garigugbu'lere constitute a subordinate clause, 'we whose bodies are dark', since it is morphologically a verb, or does it constitute a syntactically simplex nominal, since it has presumably been lexicalized with the meaning 'Aboriginal'?

Adverbial particles can present the same problem. The Gunwinggu particle bu means 'in regard to', 'as to', 'in relation to' when used before a noun. It can carry a meaning closer to 'in order to', 'when', or 'if' before a clause, however. The particle gure functions like a preposition before a noun, meaning 'at', 'to', 'toward', 'in', etc. Before a clause, it takes on the meaning 'where'. If such particles precede a morphological verb which has become lexicalized with a nominal meaning, should the result be considered syntactic subordination or not? The question is further complicated by the fact that morphological constructions do not become lexicalized all at once, so that lexicalization is necessarily a matter of degree.
3. Factors Affecting the Propensity to Subordinate

Suppose that all of the demonstrative and deictic particles described above have in fact become fully grammaticalized as subordinators. Suppose, furthermore, that all morphological verbs retain their syntactic status as subordinate clauses, even if they have been lexicalized with nominal meanings. Does the propensity to subordinate even out across languages? In fact, it does not. The proportions of subordination cited earlier for Mohawk, Gunwinggu, and Kathlamet included all such constructions with appropriate intonation as subordinate, even though those clauses could usually stand alone as independent sentences, given alternate intonation. Speakers apparently do in fact prefer to juxtapose clauses in these languages rather than to mark their syntactic relations more formally. Why might this be?

One obvious explanation for their striking contrast with English might be sought in a typological characteristic: their polysynthesis. In fact, some of the functions accomplished in English by syntactic subordination are accomplished morphologically in these languages by means of such affixes as inchoatives, inceptive, causatives, instrumentals, desideratives, purposives, etc., or by noun incorporation, as below.

**Gunwinngu** (Oates 1964:106)
(50). bi-gere-madbu-ni
   he/her-cooked-wait-past continuous
   'he [a cannibal] waited for her to cook'

**Kathlamet** (Boas 1911:670)
(51). i-L-x-e-tE-lótcx-am
   he-indef-refl-him-coming-look on-go to
   'he came to see [the dances]'

Such morphological devices fulfill a part of the function of subordination in permitting speakers to combine several ideas into a single unit: in the case of affixation and compounding, a word, in the case of subordination, a sentence.

A second function of subordination is to put ideas into relief: it provides a mechanism for backgrounding clauses within a larger, cohesive whole. The obligatory pronominal affixes in Mohawk, Gunwinggu, and Kathlamet verbs provide an alternative mechanism for such backgrounding. Since case relations within clauses are clear from the pronominal affixes, word order is not necessary for this function. Instead, it can be exploited to indicate the relative importance of the various elements within a discourse. In languages of this type, the most significant information is typically placed near the beginning of sentences, and less important information, that which is already known or merely incidental, appears near the end.

Although polysynthesis is a significant factor in the propensity to subordinate, a brief survey of other polysynthetic
languages indicates that this characteristic alone is not sufficient to account for the differences noted above. Tlingit, a highly polysynthetic Na-Dene language spoken in southeastern Alaska, shows a proportion of 28% overtly subordinate clauses in the texts recorded by Swanton (1909). This proportion is not as high as that recorded for English, but it is considerably higher than those for Mohawk, Gunwinggu, and Kathlamet. The Tlingit case indicates that it is not only the fact but the nature of the morphological complexity of a language that affects the amount of overt subordination in discourse. Tlingit has a set of suffixes that mark subordination overtly within the verb. Its high degree of polysynthesis reflects not only the morphologization of pronominal elements, tense and aspect distinctions, and various adverbial modifiers, but also of various nominalizers, relativizers, and adverbial subordinators.

Another aspect of complex morphology that can result in an increase rather than a decrease in overt subordination is the productivity discussed above. Although the proportion of overt subordination in Mohawk texts is often as low as 7%, it can vary considerably from speaker to speaker and topic to topic. Some of the highest proportions of subordination can be found in the speech of the most admired Mohawk speakers. Especially skillful speakers are characterized by a creative use of language, and in Mohawk, where the verbal morphology is particularly rich and productive, such skill generally involves the invention of new verbs to describe and refer to entities and events. In general, the more skillful the speaker, the more verbs will be present. This preponderance of verbs engenders a corresponding increase in the overt marking of subordination, both obligatory and optional. In some cases, such as locations, the nominal use of a morphological verb requires formal subordination. In addition, extremely long series of morphological verbs can be difficult to interpret syntactically, so that optional syntactic markers appear more often. The relation between morphological structure and overt subordination is, therefore, a complex one. While certain aspects of polysynthesis, such as obligatory pronominal affixes and the morphologization of concepts like cause, intent, inception, etc., can reduce the amount of overt subordination, others, like the morphologization of syntactic markers and the productivity of verbal morphology, can increase it.

Morphological characteristics still do not fully account for the contrasting frequencies of overt subordination noted above, however. Mohawk, Gunwinggu, and Kathlamet speakers combine formally independent clauses intonationally more frequently than do English speakers. Are these languages simply more primitive stylistically than English? This is clearly not the case. All three have rich oral traditions, as evidenced by numerous other aspects of the textual material available. All of the texts show skillful manipulation of various intricate stylistic devices throughout. The Mohawk have had a well documented reputation for oratorical skill ever since their first contact with Europeans.
over three and a half centuries ago, and oral virtuosity of all kinds is still highly valued and cultivated among modern Mohawk speakers. The linguistic traditions of all three groups are uniquely oral, however, and not written. The Kathlamet speaker who worked with Boas did not write at all. He did not even know a language with a written tradition, although he was at least tridialectal in Kathlamet, (Lower) Chinook, and Chinook jargon. The Gunwinggu speakers who worked with the Berndts and with Oates did not write Gunwinggu, although some had learned English and apparently wrote it extremely haltingly. The Mohawk speakers cited above have not written their language until very recently, and now do so only on rare occasions in language classes. They are all quite literate in English, however. These facts suggest a second factor in the differences between proportions of subordination in Kathlamet, Gunwinggu, Mohawk, on one side, and English on the other.

Chafe found that while the proportion of dependent idea units in English conversation was 34%, the proportion of dependent clauses in letters was 46% (p.c.). In a study of Swahili style, Joan Maw (1974) noted that the proportion of dependent clauses in her sample of oral texts was about 25%, while that in her sample of written texts was 41%. Recall that the lowest proportion of dependent clauses among the languages discussed above was in the Kathlamet texts, provided by a speaker who neither wrote nor knew a language with a literary tradition. The second lowest proportion was found in the Gunwinggu texts, provided by speakers who did not write much but did know some English. As noted above, Mohawk texts show a striking variation in their proportions of dependent clauses. Some narratives transcribed from tape recordings show as little as 7% subordination, while texts written by Mohawk speakers can show a proportion as high as 30! These speakers normally write in English when they write, and a number of stylistic elements of written English sometimes creep into their written Mohawk, such as SVO word order, reduced use of evidential particles, and increased use of overt noun phrases. It is not impossible that part of the increased proportion of overtly subordinate clauses might be attributable to the written medium.

Why should subordination increase with a literary tradition? Several explanations are possible. Most writers write more slowly than speakers speak. Writers have time to construct sentences that are fairly elaborate syntactically, and they can move back and forth over a sentence, adjusting the parts at will into a polished whole. Speakers are restricted to a single pass. In addition, most readers read considerably faster than most speakers speak, so that it is easier for a reader to keep track of the various parts of a long sentence woven into an elaborate whole, than for a hearer (cf. Chafe 1982). These differences in speed may foster the development of complex syntactic structures in written language which can eventually slip over into spoken language to some extent, especially
carefully planned speech.

The written medium may also engender a special need for subordination. Various degrees of bonding between clauses can be easily conveyed in oral narrative by rhythm and intonation. Modulation of volume, pitch, and speed, can put ideas into relief, backgrounding some clauses and foregrounding others. In contrast, writers have less control over the reception of their messages. Punctuation can reflect differences between pauses and full stops, but intricate syntax may be necessary to convey the relative importance of the ideas presented. Perhaps the lower proportions of subordination in the Mohawk, Gunwingu, and Kathlamet texts do not reflect stylistic poverty at all. It may simply be that literary traditions have led to the development of tools meant to compensate for the loss of mechanisms inherent in skillful oratory.

Subordination is thus not a universal constant. Languages and speakers vary considerably in the exploitation of this syntactic device. The exact nature of the device is a fuzzy one, more distinctive in some languages than in others. The causes of the variation and fuzziness are, furthermore, complex, in part a function of language-internal factors, such as polysynthesis, in part due to language-external factors, such as a literary tradition.

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Bibliography

"Subordination" in Universal Grammar
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1 Introduction

The labels "subordinate" and "coordinate" are as familiar and comfortable for those of us with Western grammatical training as any that have come down to us in this tradition. However, experience with the linguistic literature in recent years suggests that linguists have often either taken the term "subordination" as a primitive requiring no definition, or attempted to establish a set of criteria according to which a "subordinate clause" can be identified. Both of these approaches to "subordination" have had unfortunate consequences. If the term is taken as a primitive, then it is typically not made clear just what clauses or clause types within a given language it is intended to cover. At best, it can be assumed that it is meant to include all clauses which are non-"main". But then we know of no attempt in the literature to define "main".

The more rigorous attempts to establish criteria, however, seem not to have been much more fruitful. In fact, the traditional criteria for "subordination", including dependence, reduction, backgrounding, and preposability, among others, seem to be at best ex post facto rationalizations of our own (Western educated) "intuitions", which renders them completely circular. Moreover, they are often inconsistent or language specific. The reason for this, we think, is that "subordinate clause" does not seem to be a grammatical category at all. That is, there does not seem to be a single function or even a group of functions that we can think of this category as having been designed, as it were, to serve. It is for this reason that we are suspicious of another notion which has proven to be insightful in certain other cases (see, e.g., Comrie (1981), Givón (1979), Hopper and Thompson (1980), and Hopper and Thompson (1984)) , that of the prototypical exemplar of the grammatical category.

Some linguists, such as Kuno (1973:209) and others, have suggested that the coordination/subordination dichotomy should be replaced by a continuum. Appealing as this suggestion may seem, however, adopting this approach would still involve treating as unidimensional a phenomenon which, as we will try to show, is essentially a multidimensional one.

For these reasons, then, because the term "subordination" seems to be at best a negative term which lumps together all deviations from some "main clause" norm, and thus treats as unified a set of facts which we think is not a single phenomenon, we have found it more fruitful to tease it apart into its
component parts. We applaud previous attempts in this direction (e.g., Andersson's distinction between "semantic" and "syntactic" subordination (1975)), but our own approach will be quite different: we will show that there are a number of different properties involved in what people have heretofore called "subordination", and that a better understanding of clause combining phenomena can be achieved if we consider each of them separately, and abandon the notion of "subordination" entirely. Note that this is not to say that there is no distinction between clauses which have traditionally and recently been labeled as "subordinate" and "coordinate", but rather that what has been called "subordinate" may be more appropriately viewed as a composite of factors.\(^3\)

Teasing apart these factors, then, could be done in several ways. In future research we plan to consider semantic and discourse relationships between clauses; what we would like to do in this paper is to propose that there are at least seven independent formal properties that are often associated with clause combinations designated as "main - subordinate". The list is by no means intended as exhaustive; we simply want to show what types of factors we think underlie the compositeness of the notion "subordination".\(^4\)

1. Identity between the two clauses of subject, tense, or mood

2. Reduction of one of the clauses

3. Grammatically signalled incorporation of one of the clauses

4. Intonational linking between the two clauses

5. One clause is within the scope of the other

6. Absence of tense iconicity between the two clauses

7. Identity between the two clauses of speech act perspective

2 Properties of Non-coordinate clause combinations

2.1 Identity between the two clauses of subject, tense, or mood

Identity of subject, tense, or mood may lead to a reduction of one clause. This property is exemplified by same-subject participials such as in English

*Leaving her family behind, she fled*
in which the subject, tense, and mood of the two clauses are identical; this identity then allows these categories in the participial clause to be unspecified. Although the clauses reduced under identity in such combinations have often been described as "subordinate" (see, e.g., Underhill (1976) for Turkish -lp clauses and Kuno (1973) for Japanese -te clauses), there is considerable cross-linguistic evidence, assembled in Haiman (1983), that the mechanism for the reduction involved with this type of identity is exactly the same as that found with "gapping" and is thus characteristic of coordinate constructions as well. That is, WHICH clause is reduced may depend less on the "subordinate" nature of one clause as opposed to the other than on the linear order of the identical element. Moreover, in a variety of languages, among them Japanese (Martin (1975)), Hindi (Davison (1981)), Lenakel (Lynch (1978), (1983)), Turkish (Lewis (1967), Underhill (1976)), and Hua (Haiman 1980), the range of meanings of such reduced participial clause combinations seems to parallel that of ordinary coordinate clauses.5

We see, then, that identity between clauses of subject, tense, or mood may be reflected by the relative reduction of one of the clauses, but may not be a property that we should assume is characteristic of "subordinate" clauses.

2.2 Reduction of one of the clauses

We have already seen several ways in which reduction may be associated with identity of subject, tense, and mood. It is important to emphasize, however, that identity and reduction are often independent of each other. Reduction results, we maintain, from "discourse redundancy": the speaker does not say what isn't necessary for the communicative purposes at hand.

There are two formal ways in which clauses can be reduced. The first is what is known as "ellipsis", where material can be missing which could be restored in a fully specified version of the same clause. The second is what we might term "opposition loss", where oppositions associated with prototypical verbs (see Hopper and Thompson (1984)) are neutralized, resulting in what is often referred to as a "non-finite" verb form.6 The discourse factor underlying both of these types of reduction is the same: discourse redundancy. And discourse redundancy includes both predictability and irrelevance; both seem to be involved in both types of reduction.

For example, a Mandarin clause with a missing agent, such as 2, can be used either when the identity of the agent is known from context or when it doesn't matter who the agent is; in both cases, it would be redundant to mention it:
zhè ge dìfāng kěyǐ huábīng
this CL place can skate
'O can skate here'

By the same token, in a pair of clauses of which one is reduced, a missing argument can be found under the same conditions of discourse redundancy: either its identity is known or is irrelevant, as illustrated in the English 3:

I recommend submitting a proposal immediately

(see Thompson (1973) for discussion of the interpretation of missing subjects in such gerund complements).

Example 3 is also an illustration of what we are terming "opposition loss", in that the non-finite verb form submitting does not specify tense. Discourse redundancy also underlies this type of reduction: given the meaning of a verb such as recommend, the tense of the gerund is irrelevant since it is irreals.

However, it is clear that neither ellipsis of arguments nor non-finiteness is restricted to clauses which might be designated as "subordinate". Missing arguments occur in all types of clauses in languages with abundant zero-anaphora, which probably includes the majority of the world's languages, and a glance at languages such as the "chaining languages" of Papua New Guinea, like Hua (Haiman (1980)), Chuave (Thurman (1978)), Barai (Olson (1981)), and Tauya (MacDonald (to appear)), shows that non-finiteness resulting from identity is found only in clauses which can be shown to be coordinate: those which are typically tense-iconic and in the same tense and mood as the clause with which they are conjoined.

A second way, then, in which clause combinations can be distinguished is in terms of whether one of them is reduced, either by eliding arguments or by losing verbal oppositions. While reduction, especially opposition loss, has often been associated with clause types which have been labeled as "subordinate", it is clear that there is no correlation between them.

2.3 Grammatically signalled incorporation of one of the clauses

By "grammatically signalled incorporation", we mean a relationship between a pair of adjacent clauses such that one can be shown to be a part of the other by grammatical criteria. As with morphological incorporation, where the incorporated word loses its integrity as a word, clausal incorporation involves a clause losing its integrity as an independent speech act. Morphological incorporation is, of course, typically not marked, while clausal incorporation typically is marked: there are two useful criteria which provide evidence for grammatical incorporation: (1) one clause can be contained within the other, that is, surrounded by material from the other, as illustrated by the schema shown in 4:
(2) one clause can bear grammatical morphology which marks it as being a constituent of the other.

A simple and familiar example of grammatically signalled incorporation by the surroundability criterion would be a relative clause of the type found in many languages, as in the Mandarin 5:

\[ \text{wǒ bu xǐhuan } \text{chōu-yān de xuésheng} \]
\[ \text{I NEG like extract-tobacco REL student} \]
\[ \text{'I don't like students who smoke'} \]

where chōu-yān de is surrounded by material from the other clause.

An example of grammatically signalled incorporation of type (2), where one clause is marked morphologically as being a constituent of another would be a complement clause marked for case, as is found in a number of languages. Yuman languages are rich with examples of this type of incorporation; here is an illustration from Mojave (Munro (1974:220)):

\[ \text{?inyp ? - u:co: - c kw ny mi: - k} \]
\[ \text{me 1 - make - SUBJ different-TNS} \]
\[ \text{'I do it different'; 'My doing of it is different'} \]

where the c marks the first clause as the subject of the second.

Grammatically signalled incorporation, then, is incorporation of one clause within another where this incorporation is signalled by material of one clause surrounding another or by grammatical morphology marking one clause as being a grammatical part of another.

In fact, we think it is possible to talk about degrees of grammatically signalled incorporation as well, making use of the tagmemic distinction between nucleus and periphery (see, e.g., Elson and Pickett (1983:64)). The nucleus of any clause consists of the verb and those arguments whose case functions are governed by the verb; the periphery, of those arguments whose case functions are independent of the verb, and which are not necessary for the sentence to be understood. The ambiguity of 7 is a common minimal contrast pair:

\[ \text{We jumped on the table} \]

The table is a nuclear constituent where it is the object of the directional verb jump on(to); it is a peripheral constituent where it is the object of the preposition on. In the first case, the clause suggests jumping from somewhere else onto the table, while in the second case, the clause suggests jumping up and down on the table.\(^8\)

The notion of degrees of incorporation is nicely exemplified in many Indo-European languages, where we can find a contrast between "absolutive" clauses (ablative in Latin, genitive in Greek, dative in Balto-Slavic, nominative in English), which are peripheral and "conjunct
participles", which are clausal nuclear arguments of their verbs. We will use Latin, a language with a rich overt case morphology, to illustrate the contrast:

a. *Aristides patriā pulsō, Persae Graecōs 8 aggrēsī sunt attacked AUX*
   *'Aristides having been exiled, the Persians attacked the Greeks‘*

b. *Aristidem patriā pulsūm vidērunt saw:3PL*
   *'They saw Aristides, who had been exiled‘*

In 8a., we have an ablative absolute construction, which by our definition of incorporation is a peripheral member of the entire sentence: that is, it is case-marked as being a part of the adjacent clause, but the important thing to note about the case of this clause is that it is ablative, that is, that it is absolute, which means that it is not governed by the verb.

In 8b., on the other hand, the conjunct participial clause is the object of the verb 'see'. Since it is a nuclear constituent, marked with an accusative case marker, it is more tightly incorporated into the sentence than the absolute construction.

Degree of incorporation might be expected to correlate with other indices of "closeness" between two adjacent clauses. In this particular case, degree of incorporation correlates with one of our other parameters: identity of subject. To oversimplify somewhat, the ablative absolute construction in Latin (as in 8a.) is used where no NP in the adjacent clause is identical with the subject of the absolutive clause, while the conjunct participle is used where some NP in the surrounding clause is identical with the subject of the incorporated clause. Thus, while the underlined constituents of both 8a. and 8b. are incorporated within the sentences where they appear, as signalled by their respective case marking, the degree of incorporation is greater in 8b., and it is precisely there that we find identity of subject. Thus, in this case, degree of incorporation indeed correlates with at least one other parameter of closeness between clauses.

Grammatically signalled incorporation, then, is yet another way in which a pair of adjacent clauses can be related. Like all of our parameters, it overlaps with what various grammarians would want to label as "subordinate", but in no way correlates directly with that notion.
2.4 Intonational linking between the two clauses

"Intonational linking" refers to the absence of an intonation break (generally a pause or falling intonation) between the two. If two adjacent clauses have no intonation break between them, they can be said to be "intonationally linked".

Intonational linking versus intonational breaking, of course, often correlates with a difference in communicative intent. Thus, for example, in Japanese, Martin (1975) shows that whether a structure $S_1$-te $S_2$ is taken as one clause or two depends on whether there is an intonation break between $S_1$-te and $S_2$:

book OBJ take-PART'PLE 9
mimasi - ta
look - PST
a. (with pause) 'I took the book and read in it'
b. (without pause) 'I tried reading the book (to see what would happen')

With a pause 9 means something like translation a.; that is, the two verbs correspond to two events. Without the pause, as suggested by translation b., the second verb functions as a conative auxiliary with a meaning close to 'try to' (Martin (1975:541).

A similar distinction is made in Russian between what Rappaport (1979) has called "detached" and "non-detached" participial clauses. "Detached" participials are set off by pauses, and have phrase stress and a convex pitch contour, just like a separate clause. The invariant participial suffix -ja indicates that the subject, tense, and mood of the reduced clause are identical with those of the full clause with which it goes, but whether the participial clause plays the role of a manner adverb or of a separate clause is signaled by the presence or absence of an intonation break between the two clauses, as shown in 10:

Alik ne xodit (PAUSE) spotykajas' 10
Alik NEG walk stumbling

a. (with pause)'Alik doesn't go, because he stumbles'
b. (without pause)'Alik doesn't walk with a stumble'

p. 147

With the pause, 10 means something like what is indicated in the a. translation, where the two clauses suggest two separate events. Without the pause, the sentence has a message more like that shown in translation b., and the two verbs express one event.

Presence or absence of intonation breaks between two adjacent clauses, then, is another parameter in terms of which the relationship between two adjacent clauses in discourse can be described. (For further discussion of this parameter, see Chafe (this volume).)
2.5 One clause is within the scope of the other

When one of a pair of adjacent clauses is within the scope of the other, at least the following two types of options become available which are not possible when neither clause is within the scope of the other: (1) denying or questioning one of them also serves to deny or interrogate the other; (2) certain word order variations are available.

To illustrate (1), where scope can be shown by interrogation, we may cite a Hua utterance like 11, where the first clause is within the scope of the interrogative suffix on the second verb:

\[
p - mi - na\ de - ve\ 
\text{them- give -3SG:ANT. eat - 3SG:INT. 'Did she give it to them and eat?'}\]

To protect the first clause from being in the scope of negation or interrogation on the second, a conditional desinence -mamo may be used, as in:

\[
p - mi - mamo\ de - ve\ 
\text{them- give -3SG:COND. eat - 3SG:INT. 'Given that she gave it to them, did she eat?'}\]

In English, of course, there are minimal contrast pairs of the sort exemplified by the notorious 13

\[
a. \text{They don't beat us because they love us} \quad 13
b. \text{They don't beat us, because they love us} \quad 13
\]

Examples of variations in word order have been discussed extensively by Ross (1967) and others. Thus, in English we can find question words associated with a second clause at the beginning of a preceding clause when the second is within the scope of the first, as in:

\[
a. \text{What did you walk along singing?} \quad 14
b. \text{What did you stop playing tennis to look at?} \quad 14
\]

This freedom of word order, of course, is not found when neither clause is within the scope of the other:

\[
a. \text{?What was it raining but you watched anyway?} \quad 15
b. \text{?What did Sally make a phone call and George cook?} \quad 15
\]

Similar evidence can be found in other languages. In Hindi, for instance, Davison (1981) points out that utterances whose first clause is a participial ending with the conjunctive participle -kar allow an element associated with the second clause, such as caay 'tea' in 16, to occur at the beginning of the utterance:
a. akeele e baiTh - kar caay pii 
   alone sit - CONJ.PART. tea drink:PERF:FEM 
   thii 
   be:PST:FEM 
   'He sat alone drinking tea'

b. caay akeele e baiTh - kar pii 
   tea alone sit - CONJ.PART. drink:PERF:FEM 
   thii 
   be:PST:FEM 
   'He sat alone drinking tea'

which suggests that the kar participial is within the scope of the second clause. This option is, again, not available for a pair of clauses neither of which is within the scope of the other:

a. akeele e baiTh - aa aur caay pii 
   alone sit - PERF. and tea drink:PERF:FEM 
   thii 
   be:PERF:FEM 
   'He sat alone and drank tea'

b. ? caay akeele e baiTh - aa aur pii 
   tea alone sit - PERF and drink:PERF:FEM 
   thii 
   be:PERF:FEM 

What these facts about interrogation, negation, and word order suggest, we think, is that when one clause is within the scope of another, operators such as negation and interrogation and gaps which are associated with one of the clauses are also associated with the other. Being within the scope of another clause, then, is another parameter often associated with "subordination" which is best viewed as just one of several ways in which clauses can be related.

Incidentally, whether one clause is within the scope of another often correlates, at least in one direction, with presence or absence of intonation break, which we discussed just above. That is, if there is an intonation break between a pair of clauses, then the intended interpretation is likely to be one of two separate communicative acts, where neither clause is within the scope of the other, as we illustrated above for examples like 9, 10, and 13. However, with no intonation break between the two clauses, one of them may or may not be within the scope of the other. Thus the two parameters, like all of the seven which we are considering here, can be seen to correlate to some extent, but must be analyzed as independent of each other.
2.6 Absence of tense iconicity between the two clauses

Tense iconicity is a characteristic of certain types of coordinate clauses in which the order of clauses corresponds to the order of events. In pairs of clauses in which there is no tense iconicity, we might expect that one or the other of them could be moved, and in fact moveability is a function of the lack of tense iconicity in specific well-defined circumstances, at least in some languages (perhaps only those with long written traditions). Clauses in certain relationships appear to be moveable with respect to their associated clauses, we suggest, when these relationships can be manipulated for discourse purposes. So clauses which specify condition, time, place, manner, purpose, etc., for the associated clause are subject to the same discourse factors affecting their position as are other adverbial words and phrases, factors such as discourse continuity and thematicity. Thematicity has to do with the mode of development of a text or portion of a discourse: as Fries (to appear) and Thompson (to appear) have shown, initial position for such adverbial elements is reserved for those which provide orientation for the following material or guidance for the addressee's attention. So, in English, it can be shown that final purpose clauses as in 18a. are found under discourse conditions quite different from those in which initial purpose clauses, as in 18b., are found:

a. They took me into the market town to buy provisions 18
b. To pass the time, there was a shipboard craze for fancy rope work.

Thus, absence of tense iconicity is a feature of clauses which can be designated as "moveable", and the moveability is easily demonstrated to be subject to discourse concerns. Once again, there is clearly no correlation between absence of tense iconicity and what one might want to call "subordination".

2.7 Identity between the two clauses of speech act perspective

By "speech act perspective", we mean essentially the difference between direct and indirect speech. Munro (1982), in her investigation of this difference, takes as her point of departure Partee's (1973) observation that "the quoted sentence is not syntactically or semantically a part of the sentence which contains it", and shows how, in a variety of languages, indirect speech complements of verbs of saying differ from direct speech: direct speech cannot appear with complementizers, case-marking affixes, or other signs that indicate that the verb of saying is a transitive verb with the direct speech quote as its object.

By a wide variety of criteria, the indirect speech complement is widely assumed to be "subordinate" in a way that the direct quote is not. Yet there is
clearly no sense at all in which the direct quote of a sentence like 19 would be either more or less semantically "subordinate" than the indirect speech complement of 20:

Uncle Harry said, "I caught a four-foot-long fish" 19
Uncle Harry said that he'd caught a four-foot long fish 20

It is also just as clear that there is no semantic sense in which the effective verb said in 19 is less "transitive" than the indirect speech verb said in 20.

We maintain that the reason for the grammatical distinctions between these two types of clauses is that in the case of direct speech, the speaker of a sentence like 19 is actually assuming two different points of view, his/her own and that of the person being quoted. As Wierzbicka (1974) has correctly pointed out, direct speech is a kind of playacting, in which the speaker imagines himself or herself to be someone else. Another view of the same phenomenon is the familiar use/mention distinction. In either case, what we may have been thinking of as "subordination" actually reflects identity of speech act perspective rather than what the dictionary and common wisdom construe as "subordination".

3 Conclusions

What we have tried to do in this paper is to suggest that the notion of "subordinate clause" has caused a great amount of difficulty for grammarians, particularly those interested in language universals, because it refers to no single unitary grammatical category. Rather, the term encompasses a number of isolable and independent parameters, where each of these parameters involves a different relationship which two adjacent clauses in discourse can have with each other. Instead of assuming a simple binary distinction between "coordinate" and "subordinate" clause, therefore, we advocate the richer, more interesting, and more realistic approach of abandoning the notion "subordination" and instead determining which of the parameters of the sort we have suggested here seem to describe the relationship between the clauses in question and what the discourse factors might be that underlie each of these parameters. In this way, we think we can begin to understand some of the facts about clause combining in actual discourse.
We would like to thank the following people for their help in discussing various aspects of this paper with us: Wally Chafe, Matthew Dryer, Barbara Fox, Bill Mann, Jim Martin, Christian Matthiessen, Mickey Noonan, and Stephan Schuetze-Coburn. None of them necessarily agrees with the way we have made use of their input here. Authorship of this paper is shared equally.

Linguists working within the Systemic framework are exceptional in this respect: they have been careful to distinguish between "hypotaxis" (roughly, adverbial clauses) and "embedding" (roughly, sentential complements).

See also Pawley and Syder (ms) and Van Valin (this volume) for a similar line of reasoning.

Some of these factors are also discussed by Cumming (this volume) and (1984) and Van Valin (this volume).

To be sure, there is one very important further meaning that these "reduced coordinate clauses" are often mentioned as having which distinguishes them from "full" (i.e., unreduced) coordinate clauses: very frequently in discourse they mark simultaneity with the adjacent clause. This property seems to us iconically motivated by the diminution of linguistic distance (in the form of the reduction) between the two clauses. Two oft-noted correlates of this simultaneity are: (1) one clause comes to describe a concomitant activity, V1 and V2 then standing in a semantic relationship to each other of adverb and verb; (2) one clause comes to function as an auxiliary of tense, aspect, or mood, the two verbs then standing in a semantic relationship to each other as auxiliary and verb.

Our "reduction" seems to parallel Van Valin's "dependent" (this volume).

For discussion of morphological incorporation, see Hopper and Thompson (1984) and Mithun (1984).

In many languages, of course, such as German and Hungarian, 'the table' would be accusative in the former case, and in some oblique locative case is the second. In other languages like Mandarin, 'the table' would follow the verb in the former case, and precede it in the second. Such languages provide ample grammatical evidence for a nucleus/periphery distinction.

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Another typology of relatives

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There are three main areas of investigation that have been pursued so far by typologically-oriented studies of relativization. First, there are studies on word order, which have shown us that the position of the relative clause before or after the head noun is correlated with general word-order type to an impressive degree. Second, studies of formal devices for relativization have given us an array of notions such as deletion, pronominalization, and correlative constructions. In this second area we have almost no clear correlations between language type and relative clause type; the only exception is that verb-final word order and relativization by deletion are known to be correlated. Third, we have an account of the constraints on relativization, for instance the accessibility hierarchy and its interaction with promotion operations.

These questions and their answers have resulted in important advances in linguistics. However, there are certain aspects of relativization which they inherently neglect, and which are important to a cross-linguistic understanding of relativization. First, two of the three areas of investigation just enumerated -- word order relative to the head and constraints on the syntactic function of the relativized noun in the relative clause -- cannot say anything at all about the relative construction known variously as 'headless' or 'internally headed'. This is because the word-order inquiries focus on the position of the relative clause in relation to its head, while headless relatives have no external head in terms of which their ordering can be described; and accessibility strategies are not required to recover the syntactic function of an internal head since it is overt. (The literature on accessibility focuses entirely on headed relatives: for instance, Keenan & Comrie 1977, 1979 are aware of headless relatives but illustrate accessibility cut-off points only for headed ones.) The headless type is hence ignored in all implicational typologies, and to the best of my knowledge there has been no attempt to predict its occurrence. A second problem is that prediction of one aspect of relative structure from one typological factor -- for instance, positioning from word order (Hawkins 1983), cutoff point in the accessibility hierarchy from object-promotion rules (Givon 1979: Ch.4), deletion from OV typology -- is accurate but narrowly focused. These findings, for instance, do not point out the fundamental resemblance of Japanese relativization by deletion to English relativization by pronominalization, and of Navajo headless
relativization by deletion to Tewa relativization by deletion; much less do they account for the Japanese-English similarities and the Navajo-Tewa similarities by reference to the overall morphosyntactic type of the languages concerned.

The present paper tries to remedy both of these faults. It gives a taxonomy that organically includes headless relatives and it provides for their distribution on typological grounds. It attempts to integrate relativization strategies with overall type, in that it deals with several conditioning factors and several kinds of relativization. It offers an account in terms of what Hawkins 1983 calls cross-categorial harmony (the notion, though not the term, is based on Greenberg 1963): the tendency for structures at one level or in one area of grammar to be parallel to or otherwise implied by structures elsewhere in the same grammar. Specifically, this paper describes the extent to which cross-categorial harmony predicts relativization strategies, and it establishes some intersecting factors which account for departures from cross-categorial harmony.

In one respect this paper departs from most of the recent literature. Linguistics in the last several decades has established a number of important abstract principles governing language structure and cross-linguistic regularities: these include markedness, implicational universals, hierarchization, covariation, and cross-categorial harmony. Some linguists regard such principles as adequate for the description of linguistic phenomena, and separate the question of their explanation from their use in linguistic description (e.g. Greenberg 1963, Silverstein 1976, 1981). The majority regard their explanation as an integral part of linguistic description; works taking this approach include Givón 1979:Ch. 5 (where the interaction of accessibility and promotion rules is described as functioning to increase topicality), Hopper & Thompson 1980 (where the interaction of a set of hierarchical variables is itself viewed as a category with its origin in discourse function), Comrie 1981:25-6, 156 (where accessibility constraints on relativization are attributed to difficulties of processing low-accessibility relatives), and perhaps Hawkins 1983 (where the existence of cross-categorial harmony is attributed to its ability to simplify grammars, specifically their serialization rules). The present paper follows the former trend, showing what cross-categorial harmony does and does not account for without asking about its psychological or functional motivation. The analysis given here will be functional only in the sense in which Silverstein (1976, 1981) uses that term, namely in the mathematical sense: it analyzes one aspect of relativization as a dependent variable and several others as independent variables, showing that the dependent and independent variables covary.

The following sections discuss various relativization strategies
according to the type and location of markers of relativization, an
approach suggested by Zaliznjak & Padučeva 1975. There are two
things that must be marked in a relative construction: the identity
of one clause as the relative clause and the other as the main
clause; and the identity of one main-clause and one relative-clause
NP as relative nouns. I will distinguish between clause-affecting
and noun-affecting strategies accordingly. The next few sections
discuss noun-affecting strategies; clause-affecting strategies are
discussed toward the end.

Relativization by deletion. The contrast of headless to headed
relatives almost single-handedly captures the primarily typological
distinction to be employed in this paper. (1) shows a headless
relative from Navajo.3

(1) Navajo (Platero 1974:10)

[leechna' [ maa'itsoh bishxash - }{ ] ø naha:l'in
dog wolf 3-Perf-3-bitten REL IMP-3-bark
'The dog that was bitten by the wolf is barking'

For arguments that the relative noun 'dog' is in the relative clause
see Platero 1974:204-5. The distinctive property of (1) is that the
relative clause has its full valence while the main clause has incom-
plete valence, lacking the actant coreferential to the relative noun.
That incomplete valence is symbolized with a zero in (1), although
this may be regarded as just a graphic convenience. It is intended
to capture the empirical fact of full vs. incomplete valence without
requiring commitment to theoretical notions such as upwards Equi,
pro, PRO, etc.

(1) contains two formal markers which identify it as a relative
construction. One is the relative suffix on the relative-clause
verb, which will be mentioned below. The other is the deletion of
one copy of the relative noun. This section is concerned with the
deletion, which is noun-affecting. Taking the incomplete valence, or
the zero, as a marker of relativization, we see that that marker
appears in the main clause. The relative clause, which has full
valence, contains no noun-affecting relativization marker.

(2) is a relative construction from Chechen, a language of the
North Central Caucasus.

(2) [ ø suona a:xča della ] k'ant a:rave:lira
me-DAT money-NOM having-given boy-NOM went out
'The boy who gave me money went out'

Again we have relativization marked by a zero, or incomplete
valence, in one of the clauses. This time the zero is in the
relative clause.

In both (1) and (2), the form of the relative-clause verb marks that verb -- and hence marks its clause -- as subordinate to the main clause. This shows that the relation of the relative clause to the main clause is identical in the two examples: both relative clauses are subordinate to their main clauses. The only difference is in where noun-affecting relativization occurs -- in the main clause or in the subordinate (relative) clause.

This difference is not a random one. It follows from the typological principle given in Nichols 1984, where constructions are typologized into dependent-marked and head-marked. This distinction has to do with how, and where, morphological affixes mark syntactic relations. A head-marked construction is marked by an affix on the head; a dependent-marked one is marked by an affix on the dependent. (3) illustrates the contrast with noun phrases. (Heads of constituents are underlined; the markers are double-underlined.)

(3) Dependent-marked: Chechen

\[
de: - n \quad a:x\check{\alpha}
\]
father GEN money
'father's money'

Head-marked: Abkhaz

\[
\hat{a} - \check{\alpha}k\check{\alpha}n \quad \psi\check{\alpha} - \check{\alpha}n\check{\alpha}
\]
the boy his house
'the boy's house' (Hewitt 1979:116)

These two examples have identical syntactic structure but opposed principles of morphological marking. In the dependent-marked Chechen example, the head noun 'money' has no affix and the dependent noun 'father' is marked as possessor by its genitive case. In the head-marked Abkhaz example, the head noun 'house' takes a marker identifying it as possessed while the possessor noun bears no affix. (4) illustrates the contrast of head and dependent marking with clauses.

(4) Dependent-marked: Chechen

\[
da: - \overline{\underline{s}} \quad wo\underline{\underline{q}}a - na \quad urs - \overline{\underline{0}} \quad \overline{\underline{t}}\check{\underline{u}}:\check{x}ira
\]
father ERG son DAT knife NOM hit
'father stabbed son'

Head-marked: Abkhaz (Hewitt 1979:36)

\[
a - \check{x}ac'\alpha \quad a - \check{\alpha} \check{\alpha} \check{\alpha} s \quad a - s\check{\alpha}q\check{\alpha}d \quad \overline{\underline{0}} - \overline{\underline{l}} - \overline{\underline{y}} - \overline{\underline{te}} - \overline{\underline{yt}}
\]
the man the woman the book it to-her he gave FIN
'The man gave the book to the woman'
In the Chechen example, the grammatical relations are signaled only by the cases on the nouns; there is no verbal agreement. In the Abkhaz example, the grammatical relations are signaled only by the verbal prefixes; the nouns are caseless. The same contrast is exhibited at other levels of grammar: for instance, in adpositional phrases and in subordination. It can also be used to characterize whole languages: a dependent-marking language is one which, like Chechen or Japanese or most of Indo-European, uses predominantly dependent-marking patterns throughout its grammar. A head-marking language is one which, like Abkhaz or Navajo or Mayan, uses predominantly head-marking patterns.

The rest of this paper will deal with the relation of morphological marking patterns at the clause level to relativization strategies.

(1) and (2) illustrate the essential correlation between relative type and morphological marking of clauses: Navajo is a head-marking language, and the relative construction of (1) is marked by a zero in the main clause. Since in dependency terms the relative clause is a dependent of the main clause, and the main clause (or more precisely its verb) is head of the sentence, we can call the Navajo relative construction a head-marked one, in that the marker of relativization -- the zero -- appears in the main clause. In contrast, Chechen is a dependent-marking language (as shown in (3) and (4)); and its relative construction, where the zero which marks relativization appears in the relative clause, is dependent-marked. The claim that marking patterns at the clause level and in relativization are parallel is a statement of cross-categorial harmony.

The picture is not quite this simple, however. It is not the case that all and only head-marking languages use the Navajo pattern and all and only dependent-marking languages use the Chechen pattern. One complexity is provided by the fact that several languages tolerate both head-marked and dependent-marked relativization by deletion. Navajo, for example, also permits (5); at least one dialect of Chechen also tolerates examples like (6); Japanese allows both dependent-marked (7a) and head-marked (7b). In each instance, the preferred relativization type is that following from cross-categorial harmony: in dependent-marking Japanese and Chechen the head-marked relatives are stylistically unusual; in head-marking Navajo the dependent-marked pattern is disfavored.

(5) Navajo (Platero 1974:10)

[ Ø ma'iitsoh bishxash - 66 ] iiee'cha'all nahal'in

  wolf 3-PERF-3-bitten REL   dog   bark

'the dog that the wolf bit is barking'
(6) Chechen
[ k'ant-as suona a:xča della ] Ø a:rave:lira
boy ERG me-DAT money-NOM having-given went out
'the boy who gave me money went out'

(7) Japanese (Kuroda 1976:269-70)
   a. Taro: wa [ Ø sara no ue ni atta ] ringo o totte
      TOP plate GEN on LOC was apple OBJ took
      'Taroo picked up an apple which was on a plate ...'

   b. Taro: wa [ ringo ga sara no ue ni atta no o ] totte
      apple SUBJ COMP OBJ
      id.

A second complexity is the fact that not all languages have
strictly head-marked or strictly dependent-marked clauses. A good
many are double-marking, employing both nominal cases and extensive
verbal agreement. Languages of this type include the Quechuan and
Yuman families and Basque. Now, plainly a language cannot delete
both copies of a relative noun without losing it entirely; therefore
the correlation between clause structure and relativization has to
break down in the double-marking languages.

A third complexity is the fact that some languages have head-
marked clauses but dependent-marked phrases. The Bantu family is of
this type. Since this paper is concerned with predicting relativiza-
tion type from clause-level morphological type only, this complexity
will not concern us here. (Prediction is based on clause marking
here precisely because other levels proved to be much less
revealing.)

A fourth complexity is provided by a type of headless relative
found in certain double-marking languages, and shown in (8) and (9).

(8) Mojave (Yuman family; Munro 1976:188)

[ ?ava: kʷ- nosev ] -1Y -iva-m
   house REL white in 1 sit TENSE
   'I'm in the white house'

(9) [ ?ava: m-u:xo: ] -1Y -nYavay-k
   house 2 make LOC 1 live TENSE
   'I live in the house you built'

In these examples, the relative clauses have full valence and the
main clauses contain no copy of the relative noun. (8) and (9)
differ from (1) in that the verb of the relative clause is
nominalized and case-marked, and it bears the case that would have been borne by the main-clause copy of the relative noun, had that noun been in the main clause. Thus both (8) and (9) have relative verbs marked for the locative actant required by the main verb. This gives the main clause of (8) or (9) a very different look from that of (1): in (8) and (9) we cannot speak of incomplete valence, since both subject and locative slots of the main verb are filled. Rather, we would have to speak of 'abnormal valence' or some such, to capture the fact that the understood locative is not the whole embedded clause but one of its actants.

