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Papers in General Linguistics

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TEMPORARY ACCOMMODATION:
I AM THE OLDEST OF MY SIBLINGS

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This paper seeks to explain a previously unnoticed semantic phenomenon illustrated by the contrast between (1) *I am the oldest of my enemies*, which presupposes that the speaker is one of his or her own enemies, versus (2) *I am the oldest of my siblings*, which for most speakers does not presuppose that the speaker is his or her own sibling. I argue that the behavior of (2) is the result of temporarily enlarging the extension of the predicate (*sibling*) in order to meet an otherwise unsatisfiable presupposition. I propose that this temporary accommodation occurs only with lexical and complex predicates whose denotations are of a certain mathematical class that I call quasi-equivalence relations. I also briefly discuss a number of closely related construction types, and draw out the functional motivation for this unusual type of grammaticized accommodation.

0.   Introduction

Interpretation clearly depends on context. Typically, context restricts the range of interpretation: thanks to context, ambiguity is resolved, reference is determined, and vagueness is constrained. This paper suggests that under certain very specific conditions, context can enlarge rather than restrict the extension of a predicate. The phenomenon in question is illustrated by the semantic contrast in (1):

(1)   a. I am the oldest of my enemies.
      b. I am the oldest of my children.
      c. I am the oldest of my siblings.

(1a) entails (presupposes, actually — see the discussion below in section 2) that I am one of my own enemies. Similarly, (1b) presupposes that I am one of my own children, and therefore is infelicitous, or at best a contradiction (ignoring the possibility of time travel paradoxes). (1c) ought to be just like (1b): since I am no more my own sibling than I am my own child, we should naturally expect (1c) to also be infelicitous or contradictory. However, native speakers robustly judge (1c) to be significantly more acceptable than (1b), and capable of being true.[1]

(1c) only makes sense if the speaker is considered to be one of the speaker's siblings, so that the truth conditions of (1c) are equivalent to the truth conditions of the sentence *I am the oldest of my parents' children*. However, unlike the entailment that I am my own enemy in (1a), uttering (1c) does not commit me to the claim that I am my own sibling. Somehow, the speaker of (1c) is exceptionally

allowed to temporarily count as their own sibling, just for the purposes of comparing ages, immediately after which the normal irreflexive meaning of siblinghood is restored. For the purposes of this paper, let's call this a PRO TEMPORE reading, or less fancily, a temporary reading: something about the linguistic context provided by (1c) allows *sibling* to temporarily mean something different than it normally does.

Many authors have suggested that specific constructions can affect the interpretation of a predicate in context. For instance, Kadmon (1990:312) argues that some definite descriptions behave as if they contained descriptive content beyond what is overtly expressed. Building on Lewis' 1979 notion of accommodation (discussed below in section 2), Kadmon allows for the semantic interpolation of additional restrictive material in order to satisfy the uniqueness presupposition associated with the use of a definite description. Thus in an appropriate context, a definite description like *the man* can give rise to truth conditions equivalent to *the man I was talking to*.

Like Kadmon, I will suggest that the pro tem reading of (1c) is a kind of accommodation triggered by a presupposition. The main difference that I would like to draw attention to between the pro tem accommodation discussed in this paper and the type of accommodation proposed by Kadmon and others is that here the pro tem reading results in an enlargement of the property rather than a restriction.

Thus the potential interest of the phenomenon illustrated in (1) is that it seems to be a highly unusual combination of a construction-specific, presupposition-triggered accommodation that results in enlargement of the extension of a predicate rather than restriction. Furthermore, as if in recognition of the unnaturalness of predicate enlargement, unlike traditional accommodation, the effect of this type of accommodation is rescinded immediately after the superlative has been evaluated (i.e., the effect is temporary).

1.   Reciprocal interpretations of relational nouns

Clearly, something about (1c) is different, and gives special dispensation for (1c) to mean what it means. The obvious starting point is to investigate semantic differences between the meanings of the predicates involved. For instance, *sibling*, but not *children* or *enemies*, is one of the relational nouns that Eschenbach (1993) classifies as capable of a reciprocal interpretation.

(2)   a. The sister walked in.
       b. The sisters walked in.
       c. The daughters walked in.

Eschenbach observes that (2a) is felicitous only in a context in which we feel that we know exactly whose sister is involved. Not surprisingly, the plural use in (2b) can have a similar interpretation: let's say that we are talking about Warren Beaty's sister and Rosanna Arquette's sister. Then we can use (2b) to describe a situation in which Shirley MacLean and Patricia Arquette (who are not related to each other) enter the room.

But (2b) also has a reading that does not require any special context, provided that the reading is reciprocal, that is, provided that the sisters are all sisters of each other. In this case, each woman satisfies the has-a-sister presupposition with respect to her siblings. It is not clear whether this way of construing relational predicates constitutes a bone fide ambiguity, or whether the reciprocal interpretation is merely an especially common, convenient, and tidy way for a situation to satisfy the presuppositions of sentences like (2b); fortunately, we do not need to resolve this question for our purposes here.

Other predicates, of course, may not be consistent with the possibility of a reciprocal reading. For instance, consider the denotation of *daughter*. It is not possible to find a finite set of daughters such that each member of the set is the daughter of some other woman in the group. This makes a reciprocal interpretation impossible, and indeed (2c) has only a discourse-controlled interpretation.

As we will see, compatibility with receiving a reciprocal interpretation seems to be a necessary condition for a pro tem reading to arise. Thus the fact that the predicate children in (1b) does not have a reciprocal interpretation allows us to correctly predict that (1b) does not have a pro tem reading. However, although having a reciprocal reading may be necessary for a pro tem reading to be possible, it is not sufficient:

(3) She's the oldest of her brothers.

If (3) were ever felicitous, it certainly could never be true, even if we construe *brother* under a reciprocal interpretation. Thus it takes more than just a relational noun under a reciprocal interpretation to produce a pro tem reading, and we must look further for a more complete explanation.

2. Triggering a pro tem reading: Accommodating a presupposition

What else must be present in order for a pro tem reading to be possible or necessary? Note that a sentence like (1c) but formed with a comparative rather than a superlative does not have a pro tem reading: *I am older than my siblings* does not involve any suggestion that I am older than myself. Therefore I will assume that the presence of the superlative is essential.

Superlatives denote properties of individuals. Predicating a superlative property of an individual presupposes that that individual is a legitimate member of the set undergoing comparison.

(4) a. He is the stupidest criminal I've ever met.
    b. He isn't the stupidest criminal I've ever met.
    c. Is he the stupidest criminal I've ever met?

In the sentences in (4), the set undergoing comparison is the set of criminals. The crucial thing to note is that whether or not the referent of the subject of these sentences happens to be stupid, a use of any of these three sentences presupposes that he is at least a criminal. This suggests the following hypothesis:

(5) The superlative applicability presupposition: a use of a super-
lative [A-est N] (e.g., *stupid-est criminal*) presupposes that any entity
of which the property denoted by the superlative is predicated must
be in the extension of the nominal property N.

I'm not aware of any previous mention of such a presupposition associated with
superlatives, but its existence is clear enough. As evidence that the implication is
a presupposition rather than an at-issue entailment, recall that the hallmark of
presuppositions is that they remain constant under negation and question-forma-
tion. Since (4a), its negation in (4b), and the associated yes/no question in (4c) all
guarantee that the subject is a criminal, I conclude that we are indeed dealing
with a presupposition.

If (5) is a valid assumption, then a use of (1c) presupposes that the speaker is
a member of the relevant set of siblings. In addition, this is why (1a) entails that
the speaker is their own enemy, and why (1b) is contradictory. It also explains
why (3) is infelicitous: the presupposition that the subject is a brother (and there-
fore male) is inconsistent with the gender marking on the pronoun in subject
position.

We can now recognize that the pro tem reading in (1c) serves as a way of
satisfying the superlative applicability presupposition by extending the set of sib-
lings to include the speaker. In other words, we can view the pro tem reading as a
form of accommodation.

(6) Lewis 1979:340: Accommodation: If at time t something is said
that requires presupposition P to be acceptable, and if P is not pre-
supposed just before t, then--ceteris paribus and within certain limits--
presupposition P comes into existence at t.

Accommodation often results in adding entities (or at least discourse referents) to
a model. In the traditional example, definite descriptions presuppose the existence
of the described entity. If a speaker asserts that the King of France is (or isn't)
bald, and we have no specific knowledge to the contrary, a cooperative listener
will accommodate the existence presupposition by behaving as if France does
indeed have a king. In formal terms, this amounts to adding an entity to the do-
main of discourse having the requisite properties.

Unfortunately, the conditions under which accommodation occurs can be
fluid and elusive.