Now, the type shown in (8) and (9) is analogous to that shown in (1) except for one morphological fact: the language of (8) has cases, and hence the relative verb can be case-marked. The type of (8)–(9) can occur only in languages having cases. The type of (1) is the only possibility for languages having no cases; it can also be used, as in (7a), in languages which have cases but happen not to use a nominalized form as their relative verb. That is, (8)–(9) and (1) prove to be in complementary distinction, once we take into account the part of speech of the relative verb and the grammatical categories available to the language. Hence (1) and (8) are contextual variants of a single relative type, head-marked relativization by deletion.

(10) shows the distribution of major relativization strategies among the three clause patterns. For the two polar clause types, there is a strong correlation between clause marking and relativization: head-marked clauses clearly imply head-marked relativization, and dependent-marked clauses very strongly imply dependent-marked relativization. Double-marked clauses are fairly evenly split in their relativization types.

Further generalizations can be made if we inspect the exceptions. One exception among the dependent-marking languages, Hopi, is known to be under areal influence from other languages of the Southwest (Gorbet 1977), which have headless relatives because they are head-marking. Furthermore, the close sister languages of Hopi use dependent-marked relativization. The other exception is Kaititj, an Arandic language of Australia. Hale 1976:104 regards the Kaititj headless relatives as a functionally motivated diachronic development from the pan-Australian adjoined type (discussed below). Since nothing is known about areal aspects of relativization in this region, I will leave Kaititj unexplained. All other dependent-marking languages and families -- and they are widespread and numerous -- follow cross-categorial harmony in using dependent-marked deletion. These facts show that cross-categorial harmony is a strong determinant of grammatical form, and exceptions to it are isolated. They also show that we must recognize areal influence as a second
(10) Relativization by deletion: Typology

<table>
<thead>
<tr>
<th>Language</th>
<th>Type</th>
<th>Cross-categorial harmony violations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head-marked clause</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Navajo</td>
<td>H (also D)</td>
<td></td>
</tr>
<tr>
<td>Lakhota</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Abkhaz</td>
<td>D</td>
<td>*</td>
</tr>
<tr>
<td>Adyghe</td>
<td>H</td>
<td>*</td>
</tr>
<tr>
<td>Washo</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Mayan family</td>
<td>D</td>
<td>*</td>
</tr>
<tr>
<td>Bantu family</td>
<td>D</td>
<td>*</td>
</tr>
<tr>
<td>Double-marked clause</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quechuan family</td>
<td>H; also D</td>
<td></td>
</tr>
<tr>
<td>Yuman family</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Tonkawa</td>
<td>[H]</td>
<td></td>
</tr>
<tr>
<td>Basque</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Uralic (eastern)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Burushaski</td>
<td>[D]</td>
<td></td>
</tr>
<tr>
<td>Hurrian</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Dependent-marked clause</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hopi</td>
<td>H</td>
<td>*</td>
</tr>
<tr>
<td>other Uto-Aztecan</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Dyirbal</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Kaititj</td>
<td>H</td>
<td>*</td>
</tr>
<tr>
<td>Japanese</td>
<td>D (also H)</td>
<td></td>
</tr>
<tr>
<td>Chechen</td>
<td>D (also H)</td>
<td></td>
</tr>
<tr>
<td>other Northeast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Turkic family</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Tungusic family</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Uralic (western)</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>

Legend:  
D = dependent-marked pattern  
H = head-marked pattern  
[ ] The language has this type, but sources do not indicate whether it is the primary type.  
( ) Non-primary strategy.  
* Exception to cross-categorial harmony.
factor, in addition to cross-categorial harmony, that determines relativization strategies.

Among the head-marking languages, the fact that Abkhaz has dependent-marked relatives while closely related Adyghe has head-marked relatives is not obviously due to areal influence. And borrowing can hardly account for the systematic use of dependent-marked relativization throughout the Mayan and Bantu families. It must be, rather, that dependent-marked relativization is in itself universally somewhat favored over head-marked relativization. Thus there are more instances of dependent-marked relativization among head-marking languages than there are instances of head-marked relativization among dependent-marking languages.

For the double-marking languages, a surprising correlation emerges: those in the New World use head-marked relativization, while those in the Old World use dependent-marked relativization. (This factor appears not to be relevant for head-marking languages.) Geography in itself is not a direct causal factor here. Languages of the New World in general display a much stronger propensity toward head-marking patterns than do languages of the Old World (Nichols 1984), and relativization is just one manifestation of that tendency. This may ultimately prove to be just a special case of the areal-influence factor, but until that is demonstrated I will treat it as a separate condition.

Deletion and pronominalization in head-marked clauses. In head-marked clauses, particularly in consistently head-marking languages, it is often difficult to distinguish deletion from pronominalization. This is because languages with head-marked clauses tend either to use zero anaphora or to treat independent NP's as optional clause constituents, defining grammatical relations on the verb and its affixes instead. Therefore it is difficult to decide whether an instance of incomplete valence represents relativizing deletion, anaphoric deletion, or the optional nature of independent NP's. It is also difficult to decide whether a verbal affix should be regarded as an agreement marker or as a pronominal element bearing a grammatical relation. An example from Lakhota:

\[(11)\text{Lakhota (Rood 1973:79, 81)}\]

\[
\text{[wičhaša wə ſkawkakhə wə imákiču kí hélé wálaka he?} \\
\text{man a horse a he-takes-it-DET you-see-him Q} \\
\text{from-me} \\
\text{'}Did you see the man who took my horse?'
\]

The question is whether the third person singular affix on the verb represents pronominalization or simply agreement with a main-clause
zero. Such questions require close language-specific argumentation and cannot be answered in a survey like this paper. (For examples of such argumentation see Platero 1974 and Van Valin 1984. Givon 1979: Ch. 4 refers to deletion in head-marked clauses as a verb-coding strategy of relativization, which he regards as distinct from both deletion and pronominalization.) Presumably, more detailed information on these matters and on the finiteness of the relative- clause verb will allow more accurate prediction of dependent-marking relativization in head-marking languages. For this survey all such debatable types are classified as deletion.

**Pronominalization.** The great majority of pronominal strategies, regardless of language type, are dependent-marking. An example is the relative pronouns of modern Indo-European languages, which are in the relative clause. The rare head-marked type is found in Tanoan, represented by Hopi Tewa in (12).

(12) Hopi Tewa (Gorbet 1977: 272)

\[
[he'\text{i sen c'a:ndi \ w\text{\`o mansu`} - n ] 'i dokumq
\]

that man yesterday wine 3>3-drink DS 3sg 1>3-bought

'I bought the wine which that man drank yesterday'

The pronoun in the main clause of (12) is not a special relative pronoun but an ordinary anaphoric pronoun. Tewa is a consistently head-marking language, so its use of head-marked relativization by pronominalization follows cross-categorial harmony.

Head-marked relativization by pronominalization is not impossible for dependent-marking languages: a number of older Indo-European languages exhibit occasional instances of head-marking relativization by pronominalization (Zaliznjak & Padučeva 1975). But these are always minor, stylistically marked constructions limited to high style. An example:

(13) Latin (Ovid Ep. (Heroides) 14.11)

\[
\text{aut illo iugulet, [ quem non bene tradidit ensem ]}
\]

or that-ABL may-cut which-ACC not well gave sword-ACC

'or he may cut (my) throat with that sword which he falsely gave (me)'

In (13), the relative noun 'sword' appears in the case required by the relative clause, where 'sword' is direct object. In the main clause we have a pronoun in the case used for instrumental adverbials. (13) is thus syntactically analogous to (12). Examples of this type are traditionally said to involve incorporation of the relative noun into the relative clause.

In summary, relativization by pronominalization -- whether the
pronoun is a special relative pronoun or an ordinary anaphoric one -- occurs in its head-marked form as a primary relativization strategy only in head-marking languages (but by no means in all of them). Dependent-marked pronominalization occurs in languages of all types. Evidently, pronominalization in itself strongly favors dependent marking, and this should be regarded as an independent factor determining relativization strategy.

**Marking of the head noun.** In a number of languages, a relative noun in the main clause is marked as having a relative clause, usually by a special article or a specialized use of an article. For this paper I have not surveyed this phenomenon systematically.

**Clause-affecting strategies.** A common clause-affecting strategy is the marking of the relative verb as relative, nonfinite, nominalized, or the like. This is a dependent-marking pattern, since it affects the verb of the relative clause. It is common in relativization by deletion, regardless of language type and relativization type: hence it appears in the head-marked relativization by deletion of Navajo shown in (1), in its dependent-marked variant in (5), in both variants of Chechen (2, 6) and Japanese (7), and in the head-marked relativization of Mojave (8-9).

Another clause-affecting strategy is the introduction or closure of a relative clause with a complementizer or article. This is found in some Mayan languages and in Lakhota (see (11)).

Both of the foregoing strategies are dependent-marking. (14) shows a head-marking strategy that may be clause-affecting. The example is from Arabic, a double-marking language.

(14) Arabic (Zaliznjak & Padučeva 1975:55)

\[\text{\foreign{\text{gā'a lfallāḥānī lla'dānī [ ra'aytu-humā b'il'amsi ]}}\]

\[\text{came farmers-NOM-DU REL-NOM-DU I-saw them-DU yesterday}\]

'The two farmers I saw yesterday came'
function of the deleted noun can present problems, since the primary -- and often the only -- marker of syntactic function is case, which obviously cannot appear when the noun that would bear it is absent. The literature on accessibility deals precisely with this problem, showing that constraints on the syntactic function of the zero help narrow down the range of possible interpretations the relative clause can receive. Head-marked relativization does not have the problem of recovering the function of the relative noun in the relative clause, since that clause is intact. Nor is there any difficulty in recovering the syntactic function of the main-clause zero: the syntactic function is marked on the verb in head-marking languages. In head-marked relativization of the Yuman type, there is no recoverability problem because there is no zero in the main clause.

What does present problems in head-marked relativization is determining which NP of the relative clause is the relative noun. (For discussion and a survey of earlier literature see Jacobsen 1981.) That is, head-marked relativization by deletion presents problems in determining reference and coreference. Although a complete account of disambiguating strategies is beyond the scope of this paper, some of the ways languages have of indicating which noun is relativized can be listed here. Washo (Jacobsen 1981) uses a combination of switch reference, accessibility restrictions, and indexing of subject vs. non-subject functions to monitor coreference and hence indicate which noun is head. Languages of the Yuman family employ a prefix on the relative verb -- the $k^w$ shown in (8) -- to indicate that the relative-clause subject is the relative noun. (The problem of recoverability in the Yuman constructions is discussed in Gorbet 1973 and Munro 1976:187ff.) Hopi uses switch reference (Gorbet 1977). Navajo relies heavily on word order (Platero 1974:210-11n). Although accessibility constraints have not been documented in head-marking languages, they must exist: if, for instance, relativization is limited to subjects, then the hearer knows that, no matter what the structure of the relative clause, its subject is the relative noun. Two other possibilities are directly marking the relative noun itself and using gender agreement to establish coreference. All of these devices are employed elsewhere by head-marking languages to keep track of participant reference, a problem which is not unique to relative constructions in such languages.

Platero 1974:205 shows that the head-marked Navajo construction is preferred, despite its ambiguity, over the unambiguous dependent-marked alternative. This means that the structural principle of cross-categorial harmony is in this instance a stronger determinant of grammatical form than is the functional goal of disambiguation.

Non-embedded relatives. This paper has dealt only with the kinds of relativization that involve embedding and/or complex NP's.
The so-called 'correlative' construction, which involves a pronominal element in each clause and deletion in (usually) the second, does not create an NP and has a much looser link between the two clauses. It seems to favor the head-marking pattern, although this generalization is tentative. An example is (15).

(15) Gujarati (Masica 1972:199)

[ je dhobii maarii saathe aavyo ] te Ø DaakTarno
which washerman my with came that doctor's
bhaaii che
brother is
'The washerman who came with me is the doctor's brother'

The relative noun dhobii 'washerman' is in the relative clause. This is a head-marked pattern, although the absence of the relative noun in the main clause may be simply an incidental effect of left-to-right anaphoric reduction.

Similar to (15) is the adjoined relative clause discussed in Hale 1976, which uses either pronominalization or deletion. The relative noun is intact in whichever clause comes first, and deletion or pronominalization takes place in whichever clause follows (Hale 1976:91). Since relative clauses usually follow main clauses (86), deletion or pronominalization is usually in the relative clause, i.e. dependent-marked; but with preposed relatives it is head-marked. The head-marked or dependent-marked character thus follows from left-to-right reduction, not from cross-categorial harmony.

**Conclusions.** (16) displays the above generalizations in terms of covarying dependent and independent variables. It graphically illustrates the following generalizations: Pronominalization

(16) Factors determining treatment of relative noun

Dependent variable:

Treatment of relative noun: Head-marked > dependent-marked

Independent variables (determining factors):

- Relativization strategy: zero > pronominalization
- Clause marking: head > double > dependent
- Hemisphere: New World > Old World
- Areal influence, borrowing: (no ordering)

[The symbol > marks direction of covariance.]
strategies favor dependent-marking patterns, relative to deletion strategies. Clause-affecting strategies likewise favor dependent-marking patterns. Head-marking clause morphology favors head-marking relativization (cross-categorial harmony). Languages of the New World are most likely to have head-marked relativization. And areal influence enters in as a wild card which can distort typologically motivated patterns more or less at random.

(17) tabulates the implications that exist between clause marking type and relativization type. It is not the case that clause marking type straightforwardly predicts relativization type or vice versa. Not only are factors other than cross-categorial harmony at play; in addition, even cross-categorial harmony does not make predictions in a single direction. Rather, the predictability is split in its directionality: for the dependent-marking patterns, clause marking type implies relativization type; while for the head-marking patterns, relativization type implies clause marking type. This statement captures the fact that dependent-marked relativization is found in languages of all types, while head-marked relativization is almost never used as a primary strategy in dependent-marking languages (the sole exceptions are Hopi, known to be under areal influence, and Kaititj, unexplained). This fact is itself due to the overall preferred status of dependent-marked relativization. Incorporating that overall preference into a prediction based on cross-categorial harmony results in a prediction whose directionality varies with the morphological marking type of the phenomena described.

(17) Predictions of cross-categorial harmony

<table>
<thead>
<tr>
<th>Dependent-marked clause</th>
<th>dependent-marked relativization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head-marked relativization</td>
<td>head-marked clause</td>
</tr>
</tbody>
</table>

In conclusion, then, there is a good degree of cross-categorial harmony between relativization type and other structural factors. Relativization cannot be mechanically predicted from clause morphology alone; but there is a high degree of correlation. The choice of particular strategies such as deletion vs. pronominalization does not follow from clause marking, but the choice of headless vs. headed types clearly does. (This conclusion supports the suggestion of Jacobsen 1983:183n20, that the explanation for headless relatives in North America is not areal but typological). Non-correlation can be explained by other, also systematic, factors, and by areal influence, which is not systematic.
Appendix: Data sources for languages surveyed

Abkhaz: Hewitt 1979
Bantu family: Givón 1972; Givón 1979:Ch. 4
Basque: de Rijk 1972
BURUSHASKI: Klimov & Edel'man 1970:93-4
Chechen: *
Dyirbal: Dixon 1972:99-105
Hopí: Gorbett 1977; David Shaul, p.c.
Hurrian: Lehmann 1979:92-3
Lakhota: Rood 1973; Robert D. Van Valin, Jr., p.c.
Navajo: Platero 1974
Northeast Caucasian: *; e.g. Kibrik 1977:299ff.
Tewa: Gorbett 1977; David Shaul, p.c.
Tonkawa: Jacobsen 1981
Tungusic family: *; e.g. Avrorin 1968:140, 145-6
Turkic family: *; e.g. Lewis 1967:259
Uralic (eastern): *; Tereščenko 1973:299-300
Uralic (western): *; e.g. Karlsson 1972
Uto-Aztecan: Heath 1972; David Shaul, p.c.
Washo: Jacobsen 1981

* Languages I am personally acquainted with. Information comes from a combination of field work, text work, and grammar sources.

[Sources cited give information on relative clause types only. For sources of information on clause-marking patterns see Nichols 1984.]

Footnotes

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2 The term headless is also sometimes applied to relatives meaning 'the one who', 'that which', 'whoever', etc., in constructions where (as in English whoever) the understood pronominal head merges with a relative pronoun. Constructions of this type are not discussed in this paper, and the term headless will be used, rather than the longer internally headed, to refer to constructions like (1).

3 Abbreviations: NOMinative, ACCusative, ABLative (and likewise for other case names); RELativizer, DETerminer, IMPerfect, FINite, Q = question particle; DS = different-subject marker. Brackets and zeroes in examples are usually my additions. The analysis they reflect never contradicts that of the source cited.

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A TYPOLOGY OF SYNTACTIC RELATIONS IN CLAUSE LINKAGE

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1. Discussions of clause linkage, regardless of whether they are in the framework of traditional, structural, or generative grammar, assume a contrast between two syntactic linkage relations, coordination and subordination. Complex sentences are analyzed as being composed of clauses joined in one or the other of these relations. Lyons (1968) summarizes this opposition as follows:

Complex sentences are divided into: (a) those in which the constituent clauses are grammatically co-ordinate, no one being dependent on the others, but all being... added together in sequence, with or without the so-called co-ordinating conjunctions...; and (b) those in which one of the clauses ('the main clause') is 'modified' by one or more subordinate clauses grammatically dependent upon it and generally introduced...by a subordinating conjunction. Subordinate clauses are subdivided by function as nominal, adjectival, adverbial, etc.; and further as temporal, conditional, relative, etc. (178)

There appear to be two primary components to this distinction. First, in a coordinate relationship each clause in the linkage is independent of the others in form, so that each can stand on its own as a complete sentence. In subordination, on the other hand, only one of the clauses is in a fully independent form; the other occurs in a form which precludes its occurrence as a complete sentence. This clause, the subordinate clause, is dependent upon the other, independent clause for its occurrence. There is thus a contrast in terms of dependence: no dependency relations among the clauses in a coordinate relationship, a definite dependency relation between one or more clauses and the independent clause in a subordinate relationship. Lyons characterizes dependence strictly distributionally.

The second component to this contrast is expressed in terms of clauses "being added together in sequence" versus one of the clauses being "modified" by another. One way of paraphrasing this would be to say that in subordination one of the clauses functions as a part of another, whereas in coordination each clause is complete and distinct from all others. In other words, subordination involves embedding, while coordination involves the joining of autonomous whole clauses. Very often embedding takes the form of one clause functioning as an argument of another clause. This is particularly true of nominal and adverbial clauses.

(1) a. That Fred lost the race shocked everyone.
    b. Fred quickly forgot that he had lost the race.
c. Max put the book where no one would find it.
d. Larry talked to Sue after they left the office.

In (1a) the subordinate clause is the subject of the main clause verb shocked, while in (1b) it is the direct object of forgot. In (1c) it serves as the 'inner' locative argument of put, and in (1d) it is a 'setting' temporal argument. In coordination there is no functioning of one clause as an argument of another. Thus the second component of the coordination-subordination opposition is embeddedness: there is no embedding relation between (or among) clauses in coordination, whereas the linked clause is embedded in the unlinked (independent) clause in subordination.

Each of these components may be expressed in terms of a feature, [+dependent] and [-embedded]. Coordination is [-dependent, -embedded], and subordination is [+dependent, +embedded]. These may appear to be redundant formulations, because it has often been assumed that dependence is equivalent to embeddedness. Moreover, most of the constructions which linguists deal with seem to fit comfortably into one type or the other, and accordingly there has been little reason to challenge the identification of the two.

2. Linguists studying the languages of Papua New Guinea were among the first to describe constructions which blur the distinction between coordination and subordination. One of the distinctive attributes of many non-Austronesian Papuan languages is clause chaining, the stringing together of a large number of clauses in texts (see Longacre 1972 for an overview). There are two primary types of clauses in these chains. The final clause in the chain has a verb which is fully finite, inflected for tense and mood (illocutionary force), and carrying affixes indicating subject and, in some languages, object. The other clauses contain verbs which are not fully finite; they are never marked for mood, and if they take tense inflection it is relative rather than absolute tense. They may carry person marking, and they very often have switch-reference indicators; these are never found on the verb in the final clause of a chain. Examples of clause chains from Chuave (Thurman 1975) and Fore (Scott 1978) are given below.

(2) a. Yai kuba i-re kei si-re fu-m-e. (Chuave)
   man stick get-SEQ.SS dog hit-SEQ.SS go-3sg-INDIC
   'The man got a stick, hit the dog, and went away.'

   b. Yai kuba i-re kei su-n-goro fu-m-e.  
   man stick get-SEQ.SS dog hit-3sg-SEQ.DS go-3sg-INDIC
   'The man got a stick, hit the dog, and it went away.'

(3) a. Kanamagina agamagina máe'táye. (Fore)
   kana-ma-ki-na a-ka-ma-ki-na máe-‘tá-y-e
   come-SEQ.SS-CNJ-3sg 3sg-see-SEQ.SS-CNJ-3sg get-PST-3sg-INDIC
   'He came and saw it and got [it].'
An analysis of these sentences in terms of the definitions of coordination and subordination given above yields interesting results. With respect to dependence, the non-final clauses are dependent upon the final clauses in two interrelated ways. In terms of Lyons' distributional definition, they are dependent because they cannot constitute a complete sentence, while the final clauses can. That is, in Chuave *yai kuba ire* 'the man got a stick and' does not count as a complete sentence the way *fume* 'he went away' does; similarly in Fore, *kanauwá:iana* 'I came and he' is not a complete sentence the way *máe'táye* 'he got it' is. This distributional dependence is a function of a second type of dependence. As noted above, the verbs in the non-final clauses are not fully finite; in both languages they lack mood marking, and in Fore tense is only possible in a non-final clause with different-subject marking. The non-final clauses are thus dependent upon the final clauses for the expression of tense, mood, or an argument. This type of dependence will be called 'grammatical category' [GC] dependence; the linked clause depends upon the main clause for the expression of grammatical categories which are part of its interpretation, e.g. the past tense and indicative mood of the first two clauses in (3a). The non-final clauses accordingly exhibit both GC and distributional dependence upon the final clauses. It should be noted that GC dependence does not universally entail distributional dependence, as will be seen below.

The other feature distinguishing coordination from subordination is embeddedness. If 'embedded' is understood to mean 'functions as an argument of,' then there are no grounds for claiming that the non-final clauses are embedded in the final clause. They express neither an argument like subject or object nor any kind of adverbial notion; they are not structurally or semantically parallel to the embedded clauses in (1). Even on the much weaker concept of 'functions as a part of,' no real case can be made that the non-final clauses are part of the final clause. Rather, it seems clear that the relationships among the clauses with respect to embedding are the same as those of the clauses in their English translations; they are "added together in sequence." It is reasonable to conclude, then, that there is no embedding relation between the non-final and final clauses in these clause chains.

If clause chains in Chuave and Fore are characterized by dependence but not embedding between non-final and final clauses (i.e. they are [+dependent, −embedded]), then they cannot be considered instances of either coordination or subordination. Indeed, many
Papuanists, e.g. Longacre (1972, 1983), Thurman (1975), Olson (1981), Franklin (1983), and Haiman (1983), have argued that the non-final clauses in this construction are not subordinate clauses in the commonly accepted (Indo-European-based) sense of the term. Sentences like (2) and (3) are often described as being "coordinate but dependent," e.g. Haiman (1983:122). These constructions offer strong evidence that dependence is not equivalent to embeddedness; rather, they are distinct parameters in defining syntactic relations in clause linkage.

Coordinate dependent constructions are not restricted to Papuan languages. The following examples are from Swahili (Hinnebusch 1979) and Jacaltec (Craig 1977).

and lsg-PST-eat
'I arrived home, and I cultivated the shamba a little, and I ate.'

b. Nili-fika nyumbani, ni-ka-lima shamba kidogo,
lsg-PST-arrive home lsg-SEQ-cultivate a.little
ni-ka-la.
lsg-SEQ-eat
'I arrived home, cultivated the shamba a little, and then ate.'

(5) a. X-ϕ-to ix maΧatic'a x-ϕ-ul ix.
PST-3ABS-go CL/she never PST-3ABS-come CL/she
'She went, and she never came back.'

b. X-ϕ-w-icxe-coj an x-ϕ-s-lah-ni
PST-3ABS-lsgERG-begin-SUFF 1p PST-3ABS-3ERG-finish-SUFF CL/he
'I started it, and he finished it.'

(6) a. X-ϕ-tzebi naj x-ϕ-'el-tij
NPST-3ABS-laugh CL/he PST-3ABS-come-out CL/he
'He came out laughing.'

b. Ch-in xubi an x-ϕ-(h)in-tx'ah-ni xil
NPST-lsgABS whistle 1p PST-3ABS-lsgERG-wash-SUFF CL
kape an.
clothes 1p
'I washed the clothes whistling.'

The Swahili sentence in (4a) is a typical example of coordination; each clause occurs in a fully independent form, and they are "added together in sequence." In (4b), however, the tense slot in the non-initial verbs is filled by -ka-, which Hinnebusch (1979) calls a "consecutive marker"; it indicates that the events described by the verbs occurred sequentially, with the tense reference of the whole sentence indicated on the first verb only. The clauses in (4b) are in the same non-embedding relationship to each other as the clauses in (4a), but the non-initial clauses cannot occur as independent sentences, unlike their counterparts in (4a). They are
thus dependent upon the initial clause, both distributionally and for the interpretation of tense (i.e. GC dependence).

The examples in (5) and (6) from Jacaltec illustrate this contrast as well. Jacaltec lacks a conjunction analogous to English and or Swahili na, and consequently clauses in a coordinate relationship are simply juxtaposed, as in (5). Each clause is fully inflected and could occur as an independent sentence in its own right. Although this pair of examples does not show it, there are no restrictions on clauses in this construction in terms of tense or mood (see Craig 1977). The examples in (6) appear to be formally identical to those in (5), in that both clauses are fully inflected for tense and person. There are, however, a number of significant differences between the two sets of sentences. In (6) the verb in the first clause must be in the neutral non-past tense form, and the two clauses must have the same subject. The tense interpretation for the whole sentence is a function of the tense inflection of the verb in the second clause; there is therefore GC dependence between the clauses. It is clear that the relationship between the two clauses in (6) is the same as that in (5) with respect to the embedding parameter, and consequently the construction in (6) constitutes another example of a coordinate but dependent linkage. This one differs from those in Chuave, Fore, and Swahili in a significant respect, however. In those three languages the linked clauses exhibit both distributional and GC dependence. The linked clauses in (6), on the other hand, are only GC dependent and not distributionally dependent upon the independent clause; they can occur as independent sentences, albeit with a difference tense interpretation, i.e. Xtebi naj would mean 'he laughs', and chin xubli an would mean 'I whistle'. These Jacaltec examples show that distributional dependence and GC dependence are in fact independent in principle, even though the latter usually results in the former.

3. The coordinate but dependent linkages in Chuave, Fore, Swahili, and Jacaltec demonstrate that dependence is not equivalent to embeddedness, and these constructions fall between coordination and subordination, as traditionally defined. A reevaluation of this opposition is therefore in order. In section 1 these two notions were characterized in terms of two features, [+dependent] and [+embedded]. Since [¬dependent] does not entail [¬embedded], as (2)-(6) show, these two features yield four possibilities.

(7) a. [¬dependent, ¬embedded] Coordination
    b. [+dependent, +embedded] Subordination
    c. [+dependent, ¬embedded] ??
    d. [¬dependent, +embedded] ??

Combination (7c) characterizes the coordinate but dependent linkage relation illustrated above. This relation was originally proposed on the basis of an analysis of Barai, a Papuan language, in Olson (1981), and it was labelled COSUBORDINATION. This term will be
adopted here. The fourth combination, (7d), defines a potential relation in which a clause functions as part of another clause but is fully independent of it. Parentheticals appear to have this status, but as McCawley (1982) shows, they are not really a constituent of the clause in which they occur. Another possible candidate is direct discourse complements, since they are part of but in all respects independent of the main clause. 3 Nothing more will be said about this fourth potential linkage relation, as further research is necessary in order to establish conclusively if it does in fact exist. Thus at least three of the four possible linkage relations defined in terms of embeddedness and dependence occur and are unambiguously attested in human languages: coordination, subordination, and cosubordination.

Cosubordination is distinguished from coordination in terms of dependence; they are both [-embedded]. This dependence may either be distributional, in terms of shared grammatical categories, or both. In Chuave, Fore, and Swahili both distributional and GC dependence are involved, while with respect to Jacaltec only GC dependence is found in (6). Tonkawa (Hoijer 1949) offers a minimal pair of sentences contrasting coordination and cosubordination.

In (8a) the verb in each clause has mood inflection, and the two are joined by tekeke'ek 'and then (same subject)'; this is a clear example of coordination. In (8b), on the other hand, the verb in the first clause lacks mood inflection, and its place the same-subject suffix -ta appears. Hoijer characterizes the difference between these two constructions as follows: "The difference between such a construction as [(8b)] and the construction in [(8a)] lies solely in the fact that the subsidiary verb expression tekeke'ek §a:pa-ta cannot be used independently while the two constructions united by te:ta in [(8a)] can both occur independently" (1949:40). The initial clause in (8b) exhibits both distributional and GC dependence on the second clause, and hence (8b) is a prototypical example of cosubordination.

Cosubordination differs from subordination in terms of embeddedness; they are both [+dependent], although the nature of the dependence is not identical in the two relations. Chuave presents a minimal pair differing in terms of subordination versus cosubordination.

In (9a) the verb in each clause has mood inflection, and the two are joined by tekeke'ek 'and then (same subject)'; this is a clear example of coordination. In (9b), on the other hand, the verb in the first clause lacks mood inflection, and its place the same-subject suffix -ta appears. Hoijer characterizes the difference between these two constructions as follows: "The difference between such a construction as [(9b)] and the construction in [(9a)] lies solely in the fact that the subsidiary verb expression tekeke'ek §a:pa-ta cannot be used independently while the two constructions united by te:ta in [(9a)] can both occur independently" (1949:40). The initial clause in (9b) exhibits both distributional and GC dependence on the second clause, and hence (9b) is a prototypical example of cosubordination.

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b. Yai kei si-re fu-m-e.
   man dog hit-SEQ.SS go-3sg-INDIC
   'The man hit the dog and went away.'

The initial clauses in these two sentences are both dependent upon the final clause for their occurrence, but they contrast in a number of important ways. The verb in the linked clause in (9a) carries subject inflection but no switch-reference marking; the converse is true of the verb in the linked clause in (9b). In addition, the verb in the linked clause in (9a) is marked as subordinate by -g- and carries an indicator of the temporal relation of its clause to the main clause. These differences correlate with the distinction between subordination, as in (9a), and cosubordination, as in (9b). Thurman (1975,1978) treats sentences like (9a) as true subordinate clauses, unlike (9b) which he argues is not subordinate. This agrees with the analysis presented here. The nature of the dependence is somewhat different in the two constructions. There is distributional dependence in both, but there is much greater GC dependence in (9b) than (9a). As is well known, subordinate clauses can never be interpreted as having distinct mood (illocutionary force) from the main clause. In languages like Chuave or Fore in which mood is explicitly marked on the verb in an independent sentence, subordinate clauses normally lack mood marking altogether. Since subordinate clauses represent presupposed or background information, their contents cannot be asserted or questioned; hence they are by definition independent of the illocutionary force of the main clause. Accordingly, their formal lack of mood marking does not reflect the kind of GC dependence illustrated in e.g. the Tonkawa construction (8b) in which the first clause depends upon the second for the expression of the mood which it carries. This lack of mood marking in subordination is, rather, simply the absence of an otherwise required affix, the semantic content of which is not applicable to the clause. Consequently, it could be argued that there is no real GC dependence in (9a), since the grammatical category under consideration (mood) is not actually part of the interpretation of the subordinate clause. This contrasts sharply with GC dependence in cosubordination, which may involve tense, evidential marking, mood, and person marking, all of which are part of the interpretation of the linked clause, as in (8b) and (9b).

Haiman (1983) argues that independence of the contents of the linked clause from that of the main clause is the defining characteristic of subordination; on this view, (9a) but not (9b) would be considered to be subordination, the same conclusion reached above. Thus while the linked clause is dependent upon the main clause in both cosubordination and subordination, the nature of this dependence is different in the two constructions; in addition, the linked clause is embedded in the main clause in subordination but not in cosubordination.

The examples examined thus far involve comparisons between two of the three linkage relations. Many languages, if not most, exhibit
all three. Two languages with a three-way contrast will be presented here, Jacaltec and Kewa, a Papuan language (Franklin 1971, 1983). Coordination in Jacaltec was illustrated in (5) and cosubordination in (6); examples of subordination are given in (10).

(10) a. X-∅-'ayc'ay naj bay x-∅-(y)-il naj no' PST-3ABS-fall CL/he where PST-3ABS-3ERG-see CL/he CL/the cheh. horse 'He fell where he saw the horse.'

b. X-∅-aw-abe tato ch-in to-j hecal an. PST-3ABS-2sgERG-hear that NPST-1sgABS go-FUT tomorrow lp 'You heard that I will go tomorrow.'

The subordinate clause in (10a) is adverbial, that in (10b) an object complement; both are clearly embedded in the main clause, just like the examples in (1). They are distributionally but not GC dependent upon the main clauses, as in the Chuave example in (9a). The three-way contrast in Kewa is presented in (11).

(11) a. Roto-mé tá-a pae ake-me tá-a pae? stick-AG hit-3sgPST or what-AG hit-3sgPST or 'A stick hit [him], or what was it that hit [him]?'

b. Épo lá-ri épa-wa. whistle say-SIM SS come-1sgPST 'I whistled while I came.'

c. Épo lá-lo-pulu irikai épa-lla. whistle say-1sgPRES-CAUSAL dog come-3sgFUT 'I am whistling so that the dog will come,' or 'Because I am whistling, the dog will come.'

Example (11a) is a coordinate construction, in which each of the clauses has independent mood, the first being an assertion, the second a question. (11b) exemplifies a short clause chain analogous to (2) and (3); the linkage is cosubordinate, with the initial clause being both distributionally and GC dependent upon the final clause. The final sentence, (11c), illustrates subordination; the initial clause is distributionally but not GC dependent upon the main clause. Kewa, like Jacaltec, exhibits a three-way contrast in syntactic linkage relations, thereby showing that a binary opposition between coordination and subordination cannot adequately capture the facts of clause linkage in human language.

Accordingly, any theory of universal grammar which aspires to descriptive adequacy will have to take cosubordination into account. This does not, however, entail any expansion or elaboration of the primitive components of the theory of clause linkage. If, as argued in section 1, the primitive features defining coordination and subordination are dependence and embeddedness, which is the longstanding, traditional view, then cosubordination can be derived from them in a principled way, as in (7). The recognition of co-
subordination as a possible syntactic linkage relation in universal grammar does not, therefore, require an entirely new conception of the other two relations based on a different set of primitives.

These three linkage relations may be ranked with respect to each other in terms of the tightness of the resulting syntactic link between clauses. This is represented in Figure 1.

<table>
<thead>
<tr>
<th>Coordination</th>
<th>Subordination</th>
<th>Cosubordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Dependence</td>
<td>Distributional Dependence</td>
<td>Grammatical Category Dependence</td>
</tr>
</tbody>
</table>

Weakest SYNTACTIC LINKAGE Strongest

Figure 1

Coordination is manifestly the loosest linkage type, since each clause is independent of the others and no clause functions as an argument or part of any other. Subordination involves a tighter bond between clauses than coordination, because the subordinate clause is distributionally dependent upon the main clause; it is not normally GC dependent, however. The strongest syntactic link is cosubordination, as the linked clause is typically both distributionally and GC dependent upon the main clause. Since GC dependence usually entails distributional dependence, but not vice versa (Jacaltec is an exception), it follows that GC dependence is the stronger of the two types of dependence. This is consonant with the status of cosubordination as the tightest linkage type, because it necessarily involves GC dependence. Thus the features which define these linkage relations also provide a means for ranking them in terms of the strength or tightness of the linkage.

4. All of the examples discussed so far have involved the joining of whole clauses. However, these same relations are found in complex constructions consisting of sub-clausal units. There appear to be two major types of sub-clausal linking: between reduced clauses consisting of a verb and its primary arguments, usually subject and direct object, and between verbs. Gerunds are reduced clauses of this type in English. Barai (Olson 1981) provides an interesting example of a language in which all three types of linkage occur between reduced clauses. A couple of points about Barai grammar need to be made clear. First, when whole clauses are joined, conjunctions are always used; this is illustrated in (12).

(12) a. Na iji-ia mani-ga-ro a ume iji-ia fi. Coordi-lsg DEF-LOC stand-CONJ-DS 2sg ground DEF-LOC sit nation 'I stood there, but you sat there on the ground.'
b. Ve da-mo bu-ka subi. Cosubordi-rain fall-CAUSAL-DS 3pl-INTNS run.away nation 'Rain fell, and so they really ran away.'
c. Na rua-ema ij-i a na m-a-e.  
   1sg come-PST DEF-TEMP 1sg give-2sg-PST  
"After I came, I gave it to you."

When reduced clauses are linked, they are simply juxtaposed without any kind of conjunctive element. Second, in non-subordinate linkages the verb in the linked clause cannot be inflected independently for tense or mood; there can be only one indication of these notions in the entire sentence. Third, there is a set of what Olson (1981) calls "mode particles," whose distribution is an indicator of GC dependence between the reduced clauses.

(13) a. Na e ije k-i a, bu-me va-e.  
   1sg person DEF say-3pl 3pl-CASUAL go-PST  
'I spoke to the people, and they just went.'
  
b. Na-me e ije k-i a, bu va-e.  
   1sg-CASUAL person DEF say-3pl 3pl go-PST  
'I just spoke to the people, and they went.'

(14) a. Na-ka k-i a e ije va-e.  
   1sg-INTNS say-3pl person DEF go-PST  
'I really made the people go.'
  
b. *Na k-i a e ije bu-ka va-e.  
   1sg say-3pl person DEF 3pl-INTNS go-PST  
'I made the people really go.'

(15) a. Juare ij-i a-ka ni ije g-a-ne!  
   garden DEF-LOC 2sg-INTNS IMP 3sg look-3sg-IMP  
'Look at it (there) in the garden!!'
  
b. Juare ij-i a-ka ni [mave n-one sak-a-mo]  
   garden DEF-LOC 2sg-INTNS IMP pig 1sg-POSS bite-3sg-HAB  
   g-a-ne!  
   look-2sg-IMP  
   'In the garden, really look out: my pig bites!'

The linking of reduced clauses in (13)-(15) is paratactic, whereas the joining of whole clauses, as in (12), always involves hypotaxis. The sentences in (13) consist of two reduced clauses, each of which is fully inflected for its arguments and can take a mode particle, in this case -me 'casual'. The comma between them marks a slight pause. The linkage is coordinate. In (14), on the other hand, there is no pause between the units, and the first clause lacks a full complement of independent arguments. Moreover, only one mode particle is allowed in the whole construction, and its scope must be over the whole sentence, hence the ungrammaticality of (14b). Each unit is GC dependent upon the other; the first lacks a (pro-)nominal argument, e ije 'the people' or bu 'they/them', which appears in the second unit, and the second derives its mode interpretation from the mode particle in the first. The first unit is not an argument of the second, and vice versa, and accordingly (14) is
an example of cosubordination. The second sentence in (15) illustrates the embedding of a reduced clause as the object of a verb. The embedded clause is reduced in so far as it cannot have a mode particle, it cannot have any locative or temporal adverbial modifiers, and it has only very restricted tense possibilities. Unlike (14a), the scope of the mode particle in the main clause does not include the embedded clause; (15b) does not mean '...really look out: my pig really bites.' Hence mave no-one sak-a-mo is distributionally but not GC dependent upon the main clause. This is a clear case of subordination. Thus all three linkage relations can be found between reduced clauses, as well as whole clauses, in Barai.

It is also possible to link verbs together to form a complex predicate, and two of these three linkage relations can be found in this type of construction. The type which is not found is subordination, since it is impossible for one verb to function as part of another verb. Verbs may only be added together in sequence, but it is possible for there to be dependencies among them. Serial-verb constructions provide the clearest examples of this type of construction. In Barai, aspectual markers and the negative naebe constitute the relevant grammatical categories for determining dependence in these constructions.

(16) a. Fu fase fi isoe.
    3sg letter sit write
    'He sat writing a letter.'

b. Fu fase naebe fi isoe.
    3sg letter NEG sit write
    'He did not sit writing a letter.'

c. *Fu fase fi naebe isoe.
    3sg letter sit NEG write
    'He sat not writing a letter.'

Fi isoe 'sit write' forms in essence a complex predicate in these sentences, and consequently any modifier must have both verbs in its scope, as in (16b). It is impossible to modify (negate) one but not the other, as (16c) shows. Since these verbs necessarily share a modifier, this is a form of GC dependence, and hence the linkage between them is cosubordinate. There are serial constructions in Barai in which this form of GC dependence is lacking.

(17) a. Fu vazai ufu numu akoe.
    3sg grass cut pile throw.away
    'He cut, piled, [and] threw away the grass.'

b. Fu vazai ufu furi numu akoe.
    3sg grass cut CMPL pile throw.away
    'He finished cutting, piled, [and] threw away the grass.'

The verbs in this construction can be modified independently of each other; in (17b) the scope of the completed aspect marker,
furi 'finish', is only over ufu 'cut'. Here there is no GC dependence among the verbs, since each can be modified independently of the others, and consequently the linkage relation in (17) is coordination. Thus at the level of linking verbs, coordination and cosubordination are distinguished in terms of whether modifiers such as aspect have scope over individual verbs or over the whole complex predicate.

The linkage of subclausal units, both reduced clauses as in (13)-(15) and verbs in (16)-(17), is not limited to Papuan languages and in fact is found, to a greater or lesser extent, in all languages. English infinitival complements, gerunds, and participial complements (e.g. John sat playing the guitar) are all examples of the linking of sub-clausal units. It appears, then, that in order to describe fully the syntactic relationship between two clauses in a complex construction, it is necessary to ascertain not only the nature of the linkage relationship, e.g. coordination, but also the nature of the units being joined.

In Olson (1981), Foley & Olson (in press), and Foley & Van Valin (1984) a conception of clause structure is proposed which analyzes the clause into units which correspond to those discussed above with respect to sub-clausal linkage. On this view, the clause consists of three main levels: the NUCLEUS, which contains the predicate, the CORE, which consists of the primary arguments of the nucleus, normally the subject and (direct) object, and the PERIPHERY, which contains the oblique arguments plus temporal and locative setting elements. Modifying each level of the clause is a set of operators, e.g. aspect, modality (i.e. deontic modals), tense, status (i.e. epistemic modals), and illocutionary force; there are specific operators for each level. These will not be justified here; cf. the references given above. It is important to note, however, that both the levels of clause structure and their operators can be motivated and justified entirely on the basis of simple sentences without reference to complex sentences. The layered structure of the clause with operators can be represented as in Figure 2. The peripheral operators are ordered in terms of their scope; status is the innermost and illocutionary force the outermost with scope over all of the others. The grammatical categories in terms of which GC dependence was characterized in sections 2-4 are in fact the morphological exponents of these operators and of core arguments in a clause.

The linking of two clausal units may be termed a juncture, and the type of clausal unit may be stated in terms of the layered conception of the clause given in Figure 2. Juncures involving whole clauses will be labelled peripheral junctures; potential dependence with respect to the peripheral operators is an important factor in determining the type of linkage relation (or nexus type) in the juncture. In the discussion of (2)-(6) it was the shared peripheral operators of mood (illocutionary force) and tense which led to the analysis of them as coordinate but dependent, i.e. cosubordinate. The sentences in (2)-(6) and (8)-(12) are peripheral junc-
The Layered Structure of the Clause

Figure 2

5. A full account of the syntactic relations between clauses in complex sentences required specification of both the type of juncture and the nature of the linkage, or nexus, relation between the units in the juncture. With respect to nexus, it was shown above that a binary opposition of subordination versus coordination is descriptively inadequate, but that using the same primitive features underlying it, embeddedness and dependence, a third nexus relation, cosubordination, could be established which can account for the cases which are problematic in terms of either coordination or subordination. In the discussion of nexus types, it was found that all three linkage relations are realized in peripheral and core junctures, and that only two of the three, coordination and cosubordination, occur in nuclear junctures. These juncture and nexus combinations yield a total of eight syntactic clause-linkage categories, each defined in terms of the level of juncture and type of nexus involved. These categories may be ranked in terms of the tightness of the resulting linkage, generating a Syntactic Bondedness Hierarchy [SBH] of clause linkage. It was argued in section
3 that coordination is the loosest type of nexus, cosubordination the tightest, with subordination in between (see Figure 1). With respect to juncture, the more features of full, independent clauses that the linked clause has, the less tightly bound it is to the main clause. Obviously, a whole clause is more fully sentential than just a core, which is in turn more sentential than a nucleus. Accordingly, the linked unit in a peripheral juncture is less tightly linked to the main clause than in a core juncture, and likewise the linkage is looser in a core juncture than in a nuclear juncture. These relationships may be summarized as in (18).

(18) a. Nexus:  COORDINATION ≪ SUBORDINATION ≪ COSUBORDINATION
    b. Juncture:  PERIPHERY ≪ CORE ≪ NUCLEUS

These juncture and nexus possibilities may be combined to yield the SBH in Figure 3.8

This hierarchy is not an ad hoc taxonomy of clause-linkage relations. First, as pointed out above, it is derived from the two primitive notions traditionally assumed to define coordination and subordination and an independently motivated conception of clause structure and clausal operators. Second, it provides a principled account of the well-known phenomenon of tense-aspect-mood reduction on the verb in the linked clause. In a peripheral juncture, at least some and possibly all of the peripheral operators can be expressed in the linked clause, depending upon the nexus type. In core junctures, on the other hand, the linked element is a core, and consequently illocutionary force, evidentials, tense, and status cannot be indicated in it; the occurrence of the core operator(s) is again a feature of the nexus type. Finally, in a nuclear juncture there are only two possible grammatical categories which can be expressed on the linked nucleus, and then only in coordinate nexus. It is therefore possible to predict the inflectional form of the verb in the linked unit in a complex sentence within a very narrow range of variation, given a description of the
simple, independent clause and a list of the juncture-nexus combinations in a language.

The SBH is purely syntactic in nature; it says nothing about the semantic relations between clauses (e.g. causation) which the syntactic categories may instantiate. Hierarchies of interclausal semantic relations have been proposed in Silverstein (1976, 1980) and Foley & Van Valin (1984), and they complement rather than conflict with the SBH. It is beyond the scope of this discussion to go into these semantic hierarchies in detail. However, the basic insight motivating them, which Silverstein first articulated, is that there is a direct relationship between the closeness of the semantic relation between two clauses (or sub-clausal units) and the strength of the syntactic link between them: the closer the semantics, the tighter the syntax. This idea also underlies the analysis of complementation in Givón (1980). Stated in terms of the SBH and a complementary semantic hierarchy, this principle states that the higher up the semantic hierarchy a given relation is (assuming it to be organized like the SBH), the higher up the SBH the syntactic linkage category realizing it will be. It does not follow from this, however, that every language must express a given semantic relation, e.g. causation, with the same linkage category. The interaction of syntactic and semantic relations in clause linkage is just as complex as in grammatical relations, and consequently in analyzing this domain in a language one must ascertain not only what the linkage categories are but also what semantic relations they express.

The SBH interacts with a number of other intra- and interclausal phenomena. Silverstein (1976, 1980, 1981) proposes important generalizations about the interaction of the nexus relation of the linked unit and its case marking and voice possibilities. These are stated in terms of his semantic interclausal hierarchy but can easily be expressed in terms of the SBH. Languages use a variety of means for keeping track of referents in discourse, and their interplay with the clause-linkage categories of the SBH is structured in interesting ways. For example, switch-reference is found only in peripheral junctures, primarily in peripheral cosubordination; it may also occur in peripheral coordination, as in (12a) in Barai. On the other hand, the use of multiple gender distinctions, as in English, Swahili, and Yimas (Papua New Guinea), is not restricted in this way, and the gender system operates throughout core and peripheral junctures. (See Foley & Van Valin 1984 for detailed discussion.)

6. In conclusion, the Syntactic Bondedness Hierarchy in Figure 3 represents a typology of syntactic relations in clause linkage. It is derived from two primitive features defining linkage relations, embeddedness and dependence, which generate three universal linkage or nexus types, and from the layered conception of clause structure in Figure 2, which can be motivated and justified solely on the basis of the analysis of simple sentences. This hierarchy
provides a principled account of the systematic reduction of the inflectional possibilities of verbs in the linked units in complex sentences, and it is central to the analysis of a wide range of morphosyntactic phenomena, from case marking to discourse-coreference mechanisms. The SBH thus provides a new framework for the analysis of clause linkage in natural language.

FOOTNOTES

1. I would like to thank Jeri Jaeger, Johanna Nichols, and Janet Shibamoto for comments on an earlier draft. The following abbreviations are used: ABS absolutive; AG agent; CL classifier; CONJ conjunction; DEF definite; DEP dependent; DS different subject; ERG ergative; FUT future; GC grammatical category; HAB habitual; IMP imperative; INDIC indicative; INTNS intensive; LOC locative; NEG negative; NPST non-past; p person; pl plural; POSS possessive; PRES present; PST past; SBH Syntactic Bondedness Hierarchy; SEQ sequential; sg singular; SIM simultaneous; SS same subject; SUFF suffix; TEMP temporal.

2. Fore switch-reference marking is more complex than that in Chuave, because linked verbs carry affixes indicating the subject of the following clause. These 'anticipatory subject markers' are the final affix on the verb, e.g. -na in the first two clauses in (3a). See Scott (1978) for detailed discussion.

3. This possibility was suggested by Pam Munro in the discussion after the paper was presented. A number of other possibilities were suggested, e.g. syntactic amalgams (Lakoff 1976).

4. A mode particle can only be cliticized to a pronoun, and consequently a pronominal copy of the modified noun is required.

5. This conception of clause structure is neither derived from nor dependent upon constituent structure; it applies to all languages, both configurational and non-configurational. See Foley & Van Valin (1984) for detailed discussion.

6. Negation is also a clausal operator but is omitted here because it can function at all three levels.

7. The fourth linkage possibility, [-dependent, +embedded], would be restricted to peripheral junctures. It is inconceivable that it could occur in core or nuclear junctures, since it is impossible for a core or nucleus to occur in a juncture and yet be independent of the sentence in which it occurs. As noted in section 3, direct discourse complements are a promising candidate for this nexus type, and they are fully sentential and are in no way dependent upon the main clause of the sentence in which they occur. They are clearly peripheral junctures. Much more research is required on these constructions before the distribution of this potential nexus type can be definitively established.

8. This hierarchy is proposed in Olson (1981) solely on the basis of Barai data. It should be noted that Olson uses a different set of primitives to define the nexus relations. It is also postulated and justified with data from a wide range of languages in Foley &
Van Valin (1984), where it is presented as part of the theory of Role and Reference Grammar.

REFERENCES

Control and Command in Tzotzil Purpose Clauses
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1. Introduction Tzotzil has a "motion-cum-purpose" construction exemplified below:[1]

(1) Ch-ba s-man chitom li Xune.
icp-GO A3-BUY PIG THE JUAN
'Juan will go buy pigs.'
(2) La7 k'el-o.
COME LOOK-imp
'Come look at it.'

In this construction (henceforth simply "purpose" construction) a verb of motion (e.g. ba in (1)) is followed by what appears to be a clause (e.g. sman chitom li Xune). We will say that the verb of motion combines with this clause without implying for the moment any particular syntactic analysis. The syntax of this construction is discussed in section 3. Problematic is the fact that the verb of motion cannot cross-reference the person or number of its (semantic) argument. We argue below that this verb has no free syntactic subject and that its argument is controlled by the AGENT of the clause that follows, i.e. the reference of the argument of the verb of motion is determined by the reference of the AGENT in the clause it combines with. By 'free' subject, we mean one which can be realized in surface structure by a full nominal and one whose reference is determined by discourse, not controlled. Depending on what syntactic analysis is assumed, this may entail a violation of the condition that PRO not (asymmetrically) command its antecedent.

Tzotzil is a predicate-initial, subject-final language, see (1) above. The predicate obligatorily cross-references the person (and in some cases the number) of its final subject and, if there is one, its final direct object. Tzotzil is an ergative language: one set of affixes (Set B) cross-references final intransitive subjects and direct objects; a distinct set (Set A) cross-references final transitive subjects. Set B affixes are glossed "B1, B2" (Set B, first person, etc); Set A affixes are glossed "A1, A2, A3" (Set A, first person, etc.). Pronominal arguments generally do not occur in surface structure, see (2).

We start with (1)-(2) because they can be translated by the semantically similar English construction GO/COME/RUN + VERB. The English construction is restricted in several ways (Carden and Pesetsky 1977): the first verb must be one of the three listed above, the second verb is not preceded by to, and
neither verb may be inflected (*He went get/got it*).

The Tzotzil construction is peculiar in none of these ways. The verb of motion (henceforth V1) may be selected from a class of about twelve intransitive verbs of motion, including:[2]

(3) tal ˈcomeˈ   la ˈcomeˈ (imp)
    ba ˈgoˈ (<bat)  7a(y) ˈwentˈ (<7ay)
    7echˈ ˈpass byˈ  yul ˈreturn homeˈ
    kˈot ˈarriveˈ   kom ˈremainˈ

Like other verbs, V1 may occur in the indicative, subjunctive, or imperative modes. If indicative, V1 is inflected for one of three aspects: incompletive, completive,[3] or perfect. The second verb (V2), on the other hand, does not inflect for aspect. This is because V2 occurs in the so-called ˈsubjunctiveˈ mode which distinguishes no aspects. In the case of transitive stems, the subjunctive consists simply of the stem. This is illustrated by (1)-(2) above. The subjunctive of intransitive stems is formed by suffixing -ik (-uk word-finally) to the stem. The (a) sentences which follow are examples of the purpose construction; V2 is in the subjunctive. The (b) sentences are simple clauses; the verb is in the indicative.[4]

(4a). Tal nak[a]1-uk li krixchanoe. [0 155]
    CAME LIVE-subj THE PEOPLE
    ˈThe people came to live [there].ˈ

    b. Te nakal li krixchanoe.
    THERE LIVE THE PEOPLE
    ˈThe people live there.ˈ

(5a). Tal 7elkˈaj-uk ta Mukˈta Jokˈ. [0 129]
    CAME STEAL-subj at Mukˈta Jokˈ.
    ˈThey came to steal at Mukˈta Jokˈ.

    b. Ch-7elkˈaj.
    ˈTheyˈre going to steal.ˈ

(6a). Tal chonolaj-ik-on.
    CAME TRADE-subj-BL
    ˈI came to trade.ˈ

    b. L-i-chonolaj.
    cp-BL-TRADE
    ˈI traded.ˈ

What is peculiar about this purpose construction is that V1 cannot cross-reference the person or number of its understood argument. In general, a verb which bears no agreement affixes is necessarily interpreted as intransitive and as having a third person subject. This is because only third person absolutes cross-reference with Ø:
(7) X-tal.
   'He/she/it/they come.'

If tal is to be interpreted as having a second person plural argument it must bear overt agreement affixes (here the B2 prefix and 2p1 suffix):

(8) X-a-tal-ik.
    nt-B2-COME-2p1
    'You (all) come.'

But despite the lack of overt affixes, V1 in the purpose construction can be interpreted with a second person plural argument:

(9) X-tal 7a-tek'-ik-on. [0 145]
    nt-COME A2-STEP-2p1-B1
    'You (all) will come and step on me.'

Similarly, ba in (10a) is understood to have a first person plural argument, despite the absence of the affixes which are otherwise required for such an interpretation (B1 and lplexc in (10c)):

(10)a. Ba j-ta-tikotik j7ilol. [W]
    WENT A1-FIND-lplexc SHAMAN
    'We went to find a shaman.'
  b. Bat.
     'He/she/it/they went.'
  c. L-i-bat-otikotik.
     cp-B1-GO-lplexc
     'We went.'

It is clear enough why we get these interpretations despite the lack of morphology: the argument of V1 is necessarily coreferential with the subject of V2 and V2 does cross-reference its subject (by A2 and 2p1 in (9) and A1 and lplexc in 10a)). However, the failure of V1 to cross-reference its argument still requires an explanation, and it is to this problem that we now turn.

2. Control We will assume that predicates always cross-reference their final subjects and direct objects (and further that they only cross-reference their final subjects and direct objects). This means that V2 governs a final subject and, when transitive, a final direct object as well. On the other hand, the failure of V1 to cross-reference its (semantic) argument is a syntactic problem only if V1 has a final subject whose syntactic person and number match those of its argument. The absence of agreement suggests then that V1 has no syntactic subject (or at least not one with
any syntactic features). Several other facts support this claim.

2.1. -at Passives In the examples cited above, V1 combines with an active clause. But it can also combine with a passive clause. Passive clauses take two forms in this construction; we deal with the less frequent type first. (11) is an example of a passive clause:

(11) L-i-7ak'-b-at jmoton y-u7un kamikotak.
    cp-B1-GIVE-io-pass MY-PRESENT A3-BY MY FRIENDS
    'I was given my present by my friends.'

'I' is initial indirect object; it advances to direct object and then to subject. The verbal affix -b marks the advancement of indirect object to direct object, and -at marks the advancement to subject, i.e. passive. The passive agent functions syntactically as possessor of the noun stem -u7un. The function of -u7un here is simply to present the agent in passive sentences. The possessor is cross-referenced on -u7un by set A affixes.[5]

The result of combining (11) with a verb of motion is (12). Because V2 is passive, it is intransitive, and therefore suffixed with the subjunctive suffix -ik:

(12) 7ech 7ak'-b-at-ik-on jmoton
    PASS GIVE-io-pass-subj-B1 MY PRESENT
    y-u7un kamikotak.
    A3-BY MY FRIENDS
    'My friends passed by to give me my present.'

What is crucial here is that the argument of 7ech (V1) is coreferential with the passive agent.[6] Furthermore, this nominal has the form appropriate for passive agents (possessor of -u7un), not the form appropriate for subject of V1 (a bare nominal). This nominal can only have the form appropriate to passive agents. (13) is ungrammatical because the argument of 7ech is named by a bare nominal:

(13) *7ech 7ak'-b-at-ik-on jmoton kamikotak.
    PASS GIVE-io-pass-subj-B1 MY PRESENT MY FRIENDS
    ('My friends passed by to give me my present.')

Presumably kamikotak 'my friends' has the form appropriate to a passive agent because it is a passive agent, hence a syntactic dependent of V2, not V1. The impossibility of (13) is most straightforwardly explained if V1 has no free subject: it either has no subject or its subject is PRO, controlled by the AGENT
of V2. Since PRO has no syntactic features, it will not cross-reference on the predicate.

2.2. -el Passives The passive clause with which V1 combines may take a second form. This construction is more common than the one exemplified by (12): all speakers accept it, and the argument of V1 can only be interpreted as coreferential with the passive agent (see fn. 6). In this case, -el is suffixed to V2. It is plausible to think that -el conflates whatever is expressed by the passive and subjunctive suffixes, for neither suffix cooccurs with -el. [7] Because the complement predicate is intransitive, the derived subject is cross-referenced by set B affixes (e.g. B2 in (14)). The agent phrase is expressed as above, as possessor of -u7un:[8]

(14) 7a ti x-tal s-tzak-el-ot. [0 232]
    IF nt-COME A3-ARREST-pass-B2
    'If they come to arrest you.'

(15) 7a s-k'el-el y-u7un taj solteroetik...[0 25]
    CAME A3-LOOK-pass A3-BY THOSE SOLDIERS
    'Those soldiers came to look at him.'

(16) 7a y-ak'-b-el-on. [0 217]
    WENT A3-GIVE-io-pass-B1
    'They came to give it to me.'

(17) 7ay s-pajes-el y-u7un li mayoletike.
    WENT A3-STOP-pass A3-BY THE POLICE
    'The police went to stop him.'

In (14), for example, "you" is initial direct object of tzak 'arrest'; it advances to subject and as final subject it is cross-referenced by the B2 suffix. The AGENT in (14) is indefinite and therefore unexpressed. The derived subject of V2 in (15) is third person, 'him', hence it is not overtly cross-referenced. The initial subject, taj solteroetik 'the soldiers', has the form of a passive agent (possessor of -u7un). In all these examples, the argument of the verb of motion is necessarily coreferential with the agent of V2, expressed or not, and as noted, this is the only possible interpretation if V2 forms its passive with -el. As with the passive complements discussed earlier, when this individual is named, it must have the form appropriate to passive agents. (18)-(19) are ungrammatical because the AGENTS are expressed as bare nominals. This is the form we would expect if these nominals were subjects of V1.

(18) *Ch-tal s-tzak-el Xun li agenteetike.
    icp-COME A3-GRAB-pass JUAN THE AGENTS
    ('The agents came to arrest Juan.')
(19) *Ba s-sa7-el Xun li yajnil 7une.
    WENT A3-SEEK-pass JUAN THE HIS-WIFE cls
    (Juan's wife went to look for him.)

soldertoetik 'soldiers' in (15) and mayoletik 'pol-
ice' in (17) are presumably expressed as passive agents
because they are passive agents. Hence they are syn-
tactic dependents of sk-elel and spajesel (V2), not
of tal and 7av (V1). The ungrammaticality of (18)-
(19) is explained straightforwardly if V1 has no free
subject. It must either have no subject or its subject
must be PRO, controlled by the AGENT of V2. Hence, the
properties of this construction support the earlier
conclusion: V1 does not have a free subject. If it did,
it would be possible to express it overtly, and it is
not.

2.3. 7ich Complements We consider now a third case
in which the argument of V1 is controlled by the AGENT
of the clause with which V1 combines. In this case,
the clause in question is complex, headed by the verb
7ich which means 'get, receive' when it occurs
without a complement. 7ich can also govern a com-
plement clause, however, and when it does, the whole
construction is semantically passive though syntacti-
cally active. The complement to 7ich is passive,
and is formed by the suffix -el, which we have
already discussed:

(20) 7av-ich 7il-el. [0 287]
    A2-GET SEE-pass
    'You were seen.' (lit: 'You got seen'.)

Although (20) is synonymous with a simple passive
clause (e.g. with L-a-7il-at cp-B2-SEE-pass 'you were
seen'), we assume that (20) is an initially complex
structure in which the initial subject of 7ich is
'you'. 'you' is also understood to be initial direct
object of 7il. Note that 7il cross-references no
syntactic arguments. This is because the initial
direct object of 7il is PRO, which is never cross-
referenced. PRO advances to subject where it is con-
trolled by the subject of 7ich. What we are claim-
ing then is that 7ich takes a complement clause
whose passive subject is necessarily controlled by the
subject of 7ich. Although these complex structures
are not syntactically passive, we will refer to them as
7ich passives.[9] Sentences like (20) entail an
agent.[10]

A verb of motion can combine with an 7ich passive. As predicted, the argument of V1 is controlled
by the AGENT of the 7ich passive. Consider first
the following textual example, reproduced as (b) below,
with the text that precedes it given in (a):

(21)a. There was a rabbit who came to steal fruit.
   The owner of the fruit arrived. The rabbit
   was caught and tied up.
   The owner of the fruit said:
   b. "70k'ob x-tal y-ich' mil-el." [0 66]
      TOMMOROW nt-COME A3-GET KILL-pass
         'Tomorrow I will come and kill it.'

In (21b), the verb of motion, xtal 'come' combines
with the 7ich' passive yich' milel 'it be killed'.
The subject of yich' is a pronoun interpreted as
referring to the rabbit. The argument of V1, however,
is interpreted as coreferential with the AGENT of the
7ich' passive, namely, the speaker. Note that the
AGENT is not overtly expressed in (21b) Indeed, it can-
not be because first persons cannot be overt passive
agents in Tzotzil. In (21b), the reference of the
AGENT is determined pragmatically, but once determined,
it determines the reference of the argument of V1.

Haviland (nd:244) cites a similar example:

(22) Ch-7ech' av-ich' 7ik'-el.
     icp-PASS A2-GET TAKE-pass
     'Someone is going to pass by to get you.'

Here, the verb of motion 7ech' 'pass' combines with
the 7ich' passive 'you be taken'. Again, the argu-
ment of V1 is interpreted as coreferential with the
AGENT of the 7ich' passive, again unexpressed.

We have shown that the argument of V1 is con-
trolled by the AGENT of the clause with which V1 com-
bines, but we have not explicitly shown that the con-
troller cannot be characterized syntactically. We can
now do this. The controller can be characterized
syntactically in examples (1-2), in the (a) sentences
of (4-6), and in (9), (10a), (12), and (14-17) as INI-
TIAL SUBJECT of V2. In all these cases, the AGENT of
V2 is the initial subject of V2. However, in (21b) and
(22), the initial subject of V2 is the PATIENT of the
clause with which V1 combines, not the AGENT. Where
the AGENT and INITIAL SUBJECT do not coincide, it is
the AGENT which controls the argument of V1, not the
INITIAL SUBJECT. We conclude then that the argument of
V1 is controlled by the AGENT of the clause V1 combines
with, not the INITIAL SUBJECT.

3. Three Analyses We assume now that V1 has no free
subject. If it had one, we would have to explain why
it does not cross-reference on V1 and why it cannot
occur in surface structure. We now turn to the ques-
tion of the syntactic relation between the verb of
motion, V1, and the clause headed by V2. There are basically three possibilities.

3.1. Control Structure The first is that V1 heads a clause distinct from that headed by V2. Under this analysis, V1 presumably governs a PRO subject:

(23) 

PRO is controlled by the AGENT in the complement. Passives like (14)-(17) and (12) would be the result of passivizing the complement clause. The main problem with this analysis is that PRO (asymmetrically) commands its controller, a configuration which is generally ruled out (see especially Bresnan 1982). This is so whether command is defined on constituent structure (as in transformational grammar, e.g. Chomsky 1981) or on functional structure (as in Lexical Functional Grammar, Bresnan 1982).[11]

3.2. Auxiliaries A second possibility is that V1 does not head a clause, but is an auxiliary in the clause headed by V2:

(24) 

V2 must be stipulated as the head of S to explain why only V2, and not V1, cross-references the subject and direct object. Passives like (14)-(17) and (12) are derived simply by passivizing the structure in (24). This analysis does not entail violations of the command condition for the simple reason that V1 has no syntactic subject distinct from the subject of V2. It is still necessary, of course, to account for the fact that V1 has an argument whose interpretation is determined by the AGENT in S. Two facts noted earlier might lend mild support to this analysis, though they certainly do not force it. One is that two verbs which can function as V1 (ba 'go' and 7a 'went') are phonologically reduced (from bat and lay). The other is that completive aspect is systemically unmarked only with these verbs. On the other hand, although V1 lacks some properties of other main verbs (notably the government of a free subject), it governs V2 in the
sense that it determines its form as subjunctive. If the structure in (24), together with the stipulation that V2 heads S, entails that V1 is optional, then (24) is the wrong structure. For recall that passives formed by -el cannot head independent clauses: they occur only in complements (as in (20), (21b), footnote 9, ex. (a)), and under (24), with verbs of motion.

3.3. Clause Union A clause union analysis may also be possible. We have not had the opportunity to work out the details of such an approach, but hope to do so in a later paper. Under a clause union analysis, V1 and V2 would be predicates of separate clauses in initial structure, but co-predicates of a single clause in final structure. In a sense, clause union posits each of the structures posited by the approaches sketched above, but posits them at different levels. Once the two clauses are united, Passive is possible on the output of Clause Union, resulting in sentences like (12) and (14)-(17). With this approach, it may be possible both to posit a free subject for V1 in initial structure, and to avoid violations of the command condition. But this remains to be worked out.

4. Conclusion In Tzotzil, verbs of motion can combine with a clause in the subjunctive yielding a construction with the sense "go somewhere to do something". The verb of motion appears to be a full-fledged verb, inflecting for the various verbal aspects and, like some other verbs, governs a clause in the subjunctive. Although the verb of motion is predicated of an individual (the moving entity), in surface structure at least, the verb governs no free subject which names its argument. The agent of the subjunctive clause controls the argument of the verb of motion. It is fairly clear what the range of possible syntactic analyses is, but we have not argued for any one of them over the others. We have simply pointed out some of their consequences.

Footnotes

[1] I have profited from Haviland's (nd) discussion of this construction. Textual examples are cited by page from Laughlin 1975 (GTD), Laughlin 1977 (O), and Weather 1950 (W). Examples cited without a source are from my fieldnotes and represent the judgments of several speakers from the municipality of Zinacantan, in the state of Chiapas, Mexico. x=[x]; j=[h]; 7=[?]; tz and ch represent alveolar and alveopalatal affricates; C' represents the glottalized counterpart of C. The abbreviations used in the glosses are the following: asp-aspect; cp-completive aspect; icp-incompletive
aspect; nt-neutral aspect; imp-imperative; fut-future; subj-subjunctive; Al(2,3)-set A, first (second, third) person; Bl(2)-set B, first (second) person; pass-passive; pl-plural; lplexc-first person plural exclusive; io-suffix marking advancement of indirect object to direct object; cl(s)-clitic(s); top-topic.
In Tzotzil examples, [] encloses material which is regularly deleted; in translations, [] encloses material which is provided pragmatically.

[2] Note that two verbs are phonologically reduced in this construction (ba < bat and 7a (optionally) < 7ay).

[3] One peculiarity of this construction is that the completive form of V1 is usually Ø; otherwise, the completive is usually (not always) overtly marked.

[4] The causative verb 7aké 'have, let' requires its complement in the subjunctive too:

(a) Mu x-[y]-aké j-ti7. [0 278]
   NOT nt-A3-LET A1-EAT
   'She doesn't let me eat them.'
(b) Mu x-[y]-aké loké-ik-on. [GTD 40]
   NOT nt-A3-LET LEAVE-subj-B1
   'He won't let me leave.'

Because the complement in (a) is transitive, the subjunctive is unmarked. The complement in (b) is transitive so the verb is suffixed with -ik. 7aké does optionally trigger Clause Union in Tzotzil (see Aissen (1983)), but (a) and (b) are not examples of it.


[6] Some speakers apparently can interpret the subject of V1 as coreferential with the derived subject of V2 when V2 is passive. Haviland (nd:309) cites (a) below, and Cowan (1969:15) cites (b):

(a) 7Ali Petule, kom maj-e-uk.
   top PEDRO STAY HIT-pass-subj
   'Pedro stayed to be beaten.'
(b) Jul 7aké-b-at-ik-un.
   RETURN HOME GIVE-io-pass-subj-B1
   'I returned home and was given it.'

[7] Independent clauses never take this form:

(a) *S-tzak-e1-ot.
   A3-GRAB-pass-B2
   ('You were arrested.')
[8] The claim that these are passive clauses (hence intransitive) is not straightforward since the verb obligatorily bears an A3 prefix, a prefix which otherwise cross-references only transitive subjects of verbs or possessors of nouns. The A3 prefix which occurs in this construction, however, appears to cross-reference neither, and we regard it as a morphological dummy, i.e. a set A marker which cross-references nothing. If it did cross-reference something, it would presumably cross-reference the AGENT of V2, since that is the only third person entity around in (15), for example. But this is unlikely since the AGENT of V2 is not a final ergative (it is possessor of -u7un). Further, if the A3 affix did cross-reference the AGENT of V2, it should be able to cooccur with the third person plural suffix -ik, a suffix which otherwise optionally cooccurs with A3 and cross-references the plurality of the cross-referenced nominal.

(a) *Tāl s-tzak-el-ik-on.
   COME A3-GRAB-pass-3pl-B1
   (´They came to arrest me.´)

(b) *Tāl s-k’opon-el-ik-ot.
   COME A3-ADDRESS-pass-3pl-B2
   (´They came to talk to you.´)

Compare (a) with (c), where V1 combines with an active clause:

(c) Tāl s-tzak-ik-on.
   COME A3-GRAB-3pl-B1
   (´They came to arrest me.´)

In (c), A3 does cross-reference the person of the AGENT, since the AGENT is the final subject of V2. Therefore -ik can cross-reference its plurality.

-el does derive nominals which are passive in sense from transitive verb stems. In these constructions, the deverbal nominal is possessed by a nominal interpreted as its (underlying) direct object and such nominals can, in fact, combine with verbs of motion. However, examples (14)-(17) in the text are not of this sort. The constituent headed by A3-V-el is not a nominal, but a clause. Note that the nominal understood as underlying direct object is not cross-referenced by a set A prefix, as it would be if it were possessor of a deverbal nominal, but by a set B suffix.

[9] The syntax and control principles involved here are identical to those of complex structures governed by k´an ˝want˝, and this is the main reason for assuming that 7ich ˝passives are initially complex. If they are, no additional syntactic or control rules are
required beyond those required for k’än. The predicate of the complement to k’än also has the form [transitive verb stem + el] and its passive subject, PRO, is controlled by the subject of k’än.

(a) Ta j-k’än 7il-el.
icp Al-WANT SEE-pass
‘I want to be seen.’

Only when the complement is passive is control of the subject possible. When the subject of k’än is coreferential with something other than the passive subject in the complement, there is no control and the complement verb is fully inflected:

(b) Ta j-k’än x-i-bat.
icp Al-WANT nt-B1-GO
‘I want to go.’

Unlike k’än, 7ich only takes a passive -el complement.

[10] However, I am not sure whether an agent can be overtly expressed.

[11] Craig (1977) proposes an analysis like this for similar facts in Jacaltec, a related language. When V2 is intransitive, V1 cross-references the person and number of its argument and V2 does not:

(a) Xc-ach to ašnoj ... (314)
asp-B2 WENT TO BATHE
‘You went to bathe.’

But when V2 is transitive, V2 obligatorily cross-references its subject, while V1 does so only optionally:

(b) Cañañal ch-in to w-il-a7. (323)
DANCE asp-B1 GO Al-SEE-fut
‘A dance I’m going to see.’

(c) Cañañal x-to w-il-a7. (323)
DANCE asp-GO Al-SEE-fut
‘A dance I’m going to see.’

(c) is structurally like the Tzotzil purpose construction; Craig proposes that (c) involves (Equi) deletion of the main subject controlled by the complement subject (a violation of the command condition). In all the examples Craig cites, the complement clause is active. She does not note whether passive complements are possible.
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A SEMANTIC BASIS FOR THE CHOICE OF COMPLEMENT CLAUSE TYPES IN CHAMORRO.*

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In Chamorro, an ergative Austronesian language spoken on the Mariana Islands, certain restrictions apply on the syntactic coding of complement clauses. In this paper I will show that the choice the speaker makes as to which coding device must and/or can be used is entirely dependent on the semantic nature of the main verb. In particular, I will concern myself with two types of complement taking verbs: i) manipulative or control verbs whose Agent exerts some influence on the action performed by another Agent in the proposition of the complement clause, and ii) modality verbs where the action described in the proposition of the complement is self-induced by the Agent of the main clause. I will show that the choice of complement coding is directly related to the notion of logical implicativity and the notion of degree of control on the part of the Agent of the main verb over the action in the complement. The Chamorro data thus provide further evidence for the hierarchy of "binding" proposed by Givón (1980) (cf. section 4).

1. Types of Complement Clauses.

There are two syntactic coding devices attested in Chamorro for complements of control and modality verbs. The first one involves the absence of any kind of complementizer separating the complement clause from the main clause, and the insertion of the -UM- infix between the first consonant and vowel of the verbal root. Example:

(1) Ha- na' para si Juan si Maria k-um-anoo'
   E.3s-CAUS-stop P.N. Juan P.N. Maria    UM-eat
   i mansana.
   the apple.
   "John stopped Mary from eating the apple."

The second introduces each complement clause with a complementizer and the verb is marked for for irrealis mood:

(2) Ha- angongokko si Maria na u- sodda'
   E.3s-RED-expect P.N. Maria COMP IRR.3s-find
   i asagua-ña gi gima'.
   the spouse-3s.POS LOC house
   "Maria expected to find her husband home."

Following the selection pattern of complement types both control and modality verbs fall into different categories which will be described and discussed below.
2. Manipulative Verbs.
According to the selected complement type, verbs within this class fall into two major categories. The first class allows only -UM- type complements. As (3) shows, na'para "stop" belongs to this category.

(3) *Ha- na'- para si Juan si Maria na/para
   E.3s-CAUS-stop P.N. Juan P.N. Maria
   u- kanno' i mansana.
   IRR.3s-eat the apple
   "John stopped Mary from eating the apple."

(This sentence could actually be grammatical in the marginal sense of "John stopped Mary who was about to eat the apple.")
Other examples of manipulative verbs fitting in this class are ataha "prevent", and ayuda "help".

(4) a. In- ataha i Chapanes h-um-atme iya Guam.
   E.1Pl-prevent the Japanese UM-invade place Guam
   "We prevented the Japanese from invading Guam."
   b. *In- ataha i Chapanes na/para u- hatme
   E.1Pl-prevent the Japanese COMP IRR.3s-invade
   iya Guam.
   place Guam
(5) a. Ha- ayuda si tata- hu i che'lu- hu
   E.3s-help P.N. father-1sPOS the sibling-1s.POS
   um-arekla i kareta.
   UM-fix the car
   "My father helped my brother fix the car."
   b. *Ha- ayuda si tata- hu i che'lu-hu
   E.3s-help P.N. father-1s.POS the sibling-1s.POS
   na/para u- arekla i kareta.
   COMP IRR.3s-fix the car

Verbs of the second class take only those complements which are separated from the main clause by a complementizer and in which the embedded verb is marked for irrealis. Verbs belonging to this category include malago' "want", kombida "invite", ekspekta/angokko "expect, trust", sangani "tell", sedi "allow", prohibi "forbid", afuetsas/obligao "force, oblige, compel", otden "order", etc. Examples:

(6) a. Ha- otden si Juan si Maria na u-
   E.3s-order P.N. Juan P.N. Maria COMP IRR.3s
   hokka i niyok.
   pick the coconut
   "John ordered Mary to pick the coconut.
   b. *Ha- otden si Juan si Maria h-um-okka i
   E.3s-order P.N. Juan P.N. Maria UM-pick the
   niyok.
   coconut
(7) a. Hu- malago’i i asagua-hu na u-
   E.1s-want -PRO the spouse-1s.POS COMP IRR.3s-wash
   fagasi i kareta.
   the car
   "I want my husband to wash the car."
   b. *Hu- malago’i i asagua-hu f-um-agasi i
   E.1s-want PRO the spouse-1s.POS UM-wash the
   kareta.
   car

The major distinction between manipulative verbs of the first and the
second class is that the verbs of the former are all logically implicative. Of
the three examples given, one, i.e. ayuda "help", is positively implicative,
i.e. the truth of the whole sentence implies necessarily the truth of the
complement, whereas the other two, na para "stop" and alaha "prevent"
are negatively implicative, i.e. the truth of the whole sentence implies
necessarily that the embedded complement is false. Thus, if it is true that
my father helped my brother fix the car, it is necessarily true that my
brother was fixing the car. Similarly, if it is true that John stopped Mary
eating the apple, it is logically necessary that Mary, as a result, did not
eat the apple.
This condition does not apply to the second class of manipulative verbs. If
Mary is ordered to pick the coconut, she can ignore this order, not pick
the coconut, and the whole sentence could still be true. Notice that for
most speakers of English the verb "force" is implicative. Yet in Chamorro
it seems not to be. Under normal circumstances afuetsas only allows the
second type of complement. However, the -UM- construction can be used
in the embedding under this verb, but produces a rather forced meaning as in (8):

(8) Ha- afuetsas si Juan si Maria k-um-anno’i
    E.3s-force P.N. Juan P.N. Maria UM-eat the
    mansana.
    apple
    "John forced the apple into Mary’s mouth." (loose tr.)

The selection of -UM- here explicitly grants more control to the Agent of
the manipulative verb. Mary has no choice in this case but to eat the
apple or choke.
It is this measure of control which also plays a role in the subcategoriza-
tion of the manipulative verbs. Notice that in all the examples above the
Agent/subjects of the complement clauses function as direct objects of the
main clause. The question arises whether this Agent/subject is ever
allowed to remain within the embedding. As it turns out, manipulative
implicative verbs which only allow the -UM- type complement do not
allow the Agent/subject of the complement to remain within the embed-
ding:
(9) *Ha- ayuda si tata-hu um-arekla i
    E.3s-help P.N. father-1s.POS UM-fix the
    che'lu-hu i kareta.
    sibling-1s.POS the car
"My father helped my brother fix the car."

Changing the type of complement does not legitimize this kind of structure
either:

(10) *Ha- ayuda si tata-hu na/para u-
    E.3s-help P.N. father-1s.POS COMP IRR.3s-
    arekla i che'lu-hu i kareta.
    fix the sibling-1s.POS the car

The second class of manipulative verbs splits up into two categories, i.e.
those which allow the embedded Agent/subject to remain within the com-
plement, and those which require its presence in the main clause. Verbs
like malago'i "want", sedi "allow", ekspekta "expect", etc. belong to the
former category, whereas afuetsas "force", obligao "oblige, compel", and
sangani "tell" belong to the latter. Examples:

(11) a. Ha- obligao i ma'estro i patgon para
    E.3s-compel the teacher the child COMP
    u- cho'gue i estudia-ña.
    IRR.3s-do the study-3s.POS
"The teacher compelled the child to do his homework."

b. *Ha- obligao i ma'estro para u- cho'gue
    E.3s-compel the teacher COMP IRR.3s-do
    i patgon i estudia-ña.
    the child the study-3s.POS

(12) a. Ha- prohibi si Tun Jose i primu-hu
    E.3s-forbid P.N. Uncle Joe the cousin-1s.POS
    na u-dingu i gima'.
    COMP IRR.3s-leave the house
"Uncle Joe forbade my cousin to leave the house."

b. Ha- prohibi si Tun Jose na u-dingu
    E.3s-forbid P.N. Uncle Joe COMP IRR.3s-leave
    i primu-hu i gima'.
    the cousin-1s.POS the house
"Uncle Joe forbade that my cousin should leave the	house."

Observe that the meaning of (12) b. allows for an interpretation of an
indirect order, i.e. Uncle Joe told someone else that my cousin should not
leave the house. Thus, leaving the Agent/subject of the complement
clause within the embedding implies some reduced control of the Agent of
the main clause over the Agent in the embedded complement. The pre-
rence of the the Agent/subject of the embedded clause in direct object posi-
tion in the main clause, allows the Agent of the main clause to act
directly, without a mediator, on that referent. What is involved here then
is a measure of direct vs. indirect control.
It is obvious that for an Agent to be successful in making someone do (or, as the case may be, not do) something, direct control is required over the individual one wants to perform (or not perform) a certain activity. Hence, the implicative manipulative verbs require the Agent/subject of the complement to be in their range of direct control, viz. in the direct object position of the main clause.

Furthermore, some non-implicative manipulative verbs semantically require some kind of direct control over the manipulated Agent in the complement. Whereas it is conceivable to issue an order, an invitation, etc. indirectly to get someone to perform a certain activity, verbs like "force" and "tell" require direct control by the manipulator over the manipulee. Hence they require the Agent/subject of the complement to function as direct object in the main clause, since this codes the referent as being within the direct range of control of the Agent of the main clause.

Summarized we can say that the Chamorro verbs of manipulation we have talked about so far fall into three distinct categories: i) manipulative implicative verbs which require the -UM- construction in the embedded complement, ii) manipulative non-implicative verbs which semantically require direct control by its Agent over the manipulated Agent in the complement clause. As such the Agent of the complement must be present in direct object position in the main clause. The embedding is separated from the main clause by a complementizer and the embedded verb is marked for irrealis mood. And iii) manipulative non-implicative verbs which allow direct or indirect control over the Agent in the complement. They, like the verbs of the second category, take complements introduced by a complementizer with irrealis marked verbs, but do not require the embedded Agent/subject to function as the direct object of the main clause.

The facts concerning the selected complement clause types under modality verbs are similar to those described for manipulative verbs and require a similar explanation. The modality verbs I looked at also fall into three categories. The first category of modality or self-inducement verbs is restricted to taking only -UM- type complements. Verbs which belong here include na'para "stop", na'possibili "manage/succeed", na'fonghayon "finish/accomplish", tutuhon "start", letke, eskapayi "avoid", hasso "remember", maleffa "forget", etc. Examples:

(13) a. Ha- na'possibili i asagua-hu p-um-uno'  
E.3s-manage the spouse-1s.POS UM-kill  
i  kukuracha.  
the cockroach  
"My wife managed to kill the cockroach."

b. *Ha- na'possibili i asagua-hu na/para  
E.3s-manage the spouse-1s.POS COMP  
u- puno' i kukuracha.  
IRR.3s-kill the cockroach
(14) a. Ha- le- letke i asagua-hu f-um-agasi
   E.3s-RED-avoid the spouse-1s.POS UM-wash
   i kareta-n-mami. the car- N-1Pl.POS
   "My husband has been avoiding washing our
   car."

b. Ha- le- letke i asagua-hu na/para
   E.3s-RED-avoid the spouse-1s.POS COMP
   u-fagasi i kareta-n-mami. COME
   IRR.3s-wash the car- N-1Pl.POS

(15) a. Maleffa yo' mu-na'- hanao este i katta.
   forget A.1s UM-CAUS-go this the letter
   "I forgot to send this letter."

b. *Maleffa yo' na/para bai-hu-na'- hanao
   forget A.1s COMP IRR.1s-CAUS-go
   este i katta. this the letter

Just like with the manipulative verbs, verbs of modality which are re-
stricted to taking only -UM- type complements, are all implicative. Eksa-
payi, letke, and maleffa are negative implicative, i.e. if it is true that X for-
got or avoided to do Y, then it necessarily follows that Y was not accom-
plished. Na'para, na'possibili, tutuhon, na'fonhayan, and hasso on the other
hand are positive implicative and the truth of the whole sentence logically
implies the truth of their complements. Non-implicative verbs again fall
into two categories. Syntactically they are distinguished in that one class
allows both constructions in which the verb takes the -UM- infix and
which are not separated from the main clause by a complementizer, and
constructions preceded by the complementizer with the irrealis marking on
the embedded verb.
Verbs like chagi "try", komfotme "agree", ma'añao "be afraid", renunsia
"refuse", disidi "decide", and malago' "want" allow both construction
types.