(7)   a. My uncle is visiting me   (Presupposition: I have an uncle.)
          this week.

         b. Sorry I'm late, my   (Presupposition: I have a firetruck.)
          firetruck broke down.

As Prince 1979 observes, accommodation in (7a) is highly natural and effortless,
even without any reason to believe that the speaker has an uncle; however, it is
much less likely that even a cooperative listener will be willing to postulate that
the speaker possesses a firetruck. The difference between (7a) and (7b), obvi-

ously, is plausibility: it is much more likely that the speaker has an uncle than a firetruck.

Even if accommodation is sometimes sensitive to pragmatic plausibility, there may be situations in which accommodation is automatic, that is, conventional or grammaticized. Kadmon's proposed accommodation of uniqueness properties, mentioned above, is an example. As a second example, quantificational possessives arguably involve automatic accommodation: when we process a sentence like *Most people's dogs sleep indoors*, thanks to the existence presupposition due to the possessive, we automatically accommodate the assumption that the only relevant people for the purposes of quantification are people who possess dogs (see Barker 1995, chapter 4 for discussion). My claim here is that pro-tem readings are another instance of automatic accommodation associated with a specific class of constructions.

3. Equivalence relations and quasi-equivalence relations

Let's return to the main contrast between (1b) and (1c). What is the relevant difference between siblinghood and childhood? The first answer that a number of colleagues have suggested to me, and the one that I favor myself, is that the siblinghood but not childhood is tantamount to an equivalence relation---that is, *sibling* and similar predicates are what I will call a quasi-equivalence relation, as defined immediately below.

A true equivalence relation is transitive, symmetric, and reflexive. Because the sibling relation is anti-reflexive, it fails to qualify as an equivalence relation. That is, no one counts as their own sibling (hence *I am my own sibling* is a contradiction). However, when comparing the sibling relation to the smallest equivalence relation containing it, the reflexive pairs are all that are missing.

(8) a. quasi-equivalence relation (sibling):

$\{ <j, m>, <m, j>, <m, t>, <t, m>, <j, t>, <t, j> \}$

b. smallest equivalence relation containing (a):

$\{ <j, m>, <m, j>, <m, t>, <t, m>, <j, t>,$
$<t, j>, <j, j>, <m, m>, <t, t> \}$

The extension of the sibling relation is a quasi-equivalence relation in the sense that it lacks only reflexive pairs in order to be a true equivalence relation. For instance, the possible extension for *sibling* given in (8a) lacks only the reflexive pairs $<j, j>$, $<m, m>$, and $<t, t>$ in order to be a complete equivalence relation like the one given in (8b). More precisely, for the purposes of this paper, a QUASI-EQUIVALENCE relation is any relation whose reflexive closure is an equivalence relation.

If *sibling* denoted a genuine equivalence relation, no accommodation would be necessary in order for (1c) to be felicitous: since the speaker would be a member of the set of the speaker's siblings, the superlative presupposition mentioned above would be satisfied. Perhaps, then, a pro tem reading is available only

when the property in question is sufficiently close to being an equivalence relation. In some sense, quasi-equivalence relations are as close as you can come to an equivalence relations without being one.

Developing this thought further, it is interesting that, for whatever reason, natural languages seem to avoid expressing equivalence relations. Of course, it is possible to construct a somewhat awkward equivalence relation compositionally. For instance, the equivalence relation given in (8b) might be the extension of the relation corresponding to the string *has the same number of legs as*; but note that the words expressing this relation do not even form a constituent. In fact, there may not be any monomorphemic predicates expressing an equivalence relation, except perhaps for the degenerate case of equational *be* (assuming that *be* has a sense that can adequately be expressed by the identity relation, which is trivially an equivalence relation).

Thus not only are predicates denoting quasi-equivalence relations, like *sibling*, close to equivalence relations---they may be as close to an equivalence relation as it's possible for a nominal predicate to get. If natural languages allowed non-trivial lexical equivalence relations, presumably *sibling* would be one of them. The hypothesis under consideration, then, is that it is this closeness to an equivalence relation that makes a pro-tem reading possible for (1c). For comparison, adding reflexive pairs to the *child* relation (i.e., assuming that people count pro tempore as their own children) does much more violence to the content of the childhood concept, which gives a hint as to why (1b) does not have a pro-tem reading.

What about other types of near-equivalence relation?

(9)   a. I am the oldest of my correspondents.
         b. I am the oldest of my partners.

If Alice corresponds with Bob (in the sense of exchanging email), then Bob corresponds with Alice; thus the relation is symmetric. But if Alice corresponds with Bob and Bob corresponds with Carol, there is no guarantee that Alice corresponds with Carol. This means that the correspondent relation does not guarantee any degree of transitivity. (9a) shows that symmetry without a sufficient degree of transitivity does not give rise to a pro tem reading, since (9a) sounds contradictory.

(9b), on the other hand, can have a pro tem reading, but only if the speaker has more than one partner at the time of evaluation. That is, (9b) can mean only that the speaker is the oldest of her current co-partners in a specific venture, and the other partners must be partners of each other. It cannot be used to express the thought that over the years the speaker has always been older than her various partners.

(10) a. Quasi-equivalence relations: siblings, colleagues, brothers, roommates, classmates, lovers, partners, etc.

b. symmetric relations that are not quasi-equivalence relations: correspondents, friends, spouses, etc.

The relational nouns in (10a) are both symmetric and near-transitive (relative to any specific situation), and give rise to pro tem readings; the relational nouns in (10a) are symmetric but not sufficiently transitive to count as quasi-equivalence relations, and do not give rise to pro tem readings.

To summarize, we have the following hypothesis for explaining when pro tem readings are available.

(11) A superlative applicability presupposition (as defined in (5) in section 2 above) will be automatically but only temporarily accommodated just in case the predicate describing the comparison set denotes a quasi-equivalence relation R and the entity to which the superlative is applied is in the smallest equivalence relation containing R.

Thus in (1c) (= *I am the oldest of my siblings*), the predicate describing the comparison set is *siblings*, which clearly denotes a quasi-equivalence relation R. Furthermore, the reflexive closure of R contains the speaker. Therefore (11) correctly predicts that (1c) is capable of giving rise to a pro tem reading.

4. Other constructions

Does this pro tem effect generalize to other constructions? That is, if we find a construction in which predicating something presupposes the applicability of the predicate, will we detect pro tem effects?

Some other comparative constructions presuppose the applicability of their component properties. For instance, if I claim that I am a richer chess player than you are, I presuppose that both you and I play chess. Interestingly, these constructions also seem to give rise to pro tem readings:

(12) a. You won't find a happier one of my colleagues than me.
   b. You won't find a richer colleague of mine than me.
   c. You're the only one of your colleagues who cares about teaching.
   d. You're the one of your colleagues that I like (the most).

Thus for instance (12a) and (12b) can be felicitous and true even though speaker cannot be considered to be his own colleague.

One thing that all of these examples have in common with the prototypical pro tem construction is that they all involve a partitive construction (see Barker 1998 for arguments that *one of my colleagues* and *colleague of mine* are partitives).

It is also worth noting that the predicate in question need not be a simple lexical predicate:

(13) a. I am the oldest of [all my siblings].
   b. I am the oldest of my [male siblings].
   c. I am the oldest of my [brothers and sisters].
   d. You are by far the nicest of your [senior colleagues].

The only requirement is that the resulting complex predicate have for its extension (at every world-time index) a quasi-equivalence relation, and this is the case for the examples in (13). Note that although (13d) does not entail that the addressee is her own senior colleague, it does entail that she is senior. This is exactly what we would expect given the near-equivalence requirement: the addressee must be a senior colleague of her senior colleagues.

If modification disrupts the near-equivalence property, however, it also disrupts the availability of a pro tem interpretation. Assume that the speaker of (13) is one of exactly four brothers:

(14) I am the oldest of my three brothers.

Allowing the speaker to count as one of his own brothers even temporarily produces a set that no longer has cardinality 3; this semantic conflict significantly degrades the acceptability of (14).

5.   Conclusion

The surprisingly high degree of acceptability of (1c) suggests that some natural language predicates such as the meaning of *sibling* are at some deep conceptual level true equivalence relations. This aspect of their semantic nature is masked at a relatively superficial level, perhaps in alignment with what may be a systematic (perhaps universal?) tendency for nominal relations to avoid reflexive denotations. Under the stress of an otherwise unsatisfiable presupposition, this deeper nature can peek through, allowing expressions that denote quasi-equivalence relations to denote complete equivalence relations---but only temporarily, just long enough to evaluate the expression that gives rise to the presupposition.

NOTES

[1] My characterization of the empirical facts may turn out to be too strong. A more conservative claim would be that (1c) is an instance of speaking loosely, in the sense discussed by Lasersohn [Forthcoming]. After all, we can assert a sentence like *The townspeople are asleep* even when a few isolated souls remain awake, provide that the few people who are awake can safely be ignored for practical purposes. Perhaps, then, (1c) is acceptable because it is close enough to being true relative to some pragmatic standard. Yet merely classifying (1c) as an instance of speaking loosely is not enough; the challenge for such an approach is to explain what in particular makes (1c) close enough to being true when (1b) is not. The reader should consider the additional examples given in (12) in section 4 before making up his or her mind about the status of (1c).

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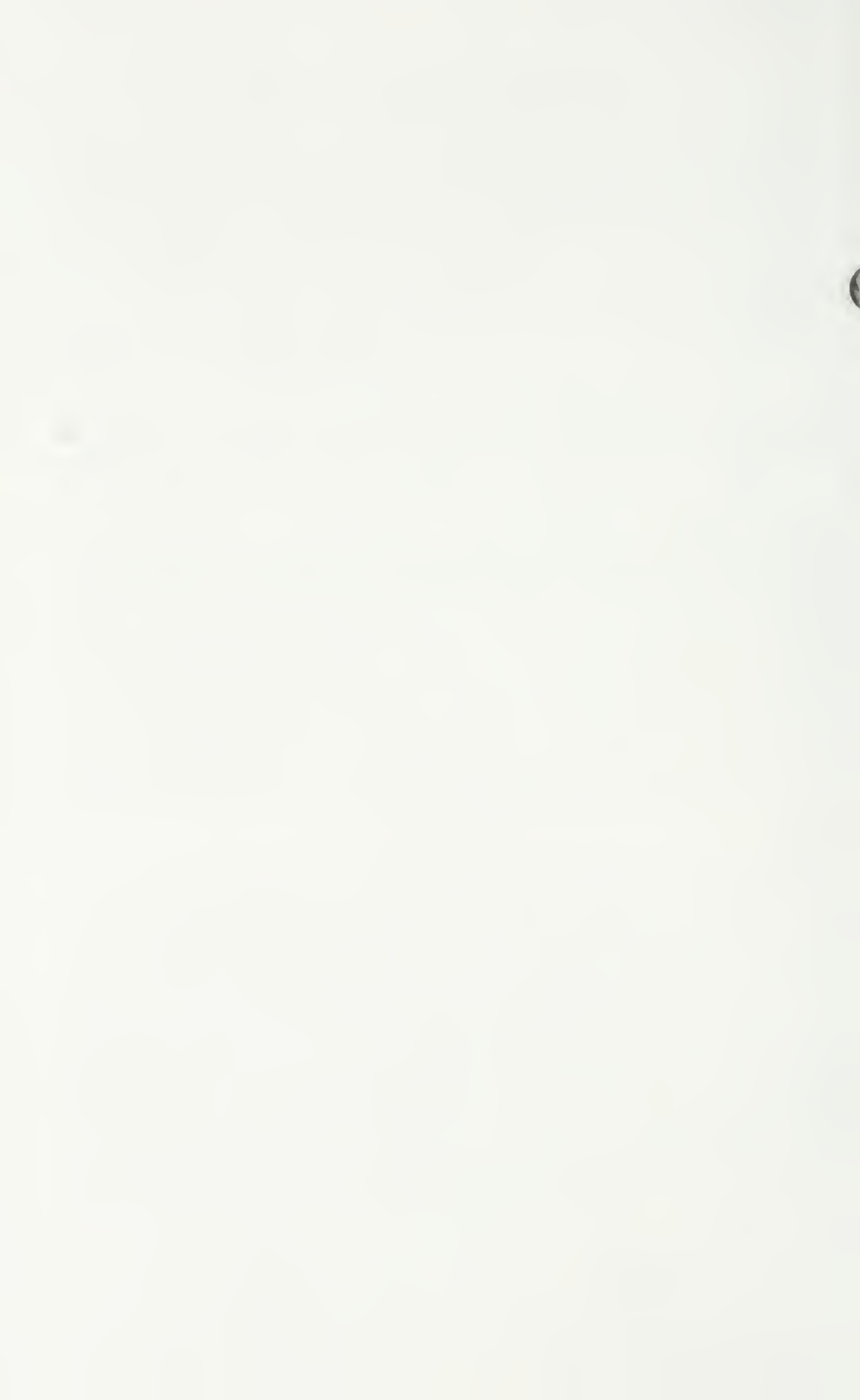
EVALUATING GENERICS

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This paper deals with the question of whether one can successfully represent the meanings of generic sentences by a process of circum-scribing the domain in some principled way so as to eliminate all ex-ceptions. One such suggestion from the semantics literature is exam-ined in some detail, and does not appear to result in a successfully cir-cumscribed domain.

1. Preliminary comments

One of the more difficult semantic problems one might undertake is to formally describe the truth-conditions of generic sentences. My present intention is not to provide or even sketch a solution to this knotty problem, but rather to discuss the overall structure of the problem in the form of a consideration of one potentially attractive strategy for evaluating generics: what I will call 'reduction to the uni-versal'. In the end I will cast some doubt on the viability of this strategy.

This basic idea, at least in a number of limited domains, is quite familiar--what one tries to do is to set aside contrary or exceptional instances so that once the domain of applicability is correctly defined, application will universally hold of the domain. So, to take a simple example, if one has a generalization such as 'birds fly', one wishes to first somehow set aside all the non-flying things as not being covered by the generalization, leaving flying birds alone as the basis of the gen-eralization. Then, with respect to that chosen domain, the inference from 'Birds fly' and 'Tweety is a bird' to the conclusion 'Tweety flies' will hold monotoni-cally so long as Tweety is in the domain. The difficult part of this strategy is to ac-complish this goal in some principled, non-circular manner.

2. Domain restriction

I take it that a generic sentence expresses a generalization or law which 'holds' of a certain domain of the real world (or, more generally, some world of evalution). I cannot at present be much more specific about what 'holds' means, but perhaps slightly more technically we might say that 'holds' means 'is true with respect to'. But I wish to be more specific about what a 'domain' of generalization is.

Generic sentences are, in the typical case, true (or false) with respect to a given DOMAIN. Such a domain might be temporally restricted, as illustrated in the examples of (1):

(1) a. IN ROMAN TIMES, workers were often paid with salt.
   b. IN THE 1950's, women never wore blue jeans.

      c. DURING THE DARK AGES, few people read books.
      d. IN THE NOT-SO-DISTANT FUTURE, loan applications will be processed
         in a matter of minutes.

However, the domain of generalization may be restricted in any number of other
ways, such as spatially rather than temporally, or in more abstract ways, as evi-
denced by examples such as those in (2).

  (2) a. IN THE UPPER MIDWEST, people still wear polyester leisure suits (but
        not in California)
      b. IN SMALL FAMILIES, children play alone much of the time (but not in
        large families).
      c. IN ENGLISH, syllable-initial voiceless stops are aspirated (but not in
        Spanish).
      d. IN THE ROCHESTER SCHOOLS, teachers are paid better than most
        places (but not in Syracuse).
      e. IN CONTRACT BRIDGE, bidding begins with the dealer and proceeds
        clockwise around the table.

In each of these cases, a change in the domain-adverbial may result in a corre-
sponding change in the truth-conditions of the sentence. The limiting case of this
domain-sensitivity would be that of universal truths conditions which do not ap-
pear to vary with time or space or any other definable domain variation. Candi-
dates include certain truths of science, mathematics, logic, and so forth.

    One of the central problems of generics, perhaps the central problem, is how
to treat the exceptions to the generics that typically arise. What I would like to do
in this paper is to discuss the extent to which the phenomenon of DOMAIN
RESTRICTION may be used as a device to set aside exceptional cases to such an ex-
tent that only the non-exceptional cases remain. So, to make our first simple ob-
servation, take Jacques, who is speaking French at the moment (and hence not
aspirating voiceless stops). We certainly do not take Jacques as then being an ex-
ception to the generalization expressed in (2c) because, at least when speaking
French, he does not fall within the domain specified by the phrase 'In English'.
Or, take the poorly paid teacher Mr. Smith, who works at a high school in Bos-
ton--we do not take him to be an exception to (1d), since it only applies to Roch-
ester teachers.

    This illustrates how domains are expressed in natural language, but it is not
an analysis. In abbreviated form, here is the beginnings of an analysis. From the
perspective I take, sentences come in two basic varieties: (1) GENERIC sentences,
which are true or false by virtue of the generalizations or laws they express, and
(2) EPISODIC sentences, which are true or false by virtue of their correspondence
(or lack thereof) to the particulars that constitute our world. I take these particu-
lars to be things like token events and actions (though not the types), particular
times and places (e.g., last Sunday, but NOT Sundays), and manifestations of indi-
viduals and kinds (though not the kinds and individuals themselves). However,
things will be somewhat easier to illustrate if we make the simplifying assumption

that times and places are the sole particulars--the 'locations' as expressed, for instance, in situation semantics (e.g., Barwise and Perry 1983).