(16) a. Hu- komfotme k-um-uentusi i ma'gas.
   E.1s-agree UM-talk to the boss
   "I agreed to talk to the boss.

b. Hu- komfotme para bai-hu-kuentusi i ma'gas.
   E.1s-agree COMP IRR.1s-talk to the boss
   "I agreed that I will talk to the boss."

(17) a. Ti malago' i asagua-hu f-um-ahan
   NEG want the spouse-1s.POS UM-buy
   ayu i niyok-siha.
   that the coconut-Pl
   "My wife did not want to buy those coconuts."

b. Ti malago' i asagua-hu na u-
   NEG want the wife- 1s.POS COMP IRR.3s-
   fahan ayu i niyok-siha.
   buy that the coconut-Pl
   "My wife did not like to buy these coconuts."
(18) a. Ma’añao i lahi-hu um-egg’a
   afraid the son-1s.POS UM-watch
   este na mubi.
   this link movie
   "My son is afraid to watch this movie."

b. Ma’añao i lahi-hu na u-
   afraid the son-1s.POS COMP IRR.3s
   egg’a este na mubi.
   watch this link movie
   "My son is afraid lest he should see
   the movie."

Verbs like angokko "expect, trust" and ekspekta belong to the second sub-
category. They do not allow -UM- constructions in their complements. Compare (2) with (19):

(19)*Ha- angongokko si Maria s-um-odd’a’ i
   E.3s-RED-expect P.N. Maria UM-find the
   asagua-hu gi gima’.
   spouse-1s.POS LOC house
   "Maria was expecting to find her husband home."

(20) a. Ha- ekspekta si Juan na u- hoksa
   E.3s-expect P.N. John COMP IRR.3s-build
   i gima’.
   the house
   "John expected to build the house."

b. *Ha- ekspekta si Juan h-um-oksa’ i
   E.3s-expect P.N. John UM-build the
   gima’.
   house

It is obvious one cannot invoke the measure of direct control by the Agent
of the main clause over the Agent of the complement clause to explain the
discrepancy observed in the above example. Yet, it is still some sense of
control of the Agent of the main clause over the action in the embedded
complement which plays a major role. The semantics of the main verb
"expect" in (2) and (20) imply to some degree that the completion of the
event described in the proposition of the complement is dependent on cir-
cumstances independent of the will of the Agent of the main clause. The
Agent has no control over the event itself. The semantics of modality
verbs which allow both types of complements, such as "want" in (17),
"agree" in (16) and "be afraid of" in (18) still allow for some control over
the event in the embedding. Yet, the suggested interpretations of these
sentences when taking just that complement type to which ekspekta and
angokko are restricted, provide some evidence that the explanation for the
discrepancy between the two subcategories of non-implicative modality
verbs on the basis of a semantic measurement of control is correct. In (17)
b. "my wife" may not have had a choice if there were no other coconuts
available. Similarly, (18) b. implies that my son is afraid he may find
himself in a situation in which he is forced to watch the movie he’d rather
not see. Another such example was volunteered by one of the native
speakers I worked with:

(21) a. Malago’ si Juan na u- hatsa i want P.N John COMP IRR.3s-lift the lamasa.
table
"John wanted to lift the table."
b. Malago’ si Juan h-um-atsa i lamasa. want P.N. John UM-lift the table
"John wanted to lift the table."

According to one of my consultants, a. may be used when the table is extremely heavy so that John may not be able to lift it. In b. John is assumed to be able to lift the table and will probably do so. Since the successful completion of the event in the complement clause is implied under the implicative verbs of modality, the irrealsis construction, which seems to be associated with a sense of reduced control over the event expressed in the embedding, is not allowed in these instances.

4. The Binding Hierarchy.
The observation that the selection of the complement clause types in language is correlated with the semantics of the verb under which these complements are embedded is not new. Givón (1980), on the basis of data from a number of non-related languages, suggested that the restrictions which apply on the syntactic types of complements of different verbs could be explained on the basis of a notion called "binding". The semantic dimension of binding operates on manipulative verbs, modality verbs, and cognitive-utterance verbs (such as know, say,...). Givón showed that one can hierarchize these verbs on a scale where the verbs on top of the scale are semantically most binding, i.e. the Agent of the main clause exerts a strong influence on the Agent of the complement clause so that the latter is not entirely capable of acting independently. Syntactically, the higher the main verb is ranked on the scale, the less the complement clause will be coded as an independent main clause. Semantically, the higher the main verb on the binding hierarchy, the more likely the event in the complement is to take effect and the stronger the influence exerted over the action in the embedded clause by the Agent of the main verb. The Chamorro data provide additional evidence for Givón’s binding hierarchy. In addition, the language is a representative of the Austronesian language family, which was not included in the sample on which he based his typological analysis. The predictions made by the binding hierarchy are borne out by the Chamorro facts observed above. With respect to the manipulative verbs, it needs to be added that there is one more class of implicative verbs which were not included in the survey above (cf. section 2). The English verbs "make, have, cause, and let" have a Chamorro correlate in the form of a causative morpheme which is prefixed to the verbal root of the intended complement (cf. also footnote 7).
(22) Ha- na' kanno' si Juan si Maria ni
E.3s-CAUS-eat P.N. John P.N. Maria OBL
mansana.
apple
"John made Mary eat the apple."

The colexicalization is predicted by Givón’s binding hierarchy for those verbs ranking at the very top and is not an isolated, language particular phenomenon for Chamorro. The embedded clause is syntactically coded as integrated into the main clause and loses all characteristics of an independent clause.

Moving down the hierarchy, we have the second class of implicative verbs, discussed earlier. They obligatorily take the -UM- complement type. The -UM- construction itself in Chamorro is restricted to a limited set of derived clauses and is not marked for mood or agreement with the subject (cf. also footnote 2). Moreover, the verbs which require the -UM- type complement, at the same time require the embedded Agent/subject to be raised into direct object position. Thus, the complements of implicative manipulative verbs, whose Agent exerts enough influence on the Agent of the complement proposition, are syntactically coded as highly dependent clauses.

The complements of non-implicative manipulative verbs look more like syntactically independent clauses since they are separated from the main clause by a complementizer, and involve irrealis marking on the embedded verb, which at the same time indicates agreement of the complement Agent/subject with the verb. These non-implicative verbs fall into two categories according to the degree of control the main clause Agent has over the action in the complement. Those verbs involving more control (i.e. obligatory direct control), require the Agent of the embedded clause to function as the direct object in the main clause. On the other hand, verbs which allow indirect control allow complements which look more like independent clauses as the Agent/subject has not been raised into the main clause.

With respect to the modality verbs, similar correlations can be made. The implicative modality verbs involve complete control by the Agent of the main verb over the action in the embedding which is necessarily completed (or not completed when negative implicativity is involved) for the sentence to be true. These verbs take the -UM- complement which looks less like an independent clause than the irrealis type complement allowed or required - as the case may be - under non-implicative verbs of modality. The irrealis-complement-type-only restriction applies when the non-implicative, main verb of modality semantically excludes control by its Agent over the event in the complement.

Finally we may add that in the case of cognition-utterance verbs - which we have not discussed in this paper - the complement clause takes on more aspects of an independent main clause. It is introduced by the complementizer na, and the verb is not restricted to irrealis mood marking. Two examples have been given in footnote 5. It may be of interest to add that in narrative discourse, utterance verbs like "say" and "tell", which rank lowest on Givón’s hierarchy of binding, often do not take sentential complements, but are instead followed by pieces of direct discourse
comprised of one or more independent main clauses.

Footnotes
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(1) For reasons of brevity, I will limit myself in the discussion to transitive complements. Intransitive complements follow the same patterns with the exception that the -UM- construction is restricted to transitive complements only. Normal realis agreement markers are maintained in the intransitive complements where -UM- is expected for transitive complements. These complements are also not separated from the main clause by complementizers.
(2) The infix -UM- here is not to be confused with the homophonous marker for singular agreement in intransitive clauses. Wherever it appears in the syntax of Chamorro, it replaces the ergative agreement markers. It is used in cleft constructions, relative clauses, and WH-questions where it is the Agent/subject that has been focussed upon, relativized, or questioned. These complements are similar to the constructions under discussion in the sense that the Agent/subject referent has been moved (or deleted under coreference) out of the clause and into a position preceding the verb. The resulting structure deviates from the expected basic word order pattern V.S.O.
Chung (1981) has called the -UM- type complements infinitival constructions. However, the similarity with other derived clause types as the ones mentioned above, and the fact that this particular -UM- morpheme never replaces the intransitive agreement prefixes leads me to question the validity of calling these constructions infinitival. Since this rather complex question does not directly pertain to the topic of this paper, I will leave it unanswered.
(3) As far as I can tell, there seems to be a difference between the choice of na over para, which is essentially a marker for irrealis. With some verbs one is sometimes preferred over the other. The reasons behind this preference are not clear to me and I will have to treat both morphemes alike in the remainder of this paper.
(4) A number of the verbs belonging in this category are morphologically complex, i.e. they consist of a prefix na’ which is the causative prefix in Chamorro. Thus na’possibili, for instance literally means "make possible". (For more details on causative constructions see Gibson 1981).
(5) Both hasso "remember" and maleffa "forget" are also verbs of cognition. When they function as such, they can take complements introduced by the complementizer na, but in these instances the Agent/subject of the embedded complement is not controlled by the Agent of the main clause.
Examples:
a. Maleffa yo’ na bai-hu-na’- hanao este forget A.1s COMP IRR.1s-CAUS-go this
   na katta.
link letter
"I forgot that I was going to send this letter."
b. Hu- hasso na ha- dingu i che'lulu-
E.1s-remember COMP E.3s-leave the sibling-
hu i tano'.
1s.POS the country
"I remembered that my sister had left the
country."

(6) Sentence (13) b. could be grammatical in a context where there is a
direct object in the clause coded by 0-anaphora. The interpretation then
would be that my wife made it possible for him (her) to kill the cockroach.
(7) The direct object of the underlying embedded clause becomes an
oblique NP in the surface construction, indicated by the oblique case
marker ni. The subject of the embedded clause becomes the direct object
of the main clause as a result of the colexication of the main and
embedded clauses. See Gibson (1981) for a detailed analysis of causative
constructions in Chamorro.

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THE SEMANTIC BASIS OF SYNTACTIC PROPERTIES

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1. The 'semantics prior' approach

The communication of meaning is the main business of language, the paramount reason for its existence. A speaker has in mind some meaning - a description of an event, or an emotive feeling, a hope, a wish or a regret - and codes it in grammar and clothes it in words simply as a channel for communication. The hearer then extracts some meaning from what he hears. Meaning is what we start with, in the use of language, and where we finish. This should surely also apply in linguistics, the scientific study of language.

I espouse a 'semantics prior' position. This is not to underestimate grammar, nor the complexities of grammar. But I maintain that we cannot understand grammar, and the way speakers use grammar, unless we approach the matter from a semantic angle.

It is useful to work in terms of 'semantic types', sets of lexical items that share a common semantic element and also show similar syntactic and morphological properties. All the lexical words of a language can be grouped into a number of semantic types (with a certain amount of overlapping membership). These semantic types are almost certainly universal; that is, every language has a set of MOVE words (e.g. come, run, take in English), a set of COLOUR terms (black, white, red, etc), a set of KIN words (mother, uncle, etc). These sets - and a score or so more - constitute 'natural classes' in each language.

In writing the grammar of any language a linguist will recognise a number of word classes (or parts of speech). There will be some large, open classes - Noun, Verb, and often also Adjective. The recognition of word classes for a particular language is based on morphological and syntactic criteria particular to that language. But then word classes can be cross-identified between languages. We talk of the Noun class in English, in Latin, in Dyirbal, and indeed in every other language. The criterion for identifying a lexeme as a noun varies between languages - in Latin a noun inflects for number and case, in Dyirbal a noun inflects for case and co-occurs with a 'noun marker' that shows a fixed gender choice, in English a noun is defined partly in terms of its potential for co-occurrence with an article.

Word classes are identified between languages - and given the same universal labels 'Noun', 'Verb', 'Adjective' - on semantic grounds. That open class, identified on grammatical criteria internal to a particular language, which includes the semantic type OBJECTS (terms for flora and fauna, body parts, etc) will be named the Noun class. In most languages Noun also includes the semantic type KIN, and in many a number of abstract concepts (beauty, truth
etc in English). The Verb class always includes the semantic types MOVE, STAY (sit, stand, lie, put down, etc), HIT (hit, cut, burn, etc), GIVE (give, lend, donate, etc), TELL (speak, tell, ask, command, etc). Note, though, that some semantic types show considerable variation in their word class affiliation from language to language - LIKE (like, hate, love, etc) is in the Verb class in English but belongs to the Adjective class in some languages (literally 'it is likeable to me') e.g. Japanese, and is in the Noun class in yet other languages (literally 'I have liking for it') e.g. the Australian language Yidin.

I first introduced the idea of semantic types in the course of a cross-language study of Adjectives, called 'Where have all the adjectives gone?' (Dixon 1977, 1982). Many languages are like English, Latin and Dyirbal in having an open word class, distinct from Noun and Verb, that includes the semantic types AGE (new, young, old), VALUE (good, bad, lovely, etc), COLOUR, DIMENSION (big, little, wide, long, etc), PHYSICAL PROPERTY (hot, cold, sharp, heavy, rough, etc), HUMAN PROPENSITY (jealous, rude, loyal, clever, etc) and a few more. In a number of languages (e.g. Chinese) there is no distinct Adjective class, and these types fall together with MOVE, STAY, GIVE, TELL etc in the (macro-)Verb class. But there are a fair number of languages that have just a small closed class of Adjectives, with from six or eight to a few score of members. These closed Adjective classes typically involve most or all members of the types AGE, VALUE, COLOUR and DIMENSION: in languages of this kind the PHYSICAL PROPERTY type most often belongs to the Verb class (e.g. 'it heavies') while the HUMAN PROPENSITY type falls into the Noun class (e.g. 'he has jealousy').

But semantic types are useful not only for cross-language comparison. In 'Where have all the adjectives gone?' I described how the various semantic types making up the Adjective class in English show distinct grammatical behaviour, in terms of co-occurrence with derivational affixes such as un-, -ish, -en, position in noun phrase structure, whether there is a derived adverb, and of what type, etc (Dixon 1982:15-34).

This paper describes a first attempt to investigate and explain the syntactic properties of verbs in English, in terms of the different semantic types making up the Verb class. I have looked in some detail at over a thousand English verbs, grouping them into semantic types on the basis of their semantic and grammatical similarities and studying, for each type, the possibilities of case frames, passives, causatives, reflexives, nominalisations, topic-manner constructions (see Dixon 1976), and occurrence in constructions of the form have a V/take a V and give a V (e.g. take a walk, have a laugh/try, give X a kiss/push). As an illustration of the methodology involved I discuss here the varieties of complement clauses that are possible for different semantic types in the Verb class (and for different verbs within these types). The results are preliminary and quite tentative; this should be regarded as a sample study, to illustrate a particular semantically-based approach to
linguistic description and explanation.

2. Verbal complements
In every language there are some semantic types in the Verb class (and often within the Adjective class too) which take complement clauses. These types generally include TELL, SEE (witness, hear, observe, etc), MAKE (cause, force, hinder, etc), WANT (desire, wish, hope, need, etc), BEGIN (start, commence, cease, finish, continue, etc). (Note, however, that in some languages the last three types may be realised through verbal affixes, rather than distinct lexemes.) Languages differ in how many varieties of complement clause they possess - Noonan (forthcoming) mentions that Irish has only two while Lango has four. I shall be concentrating here on the three main complement constructions in English - THAT, (FOR) TO, and (S) ING.

Some English verbs take only one kind of complement - just THAT (for instance, ensure), just ING (finish, interrupt) or just TO (want, fail). Others may take two complement alternatives - TO or ING (try, begin), TO or THAT (desire, persuade), ING or THAT (boast, dislike). And there are some that can occur with all three (e.g. propose, love, plan).

How do users of the language know which complement to use with which verb? Grammarians such as Rosenbaum (1967) simply list verbs that take each complement; their lists appear to be semantically heterogeneous and essentially arbitrary. This could be taken to imply that speakers have simply to 'learn' which complement a given verb takes (in the way that morphological irregularities have to be learnt), that they just keep their ears open, after a while note that ensure has been heard with a THAT complement but not with TO or ING complements, and then mark it '+THAT, -TO, -ING' in their mental lexicon.

This, plainly, is not what happens. Language users do operate with general principles in deciding what complement(s) may be used with a specific verb, and these general principles must be largely semantic.

I assume the following: that it is possible to predict the complement(s) a verb may take from knowing (a) the kinds of complement clause the language operates with, and their semantic characterisations; (b) the semantic type to which a word belongs, and its further semantic specification within that type; (c) the complement possibilities for that semantic type in that language; and (d) relevant facts about the syntactic organisation of the language i.e. its possible syntactic structures and constraints.

The remaining sections of this paper illustrate (c) and (a), in that order.

3. Some semantic types and the complements they take
Each semantic type has, in a particular language, certain 'norm' syntactic and morphological properties, which every word in the type exhibits. In addition, there will be a number of further
grammatical properties that apply only to some words in that type; as we shall shortly see there can be a variety of explanations for which words have which properties.

These remarks can be exemplified for a selection of types from the English verb class.

(a) verbs in the DECIDE type such as decide, determine, resolve, choose take both THAT and TO complements (other verbs in this type such as select and pick (out) take neither complement).

(b) all members of the WANT type (want, desire, wish, need, require, hope; intend, etc) take TO complements, and all but two also take THAT complements. The two verbs that do not take THAT complements are want and need - what can be the explanation for this? It may be that want and need have the strongest and 'most demanding' meanings (want in comparison with wish and desire, and need in comparison with require) and are thus restricted to the pragmatically strongest complement choice. It is interesting to note that in Indian English (my own observations) this 'syntactic gap' has been eliminated, with both want and need taking THAT as well as TO complements.

(c) all verbs in the BEGIN type can take ING complements but only some of these may also occur with TO clauses - begin, start, continue and cease do, whereas commence, finish and complete don't. I have shown (Dixon 1976; 1982:144-51) that some of these verbs involve 'subject-orientation' and others 'object-orientation'. Thus

(1) John has finished shelling the peas

implies that there are no more peas to be shelled i.e. the discontinuation of the activity is related to the object noun phrase; in contrast

(2) John has ceased shelling the peas

clearly indicates that the discontinuation was entirely due to the referent of the subject noun phrase.

All the verbs in the BEGIN type that can take a TO complement have (strong or weak) subject orientation; those that cannot have object orientation. This interrelates with the semantic effect of this variety of TO complement, as discussed in the next section.

(d) the MAKE type is particularly interesting. All three complement varieties are represented, but each verb takes just one of them. This will be explained, on semantic grounds, in section 4. Cause, force, allow, permit imply that the subject did something specifically to expedite the activity described in the complement clause; these all take TO complements. (Make and let must omit the complementiser to, although make but not let has to in a passive construction. This omission may just be an irregularity with a diachronic explanation - like the plural of mouse being mice - that has simply to be learnt by users.) Prevent, spare and other verbs have the opposite semantic effect, and take ING complements. Ensure implies that the subject just makes certain that something necessary has been done, treating the action described by the complement.
clause as an item and not referring to any of the details of how it was done; this verb takes a THAT complement.
(e) the most pervasive complement clause for the LIKE type is ING, which occurs with all or almost all of the verbs from this type (the possible exceptions include worship, praise and treasure). Almost all LIKE verbs can also occur with a rather special type of THAT clause which also includes it immediately before the complementiser (John likes it that Mary goes to church each Sunday); the verbs that seem less than fully at home with THAT complements include enjoy, approve (of) and favour. And then just a few verbs from this type may also accept TO complements (e.g. like, love, hate, prefer) whereas others can't (dislike, loathe, abhor, value). In connection with the failure of dislike to follow like in taking a TO complement, we can note that scarcely any verb with prefix dis-permits a TO complement (compare disagree, disbelieve, disclaim, discontinue, disapprove and disallow with their positive counterparts).

There is a semantic difference between these three varieties of complement as they occur with like, love, hate, etc; but currently I have no explanation for why only some verbs in this type take THAT, and then only a subset of these take TO. It may simply be that the most frequently occurring verbs in the LIKE type - those with the most general, superordinate meanings - have the widest syntactic possibilities, a tendency that is found in all languages.

It will now be seen that there can be varying reasons for why only some members of a type show a particular property. It is often semantically-determined (only subject-oriented verbs of the BEGIN type taking TO complements); or there may be some language-general constraint (scarcely any verbs with prefix dis- taking TO complements); or it may be simply a matter of only certain superordinate verbs having some property (like, love, hate and prefer taking TO complements) or else not showing a property (want and need not taking THAT complements).

Viewed simply from the syntactic angle of 'what verbs take certain complements', heterogeneous lists are obtained that have little apparent semantic basis. But approached from the semantic angle, we see that all members of a certain type may map onto a certain syntactic complement choice, some onto another possibility, and so on. Thus, TO complements occur with all verbs from the DECIDE type that accept any complement at all; with all verbs of the WANT type; with all BEGIN verbs that show subject-orientation; with MAKE verbs where the subject plays a direct and positive role in accomplishing something; and with a few LIKE verbs that have wide, inclusive meanings. And similarly for ING and THAT complements.

There are of course other semantic types associated with the Verb class in English that take complement clauses. Our remarks could be extended to SEE (recognise, witness, hear, etc); to TELL, which is like a meta-type spanning several basic types, e.g. order and persuade are like MAKE, promise is like intend from the WANT type, describe like witness from the SEE type, and inform like realise from the THINK type; and so on. But what has been said
should adequately demonstrate the viability of this approach to linguistic description, and its potential for insightful explanation.

4. Semantic basis of English complementation
Each semantic type has a distinctive semantic character, and complements take on a different semantic aspect with verbs from different types. Nonetheless, it is possible to discern some recurring meaning features of the different complement varieties, over the whole language.

The discussion here is limited to THAT, ING and TO complements, leaving aside the important class of WH- complements, and also a few minor complement varieties (e.g. bare verb stems with verbs of the SEE type, such as I saw Mary kick John), as well as the semantically significant possibility of having for included with a TO complement, for certain verbs (Bresnan 1979:61-95 has an illuminating discussion of this, and also of the semantics of WH- and THAT complements). The syntax of complements - whether they fill object, oblique or subject slots, and the possibilities for coreferentiality and deletion - is an important and complex matter, which must be the topic for a separate study.

THAT clauses are like miniature sentences, allowing the full range of tense, modal and aspect choices, and not permitting deletion of the subject noun phrase. A THAT complement essentially refers to an activity or event or state as a single unit, with no reference to its internal constitution or time duration. Using the graphic symbol to indicate the event or situation, we can represent a THAT complement by Typical examples include ensure from the MAKE type and report from TELL:

(3) John ensured that the horses were given sufficient food

(4) John reported that the horses were given sufficient food

In the case of (3) John need not have fed the horses himself; he just made certain that someone had.

ING complement clauses are like TO clauses in not being able to include simple modal verbs or tense inflection; they can contain be + ing, and have + en, which realises tense as well as aspect in these two varieties of complement clause. The subject in an ING complement may be marked by 's with some matrix verbs, and it may often be deleted. The ing verbal inflection in English has rather wide uses - we can distinguish ING complement clauses (I can understand Mary's tearing up her thesis), gerundive verb+ing which functions as a nominal head (I watched Mary's washing of her hair), and also relative clauses involving a progressive be + ing element, where both the WH- relativiser and the verb be can be omitted (He accosted the girl who was washing her hair in the fountain reducing to He accosted the girl washing her hair in the fountain). Each of these types of ing construction can merge into the others (and, generally, syntactic indeterminacy correlates with meaning convergence).

An ING complement refers to all or part of some on-going
activity, noting the way in which it unfolds. In contrast to the meta-nature of a THAT clause, which treats an event as an item, an ING clause is directly descriptive, investing the event with duration and structure. Compare

(5) I observed that Mary (had) struck John
(6) I observed Mary's striking John

(5) suggests that the observer simply knows that the event had taken place - he could have inferred it from seeing the bloody stick in Mary's hand, John's wound, and the expressions on their faces. (6) says far more, that the observer actually witnessed the event, saw what was done and how - the nature and order of actions making up the event. Having represented THAT clauses as \( \text{substance} \) we can show ING clauses by something like \( \text{substance} \) or \( \text{substance} \), indicating that this variety of complement actually focusses on the internal constitution of all or part of the activity.

Compare THAT and ING subject complements, where the potential meaning difference is explained in a parenthetical continuation:

(7) That Mary sings the blues delights John (he doesn't care for that sort of music himself, but he thinks it is a good thing for Mary to do)
(8) Mary's singing the blues delights John (he could listen to her all night)

Some abstract nouns refer to an activity, and others to the end-result of that activity; the former correspond to ING and the latter to THAT complement clauses, as in

(9) John heard Rocky('s) beating Big Al = John heard the fight
(10) John heard that Rocky had beaten Big Al = John heard the result

TO complements are semantically the most varied of all. The word to can function either as a complementiser or as a preposition. As a preposition it covers two distinct (if related) meanings - the 'motion towards' sense, as in I'm going to San Francisco, and the indirect object function, as in Mary gave/showed a book to John (some languages have distinct allative and dative case markings for these two functions). We also need to recognise at least two varieties of TO complement construction.

The first kind of TO complement clause refers to some as yet unrealised activity; the TO indicates the desirability, necessity or inevitability of its taking place. This sort of TO has similar semantic effect to a modal in a main clause or a THAT complement. Indeed, many verbs that take TO₁ also occur with a THAT complement that usually or always includes a modal, as

(11) I wish that John would go / I wish John to go
(12) I recommend that John should go/ I recommend John to go

Decide takes this kind of TO complement and it may also take a THAT complement with the full range of aspectual possibilities (i.e. with or without modals) e.g.
(13) I decided that I would go
(14) I decided that I was sick

But, interestingly, only those THAT clauses which include a modal show corresponding TO complements. Alongside (13) there is

(15) I decided to go

but there is no TO correspondent of (14). (I decided to be sick relates to I decided that I would be sick, rather than to (14).)

There is another kind of TO complement that is semantically quite different and involves a judgment concerning the subject of the TO clause. Thus

(16) I know that Mary hit John / I know Mary to have hit John
(17) I know that Mary is clever / I know Mary to be clever

It is interesting to note that know can, like decide, take a THAT clause with any or no modal specification. But if the THAT clause includes a modal, as in

(18) I know that Mary may/must/should be clever

then there is no corresponding TO complement clause, as there was for (16-7). (TO complements cannot themselves include a modal, but this did not hinder the occurrence of TO equivalents in (11-2).)

Compare (13-4) with (17-8). Both decide and know can take THAT complements; they both take TO complements but of completely different semantic subvarieties. For decide there is a TO1 complement corresponding to a THAT clause with a modal, in (13,15), but not one without a modal, in (14). For know there is a TO2 complement for a THAT clause without a modal, as in (16-7), but not for one with a modal, as in (18). This demonstrates the different semantic effects of TO1 and TO2 complement varieties.

TO2 complements are rather limited; they are always most felicitous when the complement clause verb is be, as in (17) (and for some verbs, e.g. understand, it is difficult to get a TO2 complement with any other verb). We could represent these complements graphically as: ——

TO1 complements are very frequent. We can employ an arrow to indicate the 'potentiality' marked by TO1 i.e. —— or ——. The difference between TO1 and ING complements is very clearly shown with try:

(19) John tried balancing the ball on his head
(20) John tried to balance the ball on his head

(19) implies that John actually did balance the ball on his head for a period of time, perhaps to see whether he liked the experience, i.e. ——. In contrast, (20) might be used when he tried to get the ball to stay on his head but was unable to achieve this i.e. —— (Attempt is another verb in the TRY type but it has a more restricted meaning than try and can only occur with a TO1, not an ING,
complement.)

Similar remarks apply to verbs from the BEGIN type. Compare

(21) Mary began hitting John
(22) Mary began to hit John

For (21) to be appropriate Mary must have rained at least a few blows on John, i.e.\(\rightarrow\). But (22) could be said when she had merely raised the stick but had not yet brought it down upon his head (perhaps she will, or perhaps she won't) i.e.\(\rightarrow\). The semantic effect of TO\(_1\) explains why this complement variety can be used only with subject-orientation verbs from the BEGIN type. The \(\rightarrow\) indicates volitional action by the subject to involve him/herself in the activity, with begin, start and continue, \(\rightarrow\). With cease (as in John ceased studying at 3 p.m.) the \(\rightarrow\) indicates volitional action by the subject to uninvolve him/herself from the activity i.e. \(\rightarrow\).

Bolinger (1968) includes a perceptive discussion of the potential semantic contrast between ING and TO complements, suggesting that TO refers to 'hypothesis or potentiality' while ING is likely to mark 'reification'. Thus afraid to jump, where the speaker has fears about voluntarily undertaking a course of action, but afraid of failing (not *afraid to fall) when describing a non-volitional activity.

There are some verbs that take all three complement varieties - THAT, ING and TO\(_1\) - but with definite meaning differences. Compare

(23) I remembered that I saw the student (but had no recollection of the details of our interview)
(24) I remembered seeing the student (and could have told you exactly what he said)
(25) I remembered to see the student (but by the time I looked in the waiting room he had given up and gone home)

and

(26) I like it that Mary recites poetry (because she goes out reciting every Friday night, and I get peace to work out my betting system for the following day's races)
(27) I like Mary('s) reciting poetry (I enjoy listening to her)
(28) I like Mary to recite poetry (I don't care to listen myself, but it's good for her and always puts her in a good mood afterwards)

It must be emphasised that if a verb allows more than one complement construction there is usually a degree of substitutability between them. That is, there are certain situations in which any of (26-8) or (23-5) or (21-2) or (19-20) or (7-8) could be used perfectly acceptably. The range of meaning and use of remember+THAT, remember+ING and remember+TO will overlap. But they will not coincide - there are some situations in which only one complement choice could be
appropriate.

We have said that TO₁ involves an agent moving towards some unrealised activity. One further point to note is that a TO₁ complement can only be used if the subject wants the activity to take place; if it is something that is not (or not yet) wanted then only an ING clause will be permitted. Compare

(29) I planned/hoped/intended for Mary to go
(30) I deferred/postponed/delayed Mary's going

A similar contrast applies to verbs from the WANT type. When there is positive desire for some eventuality a TO₁ complement is appropriate:

(31) I want/wish/desire for Mary to come home

But with a verb that has the opposite semantic orientation, an ING complement is preferred:

(32) I dread Mary('s) coming home

(Dread does have limited possibilities with THAT and TO complements, but corresponding to the sense of (31) we must use an ING clause, as in (32).)

These complement possibilities can now be compared with those for fail and succeed (in):

(33) John failed to hit the target
(34) John succeeded in hitting the target

Succeed refers to a definite event from the past, something that has happened; only an ING complement is possible. Fail, on the other hand, describes something that the agent wanted to do, but was unable to achieve, the TO₁ complement matching the 'wanting' component of meaning.

With verbs referring to speed of action the different complement possibilities again reinforce the meanings of the individual verbs:

(35) John hastened to build the hut
(36) John dawdled over building the hut

Hasten, taking a TO₁ complement, marks the agent's wish to get on with some activity, \( \text{\underline{\underline{\text{\textbf{\textbullet}}}} \text{\textbullet}} \). Dawdle, in contrast, indicates that the agent is involved in the activity, \( \text{\underline{\underline{\text{\textbullet}}}} \text{\textbullet}} \), but not with any real eagerness; this semantic profile fits well with an ING complement. (Note too that the preposition over in (36) also reinforces the meaning of dawdle, just as the preposition in in (34) helps emphasise the completive meaning of succeed.)

We remarked in section 3 that each verb from the MAKE type selects just one variety of complement. Ensure involves a general overseeing that something be done, and takes a THAT complement. Verbs like cause, force, allow and permit indicate positive activity on the part of the subject to bring about something that he wants to
happen; they all take TO₁ complements. Their negative counterparts from the same semantic type, such as prevent, hinder and stop require ING complements, with an optional preposition from:

(37) I caused John to build the hut
(38) I prevented John (from) building the hut

Note that the complement clause subject, John, has been raised to be object of the main verb in (38) just as it has in (37).

Within the TELL type we find verbs like agree, and also negative counterparts refuse and decline, all taking TO complements. Anna Wierzbicka (private discussion) has suggested that it is the 'want' component in refuse and decline (someone else wants that person to do something that he won't do) which is responsible for their taking a TO complement.

The verb forbid has, during most of the history of English, been able to occur with either TO or (from+)ING complement varieties; but during the last century or so the (from+)ING alternative has fallen into disuse, bringing forbid more into line with refuse and decline.

The semantic contrast between TO₁ and ING complements in English finds correspondences in some other languages. In Dyirbal (from North Queensland, Australia) there are two verbal affixes that can serve to mark verbal complements: (a) -nû is used both on the verb in a relative clause, and also - rather like ING in English - to mark complement clauses with verbs such as 'blame', 'see' and 'regret'; (b) purposive inflection -li can occur on a main clause verb and then has a modal-like meaning e.g. naja yanu-li 'I have to/ought to/want to go'; it can link together two clauses, rather like English in order to e.g. naja walma-nyu yanu-li 'I got up in order to go out'; and it can also mark a complement clause - very much like TO₁ in English - with verbs like 'promise', 'tempt', 'ask' and 'like'.

Dyirbal has verbs giga- 'make do, tell to do' and its opposite jabi- 'prevent from doing, tell not to do'. Giga- must take a -li complement (parallel to TO₁ in English) e.g.

(39) naja bayi giga-n yanu-li
    I-SUBJECT him-ABSOLUTIVE tell to do-PAST go-PURPOSIVE
    I told him to go

In contrast, jabi- must take a -nû complement (parallel to ING in English):

(40) naja bayi jabi-n yanu-nû
    I-SUBJECT him-ABSOLUTIVE stop-PAST go-RELATIVE
    I stopped him (from) going

In the course of field work on Dyirbal I tried by elicitation to see whether jabi- could also occur with a -li complement. When I asked whether it was possible to say naja bayi jabin yanuli the informant thought a moment and said

(41) bayi yanuli, naja jabin
was possible, and would mean 'He wanted to go but I stopped him'.
No, I persisted, what about ɲaʃa bayi jabin yanuli? The informant
replied that it was a possible sentence, but he said it with an
intonation break after jabin:

(42) ɲaʃa bayi jabin, yanuli

and stated that it could only mean 'I tried to stop him, but he
still went'. In (42) yanuli is a coordinated clause, not a comple-
ment clause to jabin. A complement clause with jabi-, referring
to the activity that is prevented from occurring, must be of the
-ŋu variety.

5. Conclusion
Which complement variety a given verb (in a particular language)
takes is not an arbitrary matter, but depends on the meaning of the
verb and the meanings of the available complements. To consider
each verb individually - looking at its meaning and complement
possibilities - would be a long-winded and unrevealing task.

I have suggested, in this paper, working in terms of natural
lexical classes (with overlapping memberships) which I term
'semantic types'. Each semantic type has certain semantic properties
which apply to all the words in that type. There will, in addition,
be further grammatical properties that apply only to a certain sub-
set within the type; these are also (in most instances) semantically
motivated.

Working in terms of semantic types enables us to see general
patterns of correlation between semantic and syntactic properties,
and then to further refine this description so that an exact specif-
ication is provided for the grammatical status of each word. (For,
just as no two words have exactly the same meaning, so no two words
will have precisely the same set of grammatical properties.)

The methodological approach that has here been illustrated for
verbal complements in English applies equally to all other syntactic
and morphological properties - of verbs, adjectives and nouns. And,
once the semantic and grammatical correlations are established for a
representative sample of individual languages, it may be possible to
generalise, perhaps uncovering universal correlations of various
kinds.

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environment. All the judgments in this paper are from my own kind
of British English; other dialects may differ slightly - for
instance, Bill Foley tells me he can say John selected to abetain.
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Irrealis Subordinate Clauses and Related Constructions in Itza Maya

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1. Introduction.
In this paper I examine complex sentences in Itza Maya which are typically labeled as "subjunctive", and structures which are morphosyntactically and semantically related to them including imperative, unrealized perfect, and hypothetical future constructions (cf. Durbin and Ojeda 1983, and Ayres 1982 for Yucatec Maya). To consider these constructions as "subjunctive" is an oversimplification of a complex of interactions among semantic and pragmatic features involving NP reference, verbal semantics, transitivity, and speaker's empathy in discourse. Itza Maya, like its sister dialects Mopan, Lacandon, and Yucatec Maya, has a split Nominative-Accusative / Ergative-ABSOLutive verb agreement system. Ergative marking generally appears with the completive aspect and statives, as well as in some of the subordinate and related constructions considered here. Non-completive aspects and other types of subordination are marked by Nominative-Accusative verb agreement. It should be pointed out, however, that there is not a simple distinction between Ergative-ABSOLutive vs. Nominative-Accusative classification for these structures.

Split ergative systems with ergativity in object complements and hypothetical future constructions appear to be a rare typological feature in languages of the world (Dixon 1979), as well as in Mayan languages (Larsen and Norman 1979). It is hoped that the present analysis will contribute to general linguistic theory with regard to ergativity, transitivity, and subordination. An additional focus of this paper is the function of different cross-referencing systems in subordinate verbs.

The Subjects of intransitive matrix verbs are coreferential with the Subjects (S or A) of subordinate verbs in the constructions under consideration.

2.1. Intransitive Matrix - Intransitive Subordinate.
When the matrix verb is intransitive, intransitive subordinate verbs are non-finite, with no dependent pronouns, and therefore exhibit no verb agreement. Aspect marking is also absent, as is generally the case for subordinate verbs.
(1) In--ka'ah ti man--al.
    1sgNOM-GO sub BUY-intr
    "I'm going to shop."

The subordinator ti does occur, a marker preceding intransitive subordinate verbs whose subjects are not marked by dependent pronouns, but are fully recoverable. Matrix verbs of this construction type are generally verbs of motion or inceptive, and thus have aspeptual qualities with modal implications.  4

2.2. Intransitive Matrix - Transitive Subordinate.

Transitive subordinate verbs have complete verb agreement even when their Subjects (A) are coreferential with intransitive matrix Subjects (S). Distal/irrealis features are also marked on the verb by a Subordinate Patient Marker (SPM) which differs from the patient markers that occur on transitive verbs in unmarked matrix clauses. 5 In subordinate sentences verb class is also reflected in patient marking when the SPM is word-final for third person Direct Objects (P). Basic transitive verbs are generally marked by a -V' suffix, with the vowel in harmony with the vowel of the preceding syllable as in (2); verbs that receive the transitivizing suffix -t- receive an -eh SPM suffix as in (3); and causative verbs are marked by the -es causative allomorph as in (4). When Patient pronominal suffixes occur on a subordinate verb, the SPM is generally deleted as in (5) below.

(2) In--ka'ah in--kon--o'.
    1sgNOM-GO 1sg-SELL-SPM
    "I'm going to sell it."

(3) In--ka'ah in--han--t--eh.
    1sgNOM-GO 1sg-EAT-tran-SPM
    "I'm going to eat it."

(4) In--ka'ah in--kim--es.
    1sgNOM-GO 1sg-DIE-caus/(SPM)
    "I'm going to kill it."

(5) In--ka'ah in--wil--(a')--eech. 6
    1sgNOM-GO 1sg-SEE-(SPM)--2sg
    "I'm going to see you."

In these constructions no subordinate markers appear other than the SPM. Aspect markers do not occur with the subordinate verb, but Agent and Patient agreement is obligatorily marked. However, it would be arbitrary to label subordinate verb agreement marking as ERG-ABS vs. NOM-ACC because the intransitive verbs with which they contrast are not marked for agreement (cf. 2.1. and Note 2).
3. **Transitive (Modal) Matrix.**

In these constructions, the matrix transitive verbs may be termed modal (cf. Durbin and Ojeda 1983 for Yucatec), and include such verbs as \( k'at \), 'want', \( pak' \), 'hope', and \( t'in \) 'tell'.

3.1. **Intransitive Subordinate.**

3.1.1. **Coreferential Subjects.**

When the Subject (A) of a (modal) transitive matrix verb is coreferential with the Subject (S) of an intransitive subordinate verb, the subordinate verb is non-finite with no marking for aspect or verb agreement just as in 2.1. above, where the Subjects are also coreferential. However, these constructions differ from the type described in 2.1. in that no subordinator appears when the matrix verb is transitive, as evidenced in the following example.

(6) \[ \begin{array}{l}
\text{In--}k'a't--ih nĩk--tal,^8 \\
1sgNOM-WANT-3ACC SIT-intr \\
"I want to sit."
\end{array} \]

The only marker of the subordinate clause is the Object Dpr on the matrix verb. In summary, intransitive subordinate verbs whose Subjects (S) are coreferential to the Subjects (S or A) of matrix verbs are not marked for verb agreement, indicating the absence of need for disambiguators.

3.1.2. **Different Subjects.**

When the Subject of the subordinate verb differs from the Subject of the matrix verb, two types of markers of subordination may appear reflecting different semantic and pragmatic relationships. Contrast examples (7)-(9) with (10)-(11) below.

(7) \[ \begin{array}{l}
U--k'a't--ih ka' tuk--ul--n--ak--en. \\
3NOM-WANT-3ACC sub THINK-intr-detir-irreal-1sgABS \\
"He wants me to think."
\end{array} \]

(8) \[ \begin{array}{l}
K--im--pak'--t--ik ka' t(al)--ak--ech. \\
inc-1sgNOM-HOPE-tran-PPM sub COME-irreal-2sgABS \\
"I hope that you come."
\end{array} \]

(9) \[ \begin{array}{l}
K--in--wa'I--ik tech ka' wen--ek--ech. \\
inc-1sgNOM_SAY-PPM 2sg sub SLEEP-irreal-2sgABS \\
"I say to you that you should sleep."
\end{array} \]

(10) \[ \begin{array}{l}
K--in--taka'--t--ik--ech ti wen--el. \\
inc-1sgNOM-SEND-tran-PPM-2sgACC sub SLEEP-intr \\
"I send/order you to sleep."\]
In sentences (7)-(9), the subordinator ka' occurs, and the irrealis suffix -Vk appears in the subordinate verb, which is marked absolutely. In (10) and (11), the subordinator ti appears and the subordinate verbs are non-finite, lacking aspectual and verb agreement marking. The matrix verbs in (7)-(11) do not permit DO (P) pronouns other than the third person zero marker indicating that the entire subordinate clause is the object, although wa'll 'say' takes independent Indirect Object pronouns as in (9).