A domain of generalization is, then, any phenomenon describable in solely episodic terms (this, then, includes things like *Fido barked yesterday* and *Bob ate a light breakfast this morning*, but excludes things like *Fido barks* and *Bob eats a light breakfast on weekends*). Translating to locations, a domain is any spacetime location (the portion of space-time where the episodics are instantiated, or find their 'direct support'); these locations may of course be temporally and spatially discontinuous, as in (2b, c, e) above.

If one regards generic sentences as inductively-based generalizations, then a given domain will include just those types of instances from which the generalization is derived. However, this is, I believe, an incorrect, or at least far too narrow a view of what a generic generalization is. Rather, I prefer the perspective that takes generics to be much more fundamentally like laws and rules (indeed, these are expressed as generics). Let us take an example of a descriptive rule of a game, for instance; say, in the card game of contract bridge, tens win over nines (i.e. are higher-ranked than nines, higher-ranking cards 'winning' when played at the same time as a lower-ranking card). Now, let us consider the status of this rule under three different circumstances:

(1)   A ten is played, a nine is also played (same suit, following suit lead, in turn, etc.).
(2)   A six wins over a five played at the same time (no tens or nines are laid on the table at the same time).
(3)   The bridge participants take a break and are playing a game of tennis.

I will assume that the situation in (1) is clearly in the domain, and that situation (3) is clearly outside the domain. The question then arises about (2). Is this situation within the domain or not? One could answer this both ways, I imagine. I prefer to answer it in the affirmative (at least in principle), applying the following reasoning.

The entire body of the rules of a game determine how play may proceed, not just a given rule in isolation. For instance, in chess it might well be that Queens (unlike, e.g., Knights) take enemy pieces placed beside them, and that is why I don't move my bishop into such a location. Thus, the (potential) APPLICABILITY of a rule can have a hand, intensionally, in determining play. If the domain of applicability were determined purely extensionally, and were identical to the domain of application, then the rule should be as irrelevant to a situation where I move my bishop to a location beyond the queen's reach, as the rules of professional golf are to playing baseball. On this line of reasoning, (2) describes a situation that falls within the domain of applicability by virtue of the fact that the participants are playing bridge, and the rule's presence intensionally affects play.

I don't assume this settles the issue once and for all, but it does provide us with a potential distinction: the domain of applicability vs. the domain of application. I take the latter to be just those instances in which the rule (extensionally) comes into play, and there is an episodic event of the type specified positively de-

termining outcome (that is, when a generic sentence has an episodic counterpart, the episodic 'holds'). It is another matter how to deal with mistakes and true exceptions--I assume any play in bridge with a ten and a nine in it falls within the domain of application, even if the participants (so long as they are playing bridge) fail to take note of a misplay; cases involving 'trumping' tens with nines, and so forth, fall under 'exceptions'. Thus, to characterize the strategy of reduction to the universal in somewhat different terms from those above, reduction to the universal requires that the domain of application be identical to the domain of applicability less exceptions.

3.   Structure of the generic problem

Above, I noted the use of explicit domain-restricting adverbs. But domain adverbs are not the only way that the applicability of a generic is restricted. A restriction of sorts in fact appears to be part and parcel of the analysis of generic sentences. Let us examine an approach that outlined in Krifka *et al* 1995, based on work in Carlson 1988, Krifka 1995, and Wilkinson 1991. The basic observation is that a generic sentence consists of a relation that holds between the denotations of two different parts of a sentence. In typical cases, these two parts are the subject and the predicate of the sentence, as in (3), but in a wide variety of other cases, the two parts expressing the denotations to be generically related may be other constituents, as illustrated in (4).

(3)   a. Cats/eat meat.
       b. John/smokes a pipe
       c. Everyone who eats at this restaurant/ returns for another meal soon.

(4)   a. A bell goes off/ when you step on this floor mat.
       b. Typhoons arise/ in this part of the Pacific.
       c. A computer computes/ the daily weather forecast.
       d. Coffee and muffins are served/ at 9 AM.

Many sentences, such as all those in (4), can have more than one plausible reading corresponding to different divisions of the sentence.

Though the sentences are thus divisible into two components, the relation is not symmetrical, since the components have different syntactic and semantic properties. Syntactically, one component is a constituent (e.g., an NP, PP, adverbial phrase), and the other is whatever remains of the sentence once that constituent is removed, reminiscent of quantificational representations with generalized quantifiers binding variables. Thus, we could enrich our representations in (3) and (4) not only to reflect the fact that a generic relation is being asserted of the denotations of the two constituents, but also to reflect this syntactic asymmetry. So, a 'logical form' for (3b) and, say, (4c), would be approximately as follows:

(3)   b.' GEN (John(x)) (x smoke a pipe)

(4)   c.' GEN (the daily weather forecast(y)) (a computer computes y)

(A short note of interpretation: the sentence-like portion containing the variables are to be interpreted EPISODICALLY, though intensionally; things would be seman-

tically clearer if a little inaccurate to render these portions in the progressive, 'x is smoking a pipe' etc.). So this, then, is the sort of representation arrived at in Carlson 1989. It does not say much about the semantics of GEN; in particular, the corresponding asymmetries in the semantic interpretation remain uncharacterized.

Manfred Krifka managed to take this general analysis at least two steps further. The first step consists of characterizing the roles of the two constituents within a DRT framework, which was then extended to a situation semantics-inspired form of representation. Consider the following recipe for representing generics taken from Krifka *et al* 1995, though here represented in a slightly different form:

GEN[$x_i...x_j$; $x_k...x_l$] (**Restrictor; Matrix**) **is true** relative to B[...$\{x_i\}$...$\{x_j\}$] if and only if there is an anchor f for the parameters of B such that for every situation s which is of type B(f) it holds that if Restrictor(f) is true, then f can be extended to f' such that Matrix(f') is true.

I will talk some about the 'background' B shortly; here, the GEN operator is assumed to be a 'default quantifier', whatever that cashes out to be in the end. However, note the asymmetrical roles of the restrictor and matrix, in that the restrictor clause specifies the type of situation that must be extended by anchoring additional parameters so that the matrix also holds. Let's look at a brief example to illustrate.

(5)   Hungry bears are attracted to beehives
(5')   GEN[x,s; y](bear(x) & hungry (x) in s; x is attracted to y in s & bee
         hive(y))

The Krifka-style truth conditions here say that, WITH EXCEPTIONS, any situation where the variables x and s are anchored by f to entities verifying bear(x) and hungry(x) in s, then there is some function f' which extends f such that the matrix will also be verified. What this boils down to, in this case, is that there must be some entity anchorable to the parameter y which is a beehive that the hungry bear is attracted to. So (5') is equivalent then to a formula in which existential quantification over y is explicitly represented in the logical form itself, as in (5").

(5")   GEN[x,s](bear(x) & hungry (x) in s; ($\exists$y [beehive(y) & x is attracted to
         y in s])

This, then, is one proposal which semantically characterizes the asymmetry between the two constituents of a generic. In subsequent work, Krifka takes the additional step of trying to integrate the analysis of generics with a general theory of focus, making use of the type of framework originally developed in Rooth 1985. This step is significant, I believe, since it is a principled attempt to motivate the use of such representations on independent grounds. But let us return to a fuller consideration of the structure of the recipe proposed above.

The restrictor clause, in this analysis, serves to limit the domain under consideration in much the same way overt domain adverbs appear to. There is, in fact, some suggestive evidence pointing to the idea that both cases, indeed, serve the

same type of function. In many cases a domain adverb can be syntactically converted into a noun-modifying phrase, though the result is synonymous with the original. The examples of (6) are almost exact paraphrases of those of (2).

(6) a. People IN THE UPPER MIDWEST still wear polyester leisure suits.
  b. Children IN SMALL FAMILIES play alone much of the time.
  c. Syllable-initial voiceless stops IN ENGLISH are aspirated.
  d. Teachers IN THE ROCHESTER SCHOOLS are paid better than most places.
  f. Bidding IN CONTRACT BRIDGE begins with the dealer and proceeds clockwise around the table.

This observation, then, lends *prima facie* credibility to the analysis. I cannot go into an extended evaluation of this issue here. However, IF the Krifka-style analysis presented above is correct, then a notion of domain restriction is a fundamental part of the analysis of generics, and not something occasionally layered on top.

If we think of domain restriction as the setting aside of contrary or possibly even irrelevant cases, the Krifka-type analysis actually encodes three layers of such restriction in the analysis--two besides the presence of the restrictor clause. The first is the character of the GEN operator itself, which is characterized as 'default quantification'. I have misgivings about the 'quantification' part (a purely extensional notion), but the idea of defaults that can be overriden with more specific information as basic to the analysis of generics is an extremely persistent one; indeed, it would never occur to a person to invent defaults if one only dealt with episodic sentences, which are relentlessly monotonic. There are of course numerous proposals about how to model this phenomenon using non-monotonic devices (e.g., Asher and Morreau, 1995), and quite differing conceptualizations of it, but what seems to be common to all is that of more specific information overriding conflicting more general information. In this way, the GEN operator sets aside exceptions not already excluded from the domain, 'from the inside' instead of 'from the outside', as a restrictor clause might.

Then there is the third restrictive mechanism aside from GEN and restrictor clauses corresponding to sentential constituents: the 'background' situation-type B. This is intended to be a conversational background of the type proposed by Kratzer 1981 for the analysis of modals, and little more is said about it. Here is an example drawn from Krifka of how it is to operate. Take a sentence like (7):

(7) Pheasants lay speckled eggs.

The restrictor clause here only contains the information that the situation has pheasants in it. To say that any such situation is extendable to one where each pheasant in that situation is laying a speckled egg is clearly wrong. But a background type of situation B, in which the domain is restricted to just those cases where something is giving birth, will combine to achieve near-universality in this case, leaving the default nature of GEN to get rid of weird pheasants laying albino eggs and whatnot; this is all very plausible, but badly underspecified.

Summarizing the strategy, then, what one does is to attempt eliminate exceptions in three steps: first, by finding a focused portion of the sentence which expresses the content of the restrictor and limiting consideration to just those types of situations; next, you invoke a general background to remove a lot of further cases; and finally the default character of the GEN operator will dispose of the residue. What remains is a domain where universal closure holds. We can summarize this process graphically in Figure 1.
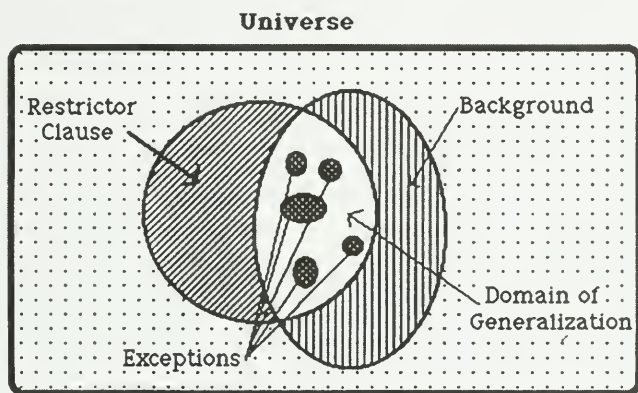
Figure 1.

4.   Some possible sources of background restriction

The success or failure of this strategy has yet to be seen, but it also leaves very serious questions about its viability in all aspects. But I am most concerned with the use of B. Unless this is somehow constrained, so that one does not posit whatever one wishes at any given time, the consequence would appear to be that nearly any generic would come out true on a given reading. I don't THINK this is the result we want. Nevertheless, it is clear that a number of other covert restrictive phenomena occur, and what I'd like to do is briefly survey some instances and then come around to a reconsideration of B.

I've already noted the appearance of domain adverbs. However, it is evident that implicit domain restrictions are even more pervasive, fixed by the context under which an utterance takes place. Consider example sentence (8):

(8)   Coffee and muffins are served around 9 AM.

Such examples as this contrast with sentences like 'The sun rises in the East'. One would readily agree that the sun does in fact rise in the East. But if asked to evaluate the truth or falsity of sentence (8), it seems that one would seek to know the circumstances of the utterance of sentence (8) in order to answer. In a given context, such as in discussing the local customs, or receiving information from a hotel clerk when checking in, the domain of generalization is implicitly restricted

by our understanding of the discourse, to (e.g.) activities located in the culture under discussion, or those located in that hotel.

Let us call this 'implicit pragmatic restriction'. Such restrictions may be imposed indexically, such as by the time and place of utterance. The generic utterance 'Oh, it usually snows heavily during the winter', for example, is most often understood as restricted to the general area where the utterance is made (though of course other restrictions are possible). Or, the discourse itself might explicitly introduce domain restrictions in one sentence that are understood as carrying through in subsequent discourse. Consider the interpretation of the last sentence in this short discourse:

(9) In Latin, /z/ between vowels is pronounced as [r]. But [z] never occurs word-finally.

Clearly, the last statement is understood as restricted to Latin, in light of the previous sentence. I do not even wish to suppose that implicit pragmatic restriction is a unified phenomenon; it could quite easily arise in a number of distinct ways.

Probably of more linguistic interest are those cases of implicit restrictions that arise from the meanings and implicatures associated with expressions that overtly appear in the sentence itself. Conversational Implicatures can, it would appear, give rise to implicit domain restrictions. Consider the following example suggested to me by Rich Thomason.

(10) People have a hard time finding CMU (= Carnegie Mellon University).

Let us assume, as seems correct, that the restrictor is merely the subject NP *people*. Now, by far and away, most people have never had, or ever will have, a hard time finding CMU. Or, if we implicitly restrict our attention just to those instances when people are going to CMU, we see that in nearly all those instances people find it with ease (e.g., most trips are by students, faculty, staff, nearby residents, etc.). From this perspective, it leaves one wondering what on earth (10) is a generalization over. However, if we take into account the conversational implicatures associated with the locution 'have a hard time x-ing', then this appears to be a much more normal type of generalization. Let us take two examples. First, I approach my neighbor Jim, who has never been to CMU and has no intention of ever going there; I ask, 'Did you have a hard time find CMU?' The result is infelicity because it implicates that he at some time was trying to find CMU. This infelicity then rules Jim out of the domain. Next, I approach Bob Carpenter, who used to work at CMU, and knowing this and knowing he went there today I ask him, 'Did you have a hard time finding CMU?' Again, the result is infelicity, this time because it appears to implicate that I had some reason to believe Bob has managed to forget where CMU is, and Bob is much sharper than that.

Under what circumstances is the locution used felicitously, then? Clearly, in those cases where (a) the person was in fact trying to find CMU, and (b) where the speaker has reason to think that the hearer is not familiar with the area. If one restricts the generalization, then, to just THOSE circumstances, sentence (10) appears to be a much more normal type of generalization. The source of the implicit

restriction (if this account is correct) is not the truth-conditional semantics of the utterance, but rather implicatures associated with the utterance in context.

Presuppositions of lexical items may also drive implicit restrictions. Consider the following example, from Schubert and Pelletier 1987:

(11) Cats land on their feet.

The lexical semantics of the verb 'land' requires that immediately before the landing, the subject is airborne (and traveling in the direction of the ground, perhaps). This restricts the cats under consideration to those that are airborne, and not those sitting on my kitchen counter, etc.

Implicit restrictions may also arise from other semantic sources in the sentence. Consider the following sentence also taken from Schubert and Pelletier 1987, of a type considered in greater detail in von Fintel (1994) and elsewhere.

(12) Bullfighters are often injured.

The issue here is the implicit restriction on the range of the adverbial *often*, on the more salient interpretation where it appears to mean that bullfighters are often injured WHEN BULLFIGHTING. There is a much more wide-ranging possibility compatible with no bullring injuries, but a lot of motocycle accidents involving bullfighters. But on the more salient reading, the introduction of the 'when bullfighting' restriction comes from the fact that *bullfighters* is in the sentence, and bullfighting is the fundamental activity one must engage in in order to be a bullfighter. If the sentence instead read, 'Policemen are often injured', obviously there would be no inclination whatsoever, out of context, to implicitly restrict this to just those cases of policemen engaged IN BULLFIGHTING, but rather to activities connected to police work instead.

Another case of implicit restriction derived from the meaning of the consituents of proposition expressed is exemplified in (13).

(13) Bishops move diagonally.

If one observes all the cases of real-world motion of chess bishops, one would find their movements approximate that of nearly any other chess piece--being carted about in cars, carried in boxes to the park, sent flying to the ground in self-indulgent fits of frustration, etc. However, all such movements of this type would appear to be outside the implicit domain. What this means, of course, is that these chess pieces move diagonally, as 'move', 'diagonally', and indeed 'bishop' are defined IN CHESS. Although each of these words has a more general 'real-world' sense, the particular senses taken on here are those derived from the constitutive rules of chess, so that the only activities that count as within the implicit domain here are those instances of bona fide chess-playing. Thus, a body of constitutive rules (see Searle 1969) defining the senses of terms used in the sentence can be used to form another implicit domain. As with example (12) above, this implicit restriction may or may not take place in a given instance. Imagine, for instance, someone only vaguely familiar with the game of chess is told the following:

(14) Bishops are made of wood, metal, ivory, or plastic.