The verbs in (10) and (11), however, take DO (P) pronouns which are coreferential to the actor of the subordinate clause. When the Subject of the subordinate intransitive verb is coreferential to the Patient of the matrix verb, it is raised, the subordinator ti appears and there is no subordinate verb agreement. As was seen above in 2.1., ti and a non-finite subordinate verb form also occur when the Subjects (S) of both verbs are coreferential. Thus, ti appears when the Subject of an intransitive subordinate verb is equivalent to either the Subject of an intransitive matrix or the Patient of a transitive matrix, an ergative alignment.

3.2. Transitive Subordinate.
3.2.1. Coreferential Subjects.

When the Subject (A) of a transitive subordinate verb is coreferential with the Subject (A) of the matrix verb, there are no independent markers of subordination, but A and P agreement is marked, as when the subordinate Agent is coreferential to the S of an intransitive matrix verb (cf. 2.2.).

(12) In--k'a't--ih in--wil--(a')--eexh.
    1sgNOM-WANT-3ACC 1sg-SEE--SPM---2sg
 "I want to see you."

Similarly, there is no basis for assigning ERG-ABS vs. NOM-ACC labels to subordinate verb agreement because the intransitive forms with which they contrast (3.1.1.) are non-finite.

3.2.2. Different Subjects.

Like the examples above with non-coreferential Subjects and intransitive subordinate verbs (3.1.2), there are two major classes of subordination for
transitive subordinate verbs with non-coreferential Subjects (A) marked by the presence or absence of the subordinator ka'. Contrast (13)-(15) with (16)-(17).

(13) U--k'a't--ih ka' in--tuk--l--eh.
    3NOM-WANT-3ACC sub 1sg-THINK SPM
    "He wants me to think it."

(14) K--im--pak'--t--ik ka' u--tal--es to'on
    inc-1sgNOM-HOPE-PPM sub 3ERG-COME-caus 1pl
    yaab meyah.
    MUCH WORK
    "I hope that it brings us a lot of work."

(15) K--in--wa'l--ik ti'ih ka' u--ben--es.
    inc-1sgNOM-SAY-PPM 3 sub 3ERG-GO-caus
    "I say to him that he should carry it."

(16) T--in--ti'ka'--t--ah--ech (ka') a--kim--es.
    com-1sgERG-SEND-tran-DPM-2sgABS (sub) 2-DIE-caus
    "I sent you to kill it."
    ("I sent you for you to kill it.")

(17) K--in--tin--ik--ech (ka') a--han--t--eh
    inc-1sgNOM-CALL-PPM-2sgACC (sub) 2-EAT-tran-SPM
    ixi'1im
    CORN
    "I call you to eat corn."
    ("I call you for you to eat corn.")

As seen in 3.1.2., the verbs in (13)-(15) take the subordinate clause as Object and no first or second person Patient dependent pronouns occur. Subordination is marked by ka' and Agent and Patient agreement is marked on the subordinate verb. The matrix verbs in (16) and (17), however, are marked for Patient pronouns which are coreferential with the Agents of the subordinate verbs. No independent marker of subordination need appear but, again, the subordinate verb is fully marked for verb agreement. When the ka' marker does appear (indicated by parentheses in The Itza and in the translation) it marks a more distal relationship between the clauses.

4. Summary of Subordination.

In summary, several syntactic/semantic features including NP reference, matrix verb class, and transitivity are marked in subordination.

Non-finite subordinate verb marking is limited to intransitive verbs whose Subjects (S) are also marked by verb agreement on the matrix verb either as Subjects (S or A) or as Objects (P). Verb agreement is a NP referencing system (Brody 1982) which generally appears
on all verbs. When it does not appear, the referential information is recoverable from other sources, in this case, the matrix verb.

Two types of subordination marking occur with non-finite subordinate verbs: 1) zero marking; 2) the subordinator ti (see chart below). No independent marker of subordination occurs when the subordinate S is coreferential to a matrix Agent. Similarly, no subordination marker occurs when a subordinate Agent is coreferential with a matrix S, A, or P, but in those cases, the subordinate verb is finite. Thus, the zero subordination marker is neutral with regard to a NOM-ACC vs. ERG-ABS system. In contrast, the ti marker appears when the subordinate S is coreferential to a matrix S or P, and thus operates on an ergative principle.

In all cases of non-finite subordinate verb forms, the subordinate S is coreferential to a major argument of the matrix verb and thus expected, anticipated information for the hearer and information which receives speaker's empathy (Kuno 1976). This close relationship between matrix and subordinate clauses is unmarked and suggests that linguistic markedness reflects conceptual distance (Haiman 1983).

When the subordinate verb is transitive, regardless of NP coreference, it is marked with an SPM and Agent and Patient verb agreement. If the Agent of the subordinate verb is coreferential with any major argument of the matrix verb (A, S, or P), no subordination marker ordinarily appears.

The complete "subjunctive" paradigm occurs when the Subject (S or A) of the subordinate verb is not equivalent to the Subject or Object of a limited class of modal matrix verbs. Coreferentiality of matrix and subordinate verbs depends upon the speaker's choice of the matrix verb and the features it entails regarding degree of affectivity and involvement of the matrix and subordinate arguments. There is a range from k'ala't 'want' or 'hope', where the matrix agent is minimally involved with the subject (S or A) of the subordinate verb and the subordinate clause as a whole always serves as an object in the "subjunctive" with the subordinator ka', to tiin 'call', where a personal Patient of the matrix verb is also an actor in the subordinate clause and where the ka' marker is generally absent.

With verbs such as k'ala't 'want' and pak' 'hope', the Agent need have no control over or effect on another personal patient and no raising of the subordinate Subject (S or A) is permitted. Wai'l 'say' does not permit an animate DO (P) and similarly does not permit raising of subordinate subjects. Verbs such as tik'a 'order', and tiin 'call', however, generally presuppose
human patients; subordinate Subjects (S or A) are raised, and no "subjunctive" subordination marking ordinarily appears. When the "subjunctive" ka' marker does appear, it marks a more distal teleological relationship between the actions represented in the matrix and subordinate clauses and thus may be iconic for conceptual distance (Haiman 1983).

A summary of subordination markers, subordinate verb form, and cross-reference relations between matrix and subordinate verbs is presented in the following chart.

<table>
<thead>
<tr>
<th>SUBORDINATION MARKER</th>
<th>Ø</th>
<th>ti</th>
<th>ka'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finite</td>
<td>S/A/P=A</td>
<td></td>
<td>A≠A/S (ERG) (P=S/A)</td>
</tr>
<tr>
<td>SUBORDINATE VERB FORM</td>
<td>A=S</td>
<td>S/P=S</td>
<td></td>
</tr>
<tr>
<td>Non-finite</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Imperatives.
While intransitive imperatives are marked distinctly from the forms considered above, transitives are marked similarly.

   V-imp    V-imp    V-imp
   "Drink!" "Get up!" "Go!"

(19) a. Uk-u'! b. Ben-es! c. Bo'-t-een!
   V-SPM    V-caus  V-tran-Dpr
   "Drink it!" "Carry it!" "Pay me!"

As evidenced above, the Actor/Agent - information implicit in the context of the speech situation - is not marked on the verb in affirmative imperatives. Intransitive verbs are marked with an -en suffix. Transitive verbs receive the SPM and Patient pronominal suffixes just as in the cases of subordinate transitive verbs considered above (2.2. and 2.3.), perhaps marking the irrealis nature of imperatives.

6. Other Constructions with Irrealis Marking.
Irrealis/distal marking similar to that found in modal controlled object complements also appears in certain unrealized perfect constructions and hypothetical future constructions.
6.1. Unrealized Perfect Constructions.11

By unrealized perfects I mean constructions which indicate that an action has not been completed prior to the discourse situation, but that it is, or might be expected to be completed in the near future.

(20) Tan-in-pak'-t-ik i(h) ma' t(al)--ak.
    dur-1sgNOM-EXPECT-tran-PPM conj neg COME-irreal
    "I'm expecting him and he hasn't come."

(21) Ma' wen--ek--en toh.
    neg SLEEP-irreal-1sgABS adv
    "I haven't slept yet."

(22) In wakax-eh ma' u-k'a't-ih han-al.
    1sg COW-top neg 3NOM-WANT-3ACC EAT-intr
    "My cow doesn't want to eat."
    T----in---ta---s---ah su'uk i(h) ma'
    com-1sgERG-COME-caus-DPM HAY conj neg
    u---han----t----eh
    3ERG-EAT-tran-SPM
    "I brought it hay and it hasn't eaten it."

(23) Speaker A: Ma' in--wil--a' ah Hwaan.
    neg 1sgERG-SEE-SPM masc PN
    "I haven't seen Juan."

    Speaker B: He'-la' yan--en--eh.
    dem-prox cop-1sgABS-top
    "Here I am."

As may be seen in the examples above, this construction type is characterized by the negative ma' preceding verb forms which have ERG-ABS verb agreement for both transitive and intransitive verbs. ERG-ABS morphosyntax is not associated with NP cross-reference, but is associated with irrealis/distal features.

6.2. Hypothetical Future Constructions.

The final construction types considered indicate actions that may occur but are not assured of happening and in some cases should be avoided.

(24) a. A'-ka' tal--ih--eh, bin-een.
    det-adv COME-3ABS-top GO-1sgABS
    "When he came, I went."

    b. Kil u--tal--eh, k--im--bel.
    adv 3NOM-COME-top inc-1sgNOM-GO
    "When he comes, I go." (habitually)

    c. A'-ka' t---ak--eh, k--im--bel.
    det-adv COME-irreal-top inc-1sgNOM-GO
    "When he comes, I go." (future)
(25) Yan--a--kin--s--ik ka' a--mīch--ī'.
oblig-2NOM-DIE-caus-PPM adv 2ERG-GRAB-SPM
"You have to kill it when you grab it."
(26) In-ka'ah in--wil--a' a'-winik a'-ka'
1sgNOM-GO 1sgERG-SEE-SPM det-MAN det-adv
u--kim--es u--k'ek'en-eh.
3ERG-DIE-caus 3-PIG-top
"I'm going to see the man when he kills his pig."

In example (24) above, one may see contrasts of subordinate temporal adverbial expressions. The ka' marker appears for past actions (24a) or future actions (24c) with ERG-ABS verb agreement in both cases while kil appears for habitual actions (24b) with NOM-ACC marking on the subordinate verb. When a future action is indicated in the subordinate adverbial clause, the verb receives irrealis/distal marking, with the -Vk suffix on intransitives (24c) and the SPM on transitives (25)-(26).

In examples (27)-(29) below, the adverbial form biki appears, which indicates the possibility of a future action, generally one to be avoided.

(27) In-ka'ah in--pul--u' chambel. Bik(i)
1sgNOM-GO 1sg-PUT-SPM SLOWLY adv
in--kim--es a'-pek'-eh.
1sgERG-DIE-caus det-DOG-top
"I'm going to put it (a heavy load) down
slowly. I could kill the dog."
(28) Em--en chambel! Biki lub--uk--ech.
GO DOWN-imp adv adv FALL-irreal-2sgABS
"Go down slowly! You could fall!"

In these examples the verb receives the same irrealis/distal marking previously noted. Like unrealized perfects, but unlike object complements, coreferentiality of NP arguments is not a relevant feature.

7. Conclusions.

The various constructions considered above indicate a marking system that reflects complex semantic and pragmatic relations involved in discourse. Subordinate clauses are differentially marked according to the coreferentiality of NP arguments of the matrix and subordinate verb, transitivity, and verbal semantics. Verb agreement marking is shown to relate to transitivity and NP coreferentiality, with the full Ergative-Absolutive system only in a restricted class of modal controlled object complements (cf. 3.1.2. & 3.2.2).
Similarly, the marking of imperatives is neither clearly ERG-ABS nor NOM-ACC, and depends on transitivity. While it is either the Agent of a transitive verb or the actor (S) of an intransitive verb that is deleted (for the pragmatic reason that the addressee is understood), indicating a NOM-ACC system, transitive imperative morphology involves the SPM noted in subordination.

Unrealized perfects and hypothetical future constructions are consistently ERG-ABS with distal/irrealis marking, independent of verb class and NP coreference.

ERG-ABS marking is associated most closely with irrealis/distal semantics. It is fully marked in hypothetical Futures and unrealized perfects, never completely marked in imperatives, which necessarily involve proximal semantics of speaker and addressee, and differentially marked in subordination. Proximal subordinate Subjects (those coreferential with an argument of the matrix verb, S or A) are deleted but fully recoverable in the case of intransitive subordinates, and raised with no subordination marker appearing in the case of transitive subordinate verbs. When the subordinate Subject (S or A) is not coreferential, that is, distal in relation to the matrix clause, subordination marking with ERG-ABS agreement appears.

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1 I would like to thank Marshall E. Durbin and Joseph F. Foster for their helpful comments on this paper, an earlier version of which was presented at the 1983 AAA Meeting. This research was supported by a Fulbright Fellowship and a University of Cincinnati Taft Postdoctoral Fellowship, for which I am grateful.

2 The following paradigm indicates the split in the verb agreement system with Nominative marking in the non-completive aspect (a-c) and Ergative marking in the completive (d-f). In the incompletive aspect, the Subject of an intransitive verb (S) is marked the same as a transitive Agent (A), but in the completive aspect the Subject of an intransitive verb is marked the same as a transitive Patient (P).

   inc-2NOM-SEE-PPM-1sgACC inc-2NOM-COME inc-1sgNOM-COME
   "You see me." "You come." "I come."

   com-2ERG-SEE-DPM-1sgABS COME-2sgABS COME-1sgABS
   "You saw me." "You came." "I came."
Subordinate sentences with different subjects of the type that mark purpose or goal are semantically and morphosyntactically distinct from the irrealis constructions treated in this paper. Consider the following example:

Bin--een yok' u--tal.  
GO-1sgABS sub 3NOM-COME  
"I went so that he would come."

The subordinate verb above has nominative verb agreement and irrealis/distal features are absent. The speaker highlights the reason for his/her action but the probability of the actuality of the event indicated in the subordinate clause is not marked on the verb.

The following are examples of this construction type with coreferential subjects of matrix verbs of motion, tal 'come', hok' 'leave', and the inceptive verb kap 'begin' and intransitive subordinate verbs.

a. Tal--een ti han--al.  b. Hok'--ih ti ts'on.  
COME-1sgABS sub EAT-intr  LEAVE-3ABS sub SHOOT  
"I came to eat."  "He went out to shoot."

c. Kap--ih ti ts'on.  
BEGIN-3ABS sub SHOOT  
"He began to shoot."

Patient markers in Itza generally serve to mark a deictic relationship between the Agent and Patient, as Durbin and Ojeda noted for Yucatec (1982), which varies according to aspect, mood, and voice. See Note 2 for an aspectual contrast of patient marking and Hofling (1982).

The verb wil 'see', a basic transitive, is irregular and its SPM is -a' with no vowel harmony.

Constructions in which the subordinate verb is governed by non-modal matrix verbs (e.g. sensory) are not considered here. As Durbin and Ojeda (1983) have shown in Yucatec Maya, object complements of sensory verbs are marked with NOM-ACC verb agreement and the actuality of the event indicated in the subordinate clause is not marked, as may be seen in the following example where the subordinate verb is marked nominatively and for aspect, but not as irrealis.

K--in---wil--ik--ech  tan--a--han--al.  
inc-1sgNOM-SEE-PPM-2sgACC dur-2NOM-EAT-intr  
"I see you eating."
8 K'a't, 'want' is an irregular verb which takes neither aspect marking nor ordinary patient marking. Rather than the PPM -ik and zero marking for third person object agreement which occur with the vast majority of non-completive transitive verbs (cf. Example 8), the suffix -ih occurs. -ih appears to be the same third person marker which occurs as an absolutive suffix on intransitive verbs in the completive aspect, e.g., bin-ih, 'he/she/it went'.

9 The term "irrealis" is used provisionally for the -Vk suffix as it may also serve other functions involving nominals (Bricker 1981). The vowel of the -Vk suffix is in harmony with the vowel of the preceding syllable, with the exception of forms with the detransitivizing suffix -n-, where the irrealis suffix is always -ak, as in example (7). The -Vk suffix only occurs with intransitive verbs, further suggesting a connection with nominals.

10 While the non-finite subordinate verb forms presented in (10-11) are by far the most common for complements of tìka' 'order' and t'ìn 'call', irrealis forms following ka' may occur as in the following example:

T---in---tìn---ah ah Hwaan ka' han--ak.
com-1sgNOM-CALL-DPM masc PN sub EAT-irreal
"I called Juan so that he would eat."

In contrast to the relatively unmarked sentence (11), the example above indicates a distal/irrealis relationship between the matrix and subordinate clauses.

11 While by far the most common usage of these constructions are negative perfects, they may also appear in affirmative perfects associated with unrealized actions as in the following example.

Hach naach a'-kol-eh. Yaab in-xi'ma'--t--eh
adv FAR det-MILPA-top quant 1sgERG-WALK-tran-SPM
i ma' k'och--ok--o' on.
conj neg ARRIVE-irreal-1plABS
The milpa is very far. I have walked a lot and we (still) haven't arrived.

While walking has been completed, the journey has not.
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Subordination and Relativization in Early Indo-European
Gary B. Holland
University of California, Berkeley

Subordinating conjunctions derived from the neuter nom.-acc. of the relative marker are widely attested in the early Indo-European languages, cf. Greek ὅ, Sanskrit yād, Avestan yat, Hittite kuit, Latin quod, etc. The first three forms descend from IE *yod; the latter two from IE *kwid and *kwoed respectively. There is good independent evidence to reconstruct both *kwio- and *yod- as relative stems in Indo-European.¹ The meanings assigned to these conjunctions vary widely: 'as, when, while, if, because, since, in that, seeing that, so that, in order that, that' is a representative selection of the glosses supplied in the standard handbooks and dictionaries. The order of the so-called subordinate and main clauses varies too: in Hittite the clauses containing kuit are typically preposed to their 'main' clauses; in Vedic Sanskrit the majority of yād clauses precede; in Latin there is a substantial minority of preposed quod clauses, especially in the older language; while in Homeric Greek all the unambiguous hó clauses are postposed. Greek hó exhibits a far more limited range of meaning than do its congeners in Sanskrit and Avestan, primarily because of competition by other conjunctions.²

The relative stem has also served as the basis for forming literally dozens of conjunctions with various suffixes in the individual IE languages. Thus, in Sanskrit we find yádi 'if', yadā 'when', yátra 'where, when', yénā 'whereby', yásmat 'wherefore', yávat 'as (great)'; in Greek hóti 'that, because', hóte 'when', hóstē 'so that', hōs 'as', ὧπρα 'while, in order that', ὧπος 'in order that', hōs 'when, while'; in Latin cum/quom 'when, although, because', quia 'because', quò 'whereby', quīn 'without, that not', quam 'than', quandē 'when', ubi 'where', ut 'that, as, because'; in Umbrian pāne 'when', pōne/pune 'when, after', pue 'where', pūfe 'where, in which', pūfe/pure/porse 'which, that', pūze/puse 'that, as', peše/pirsi/persi 'if, when, while', etc.³ For the sake of simplicity, I will omit further discussion of these conjunctions, and limit myself to dealing with the morphologically simple, but semantically apparently complex plain forms. I will argue that the meaning assigned to the neuter nom.-acc. sg. relative conjunctions is an artifact; it is always contextually derived, and the conjunction itself is (or was originally) semantically empty.

Since verbal mood does not by itself determine the status of a clause or the meaning of a conjunction, its use in subordinate clauses will not be discussed here. In all cases it can be shown that modal verb forms come to be associated with certain clause types only secondarily. Thus, for
example, in the history of Latin one may observe the development of cum clauses with subjunctive. Moreover, Hittite has no optative or subjunctive mood. In the following examples I have attempted to avoid all grammaticalized subjunctives and optatives.

Some typical examples of Vedic Sanskrit yād are provided by the following (the conjunction and any resumptive elements are underlined):

1) yāj jāyathās tād āhar asya kāme / when you were born that day of it in desire
    'mśōh pīyūṣam apibo giriṣṭhām (RV 3.48.2)
of stalk biestings you drank mountainous
    'when you were born, on that day in desire for it /
you drank the mountain biestings of the stalk'

2) yād agne divijā āsy /
    if, whether Agni heaven-born you are
    apsuṣā vā sahaskṛta /
water-born or strength-produced
    tām tvā gīrbhir havāmahe (RV 8.43.28)
that you with songs we invoke
    'whether you are heaven-born, o Agni / or water-born, o
strength-produced one / we invoke you as that with songs'

3) tvāṣṭā yād vājram sūkṛtam hiranyāyaṁ /
   Tvaṣṭr after weapon well-made golden
   sahāsaraḥśrītim svāpā āvartayat /
thousand-pointed artificer turned
   dhattā indro nāry āpāṃsi kārtave (RV 1.85.9)
takes Indra manly deeds to perform
   'after Tvaṣṭr the artificer turned the well-made, golden,
thousand-pointed weapon / Indra takes (it) to perform
manly deeds'

4) sā yād vārtamānāḥ samābhavat, tāsmād vrtrāḥ
   he since twisting he was born from that Vṛtra
   (SB 1.6.3.9)
   'since he was born twisting, from that (= therefore)
   (he is named) Vṛtra'

In ex. (1) yād seems to show clear temporal meaning; in the following clause the resumptive element is tād āhar 'on that day'. A conditional use of yād appears in ex. (2); the 'then' clause has no resumptive element other than the acc. sg. anaphoric tām, which refers to the predicate adjectives modifying Agni. The usual word for 'if' is yādi, although yād is frequently found in this meaning, especially in the older language.) In ex. (3) yād is best translated as 'after'; there is no resumptive in the following clause. The clause containing yād in ex. (4) is clearly causal, and yād is to be translated as 'since, because'. In the following clause the ablative resumptive tāsmād 'from that, therefore' serves to
reinforce the analysis of the preceding clause as causal. Exx. (1)-(4) all exhibit preposed yād clauses. In contrast, the following examples show postposed yād clauses:

5) īndraṁ nāro nemādhitā havante / Indra men in contest invoke
yāt pāryā yunājate dhiyas tāḥ (RV 7.27.1)
that decisive he may yoke prayers these
'men invoke Indra in the contest / so that he may yoke
these decisive prayers (to his chariot)'

6) gṛṇē tād indra te 'sāva upamāṁ devātātaye /
I praise this Indra your prowess highest for gods
yād dhāmai vṛtrām ōjasā (RV 8.62.8)
that you strike Vṛtra with might
'I praise this, o Indra, as your highest prowess for the
gods / that you strike Vṛtra with might' 

In ex. (5) yād is to be interpreted as a final or purpose
conjunction 'so that, in order that'; there is no overt link
between the two clauses other than the conjunction. The sub-
junctive verb form yunājate is the guarantee of the purpose
meaning. The postposed yād clause in ex. (6) is apposition-
al to the tād (... sāva) of the preceding clause. Sentences
of this type are clearly transitional between correlative
structures and those which contain complementizers. I will
return to this point below.

Avestan usage of hiiat/yat is in many respects parallel
to that of Vedic yād. I cite two typical examples:

7) hiiatcā mōi mraoš ašām jasō frāxešnane /
when-and me you say Aša you come in circumspection
at tū mōi noīt asruštā pairiiaoyāa
then you me not without having heard you say
(Y. 43.12)

'and when you say to me "you come to Aša (= Truth) in
circumspection", then you say (that) to me not without
having heard (me)" (cf. Humbach 1959:114)

8) tāt ahmāi jasaŋ aiiaptam /
that to him came boon
yat hē puθro us.zaiiata (Y. 9.4)
that to him son was born

'that favor came to him / that to him a son was born'

Ex. (7) shows hiiat (the Gothic Avestan equivalent to Young
Avestan yat) in temporal or possibly conditional meaning.
The structure of ex. (8) is parallel to that of (6), except
that the yat clause is appositional to the subject, rather
than to the object of the preceding clause.

The next group of examples comes from early Latin:
9) Mars pater, quod tibi illoc porco neque satisfactum est, te hoc porco piaculo (Cato Agr. 141.6) is you this pig I make atonement 'father Mars, since it did not satisfy you with that pig (= you were not satisfied with that pig), I make atonement to you with this pig'

10) quod quispiam ignem quaerat, extingui volo if anyone fire should ask to be extinguished I want (Plautus Aul. 91) 'if anyone should ask for fire, I want (it) to be extinguished'

11) iste metus me macerat, quod ille fastidiosus est this fear me worries that that one exacting is (Plautus Mil. 1233) 'this fear worries me, that he is exacting'

In ex. (9) quod expresses causal meaning; the structure of this example is directly comparable to that of ex. (4), except for the absence of a resumptive element. quod in ex. (10) seems to have a meaning very close to that of 'if'. This apparent meaning of quod is very rare; the usual word for 'if' is si. The collocation quod si is, however, very frequent, and points to an earlier congruence of meaning between these two elements. In any event, this example is comparable to ex. (2). Note too that the subjunctive verb quaerat is not conditioned by the conjunction; rather, it has the same meaning that it would have in an independent clause. Ernout-Thomas (1953:295) cite this example as containing a quod which 'conserve la valeur d'un accusatif de relation, la proposition qu'il introduit restant comme en suspens'; and offer the following literal translation: 'quant au fait que quelqu'un pourrait venir demander du feu, je veux qu'on l'éteigne'. The structure of ex. (11) is parallel to that of ex. (8), and to that of ex. (6), ceteris paribus. Yet another use of quod is found in the following example:

12) non satis habes, quod tibi dieculam addo ...? not enough you have that for you day I add (Terence An. 710) 'don't you have enough, seeing that I add a day of respite'

quod in postposed clauses is well on its way to becoming the 'conjonction universelle' which is the source of Modern French que, cf. Ernout-Thomas 1953:311-312.

Some typical Hittite examples of kuit used as a conjunction are provided by exx. (13)- (17):
13) ABU-KA=mu kuit tuēl ŠUM-an memiškit nu=tta father-your=me because your name he mentioned conn=you apaddan EGIR-an šanaḫḫun (Dupp. §7, 12-13, Friedrich for that prev I worried 1926) 'because your father mentioned your name to me, for that (reason) I worried about you'

14) n=aš katta ašanna kuit SÌxšÁ-at n=an conn=he prev to outlaw since was established conn=him katta ašašḫun (KBo IV 8 II 6-7) prev I outlawed 'since he was established (by oracle) to be outlawed, I outlawed him'

15) n=aš ištantait kuit nu ḏUTU-ŠI ŠL kui[tki x] conn=he lingered because conn Sun King not at allḫuškit (Muršilis Sprachlähmung Obv. 26-27, Götze-he waited Pedersen 1934) 'since she (had) lingered (there), the Sun King did not wait at all (longer)'

16) nu maḫḫan aušta [anda]=kán kuit ṣaṭkešnuwantēš conn when he saw prev=ptc that sore pressed (KBo IV 4 II 4-5, Götze 1935) 'and when he saw that (they were) sore pressed'

17) ammel kāš-pāt I-aš dammešaš kiy=an I-an my this=ptc one punishment this=her one dammešạnunun ISTU Ẹ.GAL-LIM=pāt=kán kuit katta úiyanun I punished from palace =ptc=ptc that prev I sent (KBo IV 8 II 12 ff.) 'this (is) my sole punishment, I inflicted it alone on her, that I sent her away from the palace'

Exx. (13)-(15) appear to be causal, and illustrate the various positions kuit may occupy in its clause. It may not be clause initial, but may be clause second (the unmarked position), or may be placed after the element in the clause it is most closely associated with, including the (clause final) finite verb, as in ex. (15).⁷ An overt resumptive apaddan 'for that (reason)' occurs in ex. (13). Exx. (16) and (17) both contain postposed kuit clauses; in each the clause boundary is signaled by the postpositive particle -kán, which obligatorily occurs after the first tonic element in the clause. The structure of ex. (17) is comparable to that of exx. (6), (8), and (11). The postposed kuit clauses are all of the types represented by exx. (16) and (17) in that they either provide abstract complements to verbs such as 'see' or 'know',⁸ or are correlated or appositional to subjects or objects of the preceding clause. The great majority of kuit clauses are preposed. It should be noted that Hittite has no final or purpose conjunctions. Where other Indo-European languages would use such conjunctions, Hittite merely juxtaposes clauses with no special marking, as in the
following example (cf. further Friedrich 1960:163):

18) takku LÚ-an našma SAL-an ELLAM walahzi kuiški n=aš
if man or woman free strikes anyone conn=s/he
aki (Laws I §3, Friedrich 1959)
dies
'if anyone strikes a free man or woman and (= so that)
s/he dies'

Examples (19)-(21) are Homeric Greek:

19) Tēlēmakhon thaúmazon, ḥô tharsaléōs
Telemakhos they were amazed because boldly
tagōreuen (Od.1.382 = 18.411 = 20.269)
he spoke
'they were amazed at Telemakhos, because he spoke boldly'

20) leussete gâr tô pântes, ḥô moi gēras ērkhetai
you see for this all that my prize goes
állēi (Il. 1.120)
elsewhere
'for you all see this, that my prize goes elsewhere'

21) oudê ti oýden ḥô hoi phōnos huîi têtuktau
not at all she knows that her murder son is plotted
(Od. 4.771)
'not at all does she know that murder is plotted for her son'

The structure of ex. (19) is comparable to that of ex. (12);
'seeing that' would be an equally apt translation. Ex. (20)
is parallel to exx. (6), (8), (11), and (17); ex. (21) to
ex. (16). Greek ḥô is much more restricted in its range of
use than any of the other conjunctions discussed here. In
the Homeric corpus there are only twenty-four unambiguous
examples (Monteil 1963:239-240). It was replaced by hōte
and hōti, with many Homeric attestations.

Although it is clear that purpose or final meanings for
the conjunctions treated in this paper are by and large re-
stricted to postposed clauses and that conditional meanings
are typically restricted to preposed clauses, a large mea-
sure of semantic fuzziness persists in these conjunctions.
This fact, together with the lexical identity of the items,
suggests that what we actually are doing is translating the
contexts and not the conjunctions, and that the meanings as-
signed to these conjunctions, or the analysis of these items
as conjunctions at all reflects more the structure of the
translating language than that of the translated language.9

The apparently transparent process of deriving conjunc-
tions from relative forms, in this instance from an invariant
neuter singular, has not to my knowledge received the atten-
tion it requires. The standard handbooks merely note the
use of the relative stem in conjunctions, pointing out that the relative 'pronoun' serves to link clauses and that the extension of this stem to conjunctions is thus quite natural. Opinions vary about when this development took place. Karl Brugmann (1904:664) states that "*iod, das N. zu *iós, ist als Adv. in uridg. Zeit zur Nebensatzkonjunktion geworden'. Berthold Delbrück (1888:572, 1900:332) also believes in an early date for this change. Pierre Monteil on the other hand maintains that the differences in the conjunctional systems of Greek and Sanskrit are too great for the reanalysis of the relative as a conjunction to have taken place in the parent language (1963:76-79). The extension of the range of usage of quod to include conjunction is traditionally supposed to have taken place just before the earliest texts (Hofmann-Szantyr 1965:572). French authorities usually maintain that syntactically the conjunction was an accusative of respect. The original meaning of the relative element in such constructions was 'le fait que' and other significations were secondary (thus Meillet-Vendryes 1948:661-662 on both quod and hó; Ernout-Thomas 1953:294ff. on quod; Monteil 1963:239-240 on hó).

In contradistinction to Brugmann (1904:665), Delbrück believed 'dass das Arische im Wesentlichen den indogermanischen Zustand darstellt' (1900:319), and that the wide range of meanings found in Old Indic was original. Delbrück seeks to explain the various meanings starting from an original meaning of 'when, as', which 'dürfte sich in Verbindung mit den Hauptsätzen entwickelt haben, welche einen Zeitbegriff enthielten' (1900:332) and using as evidence the sentence adduced above as ex. (1). As Delbrück notes, 'In einem solchen Satze -- den man sich natürlich in das Pro ethnische übersetzt denken muss -- konnte yád noch als Akkusativ auf áhar bezogen werden; indem aber in tād áhar der Begriff des Tages zu dem des Zeitpunktes verblasste, wurde áhar entbehrlich, und dem blossen tād 'damals' entsprach dann ein yád 'als', welches in Verbindung mit Indikativen sich als Konjunktion im Sprachbewusstsein befestigte' (1900:332). Other meanings will have developed secondarily, e.g. through use in contexts containing modal verb forms, or through overlap of temporal precedence and causality. However, Delbrück is unable to explain the development of final clauses (1900:333), although he believes that they existed already in the parent language. In favor of Delbrück's analysis, one can point out that relative sentences of the requisite form indeed exist. Against this view one may note that this is a very restricted locus for the development of an entire system of conjunctions. A variant of Delbrück's position is supported by W. P. Lehmann (1974:168-172), who derives causal uses from the case of the resumptive: 'We assume that the use of yád, kuit, and other relative
particles to express a causal relationship arose from sub-
ordination of clauses introduced by them to an ablative, as
in the following passage:
\[
\text{ācittī yāt tāva dharma yuyopimā}
\]
unknowing that, because your law, order we-have-disturbed
\[
\text{mā nas tāsād īnasō deva rīśaḥ (RV 7.}
\]
not us because-of-that because-of-sin O-god you-harm 89.5
\['\text{Do not harm us, god, because of that sin that because un-
knowingly we have disturbed your law}.'\]
As such relationships with ablatives expressing cause were
not specific, more precise particles or conjunctions came
to be used. In Sanskrit the ablative yasmāt specifies the
meaning 'because' (1974:170-171). However, Lehmann's analy-
sis of this example is open to doubt. It seems just as pos-
sible that the first clause is to be taken as a conditional:
'if unknowingly we have infringed your law, do not harm us
because of that sin' (the 'because' in the resumptive clause
is a possible meaning of the ablative; 'on account of' is
equally acceptable). Lehmann further states that 'Just as
the causal relationship developed from an ablative modified
by a relative construction, so the temporal and conditional
relationship developed from a clause modifying an underlying
time node' (171). This explanation is invalid on the strength
of the preceding example. Furthermore, the use of yasmāt, yena,
etc. as conjunctions is restricted to postposed clauses (see
Minard 1936).
In spite of these and similar efforts, a number of ques-
tions have not received satisfactory answers. First, apart
from the putative subordination, what do relatives and con-
junctions have in common? Second, why is the neuter sg.
used as the basis for these forms? Third, why is there a
correlation between clause order and the meanings typically
assigned to these forms? Fourth, where do final and pur-
poses conjunctions come from? Answers to these questions may
be found by investigating the structure and functions of
relative sentences in these languages.
I cite some typical, and not so typical, relative sen-
tences from the languages in question to illustrate the fact
that Indo-European has relative sentences of the structure
of the following Vedic Sanskrit examples:

22) soma yās te mayobhūva utāyaḥ sānti dāsūṣe /
Soma which your delightful aids are for worshipper
\[
\text{tābhir no 'vitā bhava (RV 1.91.9) with these us helper be}
\]
'Soma, which delightful means of helping the worshipper
are yours / with these be our helper'

23) yō 'smān dveṣṭi, yām ca vāyaṃ dviṃmāṇ (ŚB 1.2.4.16)
who us hates whom and we hate
\['\text{who hates us, and whom we hate}.'\]
In ex. (22) the relative form ὁδὸν is an adjective modifying τὰς ἐνδοτὰς 'aids, means of helping'; the following clause contains an instrumental resumptive pronoun τὸν βίον 'with these'. Note that the relative clause is 'adjoined' rather than embedded, 10 that the relative clause precedes the 'main' clause, that the relativizer is an adjective, not a pronoun, and that one cannot properly speak of a head noun in such constructions. In ex. (23) the relative adjective has been pronominalized, and may also be given an indefinite reading. Comparable examples from Homeric Greek, Latin, and Hittite are given in the following:

24) phulakás d' ής εἰρείαν ἱέρων / οὗ τὸς κεκριμένων guards ptc which you ask hero not one being chosen rhūetai stratòn oudè phulássei (Il. 10.416-417) protects camp nor guards 'which guards you ask about, hero / not one, having been chosen, protects nor guards the camp'

25) Naucratem quem invenire volui, in navi non erat Naucrates which to meet I wanted on ship not he was (Plautus Amph. 1009) 'which Naucrates I wanted to meet, (he) was not on the ship'

26) nu=mu kuiš DINGIR-YA inan paiš, nu=mu gienzu conn=me which god—my sickness gave conn=me pity [daš] (KUB XXX 10 rev. 3) let take 'which(ever) god of mine gave me the sickness, let him take pity on me'

In ex. (24) the relative adjective ής modifies phulakás 'guards'; the resumptive in the following clause is the compound οὗ τὸς. The relative adjective quem (accusative) must be taken with Naucratem (also accusative) in ex. (25); there is no overt resumptive in the following clause. 11 In (26) the relative adjective modifies DINGIR-YA 'my god'; again there is no overt resumptive in the following clause. The boundary between the clauses is marked by the clause introductory nu.

The basic structure of the relative sentences which are to be reconstructed to Indo-European is bipartite, consisting of a preposed relative clause followed by a resumptive clause. The relativized noun stands in the preposed clause accompanied by a relative adjective, and it is referred to in the following clause by any anaphoric element (including zero). In such a system, the relative adjective serves to establish the noun it occurs with as a topic for the purposes of the following clause. Its function is thus basically annunciatary or cataphoric; its presence points to the presence of another clause, the resumptive clause. Thus, the basic function of the relative in these languages stands in sharp contrast to
that of the relative in a language like Modern English, where
the principal function of relativization is nominal modifi-
cation. These structures are basically correlative, with
neither clause clearly subordinate to the other, although
both clauses are linked to each other: the relative through
the annunciatory relative word; the 'main' through anaphora.
Hence these clauses are independent in the sense that all
the grammatical slots are filled, but interdependent in that
neither can stand as a complete text by itself. 12

Sentences containing relative-derived 'conjunctions'
have the same clearly grammatically complete bipartite struc-
ture that relative sentences do. The principal difference
between them consists in the absence of the co-referential
noun. The resumptives, however, typically refer to the pre-
ceding clause as a whole: compare exx. (4) and (13). Especial-
ly important is the order of the 'subordinate' and the 'main'
clause. The preposing of relative clauses must be recon-
structed to Indo-European, and it is in fact still preserved
in indefinite constructions of the type: whoever compiled
this bibliography left out five articles. As anteposed
clauses, the clauses containing relative conjunctions will
have provided a temporal, causal, or conditional starting
point for the following clause. Haiman (1978) argues con-
vincingly that 'conditionals are topics', maintaining that
one or more of the following characteristics or both topics
and conditionals will hold (565):
a) the characteristic mark of the conditional and that of
the topic will be identical
b) both will be identical with a third category, the in-
terrogative
c) the characteristic marks of the conditional and the
topic will be distinct, but one will be paraphrasable
by the other.

It is clear that this stipulation is met by the condition-
als, but it also holds for temporal and causal preposed
clauses as well. The identifying marker is precisely the
relative. Moreover, in those languages which use a "kwi/o-
relative, the interrogative comes from the same root.

Thus, the neuter singular relative used as a conjunc-
tion serves simply to relativize (or topicalize) the entire
clause in which it appears, and to point to the existence
of another clause. It follows then that the meanings as-
signed to the neuter nom.-acc. sg. relative used as conjunc-
tion must be artifacts: they are always contextually derived,
and the relative conjunction itself will originally have
contained only the essentially cataphoric topicalizing/pre-
supposing value that it has when used with nouns.

When the order of clauses is reversed, then the phor-
icity of the annunciatory and resumptive elements is reversed
as well: the old resumptive elements become annunciatory and
the old annunciatory elements resumptive. At this point old resumptive (or demonstrative) forms come to be used as relatives and as conjunctions (then, that) and relative adjectives come to be reinterpreted as relative pronouns. It is also at this point that final conjunctions develop, since they can occur only in postposed clauses. A recent attempt has been made by Jeffers and Pepicello (1979 [1980]) to re- construct purpose conjunctions to Indo-European, but this attempt must founder on the non-existence of such conjunctions in Hittite and on the fact that the individual IE languages that do have such conjunctions have innovated special forms which are not reconstructible; i.e. the basis is the relative, but the additional suffixal material varies from language to language.

The views presented in this paper require the assumption of a well-developed, clearly marked relative sentence construction in Indo-European. This is after all what comparative evidence would lead us to reconstruct, and the only scholars who have denied the existence of marked relative clauses in Indo-European are those who felt unable to accept them without being able to posit a single relative pronoun (so principally scholars at the turn of the century: E. Hermann [1895] comes first to mind) and those typologists who for aprioristic reasons have maintained that relative clauses in OV languages should be unmarked in addition to being preposed.

The reanalysis of the topicalizers as conjunctions parallels the reinterpretation of the relative adjectives as relative pronouns. This development proceeded hand in hand with the development of regularly postposed relative clauses, and is part of the massive shift in word order undergone by most early IE languages.

Notes

1. Although it is usually assumed that *wo- is the sole IE relative marker and that *kʰi/o- was secondarily and independently reinterpreted as a relative in Hittite, Latin, Oscan and Umbrian, Lithuanian, etc., I believe that there is good evidence that the latter group of languages reflect the original situation. First, in a language like Hittite, the interrogative or the indefinite cannot have been the source of the relative. The customary interpretation of relatives based on *kʰi/o- as having developed from indirect questions depends crucially on the postposing of the clause under consideration. With preposed relatives this explanation becomes much less natural. Second, in Hittite again, relative, interrogative, and indefinite functions are complementary: no one of them seems to be derived from the other. They are kept distinct by word order within the clause, and by intra-clause order. Third, the use of reflexes of *kʰi/d as an
emphatic particle in Sanskrit and Avestan, and to some extent in Greek, points to an earlier situation in which it was the relative. That is, in Sanskrit and Avestan *cid/cit* appears to be used above all when the element it occurs with is followed by further modification. Fourth, the languages which use reflexes of *yo- as the primary relative also use reflexes of *kw'i/o- in close association with the *yo- relatives without necessarily altering their meaning. Oswald Szemerényi (1970:193-194) maintains on quite different grounds that the use of *kw'i- as a relative in Hittite, Italic, etc., is not an innovation but an archaic trait.

2. The primary competitors are hóti 'that' and hóte 'when', the latter with 470 Homeric attestations (Monteil 1963:273), the former with 76 (Monteil 1963:247). These two conjunctions are morphological extensions of hó. Delbrück (1900:320ff.) treats hóte as equivalent to hó; there seem to be no temporal uses of the latter.