One might not know whether this is a 'real-world' generalization (which at least I think it is), or whether this is implicitly restricted to the game of chess (and as such would take on a definitional air, as it seems to when the explicit domain adverb 'in chess' is added).

So, it seems clear that a number of different sources of implicit domain restrictions on the applicability of generics can be proposed with considerable initial plausibility. However, in the absence of a reasonable understanding of how these restrictions are identified and intergrated with the interpretation of the sentence, we cannot evaluate the hypothesis that the domains can be so narrowly restricted as to result in universality of application as the final result. Put otherwise, the goal of reduction to the universal drives the very plausibility of these explanations. But which (if any) are correct?

The all-too-handy nature of these constraints to the working semanticist must at some point meet with some empirical motivation. One plausible assumption to make is we take Krifka's background set of information B as a part of that set of information that is incremented by utterances in a discourse, in line with Stalnaker 1978, taking B, among other things, also to restrict pronoun reference and the domain of quantification. Thus, B by definition carries over from sentence to sentence in a discourse in the same way as presuppositions may, being a property of discourse and not sentences (this does not mean that it cannot be cancelled, of course).

In sum, what is being proposed is that 'background information' accounts of restrictions on the domain of generics must withstand the test of reference restrictions and domain of quantification restrictions; if one cannot find evidence of such restrictions, then one's theory of genericity cannot posit a putative property (set of circumstances, or whatever) as a restriction on the domain of applicability.

We are not here going to complete the forbidding exercise of evaluating all the conceivable proposals based on these empirical assumptions. However, let us examine a couple of contrasting examples. Consider a sentence such as the following:

(15) Pheasants lay speckled eggs.

Here, on one story, we decide we're really only talking about (normal adult) female pheasants engaged in birthing.

Now, consider example (16)

(16) Pheasants lay speckled eggs. Once rare, THEY now number in the millions.

The question is whether THEY in (16) can be understood as referring exclusively to (birthing) female pheasants or whether it can be understood as only ranging over all pheasants. It appears the latter is correct: THEY must be understood as referring to the kind pheasants, unrestricted by gender. Or, consider (17)

(17) Pheasants lay speckled eggs; EVERY PHEASANT is illegal to hunt.

The question here is whether EVERY PHEASANT can be understood as quantifying over females only. On the assumption that males alone are legel prey for hunters (females being off limits), the second sentence in (17) ought to be understood as stating something true. But it does not, because EVERY PHEASANT seems to have to range overall members of that type, not some restricted portion of them.

This situation should be contrasted with the case of indexical or pragmatic restrictions of the sort illustrated in (8) repeated here:

(8) Coffee and muffins are served around 9 AM.

Let us imagine the context is where a hotel clerk is giving a guest information about dining opportuinities. The continuations in (19) are all easily interpretable as having reference restricted to coffee and muffins in the context.

(19) a. EVERY MUFFIN comes with a cherry on top. (= muffins served here)
       b. EVERY CUP OF COFFEE is made by a special method. (= cups of coffee served here)
       c. IT is generally Colombian coffee.(= coffee served here)
       d. THEY are baked in our own ovens. (= muffins served here)

If this is correct, and if intuition bears up, it shows that pragmatic restrictions of the sort noted in (8) can be part of B, but that a 'female pheasant' or 'pheasant giving birth' restriction must take place through other mechanisms if it is to take place at all: using B for this purpose cannot be sustained.

It is of course quite possible that there can be a fourth type of restriction added to the three that are motivated, on independent grounds, by Krifka. But until adequate motivation for yet another mechanism is introduced, one must conclude that the strategy of reduction-to-the-universal has yet to prove itself an attainable goal.

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SEMANTICS OF KOREAN GAPLESS RELATIVE CLAUSE CONSTRUCTIONS

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East Asian languages like Korean are stocked with various types of relative clause constructions, one of which can be formed without involving any syntactic gap in the adnominal clause. Though this 'gapless' relative clause construction is very similar to a noun complement clause construction both syntactically and morphologically, the two constructions are different in many semantic respects. The most important semantic property of gapless relative clause construction is that a *cause and effect* or *effect and cause* relation always holds between the adnominal clause and the head noun. Also, there are some data suggesting that there exists an event variable in the adnominal clause of the gapless relative clause construction. It is this event variable that is bound by the head noun in place of a syntactic gap. This paper investigates various syntactic and semantic properties of Korean gapless relative clause construction and then seeks to arrive at the appropriate formulation of semantics of this construction, generalizing the formulation to ordinary relative clause constructions.

1. Introduction

This paper explores the semantic properties of gapless relative clause constructions in Korean. In East Asian languages like Chinese, Japanese and Korean,[1] gapless relative clause constructions provide a very common way of forming a clausal complex noun phrase. And these constructions reveal many syntactic and semantic idiosyncrasies differentiating themselves from ordinary relative clause constructions.

The most striking syntactic property of these constructions is that they involve no gap in the relative clause. For example, unlike in the English relatives as in (1) and in the ordinary Korean relatives as in (2), no syntactic or thematic[2] gap is found in the gapless relatives as in (3).

(1) $[_{N'}$ apple$_i]$ $[_S$ which John ate ___$_i$]

(2) $[_S$ John-i   ___$_i$ mek-un] $[_{NP}$ sakwa$_i]$[3]
         NOM   eat-ADN[4]   apple
      'the apple which John ate'

(3) $[_S$ komwu-ka   tha-nun] $[_{NP}$ naymsay]
         rubber-NOM   burn-ADN   smell

literally: 'the smell that rubber burns' ([$_S$ rubber burns] [$_{NP}$ smell])
meaning: 'the smell of rubber burning'

In the ordinary relative clause constructions as in (1) and (2), a gap exists in the relative clause and it binds the relative clause and the head noun. But in the gapless relative clause constructions as in (3), no gap is found and the head noun has nothing to relate to in the relative clause. That is, the head noun of the gapless relatives does not have any explicit thematic role to play in the relation represented by the main verb of the relative clause. In (3), the relative clause 'rubber burns' modifies the head noun 'smell', but no gap position is found for the modified noun phrase to relate to, since the clause is already saturated and no more further grammatical argument is needed.

In addition to this syntactic idiosyncrasy, gapless relative clause constructions also show a puzzling semantic property: the meaning of the whole noun phrase is not mere combination of the relative clause and the head noun. That is, for (3), it is not straightforward to explain how the meaning of *komwu-ka tha-nun naymsay* ('the smell of rubber burning') comes from combination of the meaning of *komwu-ka tha* ('rubber burns') and that of *naymsay* ('smell'). This is because 'smell' does not play any thematic role in the relation represented by the main verb of the clause 'rubber burns.' Some construction-specific contribution of meaning must be identified to explain the semantic compositionality of gapless relative clause constructions.

In this paper, I attempt to solve this semantic puzzle, based on neo-Davidsonian event semantics, on the assumption that some event variable exists in the gapless relative clause to be used as a bindee. I begin with providing some arguments that gapless relative clauses are really gapless against some traditional approaches as in Kuno 1973 and also that these clauses are also distinguished from noun complement clauses in the semantic relation with the head noun. Then, the semantic properties of gapless relative clause constructions are investigated in more detail, which include various instances and evidence of eventualities. Next, the semantic representations of gapless relative clause constructions are formulated according to event semantics, with generalization extended to ordinary relative clause constructions. Finally, the implication of this analysis and further issues are considered in the conclusion.

2.   Status of Gapless Relative Clause Constructions

Since it is very special that relative clause constructions can be formed without a gap, some may doubt the claim that the relative clauses as in (3) are without a gap. So, I will first show that gapless relative clauses are really gapless, comparing them with seemingly gapless adjunct gap relative clauses in order to support my claim. Then, since now gapless relative clause constructions seem to belong to noun complement clause constructions because both do not involve a gap, I will also show that gapless relative clauses are also different from noun complement clauses in many semantic properties. (See Cha 1997 and 1998 for more detailed discussions which are not listed in this section.)

2.1 Really gapless?

In the gappy Korean relative clauses, two kinds of gaps may exist: argument gap and adjunct gap. Unlike the argument gap as in (2), the adjunct gap as in (4) is not easy to locate, until the adjunct gap relative clause is compared with its source sentence (5).

(4) $[_S$ John-i ___$_i$ sakwa-lul   kkak-un] $[_{NP}$ khal$_i$]
     NOM   apple-ACC   peel-ADN   knife
     'the knife **with which** John peeled an apple'

(5) John-i   **khal-lo**   sakwa-lul   kkak-ass-ta.
     NOM   **knife-with**   apple-ACC   peel-PAST-DECL
     'John peeled an apple **with a knife**.'

As seen in the comparison, the head noun *khal* ('knife') plays the role of instrument in the gap position of (4). In Korean relativization, a postposition or connective just drops when the noun preceding it becomes the head noun of a relative clause. In this example, the meaning of *with* in (4) seems to have been incorporated into the meaning of the relativizer or becomes implicit; therefore, the head noun comes to play the role of an adjunct, not of an argument, in (4). This fact causes difficulty in locating the adjunct gap in the relative clause.

An adjunct gap analysis can be made when the head noun plays one of the thematic roles as listed below in the event represented by the main verb of the relative clause.

(6) A partial list of thematic roles by adjunct:[5]
    instrument, source, goal, direction, spatial location, temporal location,
    cooperation, reason, cause, topic, method, manner, part-whole relation, etc.

But, gapless relative clauses as in (3) cannot be described as involving any adjunct gap to play one of the thematic roles in (6). Here I provide three tests to determine whether a gap exists in the adnominal clause or not.

2.1.1 Resumptive pro-word

An appropriate resumptive pro-word can replace a gap in many Korean constructions involving a gap, and this can be used to check the existence of a gap in the relative clause. That is, if a gap exists in the relative clause, insertion of an appropriate resumptive pro-word should be possible without affecting the original meaning. In (4), for example, which has an adjunct gap, insertion of an instrumental pro-word like *kukes-ulo* ('with it') in the adnominal clause gives out (7), which is quite acceptable.

(7) $^?[_S$ John-i **kukes-ulo**$_i$ sakwa-lul   kkak-un] $[_{NP}$ khal$_i$]^6
         NOM **it-with**   apple-ACC   peel-ADN   knife
     'the knife **with which** John peeled an apple'

But, as predicted, no insertion of any resumptive pro-word is possible in the adnominal clause of the gapless relative clause construction like (3), as shown in (8).

(8)   [_S komwu-ka ??? tha-nun] [_{NP} naymsay]
        rubber-NOM   burn-ADN   smell
        'the smell of rubber burning'

Insertion of any pro-word in the adnominal clause of (8) will change the original meaning of the phrase in this case.[7] Thus, this constitutes an argument that gapless relative clause constructions like (3) are really gapless.

2.1.2 Pseudo-cleft sentence

When there is a gap in the relative clause, a pseudo-cleft sentence can be formed out of the relative clause construction. So, pseudo-cleft sentences (9) and (10) are possible out of the gappy relative clause constructions (2) and (4), respectively.

(9)   [_S [_{NP} [_S John-i   mek-un] kes-un] [_{VP} sakwa-i-ta.]]
                 NOM   eat-ADN   thing-TOP   apple-be-DECL
        'What John ate is an apple.'

(10)   [_S [_{NP} [_S John-i   sakwa-lul kkak-un]   kes-un]   [_{VP} khal-i-ta.]]
                 NOM   apple-ACC peel-ADN   thing-TOP   knife-be-DECL
        'The thing with which John peeled an apple is a knife, (not other instruments).'

But, as predicted, the pseudo-cleft sentence (11) out of the gapless (3), is not acceptable, as shown:

(11)   *[_S [_{NP} [_S komwu-ka   tha-nun]   kes-un]   [_{VP} naymsay-i-ta.]]
                  rubber-NOM burn-ADN   thing-TOP   smell-be-DECL
        Intended: 'What comes from rubber burning is smell.'

This difference comes from the fact that the head noun of the gappy relative clause construction was a constituent of the relative clause in the gap position, whereas the head noun of the gapless relative clause construction was not because of the absence of the gap in the relative clause. Thus, this also shows that gapless relative clauses are really gapless.

2.1.3 Causativization

Causativization of the gappy relative clauses in (2) and (4) does not affect grammaticality of the constructions while causativization of the gapless relative clause in (3) does affect grammaticality. That is, causativized relative clause constructions as in (12) and (13) are grammatical, since the head noun still plays a role in its gap position. Further, the gap position is still related to the original event, not to the newly introduced 'cause' event.

(12)   [_S nay-ka John-eykey _____i   mek-**keyha**-n] [_{NP} sakwa_i]
        I-NOM   DAT   eat-**cause**-ADN   apple
        'the apple which I **had** John eat'

(13)   [_S nay-ka John-eykey _____i   sakwa-lul kkak-**keyha**-n] [_{NP} khal_i]
        I-NOM   DAT   apple-ACC peel-**cause**-ADN   knife
        'the knife with which I **had** John peel an apple'

But, causativized gapless relative clause construction as in (14) is ungrammatical, because the head noun of this construction was not a constituent of the original relative clause and therefore cannot be related to the new causativized relative clause.[8]

(14) *[_S nay-ka   komwu-lul   tha-**keyha**-n]   [_{NP} naymsay]
          I-NOM   rubber-ACC   burn-**cause**-ADN   smell

Therefore, again, the different grammatical behavior regarding causativization of relative clauses constitutes another argument that gapless relative clauses are really gapless.

        To summarize, gapless relative clause constructions behave differently from gappy relative clause constructions in at least three facts – insertion of resumptive pro-word, formation of pseudo-cleft sentence and causativization of relative clauses – showing that the constructions are really gapless.

2.2   Noun complement clause construction?

There are two reasons which tempt us to identify gapless relative clause constructions like (3), repeated as (15) below, with noun complement clause constructions like (16). As can be seen in the comparison of (15) and (16), the two constructions share at least two properties: both constructions (i) use the same adnominal morpheme *nun/un/n* to connect the head noun and the clause and (ii) involve no gap in the adnominal clause.

(15) [_S komwu-ka   tha-nun]   [_{NP} naymsay]
        rubber-NOM   burn-ADN   smell
        'the smell of rubber burning'

(16) [_S John-i   nuc-un]   [_{NP} sasil]
              NOM   late-ADN   fact
        'the fact that John was late'

But, there also exist many semantic differences between the two constructions. Among others, I will point out two broad facts here. In complement clause constructions, the head noun is relational and takes a clause as its argument. So, the semantics of (16), which is a complement clause construction, can be represented, as in (17).

(17) fact(^was-late'(john'))

But, in the gapless relative clause constructions, the head noun is not relational but relates to the event of the relative clause in some unique way, controlled by some 'situated'[9] state of affair. The details of the representation of the relation between the head noun and the gapless clause will be given in Section 3. At the moment, I will focus on the semantic differences between the noun complement clause construction and the gapless relative clause construction, regarding the relation of the head noun and the adnominal clause.

2.2.1 Unbounded dependency

When the adnominal clause is embedded inside an attitude clause, relative clause constructions and noun complement clause constructions show different behaviors regarding the relation to the original clause. In the relative clause constructions, whether gappy like (2) or gapless like (3), the head noun is still related[10] to the original adnominal clause even after insertion of an attitude clause, as shown in (18) and (19). That is, in (18), 'the apple' is still related to 'John's eating', not to 'Susie's believing'. Likewise, in (19), 'the smell' is still related to 'fish burning', not to 'Susie's believing'.

(18) [s[s John-i __i   mek-ess-ta-ko]   *Susie-ka   mit-nun*]   [NP sakwai]
            NOM   eat-PAST-DECL-COMP   NOM   believe-ADN   apple
       'the apple which *Susie believes* John ate'

(19) [s[s sayngsen-i   tha-n-ta-ko]   *Susie-ka   mit-nun*]   [NP naymsay]
            fish-NOM   burn-PRES-DECL-COMP   NOM   believe-ADN   smell
       'the smell which *Susie believes* comes from fish burning'

On the other hand, in the noun complement clause construction, after insertion of an attitude clause, the head noun is related to the immediately preceding clause, which is the attitude clause, not to the original clause. That is, in (20), 'the fact' is not about 'John's being late' any more but now about 'Susie's believing'.

(20) Noun complement clause construction
        [s[s John-i nuc-ess-ta-ko]   Susie-ka mit-nun]   [NP sasil]
             NOM   late-PAST-DECL-COMP   NOM believe-ADN   fact
         'the fact that Susie believes that John was late.'

This means that, in the relative clause construction, some 'situated' semantic relation holds between the adnominal clause and the head noun, based on world knowledge. This 'situated' semantic relation still holds even with an intervening attitude clause. But, in the noun complement clause construction, the relation between the adnominal clause and the head noun is simply formal, the head noun being the predicate and the adnominal clause being its argument.