3. Umbrian pefe/pirsi comes from *kw'id-i*. Poulteny (1959:316) glosses this conjunction as 'if' and 'when, while'. A check of the passages in which it occurs reveals a characteristic distribution of meanings: 'if' is restricted to preposed clauses and is clause initial (excepting vocatives); 'when, while' may occur in preposed clauses, but the conjunction is placed in second position in the clause.

4. See Ernout-Thomas (1953:363ff.) for a clear discussion of some of the issues involved. They call attention to the fact that Cicero 'transpose mécaniquement' exibam (impf.) into exirem (subj.) in citing the following line of Plautus:

praesagibat mi animus frustra me ire quom exibam domo foretold me mind in vain me to go when I left house 'my mind foretold that I would leave disappointed when I left the house' (Aul. 178).

5. *yād in this example might also be translated 'since, because', since in fact Agni is regarded as 'born in heaven' or 'born in the waters'. Geldner translates 'ob...oder'.

6. Delbrück (1888:321ff.) offers different translations of *yād clauses with subjunctive in accordance with the position of the clause: 'damit' in postposed clauses, 'wenn' in preposed clauses.

7. I have dealt with the varying position of *kuit in conjunctional uses in a paper presented at the 1984 annual meeting of the American Oriental Society.
8. Carol Justus has discussed the complement structure of Hittite \( {\hat{s}}ak/-{\hat{s}}ek \)- 'know' from a typological point of view in a short paper (1980) and in her contribution to the Materialen zu einem hethitischen Thesaurus under the general editorship of Annelies Kammenhuber (inaccessible to me). Helmut Rix also discusses abstract complements in Indo-European (1979). All of the examples he cites involve postposed relatives of the type of ex. (6). Limitations of space preclude a fuller discussion of these papers.

9. This point seems to have been tacitly recognized by Delbrück, who observes that \( yâd \) is to be translated differently in accordance with the relationship of the 'subordinate' and 'main' clauses, the use of different verb tenses and moods, etc. (1888:572ff. passim).

10. Kenneth Hale (1976) uses this term to describe the relative structures found in Walbiri, a central Australian language. From a typological point of view the relative constructions found in Hittite (and reconstructed Indo-European) and Walbiri are directly comparable.

11. Note that this sentence is not Naucrates (nom.) quem (acc.) ... Holland and Ickler (1978) discuss some of the syntactic changes that would result in the reanalysis of this adjoined relative as an embedded relative.

12. Some of the description and argumentation here is repeated from Holland and Ickler (1978). The framework developed there has been extended to include another class of constructions.

References


CONTROL IN SOME SENTENTIAL ADJUNCTS OF MALAYALAM *

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In this paper I shall examine four sentential adjunct constructions in Malayalam from the point of view of their control properties. One of them -- the \(-\ominus\) adjunct -- has often been misanalyzed as a "serial verbs" construction; therefore I shall devote some space to showing that this construction does involve a sentential adjunct. Our four adjuncts reveal some very puzzling facts about control. But we shall be able to make some sense out of the picture by claiming that Malayalam has two types of PRO: PRO and pro. A second theoretical claim I shall make emerges from our observation that two of our adjuncts which optionally allow a lexical subject also contain aspect markers; and that this correlation between presence/absence of Aspect and optionality/obligatoriness of control is also true of the "absolute construction" of English. I shall claim that in nonfinite clauses, a lexical subject may be governed by Aspect.

In section 1 I present the data regarding the four sentential adjuncts. In section 2 I present my theoretical claims.

1

Malayalam has sentences like (1), where a chain of verbs occurs at the end of the sentence:

(1) a. ñaan oru maanŋa poṭṭicc-ə tinn-u
   I-n one mango-a pluck(st2)-ə eat(st2)-Past
   'I plucked a mango and ate it.'
   (lit. 'Plucking, I ate a mango.')

b. ñaan oru maanŋa poṭṭicc-ə muRicc-ə
   I-n one mango-a pluck(st2)-ə cut(st2)-ə
   uppilitt-ə tinn-u
   pickle(st2)-ə eat(st2)-Past
   'I plucked, cut, pickled and ate a mango.'
   (lit. 'Plucking, cutting, pickling, I ate a mango.')

In such a chain, the final V bears the tense and aspect markers of the sentence. The non-final Vs are formed by attaching a suffix \(-\ominus\) to the 'past tense stem'. The fact that the non-final Vs are nonfinite can be easily appreciated if we look at the sentence corresponding to (1a) in the future tense:
(1 a') ṇaan oru maayan a potticc-ə tinn-um
    I-n one mango-a pluck(st2)-ə eat(st1)-Future
'I will pluck and eat a mango.'

Note that only the final V has changed to signal the change of tense; the non-final V has the invariant 'past tense stem' and the suffix -ə.

The chain of verbs at the end of the sentence may be of any length (as suggested by (1b)); it is the output of a fully productive process, and the meaning is fully compositional (except in a few cases where the V-V sequence has been lexicalized). So we shall treat the building of these chains as a syntactic process.

These chains have been analyzed as 'serial verbs', with a suggested structure roughly like \[ V-V, ..., V]. But an examination of a wider range of data shows that this analysis will not do (except perhaps for the few lexicalized V-V sequences). For the structure illustrated in (1) may also occur in sentences in which the verbs are non-contiguous, as shown in (2):

(2) a. ṇaan oru maayan a nallawannam muRicc-ə patukke
    I-n one mango-a well cut-ə slowly
    tinn-u
    eat-Past
'I cut a mango well and ate it slowly.'
(lit. 'Cutting well, I ate a mango slowly.')

b. ṇaan kaaRə witt-ə oru bassə waayan-ı
    I-n car-a sell-ə one bus-a buy-Past
'I sold the car and bought a bus.'
(lit. 'Selling the car, I bought a bus.')

c. maaya siita-ye kadicc-ə tekkoottə oodi
    dog-n Sita-a bite-ə south-towards run-Past
'The dog bit Sita and ran in a southerly direction.'
(lit. 'Biting Sita, the dog ran towards the south.')

In (2) there are no contiguous sequences of verbs. The two verbs of (2a) have (each) their own adverbial modifiers, and one of these intervenes between the verbs.

In (2b) (even more strikingly), the two verbs have their own independent direct objects. In (2c), the first V has a direct object, and the second V is intransitive.

Examining these cases, it should be clear that the non-final V is the verb of an embedded S. The mutual independence of the two Vs can be further illustrated by scrambling this embedded S away from the final V:

(2 b') kaaRə witt-ə awan oru bassə waayan

This scrambling is possible also in the sentences of (1), cf.

(1 a'') potticc-ə ṇaan oru maayan tinnu. 3
The result that the 'verb chains' of sentences like (1) are not in fact what they appear to be, but that each non-final V is the verb of a full sentential adjunct, raises some interesting problems. The structure of (1a) (we see now) is something like (3):

(3)

The fact that the subject of the embedded S is controlled by the subject of the matrix S should not be surprising, since the embedded S is nonfinite. What is surprising is the control of the object position.

Mohanan (1983) has argued that Malayalam has PROs in governed positions. Temporarily adopting this solution, let us note (however) that there is a difference between the control of the subject position and that of the object position. The latter is optional, as evidenced by (2b) and (2c) (above). The control of the subject position is obligatory, cf.

(4) a. *oru maan̤ηa wiin-ə, ñaan atə uppiliṭṭ-u
    one mango-n fall-ə I-n it-a pickle-Past
    'A mango falling, I pickled it,'

    b. *amma maricc-ə, awan karañhilla
       mother-n die-ə he-n cry-Past-neg.
       '(His) mother dying, he didn't cry.'

Moreover, the controller must be the subject of the matrix S, cf.

(5) *ñaan oru maan̤ηa [PROi wiin-ə] tinn-u
    I-n one mango-ə fall-ə eat-Past
    'A mango fell, and I ate it,'
    (lit. 'Falling, I ate a mango. ')

Let us call the type of adjunct that we discussed above the "-ə adjunct", since a suffix -ə is attached to the verb. We now turn our attention to three other sentential adjuncts in Malayalam.

There is a "-konda adjunct" in Malayalam, in which a suffix -kona is attached to the adjunct's verb. This seems to have the same control properties as the -ə adjunct. Thus the control of the adjunct's subject by the matrix subject is obligatory:
The control of non-subject positions is possible, but not obligatory, cf.

In the "-ittə adjunct", a suffix -ittə is attached to the adjunct's verb. Control of the adjunct's subject position is possible, cf. (8), but it is not obligatory, cf. (9). ((9a) may be compared with (6b), which is ungrammatical.)

Control of the adjunct's object position is also possible; and here, the controller may be either the matrix subject (cf. (10)) or the matrix object (cf. (11)).

Example (9a):

(9a) amma maricc-ittə, awan karañnila
mother-n die-ittə he-n cry-Past-neg.
'(Hs) mother having died (even), he didn't cry.'
(11) a. nii paRäññ-itte, ellaavarum aä kaaryam you-n say-itte every-n that matter-a aRiññ-u know-Past

'Because you said it, everyone came to know about that matter.' (lit. 'You having said, everyone knew that matter.')

b. näaya kadic-c-itte, näan awan-e aaspRa-yileekkë dog-n bite-itte I-n he-a hospital-to kond-ë pooyi take-ë go-Past

'A dog having bitten him, I took him to a hospital.'

The fourth sentential adjunct we shall examine is the "-kondirikke adjunct", in which a suffix kondirikke is attached to the verb. In this adjunct (again), control of the adjunct's subject position is possible (cf. (12)), but it is not obligatory (cf. (13)):

(12) udyaanatt-il ulaatti-kondirikke, sita garden-in walk about-kondirikke Sita-n palatum aaloociccc-u many things-a think-Past

'While walking about in the garden, Sita thought about many things.'

(13) raaman udyaanatt-il ulaatti-kondirikke, sita Raman-n garden-in walk about-kondirikke Sita-n bhakSnam paakam ceyt-u food-a cooking do-Past

'While Raman was walking about in the garden, Sita cooked food.'

Control of the adjunct's object position also appears to be possible:

(14) amma kuliippiccu-kondirikke, cutti tummi mother-n bathe(trans.)-kondirikke child-n sneeze-Past

'While mother was bathing it, the child sneezed.'

Now, there is a clear contrast as regards the possibility of a lexical subject, between (on the one hand) the -ë and -kondë adjuncts, and (on the other hand) the -ittë and -kondirikke adjuncts. A lexical subject is inadmissible in the former, but is in complementary distribution with PRO in the latter. Interestingly, the suffixes of the latter class also function as aspect markers in Malayalam. Thus -ittë is part of the perfect aspect marker -ittunda, illustrated in (15); and -kondirikke is formed by adding an -e augment to the progressive aspect marker -kondë, illustrated in (16).
(15) ṇaan oru kattē eṉuṭi-yiṭtundē
I-n one letter-a write-Perfect
"I have written a letter."
(16) ṇaan oru kattē eṉuṭi-kkondirikki-unnu
I-n one letter-a write-Progressive-Present
"I am writing a letter."

The -ē and -kondē suffixes (on the other hand) are not aspect markers.5

The correlation between the presence of a verbal element which can function as an aspect marker and the admissibility of a lexical subject is seen to be not an accident of Malayalam when we consider the English "absolute construction". This construction allows either a lexical subject or a PRO subject if the verbal complex contains an auxiliary have, or a be (auxiliary or main verb); if have or be is not present, it allows only a PRO subject:

(17) a. (John) having finished dinner, Mary decided to wash the dishes.
b. (Her children) being ill, Mary decided not to go to work.

(18) a. (*John) munching an apple, Mary sat on the doorstep.
b. (*Her children) covered with bruises, Mary looked pretty miserable.

This striking cross-linguistic parallelism allows us to conclude that the presence of aspect (an aspectual verb) 'sanctions' a lexical subject in nonfinite Ss. If we try to explain this fact in terms of "government", we can say that aspect optionally governs the subject position.6

Suppose we adopt the position of Akmajian, Steele and Wasow (1979) that the auxiliary verb have, and the verb be, are generated in the VP but move into AUX if the latter contains no modal. We can say that in nonfinite Ss containing (only) an -ing in AUX, have (or be) moves into AUX only optionally. If have (or be) has moved into AUX, it governs the subject position and the sentence requires a lexical subject; if it has not so moved, the subject position is ungoverned and is filled by PRO. A parallel analysis can be worked out for Malayalam aspect markers (all of which are derived from verbal roots and are 'verbal' in nature); but I will not attempt this here.

We now advert to the claim of Mohanan (1983) that Malayalam has PROs in governed positions. If this were true, our attempt to describe the distribution of lexical subject and PRO in terms of government would obviously be vacuous. Suppose (however) we say that there are two types of PRO in Malayalam, PRO and pro; and that it
is the latter which appears in governed positions, such as the subject position of a tensed S and the object position. We shall further say that pro is simply a pronominal. Such an analysis will immediately account for the (otherwise puzzling) difference between English and Malayalam as regards control. I shall now conclude this paper by presenting two more arguments for the "two PROs analysis".

Consider the following instances of the -ittɔ adjunct of Malayalam:

(19) a. awan-te sukhakkeđɔ marunŋ kažicc-ittɔ he-gen illness-n medicine-a eat-ittɔ maŋki get cured-Past 'His illness got cured because of his taking medicine.' (lit. 'Having taken medicine, his illness got cured.')

b. jappaan-il boomɓ iṭt-ittɔ etRa Japan-in bomb-a put-ittɔ how many kuttikal maricc-u children-n die-Past 'How many children died because of bombing in Japan.' (lit. 'Having put bomb in Japan, how many children died.')

The point to note is that in these sentences, the PRO subject of the -ittɔ adjunct has no antecedent (in the sentence). Thus in (19a), the person who 'takes medicine' is obviously not awante sukhakkeđɔ ('his illness'), which is the matrix subject. (This person may be taken to be the "he" whose illness gets cured; but this interpretation is obviously dependent only on pragmatic factors, since awan ('he') is in the genitive position of the matrix subject.) In (19b) (on the intended reading), the people who do the bombing are not the kuttikal ('children') who get killed. The corresponding sentences with the -ɔ adjunct (instead of the -ittɔ adjunct) are ungrammatical on the intended reading, cf.

(19b') jappaan-il boomɓ iṭt-ɔ etRa kuttikal maricc-u

(This sentence is of course fine on the reading that the children did the bombing.) The English absolute construction (with or without an aspectual verb) is also ungrammatical on the intended reading:

(20) Having put bombs in Japan, how many children died?

There is a constellation of puzzling facts here which call for an explanation. The English absolute construction containing an aspectual verb takes a subject
which is either a lexical NP or a controlled PRO; but it does not allow a "free PRO". The parallel Malayalam construction with an -ittē adjunct allows all three possibilities. If Malayalam (like English) has only one type of PRO, it is difficult to see how one can explain this cross-linguistic difference. On the other hand, if we say that Malayalam (unlike English) has both PRO and pro, we predict the constellation of facts. For now, the -ittē adjunct (like the parallel English construction) will take either a lexical NP or a controlled PRO as subject. But wherever we can get a lexical subject, we can also get a pro in Malayalam. And the pro can be free.

A second set of facts which the "two PROs theory" can explain has to do with the contrast between the -ittē and -ē adjuncts. The -ē adjunct allows only a controlled PRO as subject, but the -ittē adjunct allows (also) a free PRO. Now it could be pointed out (on the basis of evidence like that noted in fn. 7) that the same type of PRO can be controlled in one structure and free in another structure. But if we are simply content to say this about the -ittē adjunct/-ē adjunct contrast, we leave unanswered the following question: why is it that the adjuncts which take a lexical subject are also the ones which allow a free PRO, and the adjuncts which do not take a lexical subject are also the ones which allow only a controlled PRO? Why do we not get the reverse correlation, or no correlation at all? On the other hand, if we say that Malayalam has both PRO and pro, and that the latter can occur wherever a lexical subject can occur, we explain the correlation.

Notes

* I wish to thank Probal Dasgupta for helpful discussions.

1 n = nominative; a = accusative; st2 = stem 2 (or "past tense stem"); st1 = stem 1 (or "present tense stem"). The Malayalam nominative marker is '∅'; the accusative marker is -e for animate NPs and '∅' (again) for inanimate NPs. Malayalam verbs have two stems, which may be called the "present tense stem" and the "past tense stem", or (more neutrally) stem1 and stem 2. The formation of the second stem from the first is the basis of an elaborate system of verb classes. The -ē suffix illustrated in (1) -- and indeed, all the suffixes we shall be discussing in this paper -- attach only to the past tense stem. This being the case, we shall omit the information about stem class in our subsequent glosses of forms involving these suffixes.

2 For the lexicalized sequences, the suggested structure may indeed be appropriate. The verbs of these resist
separation by intervening elements. A good diagnostic of whether a sequence has been lexicalized or not is what we may call the "tanə test". (Tanə is an emphasis marker which can modify both nouns and verbs.) Tanə cannot modify the first V of kandə var 'take and come' (meaning 'bring'), which is one of the clearest cases of lexicalization; whereas it can modify the first V of kadiccə tinn 'bite and eat'; cf.

(1) *nii maŋə a kandə tanə var-anam
    you-n mango-a take-ə emph. come-must

(2) nii maŋə a kadicc-ə tanə tinn-anam
    you-n mango-a bite-ə emph. eat-must

3 If this sentence is judged somewhat odd, note that it becomes fine if there is an emphasis marker, tanə, on potticc-ə:

(1) potticc-ə tanə ə aa orə maŋə a tinnu.

A still better sentence is:

(2) cavacc-ə tanə nii itə tinn-anam
    chew-ə emph. you-n this-a eat-must
    'You must eat this by chewing it.'

4 The question of whether Malayalam has a VP or not is largely irrelevant to our discussion. In (3) we tentatively adopt a "flat structure" (see Mohanan (1982) for some arguments in this regard).

5 There is a minor snag here. It could be objected that -itə is only the first element of the complex form -ittundə (itə + undə), which functions as the aspect marker. And that, in this respect it is no different from -kandə which is the first element of the progressive marker -kondirikk (kandə + irikk). Therefore (it could be asked), how can one maintain that -itə is an aspect marker and -kandə is not?

There is a difference between the two cases, however. The second element of -ittundə, namely undə, is a verb with a defective paradigm: it exists only in two forms, undə (the present tense form), and ulla (its form when the relative clause marker -a is attached to it). The second element of -kondirikk, namely irikk, is a verb with a 'full' paradigm. The fact that undə is a defective verb may explain why it does not surface in the adjunct. My claim (in other words) is that the full aspect marker, -ittundə, is underlyingly present in the adjunct; and that its second element is deleted for morphological reasons.

One could alternatively maintain that the aspectual meaning is carried by the first element in -ittundə, the second element making a distinction only in form.
and by the second element in -kondirikk.

6 It has been claimed (Reuland 1983) that in the absolute construction, it is the -ing which optionally governs the subject position. This cannot be true, in view of (18).

There are some apparent counterexamples to our claim, which we must take care of. There are sentences like (i) and (ii):

(i) a. Mary sat motionless, her tears flowing down her cheeks.
   b. The wounded man lay on the floor, his blood dripping on the carpet.

(ii) a. His face suffused with pain, John kissed Mary.
    b. His money all spent, he decided to enlist.

The data in (i) would seem to argue that -ing is indeed a governor; the data in (ii), that -en is also a governor. But note (firstly) that we also get sentences like (iii), without either -ing or -en:

(iii) a. His face red with confusion, John kissed Mary.
    b. There he sat, his clothes a mess!

A second point to note is that in the adjunct type illustrated in (i)-(iii), there is a constraint that the adjunct must be interpretable as a predication on the matrix subject. Thus, contrast (iv)(below) with (ia) and (iiia):

(iv) *John kissed Mary, her tears flowing down her cheeks/her face red with confusion.

But the absolute construction containing an aspectual verb is under no such constraint:

(v) a. John being away, Mary decided to enjoy herself.
    b. John having become an alcoholic again, Mary decided to leave him.

While I have nothing useful to suggest regarding what 'sanctions' (or "governs") a lexical subject in the adjuncts in (i)-(iii), it seems clear that these adjuncts constitute a separate phenomenon which calls for a separate explanation.

7 The English PRO (too) can be sometimes free and sometimes controlled, but in different constructions or different syntactic positions. (Thus, it is well known that the PRO subject of a gerund is controlled in the object position and free in the subject position:
(i) a. I like [PRO eating bananas]
   b. [PRO eating bananas] is fun.)

The problem we are facing is that in the same construction, PRO seems to be controlled in one language and free in another language. (The argument of course is dependent on the parallel we drew between the English absolute construction containing an aspectual verb and the Malayalam -ittə adjunct.)

References


The Syntactic Status of
Object Possessor Raising in Western Muskogean

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When two sentence types have the same logical structure and differ only in their surface syntax, we may say that they are related by syntactic rule. If one accepts the notion of syntactic rules at all, this definition might seem uncontroversial. Problems arise for the characterization of some putative syntactic rules within certain theories, however, because of the way these rules alter the argument structure of the sentences to which they apply. The Western Muskogean languages Chickasaw and Choctaw have several relation-changing rules which have already received a fair amount of attention in the literature. In this paper, I will examine the notion of syntactic rule which can be motivated by the Western Muskogean rules of III-Subjectivalization and (Subject) Possessor Raising, and then consider the syntactic status of a third process, Object Possessor Raising, which, like Subject Possessor Raising, is of cross-linguistic interest because it appears to result in violations of the Projection Principle (Chomsky e.g. 1982).

Munro and Gordon (1982) discuss the Western Muskogean rule of III-Subjectivalization, which promotes a dative object to subject (see also Carden, Gordon, and Munro ms. and other references cited there):

(la) Chihoow-at hattak im-oktani-tok. 'God appeared to the man'
    God-su  man  III-appear-pt
b) Hattak-at Chihoow-at im-oktani-tok.
    man-su  God-su  III-appear-pt

(These examples are Chickasaw, as are all others not otherwise identified below. The Choctaw facts are similar, although lexical items and phonological and morphological details vary.) Sentences like (la) have a subject NP marked with the subject case suffix -at and an object (generally a semantic dative) triggering the appearance on the verb of a prefix from the III agreement set (im- is the third-person III prefix, to use Munro and Gordon (1982)'s terminology). Application of the rule of III-Subjectivalization gives a new structure, exemplified by
(lb), in which the III argument has become the subject -- it appears initially in the sentence, is marked with the -at suffix, and can be shown to be the (only) syntactic subject by a variety of other tests, including switch-reference and the triggering of a third-person plural agreement marker (for details, see Munro and Gordon 1982). The old subject (in (I), *Chikoowa, 'God', the semantic subject of oktani 'appear') retains its -at case marking but is otherwise not treated as a subject: although in (Ia) *Chikoowa triggers switch-reference marking and other syntactic subject tests, it no longer does in (lb).

III-Subjectivalization is a syntactic rule:

(A) The rule relates two sentences which have exactly the same logical structure. (Derived structures created by the application of syntactic rules may differ in implicational structure or discourse use -- this has been shown for English rules such as Dative Movement, Particle Movement, and Passive, and is clearly true of III-Subjectivalization. III-Subjectivalization appears to be an option in cases where the speaker wishes to mark the increased salience in the discourse of the logical III object. Thus, other translations for (lb) above would be 'The man had God appear to him' or 'The man was appeared to by God'. But the truth conditions for (Ia) and (lb) are the same.)

(B) In the new structure created by the rule, grammatical relations and derived syntactic properties are changed. However, although the argument structure of the sentence changes, the number of NPs and the semantic predicates in the sentence remains constant -- no new information is added to the sentence by the rule. (After III-Subjectivalization, the old subject retains only lexical subject properties, such as those related to selectional restrictions. The derived subject acquires all the syntactic subject properties mentioned above.)

(C) The rule is productive. While there may be lexical or grammatical restrictions on the application of the rule, it applies to a significant class of sentences. (Speakers vary in terms of how productive a rule like III-Subjectivalization is -- for some speakers, any sentence containing a verb with a third-person subject and a III object may undergo III-Subjectivalization; others restrict the application of the rule to a lexically specified set of verbs.)

(D) The new structure created by the rule is a novel, non-basic sentence type. (English Dative Movement, for example, creates a new type of non-basic sentence with two bare object NPs. Similarly,
because of the appearance of two at-marked NPs in derived III-Subjectivalization sentences, these structures are different from any basic sentence type in the language. Thus, all double-at structures like (lb) are derived structures.

As the list of criteria above shows, I do not consider obligatory processes -- Subject-Verb Agreement, for example -- to be syntactic rules of the same type as III-Subjectivalization. True syntactic rules, in the sense I use that term here, must relate pairs of surface sentence types. (On the other hand, certain restricted types of sentences may require or prohibit the application of particular syntactic rules -- thus, English Dative Movement cannot apply when the semantic direct object is pronominal.) Similarly, no rule can add a noun phrase or predicate to a sentence -- thus, there is no syntactic rule of Causativization in Western Muskogean to relate sentence pairs like (2a) and (2b), because the logical structure of such sentences is not the same:

(2a) Ihoo-at hilha-tok. The woman danced'
    woman-su dance-pt
b) Hattak-at ihoo hilha-sh-tok. The man made the woman dance'
    man-su woman dance-cs-pt

(2a) has only one NP argument (ihoo 'woman'), and its predicate is the simple hilha 'dance'; (2b) has two NP arguments, and a complex predicate. Although there is an interesting sense in which (2b) "includes" the predication of (2a), it is certainly not the case that Causativization can be a syntactic rule. Despite the fact that causative formation is a very regular process in Western Muskogean, then, it must be lexical, rather than syntactic.<4>

The second Western Muskogean syntactic rule described in Munro and Gordon (1982), (Subject) Possessor Raising, presents problems for certain characterizations of possible syntactic rules, as discussed at length by Carden, Gordon, and Munro (ms.). Subject Possessor Raising relates pairs of sentences like those in (3). (3a) is an intransitive sentence with a possessed subject (the possessed noun has a III prefix agreeing with the possessor), while in (3b) there is a double-at structure like the one in (lb), with the possessor of the old semantic subject a new derived subject which has acquired all the syntactic subject properties discussed above:
(3a) Ihoo im-ofi'-at ishto. The woman’s dog is big.
   woman III-dog-su big
b) Ihoo-at ofi'-at im-ishto.

The semantic subject (the possessed syntactic subject in (3a)) loses its
(alienable) possessive marking, and the verb is marked for
morphological III-agreement with the derived (possessor) subject.<5>
Pairs of sentences related by Subject Possessor Raising have the same
logical structure (although once again their discourse use may vary -- a
sentence like (3b) shows that the possessor is more important to the
speaker in the discourse, and might also be translated ‘The woman has
a big dog’), and do not involve the addition of new NPs or predicates to
the sentence. Subject Possessor Raising creates a novel phrasal
structure, just as III-Subjectivation does.

However, while III-Subjectivation promotes a dative in a
sentence whose verb is already lexically subcategorized for a dative
(III) argument (cf. (1a-b)), Subject Possessor Raising, as in (3a-b),
promotes to subject an NP which was not an original subcategorized
argument of the verb. The verb in (3), ishto ‘be big’, cannot take a
semantic dative or any other type of III-marked argument other than
one derived via Subject Possessor Raising. Thus, Subject Possessor
Raising as described here involves a violation of the Projection
Principle within the theory of Government and Binding (cf. e.g.
Chomsky 1982 and Carden, Gordon, and Munro ms.).<6> Subject
Possessor Raising does not add any information to the sentence, but it
does give the verb a new argument (possessor-of-subject is not a basic
argument of a verb like ‘be big’).<7>

The rule which I will examine in the remainder of this paper,
Object Possessor Raising, has some features in common with Subject
Possessor Raising. Just as Subject Possessor Raising promotes a
possessor-of-subject to subject, Object Possessor Raising promotes a
possessor-of-object to object:

(4a) Ofi’-at ihoo im-pask-a apa-tok. The dog ate the woman’s
dog-su woman III-bread-ns eat-pt bread’
b) Ofi’-at ihoo-a paska im-apa-tok.
dog-su woman-ns bread III-eat-pt
The object in (4a) is the possessed NP *ihoo im-paska* ‘the woman’s bread’, marked here with the (optional) non-subject marker -a. This NP is a constituent in (4a), and must move and be marked as a unit. In (4b), the possessor, *ihoo* ‘woman’, is a derived object. It is a separate constituent of the sentence: it controls verbal agreement (the III prefix on the verb of (4b) agrees with the semantic possessor-of-object), may be suffixed with the non-subject marker, and can freely be moved away from the possessed noun *paska* ‘bread’. (5) and (6) show some variations of (4a) and (4b) respectively, illustrating these possibilities:

(5a) Ofi'-at apa-tok ihoo im-pask-a.
   b) Ihoo im-pask-a ofi'-at apa-tok.
(6a) Ofi-at paska im-apa-tok ihoo-a.
   b) Ihoo-a ofi'-at paska im-apa-tok.
   c) Ofi-at pask-a ihoo im-apa-tok. (etc.)

The two object nouns in (4b) and (6) act just like the two objects which occur in basic two-object sentences, for instance in sentences with the verb *ima* ‘give’, which is lexically subcategorized for both a III (dative) object and a direct (patient) object which cannot show verbal agreement. For most speakers, sentences like (4b) and (6) show a similar restriction: the III (possessor) argument shows verbal agreement, and the original direct object is a non-appearing NP. Other than with regard to agreement, though, the two objects in all such sentences exhibit similar word order and case marking. Subject NPs and object NPs of any type may be either pre- or postposed, with certain discourse limitations.<8> Non-subject *a*-marking is never required, but is most common when there is more than one non-subject noun. *A*-marking is used on either the first non-subject noun or on a moved non-subject: it may not occur on the second non-subject noun in a string, or on a preverbal non-subject if another non-subject has been pre- or postposed.

Like Subject Possessor Raising, Object Possessor Raising violates the Projection Principle by adding a new NP as an argument to the verb (as with Subject Possessor Raising, of course, no information is added to the sentence -- but possessor-of-object is not an argument for which the verb of the main clause is subcategorized).
Unlike III-Subjectivalization and Subject Possessor Raising, however, which create non-basic double-*at* sentence structures, most applications of Object Possessor Raising do not create novel, non-basic surface strings. Sentence (4b) above, for instance, can be interpreted as meaning not only 'The dog ate the woman's bread' but also 'The dog ate the bread for the woman' (and, in this reading, it has all the same variations discussed above). In Chickasaw and most varieties of Choctaw, this sort of sentence would be the usual expression of either a benefactive<9> or an in-place-of 'for', and all speakers can apparently accept a malefactive or "ethical" interpretation for sentences with III objects -- (4b) can, therefore, also mean that the dog's eating the bread involved the woman in some unspecified way, whether she wanted him to eat it or not: thus, 'for' is probably too specific an English translation for Western Muskogean III objects. We may wonder, then, whether there really is a syntactic rule relating sentences like (4a) to the more general type (4b), or whether the possessor-of-object might not simply be one of many interpretations available for a III object in a sentence like (4b).

There are a number of specific ways, however, in which Object Possessor Raising sentences differ from ordinary sentences with basic III objects, which argues that the Object Possessor Raising construction has an independent syntactic status.

First of all, there is by no means a complete overlap between Object Possessor Raising sentences like (4b) and basic, non-derived sentences with III objects such as (7):

(7) Iho-o-at hattak-a ofi' im-a-tok. 'The woman gave the man a dog'
    woman-su man-ns dog III-give-pt

A sentence with a verb like 'give' which is lexically subcategorized for a III dative object and an additional patient object does not allow the interpretation that the III object names the possessor of the patient. Thus, (7) cannot mean 'The woman gave (gave up, gave away) the man's dog'. The same is true of many transitive verbs which are lexically subcategorized to allow an optional added III object. While *apa* 'eat' may occur with either a subcategorized III (dative) object or a III argument derived by Object Possessor Raising, other verbs, such as 'kiss' (Chickasaw *shokɔ*ka, Oklahoma Choctaw *ahpali*) allow only a
dative interpretation for the III object, never a possessor-of-subject interpretation:

(8) Hattak-at ihoo-à chipota i-sho'ka-tok.
    man-su woman-ns child III-kiss-pt
    'The man kissed the child for the woman', "The man kissed the woman's child"

Further, an Object Possessor Raising sentence must have an unpossessed direct object (understood to be possessed by the derived III object), but there is no such restriction on ordinary III object sentences:

(9a) Hattak-at ihoo yamm-a ofi' im-ambi-tok.
    man-su woman that-ns dog III-kill-pt
    'The man killed that woman's dog'; 'The man killed the dog for that woman'

b) Hattak-at ihoo yamm-a chim-ofi' im-ambi-tok.
    man-su woman that-ns 2sIII-dog III-kill-pt
    'The man killed your dog for that woman'

While the set of transitive verbs which may undergo Object Possessor Raising is roughly a subset of the set of transitive verbs which may optionally take an added dative object, this is not completely true. A few verbs, such as ayoppanchi 'like, admire' may undergo Object Possessor Raising, but may not take a III dative argument. The dative reading of (10) below is unacceptable (even though my Chickasaw consultant found it semantically plausible, for instance if the woman urged you to admire the dress for her sake):

(10) Ihoo-a naafka im-ayoppash-li-tok.
    woman-ns dress III-admire-3s1-pt
    'I admired the woman's dress', "I admired the dress for the woman"

For some speakers, basic III objects and those derived via Object Possessor Raising are differentiated in terms of the position of the III prefix in certain constructions. (11a-b) shows basic sentences containing the Choctaw verb anopolí 'talk', with an instrumental prefix isht-,
which agrees with the 'about' object in (a) and with the III prefix im-, agreeing with the dative object in (b). The normal combination of instrumental plus basic dative III prefixes occurs in that order, as in (IIC). But when Object Possessor Raising applies to a sentence with an instrumental 'about' object, like (IIa), yielding the derived sentence (IId), the III prefix agreeing with the derived possessor-object appears before the instrumental prefix. Thus, the basic III object structure and the Object Possessor Raising structure are not always the same.

CHOCTAW

(Ila) Alikchi im-ohoyo isht-anopoli-li-tok. 'I talked about the
doctor III-woman it-talk-lsl-pt
doc'tor's wife'

(b) Alikchi im-ohoyo im-anopoli-li-tok. 'I talked to the doctor's
doctor III-woman III-talk-lsl-pt
wife'

(c) Alikchi-ya ohoyo isht-im-anopoli-li-tok. 'I talked about the
doctor-ns woman it-III-talk-lsl-pt
doctor to the woman'

(d) Alikchi-ya ohoyo im-isht-anopoli-li-tok. 'I talked about the
doctor-ns woman III-it-talk-lsl-pt
doc'tor's wife'

Some of the syntactic properties which characterize the class of objects in Western Muskogean also differentiate between basic and derived III objects. As noted above, a-marking and word order do not work differently for basic III's and those derived via Object Possessor Raising. However, the use of reflexives and reciprocals does distinguish these two types of III objects in several ways, again suggesting a separate status for Object Possessor Raising sentences.

The use of the reciprocal and reflexive object prefixes itti- and ili- and their III counterparts ittim- and ilim- in Western Muskogean is exclusively subject-controlled. Thus, if Object Possessor Raising creates a new III object, we might expect it to be reciprocialized or reflexivized under the appropriate sort of coreference with the subject. This is true for reciprocals:

(12) Hattak-at paska ittim-apa-tok.

man-su bread IIIrc-eat-pt

'The men ate each other's bread', 'The men ate bread for each other'

As far as I can tell, III reciprocal objects behave no differently
whether they are basic III’s or III’s derived via Object Possessor Raising. The situation is different for III reflexive objects, however. A III object derived by Object Possessor Raising may be reflexivized in Choctaw, but not, apparently, in Chickasaw:

(l3a) **CHOCTAW** Pallaska ilim-apa-li-tok. ‘I ate my own bread’
bread IIIrf-eat-lsl-pt

b) **CHICKASAW** *Paska ilim-apa-li-tok.
bread IIIrf-eat-lsl-pt

III reflexives are uncommon in Chickasaw, but they can be formed from certain basic III dative objects. However, III objects derived by Object Possessor Raising can never be reflexivized in Chickasaw.

Although Choctaw reflexivizes both basic and derived III objects similarly, there is one Choctaw construction in which they are distinguished. The verb ‘talk about’ can take a basic III dative object, as in (l1c) above. When the dative object is reflexive, Chickasaw speakers use the expected III reflexive *ilim-* , as in (l4a), but Choctaw speakers use the non-III reflexive *il(i)* , as in (l4b), even though ‘talk’ cannot otherwise take an ordinary non-reflexive object:

(l4a) **CHICKASAW** (Isht)-ilim-anompogi-li-tok. ‘I talked to myself
(it)-IIIrf-talk-lsl-pt (about it)’

b) **CHOCTAW** (Isht)-il-anompogi-li-tok.
(it)-rf-talk-lsl-pt

Apparently (l4b) is a lexically specified idiosyncratic form of reflexive + III, used only with Choctaw *anopoli*. But although (l4b) is the normal way to specify a III reflexive object with this verb, it is not the usual way to specify a derived III reflexive possessor object, as (l5) shows:

(l5) **CHOCTAW** Hattak isht-ilim-anompogi-li-tok. ‘I talked about my
man it-IIIrf-talk-lsl-pt husband’

A derived reflexive III object does not normally appear before instrumental *isht-* , the way non-reflexive *im-* does in (l1d). However, even though it appears in the same position as the reflexive prefix in (l4b), the reflexive prefix in (l5) takes the normal, regular form, rather
than the idiosyncratic form of the nonderived III object.

Finally, evidence from idiomatic object NPs also supports the idea that certain III objects must be derived, not basic. There are a number of nouns which have the form of possessed NPs, but whose meaning is not predictable from their parts, such as Choctaw tali i-hina (rock III-road, literally 'rock's road') 'railroad track' or nashollo i-tobi (Anglo III-bean, literally 'Anglo's bean') 'green peas ('English peas'). My Choctaw teacher willingly accepts Object Possessor Raising pairs like the following, in which the original direct object is an idiomatic possessed NP whose formal possessor can be raised:

**CHOCTAW**

(l6a) Naahollo i-tobi-ya apa-li-tok. 'I ate the white man's beans',
    Anglo III-bean-ns eat-lsl-pt 'I ate the green peas'
    b) Naahollo-ya tobi im-apa-li-tok.
        Anglo-ns bean III-eat-lsl-pt

(l7a) Tali i-hina-ya ayska-li-tok. 'I fixed the railroad track'
        rock III-road-ns fix-lsl-pt
    b) Tali-ya hina im-ayska-li-tok.
        rock-ns road III-fix-lsl-pt

(l6) could be simply another standard Object Possessor Raising sentence -- and, thus, (l6b) also means 'I ate the beans for the white man'. But, crucially, both (l6) sentences can mean 'I ate the green peas', a reading which must reflect an original structure containing the idiomatic NP nashollo i-tobi. With (l7), the case is even clearer, since it makes little sense to think of this sentence as having the reading 'I fixed the rock's road' or (for l7b) 'I fixed the road for the rock'. The possibility of idiomatic readings for the (b) sentences shows that a rule like Object Possessor Raising must exist to relate these two-object surface structures to an underlying structure with a single object, an idiomatic possessed NP.

There are thus a number of ways in which derived III possessor objects behave differently from basic III dative objects in Western Muskogean: in their subcategorization and occurrence with particular verbs, in their marking within the verbal complex, with regard to reflexivization (both generally and in the idiosyncratic Choctaw 'talk' construction), and in their interaction with idiomatic NPs. Significantly,
both Chickasaw and Choctaw distinguish basic and derived III object structures in different ways, which nonetheless confirm the idea that basic III objects are more idiosyncratic and more closely bound to the verb than are the III objects derived by Object Possessor Raising. Thus, Western Muskogean sentences containing a transitive verb plus a III object may reflect (at least) two distinct sources, a basic phrasal type or a derived one. Clearly, then, it seems that my original hypotheses characterizing syntactic rules must be revised: it is certainly not necessary that a syntactic rule produce a completely novel type of sentence structure, as long as it creates a sentence type with unique syntactic properties.

Footnotes

1. Chickasaw and Choctaw constitute the Western branch of the Muskogean family of American Indian languages (Haas 1941). For the purposes of this paper I will refer to Chickasaw and Choctaw loosely as two "languages", although their exact linguistic status has not been established (Haas 1941, etc.; Pulte 1975; Munro ms.): Chickasaw and Choctaw may be distantly related dialects rather than separate languages, though the political separation between the two groups is longstanding. The phonological, morphological, and lexical differences between Chickasaw and Choctaw in general are considerable, however; more than the differences among the various dialects of Choctaw proper I have examined. Although Chickasaw has only recently been extensively studied, Choctaw is well described -- Nicklas (1972) and Davies (1981) are two useful grammars.

The data presented in this paper reflect the usage of my two major consultants, Catherine Willmond for Chickasaw and Josephine Wade for Choctaw. These findings have been corroborated in work with over twenty other speakers of Chickasaw and Choctaw in Oklahoma, Los Angeles, and Mississippi. Any conclusions about the use of the syntactic constructions discussed here in Chickasaw versus Choctaw, however, must be tentative at this time.

I'm very grateful to all of my Chickasaw and Choctaw teachers for their patient help, and to a number of linguists for productive discussion and suggestions. In particular, I want to thank Charles Ulrich
and Lynn Gordon; I'm also grateful to Jan Scott Batchler, Guy Carden, Bernard Comrie, Bill Davies, Larry Hyman, Hyo Sang Lee, Allen Munro, Doris Payne, and Tim Stowell.

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2. Examples in this paper are presented in practical orthography -- the digraphs *ch, lh*, and *sh* represent [-chief], [H], and [s] respectively, the apostrophe represents the phonemic glottal stop in Chickasaw, long vowels are doubled, and nasalized vowels are underlined. (For details, and notes on areas where Chickasaw and Choctaw differ, see Munro ms.)

The abbreviations I use in this paper include I, II, and III for the affix agreement sets whose use is described in Munro and Gordon (1982) and elsewhere; 1 and 2 for first- and second-person; cs = causative; it = instrumental, ns = non-subject, p = plural, pt = perfective, rc = reciprocal, rf = reflexive, s = singular, and su = subject.

3. The two positions described here are essentially those of Mrs. Wade, who allows an almost unlimited range of III-Subjectivalizations, and of Mrs. Willmond, whose III-Subjectivalization rule is much more restricted (though it still applies to a great number of verbs). I do not have enough data from additional speakers to know for certain if the difference in these two speakers' usage is correlated with a general Choctaw/Chickasaw difference, as Lynn Gordon has suggested.

The question of how regular a rule must be to be "productive" is difficult, of course: note, for instance, that Wasow (1977) acknowledges the existence of lexical exceptions to the English Passive transformation, despite his claim that transformations must "have few or no true exceptions" (331). Delimiting "few or no", and characterizing allowable interspeaker variation are problems I will ignore here.

The restriction of the application of III-Subjectivalization to sentences with third-person semantic subjects, incidentally, appears to hold for every speaker of Choctaw and Chickasaw I have worked with, so it must be fairly widespread. However, Davies (1981) presents data which suggest that some Choctaw speakers may not have this restriction.

4. There is a fair amount of independent support for this position. For one thing, the causative suffix *-ci* (which becomes *-sh* in sentences like (2b) by regular phonological rules) irregularly appears
as -chichi with certain verbs, which must be lexically specified. More significantly, morphophonological evidence shows that the causative suffix in Chickasaw must be added to verb stems at a phonological level preceding that at which all inflectional affixation is begun (cf. Munro and Ulrich ms.).

Charles Ulrich has pointed out to me that many of the most intriguing proposals contained in Davies's (1981) analysis of Choctaw within the framework of Relational Grammar would also not be considered syntactic rules, as I use that term here, since they involve lexically triggered obligatory operations.

5. Two variant Subject Possessor Raising constructions are worthy of note here. First, although most examples in the literature have an alienably possessed noun, as in (3), which loses its possessive marking in Raising sentences like (3b), the same construction is possible with inalienably possessed nouns, many of which take II- rather than III-agreement. (i) and (ii) illustrate cases of inalienable possessor raising. In (ii), the possessor is non-third-person (note that the possessor need not surface as an independent pronoun), agreeing with both the possessed noun and the verb:

(i-a) Hattak ipash-at litiha. 'The man's hair is dirty'
   man su hair-su dirty

(b) Hattak-at ipash-at í-litiha.
   man-su hair-su III-dirty

(ii-a) Sa-pash-at litiha. 'My hair is dirty'
   lsII-hair-su dirty

(b) Sa-pash-at a-litiha.
   lsII-hair-su lsIII-dirty

Thus, only alienable possessive marking on the noun is lost in the Raising construction, as confirmed by (iii):

(iii-a) Am-ofí'-at ishto. 'My dog is big'
   lsIII-dog-su big

(b) Ofí'-at am-ishto.
   dog-su lsIII-big

Second, another Subject Possessor Raising construction is illustrated in
(iv) and the second example in (v) (see Munro and Gordon 1982):

(iv) Ihoo-at im-ofi'-at ishto. 'The woman's dog is big' (cf. (3))
(v-a) Hattak im-ofi'-at losa. 'The man's dog is black'
   man   III-dog-su black
(b) Hattak-at im-ofi'-at losa.

6. It is interesting to note that Subject Possessor Raising is unusual among candidates for Projection Principle violation (such as the Raising-to-Object rules in Persian and Fijian surveyed in Carden, Gordon, and Munro ms.) in that the domain of Subject Possessor Raising is just one clause. In general, it seems, rules which involve potential Projection Principle violations are rules (for instance, Raising rules of all types) which move NPs from a subordinate clause into the higher clause in which that subordinate clause is embedded.

One rule which probably results in a Projection Principle violation of which this would not be true, however, is Pima Postposition Incorporation (Munro ms2). It may be that the relevant generalization involves the extraction of arguments from small clauses, a characterization which would probably take in both postpositional phrases and many types of possessed NPs.

Yuman languages like Mojave and Maricopa provide interesting comparative evidence on this point, since such languages have not only a Subject Possessor Raising rule like that of Western Muskogean but also a Subject Copying rule somewhat similar to familiar Raising to Subject rules (cf. Munro 1976, Gordon 1981). Significantly, possessed nouns in Mojave and Maricopa show many characteristics of sentential nominalizations, and some (such as kinship terms) function synchronically as verbs. However, I know of no particularly convincing evidence that Western Muskogean possessives are complex in this way.

7. As Munro and Gordon (1982) and Carden, Gordon, and Munro ms. show, this process is recursive (infinitely, within performance limitations?), e.g.:

(vi) Hattak-at im-ihoon-at ofi'-at im-ishto. 'The man's wife's dog is
   man-su   III-woman-su dog-su III-big   big'

8. There is some interspeaker variation on this point which
deserves further investigation. It may be that some speakers have a sort of hierarchy (more likely based on animacy than on syntactic role, I think) which governs the syntactic viability of certain object nouns for certain syntactic operations. However, any non-subject argument (i.e., an object, not just a possessor) which is viewed as important in the discourse is subject to movement and a-marking, for all speakers.

9. In Oklahoma Choctaw there is a separate series of specifically benefactive agreement prefixes (cf. Davies 1981, Ulrich in preparation; Nicklas 1972 calls these "free datives").

10. By "transitive verbs" here, I mean essentially only those verbs which in their simplest use take a subject marked by an agreement affix of the I set (Munro and Gordon 1982) and an object marked by an agreement affix of the II set. The facts are more complicated when other sorts of transitive verbs are considered.

The situation I describe in the text, where certain transitive verbs may take only III objects derived via Object Possessor Raising, but may not take a III object specifying a dative argument, may not occur for some speakers. I have been unable to discover any transitive verbs to which Mrs. Wade is unwilling to add a III argument, for example (although see the comments regarding the reflexive of 'talk' below).

11. I'm grateful to Lynn Gordon for bringing some of these facts to my attention.

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On the Borders of Subordination:  
Signaling Relative Clauses in Spoken German  
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The German language may be viewed as a classic case where subordination, on the whole, can be taken to be a grammatical category. "Subordination" or "dependency" is practically equated with a particular word order by linguists as well as grammarians working in the German tradition. "Independent" clauses clearly appear to have one basic word order, "dependent" clauses another.

While this may be most true for formal styles of the homogenized standard language, it is less accurate for both more colloquial styles and dialect. And in terms of 'basicness,' there is good reason not to consider the informal styles as somehow "deviating" from the norm of the standard, but instead that the standard represents one extreme of some highly-valued tendency. Highly-valued originally by prescriptive grammarians.

Restricted to a finite space, I would like to discuss here one group of dependent clauses, relative clauses, and how they might be signaled in more informal styles of German.

One recent work by the East German linguist Helbig (1980) has clearly demonstrated the complexities involved in even delimiting the subclass relative clause: indirect questions as well as other types of clauses usually taken to be subordinate are shown to have domains which overlap with that of relatives. The details do not need to concern us now; what is important, though, to the present discussion is the conclusion that no one criterion or set of criteria at one level is alone sufficient to establish a taxonomy free from contradiction and redundancy.

Attempts made to rectify previous shortcomings have also met with limited success, for proposed solutions have amounted to little more than an addition using highly-visible, grammatical criteria. As I shall try to demonstrate in this paper, the failures have been caused, in part, by limiting what can be viewed as grammatical. In the data I wish to present, there is much more at hand than obviously meets the eye: suprasegmental cues also prove relevant and so must be taken into consideration.

In order to exemplify the crucial role intonational factors play in signaling relative clauses, I shall focus on a certain subset of clauses, namely on those for which there is generally no disagreement over their
classification as relative. These clauses take the form depicted in (1), that is, they are characterized by the clause-initial relative pronoun *der* or any of its declined forms:

(1) ... # der ...... # ... (# = clause boundary)

What makes this particular subset interesting is its resemblance to a separate class of independent clauses. Notice that (1) also represents the basic form of a clause introduced by a demonstrative pronoun used substantively (henceforth 'demonstrative clauses'). Differentiating between relative and demonstrative clauses 'normally' requires no special effort. The clauses are distinguishable on the basis of word order. Relative clauses take verb-final¹ or "dependent" word order, as in (2):

(2) /zwiːɩ˥ geschwister hatte ich die two siblings had I these ones köchinnen waren (Carolii:546) cooks were 'I had two siblings who were cooks'

Demonstrative clauses show verb-second position or "independent" word order, as in (3):

(3) /und ihre älteste tőchter↑ lebt die auch and your oldest daughter lives this one also mit ihnen /já↓ die lebt ↓auch mit mir/ with you yes this one lives also with me (Carolii:555) 'and your oldest daughter does she also live with you -- yes she lives with me too'

Yet clauses occur in informal speech and in certain styles of writing² which have quite a relative 'feel' to them but nevertheless display verb-second word order. Take, for example, (4), a sentence from one of Grimm's Märchen, and (5), a sentence from Brecht's Herr Puntila:

(4) Es war einmal ein Mann, der verstand it was once a man this one understood allerlei Künste. (Grimm:211) all kinds of tricks 'There once was a man who knew all kinds of tricks'

(5) Ich war im Dienst bei einer Bierbrauerin, I was in the service by a beer-breweress
In (4) the **der**-clause is in every sense a clause attributive to **ein Mann**. In a less stylized text, the verb **verstand** would be placed at the end of the clause. The same can be said for (5). This sentence suggests the author was trying to capture a sense of the spontaneous. The verb **hat**, again, would normally come clause-final. How should such clauses be analyzed?

Discussions in the literature treat this and related problems in an unenlightening manner. A few discussants (Lambert 1976, Kann 1972) have ventured the idea that the second clauses in examples like (4) and (5) are dependent clauses with independent word order, that is, relative clauses with verb second. Others have criticized this approach or have simply interpreted the clauses as demonstrative (Wichter 1980, Engel 1977, Saltveit 1975, Van de Velde 1974). All, however, apparently felt compelled to commit themselves one way or the other. But in doing so, they have relied either on criteria of an impressionistic nature to the exclusion of syntactic form or on the position of the finite verb without the consideration of contextual function. In either case, the evidence against one analysis is as great as that for it. Without additional support, classifications based on this kind of reasoning are inconsequent, and the matter thus reduces to a question of personal aim and inclination of the discussant. Objectively, sentences like (4) and (5), in isolation, must remain indeterminate. A clear judgment cannot be made solely on the criteria so far presented.

Before we examine an additional criterion which would provide evidence for a more objective judgment, we might well ask about the status of verb-second relatives in general. That relative clauses with verb-second exist is undeniable. In sentences such as (6) and (7), the presence of unspecified antecedents in the main clauses forces interpreting the following clauses as relative:

(6) Ich hab **welche gesehn**, die graben Wurzeln aus vor Hunger. (Kolb:49)
'I have seen **some** who dig roots out because of hunger'
(7) Ich sehe aus wie eine, die wartet auf den Bus.
    'I look like one who waits for the bus'
    (Kolb:45)

In (6) welche requires the following die to be a relative pronoun; in (7) eine has the same force.
Again, in both sentences, the "normal" position for the verb would be at the end of the clause.

That evidence for a subgroup of relative clauses with verb second surfaces should not surprise us. The notion of dependent clause with independent-clause word order is only strange within the rigid framework of a normative grammar. Diachronically there is support for such a subgroup also. The historical continuity between earlier forms of German, which did not always make a clear syntactic distinction "dependent" versus "independent," and the spoken language today has been observed (Schieb 1978, Sandig 1973).

Finally, existence of the subgroup finds support when we examine the syntax of informal styles of German. The tendency toward shorter clauses and parataxis in the spoken language and the widespread un bracketing of the characteristically German sentence frame in the written is thoroughly discussed in the literature (Lambert 1976, Weiss 1975, Helmig 1972, Dal 1966, Moser 1969, Leska 1965). It has been documented that typically "subordinating" conjunctions, which should always trigger verb-final word order, occur with a mixture of verb positions (Eisenmann 1973). Elimination of dass ('that') is a well-known phenomenon. Furthermore, Lambert has shown that syntactically light elements, as well as heavy clauses, are commonly unbracketed (i.e., extraposed) in the written and spoken language. These devices and others are regularly employed by speakers to control embedding. The type relative clause with verb second is an additional manifestation of the syntactically independent constructions preferred in informal styles.

Now that we have presumably erased preconceived notions of relative clauses and the form they should exhibit, we can return to the problem of disambiguating the indeterminate clauses discussed earlier. Since we are dealing chiefly with the spoken language, we should have at our disposal the extragrammatical dimension of utterances, intonation, with which we can systematically adjudicate the indeterminate clauses. That is, we should be able to use intonation to distinguish between relative and demonstrative clauses.

Although matters of intonation are, as a whole,
exceedingly complex, certain components seem to stand out in an examination of interclausal relationships. Thus, while there is considerable debate over the individual parameters of intonation, there is also a fair amount of agreement that final phrasal intonation in German is pragmatically dependent and determines the character of the entire clause (Lötscher 1983, Scuffil 1982).

The data I have used in my examination of relative clauses was taken from the appendix of Caroli (1977). The texts comprise parts of nine interviews from a collection known as the "Bottrop Records." They are marked for pause (/), and for pitch contour in relation to tonic accent, following Isačenko/Schädlich (1966). It should be noted that this system ignores the finer details of German intonation, but as an approximation it is adequate for present purposes.

Crudely speaking, then, a pretonic falling change in pitch (\(\downarrow\)) concomitant with a pause often signals a clause or clause-group boundary; a posttonic rising pattern (\(\uparrow\)) is present in many interrogative clauses; and a pretonic rising strategy (\(\uparrow\)\(\downarrow\)) signifies a linking to the following clause. Since it is precisely the relationship between clauses which interests us, effort may be concentrated on the few patterns which are relevant to the conjoining process.

Let us first take a look at the intonation patterns of unambiguous relative and demonstrative clauses. When we inspect the intonational nature of conjunction involving verb-clause-final relative clauses, we notice the tendency is to use a linking pattern in the clause containing the antecedent and a falling pattern in the relative clause (if the entire clause is then completed). Examples are (8) and (9):

(8) wir ham so verschiedene \(\uparrow\)schreiben/die wir an we have so different writings which we to die \(\downarrow\)ELTERN schicken müssen (599) the parents send must 'we have different papers which we have to send to the parents'

(9) /und da sind doch \(\uparrow\)sehr viele mutter die/zu and there are indeed very many mothers who at hause bleiben \(\downarrow\)wollen (545) home stay want 'and there are very many mothers who want to stay home'

In (8) the change in pitch is pretonic rising on schreiben, a linking pattern, which signifies incompleteness
on the part of the main clause. The relative clause which follows completes the main clause and closes with a pretonic falling change in pitch. Exactly the same is true for (9). Given this pattern, relative clauses can be said to be intonationally dependent on the preceding clauses containing their antecedents.

If instead an "independent" demonstrative clause follows, the first clause will contain a completed-clause change in pitch, as in (10) and (11):

(10) die mutter wiegt im höchstfall fünfund-
siebzig pfund /bekommt sehr dicke kräftige
kinder /also die würde niemals in ein
krankenhaus gehn (546)
go
'the mother weighs at most 75 pounds, bears big
strong children, now then she would never enter
a hospital'

(11) wir machen jeden monat einmal unsren/hausfrauen-
we make every month once our housewife
tag nicht/das is so alle sieben monate is man
day not that is so all seven months is one
denn mal dran/ (448)
then once on it
'we have once a month our housewife-day, it's
like this every seven months it's your turn'

Example (10) is an instance of a series of independent clauses, the last containing a demonstrative pronoun. Notice that the completion of each clause is signaled by a pretonic falling contour, thus the three clauses are intonationally independent from each other. Example (11) is an instance of another way of signaling clause completion. The first clause shows a pretonic falling contour, which is then reinforced by a posttonic rising pattern, much the same as with English 'right?/isn't it so?' In both cases, clauses with these types of intonation patterns can be said to be intonationally independent.

We are now prepared to turn to the indeterminate clauses in the text. Upon inspecting the group of relative clauses with verb-second word order in conjunction with their antecedent clauses and checking the intonation against the above orders, it becomes evident that the group exhibits more of the 'connected-to' intonation that we expect from relative clauses, as examples (12) through (15) show:
(12) der älteste is fünfzig Jahre... ein bergmann/
      the oldest is fifty years a miner
      ein bergmann/ der kommt aus dem bauergewerbe/
      a miner who comes from the building-
      trade (480)
      'the oldest is 50 years, a miner, a miner who
      comes from the construction trade'
(13) jetzt hab ich eine erwütscht/die hat zu viel
        now have I one caught who has too much
        ahnung/ (579)
        idea
        'now I've nabbed one who has too much of an idea'
(14) also s' laufen leute rum / die ham überhaupt
       thus it run people around who have at all
       keine arbeig/ (529)
       no work
       'so there are people running around who have no
       work at all'
(15) s' wird ne delegation zusammengestellt/die
       it becomes a delegation together-put which
       fährt über/zur zone (533)
       drives over to the zone
       'there's a delegation being formed which is going
       over to the (East) zone'

In (12), although the main clause is completed, the
referent to der älteste, i.e. ein bergmann, is picked
up, emphasized, and finally uttered with a linking
intonation signifying something is to follow. That is,
the der-clause is intonationally dependent. Likewise,
in (13) the main clause shows pretonic rising intona-
tion signifying dependency. Examples (14) and (15) are
similar cases. The main clauses show a linking pattern
which then requires the following clauses introduced by
die to contribute to the completeness of the main clause.
The second clauses of (12) through (15), then, show
dependency intonationally the same way the relative
clauses in (8) and (9) do.

Examples (16) and (17) display an even tighter
kind of intonational dependency:

(16) né da sind eben leute die wollen sich
      not there are just people who want themselves
      n'paar pfennige verdienen/ (560)
      a few pennies earn
      'right, there are people who want to earn a few
      cents'
(17) und da sind amerikanische firmen sind dà
      and there are American firms are there
die kaufen schächte auf\( \downarrow \) (528)
who buy wells up
'and there are American companies are there who
are buying up the wells'

In both instances no pause turns up between the ante-
cedents and the following die-pronouns. From a
traditional grammatical point of view, verb-final word
order is expected in the dependent clauses, thus the
above examples would have to be labeled "anomalous," as
would (12) through (15). We have seen, however, that
syntactically independent clauses which function as
relative clauses with respect to their antecedents
systematically signal their dependency by means of a
linking intonational pattern. To call these clauses
"deviant" ignores the importance the construction may
possess for users of the language. We must conclude,
then, that word order becomes just as unreliable as
any other single criterion in predicting dependency in
German. Consequently, reference must be made to
factors situated outside the domain of the strictly
grammatical. The claim accordingly is not that into-
nation replaces word order or anything else as a means
of determining dependency, but instead that intona-
tional patterns on the one hand have a vital contribu-
tion to make in disambiguating otherwise ambiguous
clauses.

On the other hand, the patterns alone do not
disambiguate unequivocally: I would not wish to state
that the indeterminate clauses we have examined are
fully equivalent to relative clauses. Pragmatically
they may carry separate connotations. Moreover, com-
paratively their use in discourse has not yet been
explored. However, these indeterminate clauses cer-
tainly behave much more like relatives than has been
their allotted credit. Syntactically coordinate,
arguably subordinate in function and intonation, verb-
second relative clauses fall on the borders of sub-
ordination, alerting us that the theme of this para-
session is indeed multidimensional, and that an all-
or-nothing approach, coordinate or subordinate, cannot
be advocated.

Footnotes

1 More accurate is 'verb not-second.' Even the
written language permits a number of elements to fall
outside the verbal frame (and thus ousting the finite
verb from its clause-final position). I shall, however,
continue to use 'verb-final' as the terminology is, in
English, clumsy enough already.
This generally includes any style which strives to resemble or is especially close to the spoken language.

References


1. Introduction

It is unclear what the status of relativizing that, henceforth "R-that", is. In the twenties Jespersen, Kruisinga, and Deutschbein reacted against the tradition of their days, and argued that R-that wasn't a relative pronoun, but a conjunction or particle. Transformationalists, too, have devoted attention to the problem of the status of R-that. They soon agreed that R-that was a complementizer. As a matter of fact, every grammarian of English, whatever his/her theoretical conviction, is confronted with the R-that problem. Thus the view that R-that is a complementizer is also found in Functional Grammar (Junger 1981:169-170). Conversely, the view that R-that is not a complementizer is found in Generalized Phrase Structure Grammar (Gazdar 1981:163), Realistic Syntax (Brame 1980:88), and in papers such as Bolinger (1972a) and Watts (1982). Below I discuss some of the arguments for the conjunction, particle, and complementizer hypotheses, and present a new hypothesis.

2. R-that is not a relative pronoun, but a conjunction or particle

Jespersen (1924:85, 1926:106-107, 1927:165-168), Kruisinga (1924, 1925:164, 1927a:29, 1927b:199), and Deutschbein ([1926] 1931:242) seemed to have independently claimed that R-that was not a relative pronoun, as had been the traditional claim (Sweet 1898:80; Onions [1904] 1932:147; Wendt 1911:213; and even Kruisinga 1922:453-455), but, in the words of Jespersen and Kruisinga, a conjunction, or, in the words of Deutschbein, a particle.

2.1. R-that is not a relative pronoun

One can find at least eight arguments. For lack of space I can only discuss four.

Argument 1 With some relativized PPs, relative clauses can start with the preposition immediately followed by the WH-relativizer or they can start with the WH-relativizer and have the preposition later on. In modern terminology, WH-relativizers allow both pied piping and preposition stranding. R-that only allows preposition stranding.

(1a) This is the man about whom I have spoken.
    b This is the man whom I have spoken about.
(2a) *This is the man about that I have spoken.
    b This is the man that I have spoken about.
One assumes that a pronoun should be able to follow a preposition. Therefore, the fact that R-that can't suggests that R-that isn't a pronoun. (Jespersen 1924: 85, 1926:106; Kruisinga 1924:142-143; Deutschbein 1953: 223; Erades 1955:53)

Counterarguments First, from the fact that R-that can't follow prepositions it certainly follows, as Araki (1958:90) has first claimed (cp. Horn 1923:72-73; Smith 1982:77), that R-that doesn't have every one of the usual characteristics of a pronoun, but not that R-that isn't a pronoun at all. Second, the data about the distribution of prepositions and relativizers must be handled with care. If pronominal relativizers are to allow both pied piping and preposition stranding, then one should say that the WH-relativizers of infinitival and independent relatives are not pronominal, for they only allow pied piping, respectively, stranding (see Emonds 1976:192; Helgander 1971:207-209,268).

(3)a I found an usher from whom to buy tickets.  
   b *I found an usher who to buy tickets from.

(4)a They liked whatever they went to.  
   b *They liked to whatever they went.

Argument 2 Who, whom, and what are sensitive to gender. R-that isn't, hence it might not be pronominal.

(5)a The man who attracts her ...  
   b *The book who attracts her ...

(6) He then scoured what/??who was left.

(7) The man/book that I like ...

(Kruisinga 1924:141-143; Deutschbein 1953:223)

Counterarguments First, to some extent it is true that R-that isn't gender-sensitive, but neither is whose, nor was which.

(8) This is the man/book whose cover I dislike.

(9) Our father, which art in heaven ...

Yet whose and the which of (9) are never said to be non-pronominal. Second, it isn't fully true that R-that is genderless. In his corpus of written British who(m), Ø, and R-that relativizations of the thirties and forties, Malmberg (1947) found that only 1.63 % of all human antecedents took R-that, while 88.98 % took who(m) (and 9.39 % Ø). It appears from Quirk's (1957:106) study of spoken educated British of the fifties that R-that subject relatives prefer a non-human antecedent: the [+Human]/[-Human] ratio is 1/9. And, to stress the parallel with whose, it isn't fully genderless either: whose is predominantly [+Human].
Argument 3  One can find R-that relatives that contain a non-relative pronoun coreferential with the relativized constituent.

(10) That's the problem that I asked you to find out from Fred about it.

If R-that were a pronoun, too, i.e. in addition to it, its function would be unintelligible. (cp. Jespersen 1927:109-110,165-168)

Counterarguments First, one can find relative clauses that contain a non-relative pronominal reflection of the relativized constituent, and are introduced by WH-relativizers.

(11) I have to type the footnotes and the bibliography which I don't know how long they're going to be.

What's more, Jespersen (1927:111) found more such examples with which than with R-that. Note also that it is no accident that the relative clauses in (10) and (11) are complex, that the relative pronoun occurs in the bridge clause, and the non-relative one in the embedded clause. The "double pronoun strategy" is a way to facilitate the comprehension (cp. Comrie 1981:140; Van der Auwera 1984a). Second, the double reflection strategy is found with who, too, especially when the second reflection involves a possessive adnominal.

(12) ... the fellow who you don't know his name.

The basic point of all this is that nobody would use (11) and (12) as evidence for a claim that which and who are not pronominal. Why treat (10) differently?

Argument 4  R-that can't be a pronoun, for it often means as much as on/in/at which. (Kruisinga 1924:141-143; Jespersen 1927:162; Deutschbein 1953:223)

(13)a I remember the day { that } he came.
   b { on which }

(14)a ... in the same cordial fashion { that }
   b { in which }
   we had met

Counterargument The interchangeability of R-that and preposition + WH-pronoun is as compatible with the idea that R-that is not always pronominal, as with the idea that it is never pronominal.

2.2. R-that is a conjunction or particle

When Kruisinga and Jespersen maintain that R-that is a conjunction, they mean that R-that is the same as the conjunction that, henceforth "C-that", as found in (15).

(15) I believe that the earth is flat.
For Deutschbein, R-that is a (relative) particle, which is to mean that R-that and C-that are similar, though not identical (cp. also Zandvoort 1950:186). The Jespersen-Kruisinga-Deutschbein views have been supported by at least seven arguments. For lack of space, I can only discuss one.

**Argument 5.** Both C-that and R-that are deletable; if we say that they are the same, we arrive at a nice generalization. (Jespersen 1924:85, 1927:165; Kliima 1964:6)

(16) I know that/∅ Antwerp has a harbor.
(17) I know the man that/∅ you've mentioned.

**Counterargument.** The deletion conditions for C-that and R-that are entirely different. For C-that, Bolinger (1972b:18-23; cp. Jespersen 1927:33; McDavid 1964) draws attention to the frequency of the main verb: deletion would be easier for high-frequency verbs such as know than for low-frequency ones such as snigger.

(18) He sniggered that/?∅ it was easy.

Another factor is the presence of an indirect object. (Bolinger 1972b:23-24)

(19)a He wired her ∅ I was coming.
   b ?? He wired ∅ I was coming.

What is relevant for the deletion of R-that, and irrelevant for that of C-that is whether the relativized constituent is the subject of the relative clause.

(20)a There is a man {that} wants to speak to you.
   b

(21)a I met the woman {that} loves John.
   b

For subjects, "zero" or "contact clause" relativization has a highly restricted function. (21)b is simply unacceptable, and (20)b serves a very specific focussing function and is typically colloquial (see Van der Auwera 1984b).

The general conclusion on the work of Jespersen, Kruisinga, and Deutschbein is that though they must be credited for noticing a large number of idiosyncracies of R-that, none of their arguments—not the four discussed here, nor the eleven left undiscussed—prove that R-that is a conjunction or particle.

3. R-that is not a relative pronoun, but a complementizer

There are various kinds of conjunctions. The big split is that between subordinating and coordinating conjunctions. C-that, when, and although are subordinators. Of course, there is still a big difference between C-that, on the one hand, and when and although, on the other,
and it would seem useful to have a special term for C-
that-like subordinators. Rosenbaum (1967) suggested
"complementizer", and his suggestion was well received.
In a sense, it was too well received. When a term be-
comes popular, investigators often appropriate it in
their own ways, and the result is confusion. In the
case of "complementizer", Bresnan (1970, 1972) has wid-
ened the meaning to the extent that "complementizer"
becomes synonymous with "clause-introducing particle".
As a result, we now have confusion and vagueness (cp.
Goldsmith 1981:551; Smith 1982:10-11, 26-27): there is
the narrow Rosenbaum definition, the broad Bresnan
definition, and at least one in-between position, in
which "complementizer" is synonymous with "subordina-
tor" (Downing 1973; Geoghegan 1975; Stahlke 1976;
Lightfoot 1979:314; Smith 1982:35-36). For the purpose
of this paper, however, I do not need to get into this
any further. In essence, all the moderns who say that
R-that is a complementizer support the view that R-that
is the same as C-that.
3.1. R-that is not a relative pronoun
All but one of the old arguments reappear. Sometimes
they are presented as new, the reason being that the
moderns are not always informed about the heated dis-
cussions of the twenties. Of the classical authors on
R-that, only Jespersen is still widely read; Kruisinga
is vaguely remembered; Deutschbein and such protago-
nists as Horn and Johansen - to be discussed in 4 -
seem to be totally forgotten. The list below gives an
idea of the continuing appeal of Arguments 1 to 4.

Gregg (1972), Morgan (1972:70), Downing (1973:7-8),
Geoghegan (1975:31), Emonds (1976:142), Stahlke
(1976:588-589), and Lightfoot (1979:314)
Argument 2: Gregg (1972) and Downing (1973:6-7)
Argument 3: Downing (1973:9-10), Geoghegan (1975:
31-32), Stahlke (1976:591, 599-600), and Smith
(1982:80)
Argument 4: Downing (1973:11-12), Schachter (1973:
27), and Larson (1983)

There are seven new arguments. Space permits me to
discuss two.
Argument 6 The relative pronoun who shows case: its
oblique forms are whom (objective) and whose (genitive).
The genitive of what is also whose. If R-that were like
who and what, one would expect it to show case, too.
It doesn't; so perhaps it isn't a pronoun. (Gregg 1972;
Downing 1973:6-7; Geoghegan 1975:32; Smith 1982:37)
Counterarguments First, which doesn't have any de-
clension, yet that doesn't make it any less pronominal.
Second, neither who nor what are less pronominal just because whom is disappearing and because whose is used as a suppletive genitive for which. Third, in the genitive, the oblique form that sits strongest, Scots has developed a genitive that's (Jespersen 1927:111; Romaine 1980:227).

(22) The dog that's leg has been broken ...


(23)a Ann isn't the woman (\*who
\*which
\*that
 she used to be.

The unacceptability of (23)a and b follows from the general restriction that predicate nominals cannot be pronominalized.

(24) \*J. was president, and K. was it, too.

If R-that were pronominal, one would expect (23)c to be ungrammatical, too.

Counterargument. Downing's views on (23)b are probably not representative. The claims of Poutsma (1916:963–964), Kruisinga (1925:165–166), Jespersen (1927:123–124), Curme (1935:164), and Deutschbein (1953:223) are still valid: predicate nominals can be relativized with which. The reason why both R-that and which, but not who are acceptable is, as Jespersen (1924:242–243; 1927:123–124,156) has pointed out, that they are felt to be neuter, and that a predicate nominal is considered neuter, too. Compare:

(25) \*What is he? Just nothing at all as yet.

3.2. R-that is a complementizer

All of the old arguments reappear or are rediscovered. Argument 5 surfaces in Gregg (1972), Downing (1973:7), and Stahlke (1976:592, 596–597). There are two new arguments, but space prevents a discussion.

The general conclusion, because of space — again — only half-argued for, is a negative one: the case for the non-pronominality of R-that, and the C-that — R-that identity is as shaky as it was sixty years ago.

4. R-that is a highly pronominal relativizer

4.1. R-that is a relativizer

The proponents of the view that R-that is the same as C-that deny that R-that is a relativizer, i.e., that it conveys "relativeness". Thus they must show that something other than R-that is responsible for the relative clause meaning. This "something" could only be the fact that a relative clause with R-that is like one with a WH-relativizer, except that there is no WH-relativizer
or, in other words, that this "something" is the $\emptyset$
relativizer. In this perspective (26)a is analyzed as
(26)b or (26)c.

(26)a I like the man that you've seen.
b I like the man \{(that $\emptyset$) you've seen.\}
c \{($\emptyset$ that)\}

With respect to object relativizations, this suggestion
carries some plausibility, for $\emptyset$ is indeed sufficient
to mark a relativization (see (77)). Not so for subject
relativizations, of course. In (21)b $\emptyset$ is insufficient.

(21)b $\neq$ I met the woman $\emptyset$ loves John.

Add $R$-that and the relative clause meaning is clear.
Hence, in subject relatives anyway, $R$-that must be con-
sidered a relativizer.

There are at least two reasons to think that $R$-that
is no less of a relativizer in object relatives. For
one thing, $R$-that can be replaced by $WH$-relativizers in
subject and object relativizations alike.

(27) I like the man that/whom/who you've seen.
(28) I like the man that/who has seen you.

For another thing, given the analyses in (26)b and c,
and given that $\emptyset$ is interchangeable with $WH$-relativ-
izers, there is no reason why the following shouldn't
be grammatical.

(29)a I like the man $\neq$ that whom/$\neq$that who
you've seen.
b I like the man $\neq$ whom that/$\neq$who that
you've seen.

They are all ungrammatical4, which suggests that $R$-
that is itself a relativizer.

The claim that $R$-that is a relativizer still allows
for the Deutschbein position that $R$-that is a relative
particle. I will now come to the pronounality issue.

4.2. $R$-that is highly pronominal

4.2.1. Is it strange that $R$-that, if pronominal, is in-
viant? No. English only has vestiges of (pro)nominial
decensions. As to $WH$-pronouns, I have already re-
marked that which is invariant, that what has lost
whose to which, which thereby got a suppletive
genitive, and that the who-whom contrast is breaking
down. Furthermore, given the claim - to be argued for
in 4.2.2. - that $R$-that originated as a conjunction
only to become a pronoun later on, it would be strange
if it acquired a decension, when the general "drift"
of English was one of losing declensions. True, the
genitive is still strong, but then there is at least
one dialect (Scots) in which $R$-that has got a genitive.
Suppose then that _R-that_ is a pronoun. It certainly makes it easy to understand why _R-that_ is so often replaceable by _who, whom_, and _which, which_ are pronominal too. It also sheds some explanatory light on the problem why _R-that_ is hard to delete in a subject relative. Present-day English is very strict about it that each finite clause have its overt subject. Under the pronom hypothesis, _R-that_ subject relativizations have their overt subject in _R-that_; Ø subject relatives do not have an overt subject. Thus Ø subject relatives go against a very strong generalization, and this can only happen under special, pragmatic conditions (Van der Auwera 1984b).

4.2.2. So far I have suggested that _R-that_ is pronominal. I will now refine this and say that _R-that_ isn't fully pronominal, but only highly pronominal. The hedge with "highly" takes us back to the fact that _R-that_ can't follow a preposition.

(30)a  ... the man to _{whom}_ I have given a book.

(30)b  _x{that}_

_Pace_ Jespersen (1927:166), Downing (1973:7-8), and Geoghegan (1975:31), the claim that _R-that_ can't follow a preposition is not equivalent with the claim that _R-that_ can't be the object of a preposition. If we have reasons to believe that _R-that_ is an object, respectively, a subject in (27) and (28), then we shouldn't doubt that it is a prepositional object in (31).

(31)  ... the man _who/whom/that_ I have given a book to.

In (31), the preposition is "stranded", but it still governs the relative pronoun. The unacceptability of (30)b is not due to any "ungovernability" of _R-that_; it is only a fact about word order.

What is the explanation of this bizarre and strict word order rule, one which sets _R-that_ apart from the WH-relativizers and, given that one would want a pronoun to be precedable by a preposition, makes it a less than a "full" pronoun? Part of the answer is historical.

It is very plausible to assume that _R-that_ goes back to the ME subordinator _bat_, which was a coalescence of the OE relative particle _be_ and the subordinator _be_ (Horn 1923:72-73; Helgander 1971:276-278; Geoghegan 1975). What happened was that _be_ disappeared and that its function was taken over by _be_. This process seems to have started in compound conjunctions such as _do be (until)_ and _be while be (while)_ (Kivimaa 1966:258-259), constructions in which there had been partial overlap.
even in OE (some conjunctions demanded *be*, some *bat*, and some allowed both). When *baet*/*bat* established itself in the relative clause, we can assume that this process was facilitated by the fact that OE had a neuter relative pronoun *bat*. Thus we can understand why *bat*, in at least some dialects of Early ME, first preferred inanimate antecedents, and that *be* held out longest for animate ones (McIntosh 1947; Miyabe 1959; Brunner 1962:149-150; Kivimaa 1966:85-87; Samuels 1972:157; Dekeyser 1983:100; Watts 1982:25-26). Note that this does not mean, pace Anklam (1908:75-76), Kellner (1924:205), Onions (1932:148), Mustanoja (1960) and Kivimaa (1966), that ME R-*bat* was simply a continuation of the OE neuter relative *baet*. There are three facts which such an account would leave mysterious (cp. Traugott 1972:153; Dekeyser 1983:101): ME R-*bat* allowed WH-pronoun-*bat* constructions, it occurred in adverbial constructions of the type *on the day that*, and it did not tolerate any prepositions in front of it. On the *be-*bat* account, these facts fall into place. The appearance of WH-*bat* forms is a testimony of the way the conjunction *bat* was expanding its use (Kivimaa 1966:251-255); the ME R-*bat* of the *on the day that* type was merely fulfilling a function it had inherited from *be*; that ME R-*bat* couldn't follow a preposition is a reflection of two facts: (i) *be* couldn't follow any prepositions either, and (ii) though the conjunction *baet-*bat* could follow a preposition, it then formed a compound conjunction with a double clause scope structure (as in Modern English in *s[that s[[...]]s]*), unsuitable for a relativization involving a constituent scope preposition.

Given the independently arguable claims that present-day R-*that* is pronominal, but that its ancestor was conjunctive, we must draw the conclusion that R-*that* changed categories. As with all changes, there is no reason to assume that the change has reached its completion. For a change to be complete, it would have to have itself felt in all environments. Now, one environment in which the change definitely couldn't start was the preposition + relativizer pattern; it simply wasn't available for the ancestor of R-*that*. If English was going to allow a preposition to precede R-*that*, this pattern would have to come into existence at a point when R-*that* would be pronominal on account of other factors. Only then could there be some analogical pressure to make R-*that* behave like any other relative pronoun and follow a preposition. But we know that R-*that* still doesn't follow prepositions. This means that the pronominalization process hasn't reached its completion. Though R-*that* has become highly pronominal, it hasn't become fully pronominal.
In essence, the view that $R$-that is pronominal, and that its repugnance against a preceding preposition is an inheritance from its Anglo-Saxon conjunctive ancestors is not new. It goes back to Horn (1923:72-73) (cp. Johansen 1935:139)

4.2.3. The thesis that conjunctive $R$-bat-bat changed into a highly pronominal $R$-that can be supported in some other ways: (i) we can see that $R$-that grew increasingly more gender-sensitive (Saito 1961:84-85; Dekeyser 1984); (ii) we can understand why the $WH$-bat was to disappear: as bat grew pronominal, $WH$-bat grew redundant; and (iii) we can understand why the $R$-that + pronoun pattern (see Argument 3) was more popular in ME (Helgander 1971:272-273; Traugott 1972:157-158), a period in which $R$-that was less pronominal and the $R$-that + pronoun pattern was less redundant.

4.2.4. There is no evidence that the pronominalization of $R$-that is setting through and pushing it to accept a preceding preposition. On the contrary, there is a feature of $R$-that that seems to effectively block the completion of the category change. Ever since its appearance in relative clauses, $R$-that has had a use in which it is synonymous with a $WH$-adverb or with a preposition + $WH$-pronoun pattern.

(32) I came the day that/when/on which John came.
(33) I don't like the way that/in which he mis-pronounces my name.

This $R$-that, it must be admitted (cp. Argument 4), is adverbial and non-pronominal.

And yet, this adverbial $R$-that is less non-pronominal than might be thought. Adverbial $R$-that often goes with a bare-NP adverbial antecedent (see Larson 1983). These NPs can function as adverbials without the help of a preposition; membership in the class of possible bare-NP adverbials is lexically determined. In this light, it is easy to claim that (i) there is a relative pronoun that can function as an adverbial - without the help of a preposition; (ii) membership in the class of possible bare-pronoun relative adverbials is lexically determined (of all relative pronouns, only $R$-that qualifies; and (iii) it is only natural that the bare-pronoun relative adverbial tends to go with the bare-NP antecedent adverbial.

Adverbial $R$-that may counteract the analogical pressure on pronominal $R$-that to accept preceding prepositions in a double way. First, the very existence of an adverbial, non-pronominal $R$-that will probably diminish the urgency with which highly pronominal $R$-that should go fully pronominal. Second, both adverbial and pronominal $R$-that are presently clause-initial. If a pattern of
a preposition followed by \textit{R-that} were to develop, it would disturb an otherwise exceptionless regularity. 4.2.5. What do I mean when I claim that there are two \textit{R-that}'s, a pronominal and an adverbial one? Nothing more than when one says that the day has two uses, a nominal and an adverbial one. When the relative clause assigns the relativized constituent a nominal role, \textit{R-that} is pronominal, and when the relativized constituent is to play an adverbial role in the relative clause, then \textit{R-that} is adverbial. However upsetting this switching category membership may be for linguists, it seems to be useful for speakers.

Notes

1 This is a reassembling of excerpts from a longer paper (in progress) on the same subject. I am grateful to C. Braecke, J. Bruyndonx, X. Dekeyser, B. Downing, L. Goossens, J. Kirby, R. Larson, and E. Smith.

2 Interestingly, Watts (1982) turns the hypothesis that \textit{R-that} is a conjunction/complementizer upside down, and claims that complement clause that is a pronoun. I do not think that this position is defendable, but it is a most forceful illustration of the way the that facts underdetermine their theories.

3 On the independence of this claim, Kruisinga (1927b: 199) notes that "It is evidently an idea that has been 'in the air' for some time." Though Jespersen preluded upon his later views as early as in 1885, he did it in a Danish school grammar, which, though a Nordic success (8 Danish editions and 2 different Swedish translations) didn't get any international attention. Moreover, his 1885-views were not very explicit (cp. Kruisinga 1927a:29).

4 The \textit{WH-pronoun + R-that} pattern was grammatical in ME. See sections 4.2.2. and 4.2.3.

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CREATING COMPLEX SENTENCE STRUCTURE
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While it is well known that new morphological markers of syntactic relations often come from what were earlier free forms, (Givón 1979, Bynon 1982), the sources of new syntactic structure have been less well documented. This has been especially true in the case of innovations in complex sentence structure. In the case of relative clauses in the history of English, for example, considerable attention has been focused on charting the changes in clause introductory forms. How we got the structure of antecedent followed by pronoun or complementizer followed by an embedded relative clause is another question. This structure has been assumed to have remained constant throughout the history of English, and in fact from an even earlier stage of Germanic. The origin of verbal complements with that has received slightly more attention, principally because the form is transparently the demonstrative pronoun, and speculation on the strategy behind its use is that much easier. It has been assumed, however, that Old English baet (‘that’) complements to verbs are found in the earliest stages of the language more or less fully fledged, and that therefore there is no evidence on which to do internal reconstruction and so no way to give any substantive to our speculations.

Such a lack of documentary evidence of the earliest stages of the development of these complex sentence types has remained a problem in the study of languages with a fairly continuous history. It has made it harder to investigate what is involved in the process of grammaticalization, in cases where it would seem that a discourse strategy has given rise to new syntax. Sankoff and Brown’s 1976 study of the Tok Pisin relative marker ia reports one case in which evidence of the process is reconstructable from the record. But this was chiefly possible because the data was from an emerging creole, a situation in which there was no old syntactic strategy for the new structure to replace. In the case of already established languages, where the development in question antedates the historical record, and where the new syntactic strategy replaces an old one, it is simply a much rarer occasion when we can detect the evidence of new structure being created. In this paper, I will argue that despite this drawback, there is sufficient evidence about the OE clause-introductory particle be to reconstruct the strategy by which it was used to create a new way to form complex sentence structure.

The scarcity of evidence for structural innovation was a major factor behind the traditional interpretation of the creation of complex sentence structure as a process a language goes through only once in its history. As G. W. Small puts it:

1) It may be laid down as a general principle that in the progress of language parataxis precedes hypotaxis. (1924:125).
According to this view, the development of complex structure took place in three stages.

2) parataxis: 2 independent sentences juxtaposed.
   partial hypotaxis: inclusion in one or both
   sentences of a morpheme indicating
   the nature of the relation.
   hypotaxis: main and dependent clauses, with
   alteration or loss of meaning of the
   connective morpheme.

The earliest periods of a language were thought to be characterized by a tendency toward parataxis, or expression of related propositions in independent but juxtaposed sentences. The hypotactic stage, in which the second clause is dependent, was thought to arise as that clause was felt more and more to modify the first in some way. It was interpreted as a sign of departure from pure parataxis when a marker appeared to indicate more specifically the nature of the relation. The true hypotactic stage was characterized by an alteration, or sometimes a loss, of the fundamental meaning of the particle (Paul 1909:144ff) — what we would today call grammaticalization. Complex sentences in which one or both clauses showed a particle whose function was a connective one but whose original meaning had not yet been completely bleached were thought to represent a half-way point between para- and hypotaxis, giving a feeling of a degree of subordination.

There are several difficulties with such a characterization. First, it depends crucially on an initial stage at which both propositions were expressed as sentences, in a particular order in the text. With many adverbial relations, however, the order of clauses in a complex sentence is most often the reverse of that which occurs when the relation has to be inferred from mere juxtaposition. In Modern English (i), for example, a temporal connection is implied because the order of mention of the events is taken as indicating their order of occurrence. Yet in a temporal complex sentence with after, the order of mention is usually reversed. The synchronic strategy for forming this sort of complex sentence often involves a different organization of information at the clausal level, as well as the addition of a morpheme expressing the nature of the relation.

3) The party ended. Jane left.
   Jane left after the party ended.

Second, within the framework of traditional grammar it is difficult to characterize more precisely the nature of the mechanism involved in the departure from parataxis — i.e., what is meant by saying that the second clause was felt more and more to modify the first, by the concept of modification, and by degree of subordination.
Current work on syntactic change which considers the semantics and communicative function of structures as well as their syntactic form has produced a framework which provides a way out of these difficulties. In his book *On Understanding Grammar* (1979), Talmy Givón proposed a cyclic characterization of the general historical development of languages, whereby:

4) discourse > syntax > morphology > morphophonemics > zero  

(Givón 1979:209)

Of the first phase in this cycle, he says:

5) At least at their present stage, it seems, human languages keep renovating their syntax via syntacticizing discourse. (Givón 1979:232)

There are two insights here that are crucial to understanding the creation of subordinate structure. The first is that the initiation of the process comes out of discourse strategies for organizing information in a connected text. In other words, we are not tied to an account which necessarily starts from the juxtaposition of already grammaticalized units of structure. The second insight is that the process is a cyclic one, freeing us from the idea that the paratactic stage is limited to the original period of a language.

The kind of complex sentences I am concerned with here are those involving two full, tensed clauses, and where one plays a certain semantic role within the matrix clause defined by the other. From the semantic point of view, what we have in this type of construction is two situations expressed in a complex proposition. One, which I will call the 'described' situation, consists minimally of a certain event or static state, and some appropriate number of participants. This is the proposition expressed alone in a simple sentence or as the main, or matrix, clause in a complex one. The other situation, which I will refer to as the 'evaluative' situation, also consists of an event or state and its participants. The difference lies in its function. While the described situation sets the scene, by describing an event and participants which are relevant to the main line of discourse, the evaluating situation is used to identify the referent of, or characterize the relevance of, some aspect of the described situation. Aspects of the described situation which are most typically in need of evaluation are:
6) a participant
the spatial location of the event/a participant
the temporal location of the event/a participant
the rational status of the event in the external world
(i.e., as cause or effect)
the rational status of the event within the discourse
(e.g., concessives, conditionals)

This way of viewing this type of complex sentence, as well as the notion of restrictive modification as evaluation in a situation, are based on work done within the framework of situation semantics (Larson 1983). The insight here is that one can construct an (evaluation) situation on the basis of what is known from the context of the discourse. That situation can then be used to characterize some aspect of the main discourse situation, when they share a common entity or spatial/temporal location, or when the evaluation situation is the point of reference in a relation (e.g., temporal or causal sequence) which involves both. Now, there are various ways to implement this strategy when organizing information in a discourse. One can rely on knowledge of the world, shared special knowledge, or information mentioned or inferable from previous discourse. This can be done without any explicit indication, or by semantic strategies such as repetition, anaphora, or ostension to the external world. Complex sentences of the type being discussed here can be considered grammaticalizations of this strategy. They are means of expressing the information within one syntactic unit. Relative clauses (7) can be seen as syntacticizations of the use of one situation to characterize a participant in another. The other sentences in (7) show syntactic strategies in Modern English for use of an evaluating situation to characterize other aspects of the described situation.

7) The woman who/that wore a white dress left the party.
   (participant)
   Jane left the party when the band stopped playing.
   (temporal location of event)
   The month when Jane was in London passed by quickly.
   (temporal location of participant)
   Jane left the party because the band stopped playing.
   (rational status of event)
   Though the band was still playing, Jane left the party.
   (rational status of event)

Incorporating the syntactic expression of two situations into one complex structural unit poses a problem of linearization. In these modern English sentences, the clause which is semantically subordinate is embedded in a phrase following its head. The antecedent and relative clause form a complex NP, the subordinating conjunction and its clause form a complex PP, and so on. With the
exception of extrapoled relative clauses, this has been the major syntactic strategy for incorporating evaluative clauses into complex sentences since late Middle English. From OE on, there have been many changes in the forms used to mark the various types of subordinate clauses, and also in the number of introductory forms possible. But it has been assumed by most that the structural strategy used in the earliest stages of the language was the same as that of Modern English. Ruth Armentrout, for example, in her study of the development of subordinate conjunctions, maintains.

8) With regard to adverb clauses and the conjunctions that introduce them, the syntax of Modern English is much the same as that of Old and Middle English.
(Armentrout 1978:v)

In the remainder of this paper I will show that this is not the case. OE in fact shows evidence of an additional strategy, which involves the clause-introductory particle be. This form has been a thorn in the side of linguists for over a century, because it has never quite fit very comfortably into anyone’s system of syntactic categories. Traditional descriptions usually call it a relative pronoun or particle; studies done in more current frameworks simply assign it more or less by default to the category complementizer. Most writers are aware of at least some grounds for dissatisfaction with these treatments. Once we have developed an adequate treatment of be, including a way to generalize over all its uses, a little internal reconstruction can be done to argue that its clauses were originally adjoined to their matrix clause, and only gradually incorporated into the main clause structure by means of embedding.

OE has two sentence initial particles which introduce tensed clauses whose semantic content is definite and specific: baet, ‘that’, and be, whose translation I’ll leave open for the moment.

9) baet, ‘that’ be, ?

Baet is basically the complementizer for indirect speech and desires, a function which is still a property of its ModE reflex that.

10) Onthere saede baet sio scir hatte Halgoland. O. said that that region was called Helgeland.
(Orosius 19:9)

"Onthere said that the region was called Helgeland."

It contrasts with hwæber, ‘whether’, which introduces complements of which some aspect is open to question.
11) He fraegn *hwaep* nea aenigne nusl inne haefdon. 
He asked whether they any Eucharist within had. 
(Bede 106)

"He asked whether they had any Eucharist in the house."

Unlike its ModE counterpart, however, the OE *baet* appears only very infrequently as a complementizer in relatives or complements to nouns (Wiegand forthcoming). In these constructions, as well as in several others without exact counterparts in ModE, the particle *be* is used.

I have argued elsewhere (Wiegand 1983 and forthcoming) that both the relative pronoun analysis and one in which *be* is simply called a complementizer fall short of an explanatory account of the OE system. Let me here briefly review the claims made by these analyses and the reasons for rejecting them, before I discuss a more general account.

Some linguists working in the traditional grammar framework (Quirk and Wrenn 1957, Carkeet 1976) analyzed *be* as a relative pronoun, because its most frequent use was in relative clauses, and because the category of relative pronoun was a familiar one. *De* is used in two out of the three major types of OE relative clauses. In some it appears alone, as in (12), and others it is used following a form of the inflected demonstrative pronoun, as in (13).

12) Se bat waes geworht of priddan healfre hyde
That boat was made of three half hides

*be* hi on foron. (Chronicle 891, 82:22)
PART they in went.

"The boat that they set out in was made of two and a half hides."

13) & he waes se eantepe cyning se *be*
and he was that eighth king that PART

Bretwald waes. (Chronicle 827, 60:25)
Bretwald was.

"And he was the eighth king who was chief king of Britain."

Other linguists, working in both traditional and generative frameworks, (Erickson 1977, Reddick 1981, Allen 1980) found fault with this analysis, basically for two reasons. First, they noted that *be* fails to show much positive indication of pronominal status. Unlike the OE demonstrative pronouns, it does not inflect
for gender, number or case. And when the relative gap is the object of a preposition, that preposition is obligatorily pied piped with demonstratives, but stranded with be. These arguments are similar to those made by both traditional and later linguists against pronominal status for ModE that in relatives. Secondly, they attached significance to the frequent appearance of be in constructions not usually analyzed as relatives in the strict sense. Most notable among these are constructions in which a sentence introduced by be is used in conjunction with a preceding adverbial PP (14) or NP (15), giving these phrases a connective function.

14) & paer Romane swipost for baem besierde waeron and there Romans chiefly for that ensnared were be him paet land uncupre waes ponne hit PART them that land more unknown was than it Somnitum waere. (Orosius 120:27) Samnites-dat were.

"And there the Romans were ensnared chiefly because of that, that the land was more unknown to them than it was to the Samnites."

15) Se... forpferde by geare be sio That-masc died that-instr year PART the sunne apiestrode. (Chronicle 885, 78:25) sun darkened

"He died in the year that the sun was eclipsed."

These of course are unlike relatives in that there is no dependency relation between the main clause demonstrative pronoun or lexical noun and a gap in the lower clause. Instead, there is a coreference relation between the antecedent and the whole lower clause, as in Modern English the fact that sentences.

In the last decade, a number of studies using current syntactic frameworks (Erickson 1977, Armentrout 1978, Reddick 1981, Allen 1980) have focused their attention on the structure and origin of the NP and PP connectives, of the type illustrated in (14) and (15), and the issue of the proper treatment of be was revived. In most of these studies, the basic line of argument is this: since be, for the reasons given above, cannot be considered a pronoun, and since it occurs in some constructions where ModE has the complementizer that, it must therefore be a complementizer. This simple complementizer analysis is in fact an improvement, since it makes more defensible claims about what other forms be stands in paradigmatic relation with. Nevertheless, in this case
negative evidence, and dependence on the theory as developed so far, do not take us far enough. The simple complementizer analysis fails to account for two very important aspects of the data: first, the fact that be co-occurs with the other complementizers baet and hwaebere, and second, that it occurs in a number of constructions which are neither relatives nor noun complements and which, if they appear in ModE, are not always introduced by a complementizer. The simple complementizer analysis needs to be refined in order to provide both an account of the function of be which is general enough to cover all its uses, and a means of distinguishing this particle from the verbal complementizer baet.

Let's turn now to the two other kinds of evidence about the function of be. First, there is its different syntactic behavior. The other complementizers were illustrated above in (10) and (11). While these two are in complementary distribution with each other, be can co-occur with either of them, as shown in (16) and (17).

16) Gesse...hwaebere be betere pince...hwaebere
Say which-of-two you-dat better seems whether

be pu hi forseo... be pu gebide nwnone hi
PART you them reject PART you continue until they

be sorgiendne forlaeten. (Boethius 20:28)
you grieving abandon.

"Say which of the two seems better to you...whether you should reject them...(or) you should continue until they abandon you grieving."

17) Genog sweotol £ is baet te forby sint gode men
enough clear that is that PART for-that are good men
goode be hi god gemetaesp. (Boethius 106:33)
good PART they good discover.

"It is clear enough that for this reason good men are good, that they discover goodness."

(18) shows the more common version of (17), where be has been cliticized onto baet, producing an alternate form of that complementizer.

18) pu wast baette butan pissum tolum nan cyning his
you know that without these tools no king his

craeft ne maeg cypan. (Boethius 40:18)
strength neg. can make known.
"You know that without these tools no king can make his strength known."

Now, we can look at the category complementizer as having two basic defining properties: in OE as in ModE, members of this category mark the clause as a constituent within the matrix S, and they distinguish clause types on the basis of semantic content. Daet complements are definite and specific, hwaeper complements have some aspect left open to question. The fact that be co-occurs with them strongly suggests that it has some different or additional function. Though it is also possible that the defining properties of complementizers are here seen distributed between the two forms, the fact that use of baet and hwaeper alone is much more frequent makes this unlikely.

The other source of evidence about be is its use in a range of other constructions, most of which have not been considered in previous attempts to discern the function of be. Some of these appear quite frequently in the texts, while others are rare. All however are recognized OE uses, in so far as they are mentioned in Bosworth-Toller or in specialized studies of constructions with similar meanings. All of these are discussed in detail in Wiegand (forthcoming), including those whose meaning has previously been disputed or obscure. This analysis is very complex, and can only be given a brief sketch here.

The normal complementizer in OE comparatives is bonne "than", but there is an alternative construction which uses be.

19) Ne nine mon ne maeg bon eb on him neg. him one neg. can than-that more-easily on him

  geniman be mon maeg pa sunnan awendan of niera stede.
effect PART one can the sun turn from its place.
(Boethius 46:19)

"One can no more readily have an effect on him than one can turn the sun from its fixed place."

In (19), a comparative relation is asserted by the phrase bon eb, "more easily than that", which consists of a demonstrative pronoun and an adverb in the comparative degree. The be S gives the standard of comparison and seems to provide the reference of bon. This gives the sentence the appearance of being the same type of construction as in the NP and PP connectives, where a demonstrative also referred to an entire lower clause. We might be content to analyze the be S here as a noun complement, were it not for the existence of comparatives like (20).

20) He wolde baet pa folc him by swibor
He wished that the people him than-that more-readily
to buge be he haefde hiera ealdhlafordes sunu
to submit PART he had their old lord-gen son

on his gewealde. (Orosius 143:32)
in his power

"He wished that the people would submit to him more
readily when/after/because he had the old lord's son
in his power."

Here we have exactly the same syntax, but the be S is not the
standard of comparison. Instead the reference of the comparative
phrase by swibor "more readily than that" is to an expected
situation set up by or assumed from the previous discourse. The
be S gives the way in which the current situation differs. We can
translate be as "when", "after", or "because", but it should be
emphasized that there is no explicit indication within this
subordinate clause of the type of relation that is being asserted.
Instead, in both (19) and (20), the comparative phrase indicates
that the described situation stands in a particular rational
relation. The be S expresses another situation which is necessary
to complete our understanding of the comparative relation.

In (21) and (22), the be S is again used to evaluate, or
qualify, the situation set up by the main clause. The difference
is that here there is no explicit indication within the main clause
of the nature of the relation -- i.e., of what element or feature
is being qualified. Instead we must rely on the content of the
clauses, as well as the context of the utterance.

21) pa wifmen bysmredan hiora weras be hie fleon woldon.
the women ridiculed their men PART they flee wished.
(Orosius 2.5)

"The women ridiculed their men when/after/because they
[wished to flee."

In (21), content and context make it clear that the situation with
the men wishing to flee is certainly antecedent to, and probably
the cause of, the situation in which the women are ridiculing. So
the be S qualifies the temporal status of the main clause, and
perhaps its rational status.

In (22), the be S again gives the reference point by which
we evaluate a relation which the main clause stands in.

22) 7 hie pa brei daelas on preo tonemdon: Asia,
and they the three parts in three named Asia

7 Europem, 7 Africam; beah be sume men saegden
and Europe and Africa though PART some men said
...buton twegen daelas. . . . (Orosius 8:4)
that there weren’t but two parts.

"And they named the three parts by three names:
Asia, and Europe, and Africa, though some men said
that there were only two parts."

In this case, however, the concessive nature of that relation is
indicated by use in addition of another morpheme, the adv/conj beah
"though". In (23), the be S qualifies the location of an element
within the main clause situation.

23) ponne cympel Ilfing eastan in Estmere of paem mere
then comes Elbing east-obl in E. from the lake
be Truso standeþ in stape. (Orosius 20:9)
PART T. stands on shore.

"Then the Elbing comes from the east into Eastmere,
from the lake where Truso stands on the shore."

How then can we generalize over all these various uses?
The simple complementizer analysis was based on looking at only
relatives and noun complements. Allen (1980) suggested that since
both of these constructions involve an [NP S] structure and a co-
referential relation between upper and lower clauses, be could be
characterized as the relative complementizer, with "relative" used
in the looser sense defined by these two properties -- one
configurational, the other semantic. But when we look at the uses
in (16) - (23), we see that each lacks one or both of these
properties. Most have no co-referential relation between the
clauses, and only (16) and (17) could be argued to have an [NP S]
structure.

In fact, initially the most striking fact about this group
is the diversity of both internal syntactic structure and semantic
content of the subordinate clause. We are used to thinking of
relative clauses and adverbial subordinate clauses as two very
different types of structure. But herein lies the difficulty with
the relative and relative complementizer analyses. They are
looking at too local a phenomenon.

When we step back and look for a more abstract level at
which all these be S’s might share some property, we can see that
they give information which has a common discourse function. In
all cases be introduces a clause which expresses a situation used
to evaluate some aspect of the described situation. Relatives and
noun complements give information needed to identify or further
characterize a participant in the situation. Other be S’s restrict
the temporal or local properties of the situation itself or of a
participant. Still others supply a reference point by which we can
evaluate an adverbial relation asserted as true of the main clause
situation — be it comparative, causal, or concessive. In other words, *be* does not so much characterize the semantic content of its clause, but rather its position in semantic structure. This gives us the answer to our first question about *be* — the generalization behind the use of the same form in this particular subset of subordinate clauses. It also gives us the means to distinguish use of this form from the use of *baet*. Syntactically, *baet* clauses are subjects or direct objects. On the functional level, *baet* introduces clauses which are not evaluative of the main clause situation but are themselves participants in it.

Now that this common function has been established as the basis for generalizing over the set of *be* clauses synchronically, we can return to the diachronic picture. As we established earlier, there are many ways above the syntactic level to incorporate information about an evaluating situation into the discourse. We can take this synchronic characterization as the syntacticized reflex of this discourse function. The etymology of *be* is a matter of much dispute. The two most probable origins are as an old locative, meaning ‘there’, (cf. OED *the* particle (conj., adv), relative pronoun’) or as an oblique (probably instrumental) form of the demonstrative, meaning ‘by that’ (Small 1926). Either etymology is consistent with the hypothesis that *be* originally indexed the existence of a proposition as relevant in considering the described situation. Through its demonstrative and perhaps case properties, it juxtaposes its proposition by the side of the main clause proposition, and thus indicates its secondary, or subordinate, status in semantic structure.

This gives us the functional and semantic strategy by which these evaluative situations came to be expressed in *be S*’s. We have still to elucidate the linearization problem. Given a clause with such functional and semantic properties, by what principle was it originally ordered in the complex structure? On the one hand, languages such as OE which have some constraints on word order in simple sentences can be argued to show a linearization principle by which modifiers and heads are kept together — dependencies are marked by juxtaposition. This is an instance of what Croft (1983) calls the principle of phrasal unity. At least below the level of the phrase, OE shows definite syntactic restrictions on the order of elements. On the other hand, the semantic strategy behind the use of *be* to mark clauses with this particular discourse function appears to require the juxtaposition of the two clauses as wholes in order to indicate their relative semantic status.

Three facts about the syntax of complex sentences with *be* can help to elucidate how this problem was solved. The first is that in all cases, even relatives, they usually appear in sentence-final position. Secondly, when there is an explicit marker of the relation in the main clause — e.g., the antecedent in relatives, or the PP in the adverbial connectives — that element can appear within the main clause and separated from the *be* clause (cf. 12 and 14). Finally, when the *be S* does appear in something other than
final position, it must always follow such an explicit relation marker. It is never found initially or medially on its own. Now, we are used to thinking of sentence final complement clauses from the point of view of generative accounts of ModE, in which they are extraposed. But the facts of OE point in the other direction. The only way the historical development makes sense is to argue that these clauses were first adjoined to the end of the sentence, in a manner familiar from discussions of such structures in Walpíri and other Australian languages by Hale (1976) and Larson (1983), and because such juxtaposition was part of the means of indicating the semantic relation between the clauses. An example structure for examples (12) and (14) is given in (24).

24)

```
    S
      |
    Se bat waes geworht...
    |
  S
    |
be hi on foron.
    |
S
    |
besierde waeron
    |
S
    |
be him paet land
    |
S
    |
uincupre waes...
```

This would mean, however, that some degree of tension would exist in the OE system between this semantically motivated linearization and the principle of phrasal unity. The fact that we find instances in OE in which the be S is unambiguously embedded under a head shows that this principle was the stronger one.

This interpretation of the development in OE makes possible a revised view of the development of complex sentence structure. The initial stage of the progression was one in which the language had the discourse strategy of modification by use of an evaluative situation, and two linearization principles. The next step was to utilize the form be as a semantic way of characterizing the discourse function of evaluation, and to use juxtaposition as the linearization strategy. At this point, the be S must be considered semantically subordinate, but the syntactic dependency exists only between the two clauses, not between modifier and head. This stage represents the first phase of Givón's progression, in which a pragmatic strategy has been syntacticized. The final stage is the incorporation of the be clause into a phrase with its head, where such an overt element exists. At this point, there is both a semantic and a syntactic dependency between the elements. And to the extent that the be form comes to be interpreted as a marker of the syntactic dependency rather than the semantic relation of the clauses, it has been grammaticalized. This final stage represents the second phase of Givón's cycle, and the beginning of the syntactic strategy for marking subordinate status that is utilized almost exclusively in the later stages of the language.
PRIMARY SOURCES


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The Characterization of Clause-types: Scope, Obviatation and Independent Tense
Laurie Zaring
Cornell University

1. Introduction*

Recent work in Government-Binding has suggested that different clause-types (indicative, infinitival, etc.) can be characterized by the features [+Tense, +AGR(eement)], where a tensed clause contains [+Tns, +AGR], and an infinitival clause [-Tns, -AGR]. The features chosen, in turn, are held to interact with principles of GB in varying ways. For example, the Binding theory proposed in Chomsky (1981) specifies the domain of an accessible SUBJECT as the domain in which anaphors must be bound and pronouns must be free. [+AGR] and NP constitute potential SUBJECTs; therefore it is predicted that possibilities for realization/interpretation of a subject NP will differ according to whether or not agreement is present. For example, in a tensed clause, the pronoun he/him can refer to the subject of the main clause, while in an infinitival clause such reference is not possible:

1a. John$_i$ believed that he$_{i/j}$ had won.
1b. John$_i$ believed him$_{i/j}$ to have won.

Picallo (1983$^1$, 1984) and Meireles and Raposo (1983) (henceforth M&R) provide evidence from Catalan and Portuguese respectively which shows that the Binding theory does not, however, make the correct predictions for subject pronoun reference in subjunctive and inflected infinitive clauses, both of which exhibit agreement morphology. In the sections which follow, I will first present (section 2) the data and analyses suggested by Picallo to account for subject pronoun reference, quantifier scope and sequence-of-tense phenomena in Catalan subjunctive clauses. In section 3, Meireles and Raposo's claims for Portuguese will be discussed. In section 4, data from French and further data from Portuguese will be provided which show that neither Picallo's nor Meireles and Raposo's analyses correctly account for the interpretation of subject pronouns, scope of quantifiers and sequence-of-tense phenomena in these two languages. It will be concluded that in and of themselves, neither [+Tense] (or Meireles and Raposo's corresponding [+Independent Tense]), nor [+AGR], nor a combination thereof, is sufficient to distinguish between moods, or determine the referential properties of subject pronouns; rather, these are dependent on the lexical properties of the matrix verb.

2. Catalan
Working in Catalan, Picallo (1983) addresses three areas in which subjunctive clauses are distinguished from indicative. She points out that, as in English (cf. (1a)), a subject pronoun in an indicative complement is free in reference to the matrix subject; that is, it can co-refer with or fail to co-refer with the matrix subject:

2. En Joan_1 creu que pro\_1/j hi va.
   John believes that (he)/there goes-IND
   'John believes that he's going there.'

However, in Catalan subjunctive clauses a subject pronoun in an embedded subjunctive clause is obligatorily disjoint in reference to the matrix subject; i.e., it must refer to someone/thing other than the matrix subject:

3. En Joan_1 vol que pro\_1/j vingui.
   John wants that (he)/come-SBJN
   'John wants that he come.' (P's (1))

Second, Picallo (1984) argues against Rizzi (1982)'s proposal in which he maintains that in Null-Subject languages like Spanish, Italian, Portuguese and Catalan, subject position is not properly governed, contrary to other proposals, and that extraction of an NP from this position is restricted by the Empty Category Principle (ECP). Although it is possible to extract a wh-phrase from this position in these languages, Rizzi suggests that this is due to the existence in these languages of free inversion (movement of the subject to post-verbal position). The structure of (4a) would thus be (4c), not (4b):

4a. Chi credi che verrà?
    who think-PR-2S that come-FUT-3S
    'Who do you think that will come?' (R's (84))

4b. [_{\_1} \_i [_{\_2} [credi [_{\_3} [che [_{\_4} [t\_1 verrà]]]]]]

4c. [_{\_1} \_i [_{\_2} [credi [_{\_3} [che [_{\_4} [t\_1 [vp [vp verrà] t\_1]]]]]]

A subject wh-phrase is thus not extracted from pre-verbal position, where its trace would not be properly governed, but from post-verbal position, where it has been moved, and where its trace is properly governed by V. The pre-verbal trace in (4c) is pro\_1; it is not properly governed and therefore cannot be trace, but it is governed, and as such can't be PRO. In (4b), however, t\_i cannot be pro\_i, since if it were, chi\_i would have no variable to bind, and the sentence would be ruled out by virtue of containing a vacuous operator. Therefore, pre-verbal t\_i in (4b) is a trace, subject to the ECP, while that in (4c) is pro\_i, and not subject to the ECP.

Rizzi cites as evidence for this analysis the movement of quantifiers in LF. At this level, free inversion is not
available, and it is assumed that quantifiers/negatives are raised to COMP to be interpreted. If raised to an embedded COMP, the quantifier/negative will have narrow scope (i.e., scope over the embedded clause only):

5a. S-structure: I require that you not arrest anyone.
5b. LF: I require that [there is no x such that [you arrest x]]

If raised to the matrix COMP, however, the quantifier/negative will have wide scope (scope over the entire sentence):

6a. S-structure: I do not require that you arrest anyone.
6b. LF: There is no x such that [I require that [you arrest x]]

Thus, a quantifier in subject position would leave a trace in this position when raised at LF, which must be properly governed. If the quantifier is raised to the matrix COMP, the trace would not be properly governed since it would lack a local antecedent; thus it is predicted that only narrow scope interpretation is possible for quantifiers in embedded subject position. Rizzi asserts that this is true for Italian; (7a) can be interpreted only as (7b), a totally irrelevant meaning where non and nessuno are interpreted independently of each other. A narrow scope reading (7c) is out due to the presence in the matrix clause of the scope marker non, and a wide scope reading (7d) is unacceptable:

7a. Non pretendo che nessuno ti arresti.
    not require-PRT-1S that no one you arrest-PRT-3S
7b. [It is not the case that [I require that [there be no x such that [x arrest you]]]]
7c. *[I require that [there is no x such that [x arrest you]]]
7d. *[There is no x such that [I require that [x arrest you]]]

In Catalan, however, Piccallo notes that Rizzi's analysis does not uniformly obtain. While it is true that in subjunctive clauses, only narrow scope interpretation of a quantifier in subject position is possible, in indicative clauses, a quantifier in subject position may have either narrow or wide scope interpretation:

8a. Tots els estudiants senten que alguns examens
    all the students regret that some exams
    siguin difficils.
    are-SBJN difficult
    'All students regret that some exams are difficult.'
8b. *[For some x, x an exam [all students regret that [x are difficult]]]
8c. All students regret that [for some x, x an exam [x are difficult]]

9a. Tots els estudiants saben que alguns examens all the students know that some exams són difficils. are-IND difficult 'All students know that some exams are difficult.'

9b. For some x, x an exam [all students know that [x are difficult]]

9c. All students know that [for some x, x an exam [x are difficult]]

A narrow scope interpretation (8c, 9c) would be one where, for each student, the exams in question are different, whereas in a wide scope interpretation (8b, 9b), the exams would be the same for each student. As seen above, an indicative clause allows both interpretations, while only narrow scope reading is possible in the subjunctive clause.

Next, Piccallo notes that subjunctive and indicative clauses differ in the range of tenses allowed in the embedded clause. An embedded indicative clause may have a verb in virtually any tense:

10. Sap que \{porta (PRS) \} un llibre. \{portava (IMP) \}
\{portara (FUT) \} ha portat (PST) \} IND
 'S/he knows that s/he brings/used to bring/ will bring/brought a book.' (P's (42))

However, the tense of a verb in subjunctive mood is dependent on the tense of the matrix verb; the verbs must match in tense, present-present, past-past:

11. Desitja que \{porti \} un llibre. \{*portés \}
desire-PRS-3S that bring-{PRS}-3S-SBJN a book \{*PST \}
 'S/he desires that s/he bring a book.'

In order to account for this sequence-of-tense phenomenon, Piccallo proposes that subjunctive clauses are characterized by [-Tns, +AGR], and must therefore receive their time-frame reference from the matrix verb. This characterization distinguishes subjunctive clauses from indicative, which would be [+Tns, +AGR], and from infinitival clauses, which would be [-Tns, -AGR]. Piccallo suggests furthermore that the difference in subject pronoun reference between indicative and subjunctive clauses (cf. (2),(3)) can also be accounted for via the [+Tns]/[-Tns] distinction if it is assumed that the binding domain for pronouns is defined by [+Tns], rather than [+AGR]. Therefore, a
subject pronoun in an embedded indicative ([+Tns]) clause must by Principle B of the binding theory be free in that embedded clause, but can refer to any NP outside of it. A subject pronoun in an embedded subjunctive ([−Tns]) clause, on the other hand, must be free within its immediate [+Tns] clause. That clause is the matrix clause, and the embedded subject pronoun may not, consequently, refer to an NP in that clause.

Finally, Picallo proposes that the differing possibilities for interpretation of quantifier scope between indicative and subjunctive (cf. (8),(9)) can also be attributed to the [+Tns]/[-Tns] distinction, if it is assumed that [+Tns], but not [-Tns], is a proper governor. The trace of a quantifier raised from an embedded subject position to the matrix COMP will thus be properly governed only if the embedded clause is indicative, and wide scope interpretation is thus possible with indicative, but not subjunctive, clauses.

3. Portuguese

Meireles and Raposo (1983) provide evidence that in Portuguese subject pronoun interpretation and sequence-of-tense restrictions in subjunctive clauses parallel those in Catalan. Moreover, Portuguese possesses an infinitive which is inflected for person and number (the "Personal Infinitive," henceforth PI):

12. Duvido meus pais chegarem antes de meia-noite. 'I doubt my parents will arrive before midnight.'

Depending on the matrix verb, subject pronoun reference and sequence-of-tense restrictions in a PI clause parallel those of subjunctive clauses. M&R note that it is the matrix verb which determines whether a subordinate clause (indicative, subjunctive, PI or infinitival) may have tense reference independent from the matrix verb:

13a. João disse que ele conhece Maria. 'John said that he knows Mary.'

13b. As crianças disseram o bolo. 'The children said they're eating/they ate the cake.'
14a. João deixa que Maria saia de casa.

14b. João deixa Maria sair de casa.

Furthermore, where a subordinate clause cannot have independent tense reference, a subject pronoun in that clause must be disjoint in reference to the matrix subject:

15a. João disse que ele conhece Maria.

15b. As crianças disseram pro terem comido o bolo.

16a. Susana deixa que ela saia de casa.

16b. Susana deixa ela sair de casa.

Thus, Meireles and Raposo suggest that a notion of Independent Tense be introduced to account for sequence-of-tense and pronoun reference. Each verb allowing a sentential complement will be marked in the lexicon as allowing IT [+IT]) or disallowing IT ([-IT]) in the COMP of its complement sentence, and [+IT] will then act as an operator binding a tense-variable in the INFL of the S which it governs. A verb in an embedded clause whose COMP contains [+IT] will thus vary freely in tense with respect to that of the matrix verb, while a verb in a [-IT] embedded clause will have to go to the matrix [+IT] for tense specification, and thus match the matrix verb in tense.

M&R also propose that IT is relevant in defining the domain for Binding, since sequence-of-tense phenomena and subject pronoun reference are linked (cf. (13)-(16)). [+IT] thus defines the domain in which a subject pronoun must be free. In (15), the embedded clause contains [+IT], the embedded subject pronoun is free in that clause and may co-refer with the matrix subject. In (16), however, the embedded clause does not contain [+IT]; the binding domain for the embedded subject pronoun is thus the matrix clause and the embedded subject, in order to be free in that domain, must not co-refer with the matrix subject.
Thus, IT defines the domain for pronoun binding, accounts for sequence-of-tense effects, and distinguishes between indicative and subjunctive moods. Since it is the matrix verb which specifies the presence/absence of IT in its complement, it follows that pronoun reference and sequence-of-tense effects will be the same for all the sentential complements of a verb, be they finite or infinitival. Moreover, six types of sentential complements are predicted to exist: finite clauses with [+IT] (indicative), finite clauses with [-IT] (subjunctive), inflected infinitives (PI) with [+IT] (cf. (13b)), inflected infinitives with [-IT] (cf. (14b)), uninflected infinitives with [+IT], and uninflected infinitives with [-IT].

To summarize Picallo's and Meireles and Raposo's analyses, both predict that subject pronoun reference and independent tense reference are linked: the subject pronoun of a clause without independent tense reference will obligatorily be disjoint in reference to the matrix subject, while that of a clause with independent tense will be free. Picallo accounts for this by postulating [+Tns] as the feature which defines the binding domain of pronouns and to which a clause with [-Tns] must go to receive tense specification. Since it is the [-Tns] characterization of subjunctive clauses which accounts for subject pronoun reference and the lack of independent tense in these clauses, Picallo's analysis predicts that other clauses characterized by [-Tns], such as infinitives, should parallel subjunctive clauses with respect to pronoun reference and IT. Indeed, Picallo suggests that the Portuguese PI is a stylistic variant of the subjunctive, characterized by [-Tns, +AGR], and identical to the subjunctive in the relevant respects. Finally, Picallo's analysis predicts that only narrow scope interpretation is possible of quantifiers in subject position of subjunctive clauses, since she takes [+Tns], but not [-Tns], to be a proper governor.

Similarly, M&R account for the link between pronoun reference and independent tense reference by means of a tense-operator, generated in COMP, termed IT. The lack of IT ([-IT]) in a subordinate clause results in that clause's having no independent tense reference, and in the transparency of subject position for pronoun binding. They do not, however, link Portuguese subjunctive and PI. Rather, they suggest that a verb may sub-categorize to allow: 1) a finite (indicative or subjunctive), PI or uninflected infinitive clause, and 2) presence or absence of IT in the COMP of the sentential complement. It follows that the pronoun reference and IT facts will be identical for all types of clausal complements of any given verb.

4. Further Data

Given Picallo's analysis for Catalan, it would be reasonable to assume that it could extend to account for phenomena in analogous clause-types in closely related languages such as Portuguese and
French. Similarly, it would not be unreasonable to expect Meireles and Raposo's analysis for Portuguese to account for corresponding phenomena in French. The predictions made by the two proposals sketched above do not, however, hold when further data from Portuguese are taken into consideration, nor do they extend to analogous constructions in French. A preliminary examination of the characteristics of the subject position in subjunctive and infinitival clauses in these languages shows first of all, contrary to Picallo's analysis, that both wide (17d) and narrow (17e) scope interpretation of quantifiers are possible out of the subject position of Portuguese subjunctives (17a), PIs (17b) and French subjunctives (17c):

17a. Todos os estudantes lamentam que alguns exames sejam difíceis.
    all the students regret that some exams are-SBJN difficult

17b. Todos os estudantes lamentam alguns exames serem difíceis.
    all the students regret some exams to-be-3P difficult

17c. Tous les étudiants regrettent que quelques examens soient difficiles.
    all the students regret that some exams are-SBJN difficult
    'All students regret that some exams are difficult.'

17d. For some x, x an exam [all students regret that [x are difficult]]

17e. All students regret that [for some x, x an exam [x are difficult]]

Second, it is not the case, as Picallo suggests, that all Portuguese PIs correspond to subjunctive clauses; for some verbs allowing a PI, a subjunctive clause is ungrammatical, while an indicative clause is grammatical. Compare the following:

18a. Os meninos dizem que estarem cansados.
    the boys say-PRS to-be-3P tired

18b. *Os meninos dizem que estejam cansados.
    that (they) are-SBJN

18c. Os meninos dizem que estão cansados.
    are-IND
    'The boys say they are tired.'

Nor is it the case, as Meireles and Raposo suggest, that all clausal complements of a verb are identical in behavior with respect to pronoun reference and IT. Consider (19a) and (19b), in which pronoun reference and IT in a subjunctive complement of estar contente differ from those in the PI complement of the same predicate:

19a. Os meninos dizem estar contentes.
    the boys say-PRS estar contente

19b. *Os meninos dizem estar contente que estarem.
19a. Meus amigos, estão contentes que pro^{i/j} my friends are-PRS glad that they^{i/j}
   venham {#.}
   *viessem
   come-PRS-SBJN/*come-PST-SBJN
   'My friends are glad they're coming/they came.'

19b. Meus amigos^{i} estão contentes por pro^{i/j} COMP they^{i/j}
   virem {.}
   *terem vindo
   to-come-3P/to-have-come-3P
   'My friends are glad they're coming/they came.'

Third, it is not the case that [-Tns]/[-IT] characterizing a subordinate clause entails that a subject pronoun in that clause must be disjoint in reference to the matrix subject. There exists a group of verbs in both Portuguese (albeit a minority) and French (a majority) whose subjunctive (and, for Portuguese, PI) complements contain a subject pronoun which is totally free in reference. Consider (20) and (21):

20a. Meus pais^{i} duvidam que pro^{i/j} my parents^{i} doubt that they^{i/j}
   cheguem na hora. arrive-SBJN
   on time

20b. Meus pais^{i} duvidam pro^{i/j} chegarem na hora. to-arrive-3P
   'My parents doubt they'll arrive on time.'

21. Paul^{i} est étonné qu'il^{i/j} ne dorme pas bien. Paul^{i} is amazed that he^{i/j} ptc sleep-SBJN not well
   'Paul is amazed that he's not sleeping well.'

Finally, contrary to Picallo's and Meireles and Raposo's proposals, independent tense reference is possible for a number of subjunctive and infinitival complements in both languages, as seen in (22), (23):

22a. Os meninos negam que \{cheguem \} atrasados. the boys deny-PRS that (they)arrive-PRS/PST-SBJN late
   'The boys deny that they are arriving/arrived late.'

22b. Os meninos negam \{fazerem \} aquilo. to-do-3P/to-have-done-3P that
   'The boys deny they're doing/they did that.'

23a. Il craint qu'ils ne le fassent maintenan.
   he fear-PRS that they ptc it do-PRS-SBJN now
   'He's afraid that they're doing it now.'

23b. Il craint qu'ils ne l'aient fait hier.
   it have-SBJN done yesterday
   'He's afraid they did it yesterday.'
5. Conclusion

In light of the data sketched in section 4, it must be concluded that while [+Tense]/[+IT] (or whatever characterizes indicative mood) does determine independent tense reference and free reference for subject pronouns, [-Tense]/[-IT] (subjunctive and infinitival moods) does not imply a lack of independent tense reference or transparency of the embedded subject position for the binding of pronouns (i.e., disjoint reference assignment). As Picallo and M&R point out, [+AGR] is not sufficient to determine the binding domain for pronouns; however, neither are [+IT]/[+Tense] sufficient in and of themselves to determine that binding domain. Nor is it possible to account for verbal mood and independent tense reference via [+Tense]/[+IT] alone. Rather, these are all dependent (at least in part) on the lexical properties of the matrix verb. Although it is beyond the scope of this paper to offer a systematic analysis incorporating these observations, they suggest first of all that the characterization of clauses as [+Tense, +AGR] is insufficient and that the lexical properties of the matrix verb must assume a larger role in accounting for mood and independent tense reference. Moreover, the Binding theory will need to be adapted to allow the lexical properties of a matrix verb to play a role in the determination of possible pronoun reference.

NOTES

*I am very grateful to Wayne Harbert for his interest, time and invaluable comments during the preparation of this paper. All errors and inadequacies are of course my own.

(1) Picallo (1983) is, in fact, a rough draft of a section of Picallo's doctoral dissertation, still in preparation. Her comments there should thus be taken as provisional, since she may very well have revised her analysis since the writing of the draft.

(2) The ECP is a principle of government theory in GB which states that a trace must be properly governed. To be governed, it must be c-commanded by a lexical category (N,V,A,P) in the same maximal projection. Proper government, however, limits governors to N,V,A (sometimes [+AGR]) or a local antecedent coindexed with the trace. It is the notion of proper government which is relevant for the ECP. See Chomsky (1981, 1982) for a formal formulation of the ECP.

(3) LF, or Logical Form, is one of the components of grammar at which interpretive rules (such as construal of empty categories, the scope of quantifiers, interpretation of variables, in the case of LF) apply. See Chomsky (1981) for further detail.

(4) In examples (5,6), anyone is taken to be the quantifier which is raised, while not is taken to be a scope marker, overtly marking the clause over which the negative anyone has scope.
(5) Picallo's formulation of binding domain does not totally discard the notion of accessible SUBJECT. She argues, however, that the crucial notions are those of [+Tense] and accessible subject (i.e., [NP,S] or [NP,NP]) chain:
   i) $\lambda$ is a governing category for $\beta$ iff:
      I. $\lambda$ is the minimal category domain percolated-governed by
          $[+\text{Tense}]^1$ containing $\beta$ and a subject chain accessible
          to $\beta$.
      II. A maximal $[+\text{Tense}]^1$ domain is a governing category for a $\beta$
          lacking an accessible subject.
   ii) $\gamma$ is accessible to $\beta$ iff $\beta$ is in the c-command domain of
        all elements forming a $\gamma$-GF chain and the coindexing of $\beta$
        and $\gamma$ does not violate the i/i condition.
        (Picallo 1983:50)
(6) See Huang (1983) for a version of Binding theory where an
accessible SUBJECT does not play a role in the binding of
pronouns. However, Huang's proposal is still insufficient to
account for the problems relevant in this paper.

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