2.2.2 Extraction

An element cannot be extracted out of the relative clause constructions to form a super complex noun phrase, in which the extracted noun is the head noun of the outer complex noun phrase, as shown in (21) and (22). However, extraction of an element is possible from the noun complement construction, as shown in (23).

(21) *[NP[S[NP[S John-i __i __j cwu-n]   sakwaj]-lul   ney-ka mek-un]   Maryi]
            NOM   give-ADN apple-ACC you-NOM eat-ADN
       Intended: 'the Maryi who you ate an applej which John gave __i __j'

(22) *[NP[S[NP[S Mary-ka __i kwup-nun] naymsay]-lul ney-ka   math-un]
                  NOM   grill-ADN   smell-ACC   you-NOM take-ADN
           sayngsenj]
           fish
       Intended: 'the fish which you smelled while Mary grilled it'

(23) ⁷[_NP[_S[_NP[_S John-i __ᵢ mek-un] sasil]-ul ney-ka   pwuinha-n] sakwaᵢ]
                    NOM   eat-ADN fact-ACC you-NOM deny-ADN   apple
        'the apple which you denied the fact that John ate (it)'

This can also be explained by way of differences of semantic relations between
the adnominal clause and the head noun in the relative clause construction and
noun complement clause construction. In the relative clause construction, extrac-
tion has much influence on grammaticality since it breaks the 'situated' semantic
relation between the relative clause and the head noun. But, in the noun comple-
ment clause construction, extraction has less influence on grammaticality since
there is only formal relation, not 'situated' relation, between the complement
clause and the head noun.

2.2.3 Verb form

Both the relative clause construction (whether gappy or gapless) and the noun
complement clause construction may have two different verb forms in the ad-
nominal clause: short form and long form (full-fledged verb form). But the relative
clause construction and the noun complement clause construction show different
interpretations regarding different verb forms. In the relative clause constructions,
the long form always carries 'quotative' meaning while the short form carries
non-quotative, simple meaning, as shown in (24) and (25). And this contrast is
rather consistent.

(24) [_S komwu-ka   tha-**nun**]   [_NP naymsay]   (Short form)
        rubber-NOM   burn-ADN(pres)   smell
        'the smell of rubber burning'

(25) [_S komwu-ka   tha-**n-ta-nun**]   [_NP naymsay]   (Long form)
        rubber-NOM   burn-PRES-DECL-ADN   smell
        'the smell that **someone says** comes from rubber burning'

On the contrary, in the noun complement clause construction, the 'quota-
tive' meaning of the long form is not always present, as shown in (26) and (27).

(26) [_S John-i   nuc-**un**]   [_NP sasil]   (Short form)
        NOM   late-ADN(past)   fact
        'the fact that John was late'

(27) [_S John-i   nuc-**ess-ta-nun**]   [_NP sasil]¹¹ (Long form)
        NOM   late-PAST-DECL-ADN   fact
        'the fact that John was late'

In the noun complement clause construction, the meaning difference between
short and long verb forms is not structural, but rather it comes from lexical proper-
ties of the head noun. For example, some nouns like *fact, thought, belief,* etc. go
without quotative meaning, but some nouns like *rumor, claim,* etc. inherently
carry quotative meaning.

What these different ways of interpretation show is that gapless relative
clause construction and noun complement construction have semantically differ-
ent structures. The head noun of the gapless relative clause construction does not

have any lexical influence on the adnominal clause, while the head noun of the noun complement clause construction has its lexical force over the adnominal clause. Thus, this also provides evidence that gapless relative clause construction is semantically different from noun complement clause construction.

To summarize this section, it was shown that gapless relative clause constructions go with relative clause constructions, not with noun complement clause constructions, in that some 'situated' semantic relation holds between the adnominal clause and the head noun based on world knowledge. But still gapless relative clause constructions are unique in its syntactic and semantic behaviors, not totally conforming themselves either to ordinary relative clause constructions or to noun complement clause constructions.[12] The uniqueness of the gapless relative clause construction comes from the basic fact that there exists a special relation between the gapless relative clause and the head noun, which is *cause and effect* relation. The next section investigates details of this special semantic relation between the adnominal clause and the head noun relevant to the formulation of the semantic representation of the gapless relative clause construction.

3. Semantic investigation

3.1 Specification of head-clause relation

In addition to the syntactic idiosyncrasy that no gap is found in the adnominal clause, all gapless relative clause constructions convey some construction-specific semantic relation between the adnominal clause and the head noun. The semantic relation holds between the eventuality represented by the adnominal clause and entity represented by the head noun.

Investigations of various cases of Korean gapless relative clause constructions, based on corpora and newly created examples, show that the basic relation holding between the adnominal clause and the head noun is always CAUSE and EFFECT relation. This basic relation can be instantiated in two different ways, according to the direction of the head-clause relation, as shown below.

(28) The head-clause relation in the gapless relative clause construction

ADNOMINAL CLAUSE	HEAD NOUN
Causing eventuality	Resulting entity
Resulting eventuality	Causing entity

The direction of the head-clause relation, that is, which one is cause and which one is effect, is resolved by pragmatics based on world knowledge ('natural constraints' in situation-semantics terms). For example, for (3), repeated as (29) below, the speakers determine, based on world knowledge, that 'rubber burning' is the cause and 'smell' is the effect, not the reverse.

(29) [ₛ komwu-ka   tha-nun]   [ₙₚ naymsay]
　　　 rubber-NOM   burn-ADN   smell
　　　 'the smell of rubber burning'

On the other hand, in (30), world knowledge lets the speakers interpret that 'food' is the cause and 'gaining weight' is the effect, again not the reverse.

(30) [$_S$ sal-i   cci-nun]   [$_{NP}$ umsik]
      flesh-NOM gain-ADN   food
      'food which lets you gain weight'

Here are some more examples of instantiation of the basic CAUSE and EFFECT relation holding between the clause and the head in the gapless relative clause construction.

CAUSING EVENTUALITY AND RESULTING ENTITY

(31) [$_S$ mwul-i   hulu-nun]   [$_{NP}$ soli]
      water-NOM flow-ADN   sound
      'the sound of water flowing'

(32) [$_S$ wuli-ka   achim-ul   mek-un]   [$_{NP}$ ccikkeki]
      we-NOM breakfast-ACC   eat-ADN   leftover
      'the leftovers from our having breakfast'

(33) [$_S$ thaypwung-i cinaka-n]   [$_{NP}$ huncek]
      typhoon-NOM pass_by-ADN   trace
      'the trace after a typhoon hit'

RESULTING EVENTUALITY AND CAUSING ENTITY

(34) [$_S$ *pro* sal-ul   ppay-nun]   [$_{NP}$ yak]
            flesh-ACC   remove-ADN medicine
      'medicine to let you lose weight'

(35) [$_S$ Mary-ka   wulepeli-n]   [$_{NP}$ pyenci]
        NOM   cry_out-ADN   letter
      'the letter which caused Mary to cry'

3.2 Evidence for eventualities

Gapless relative clause constructions show some interesting facts regarding the eventuality of the relative clause. In this section, three points are provided as evidence for the existence of event variable in the gapless relative clause. And, this event variable is assumed to play the role of bindee in the gapless relative clause construction, instead of the gap in the gappy relative clause construction.

3.2.1 Individual level vs. stage level

Sentences carrying individual level interpretation with the topic marker *nun* cannot be relativized into gapless relative clause constructions. In some Korean sentences, the topic marker *nun* renders individual level interpretation, while the plain subject marker *ka/i* renders stage level interpretation, as contrasted in (36) and (37).

(36) Kay-**nun**   cic-nun-ta.
      dog-TOP   bark-PRESENT-DECL
      'Dogs bark.'   (individual level)

(37)   Kay-**ka**   cic-nun-ta
       dog-NOM   bark-PRESENT-DECL
       'A dog barks.' (stage level)

Interestingly, only the stage level sentence (37) can be relativized into the gapless relative clause construction, as contrasted in (38) and (39).

(38)   *[$_S$ kay-**nun**   cic-nun]   [$_{NP}$ soli]
         dog-TOP   bark-ADN(pres)   sound

(39)   [$_S$ kay-**ka**   cic-nun]   [$_{NP}$ soli]
         dog-NOM   bark-ADN(pres)   sound
       'the sound of a dog barking'

        The explanation of the contrast between (38) and (39) can be sought if, following Kratzer (1995), it is assumed that individual level interpretation does not involve an event variable while stage level interpretation does, and also that, instead of gap, event variable can be bound by the head noun of gapless relative clause constructions. That is, (38), which has a relative clause with individual level interpretation, is bad because it does not involve event variable to be bound by the head noun.[13]

3.2.2 Negation

Gapless relative clauses cannot be negated, as shown in (40) and (41), and the explanation of this fact can also be sought by way of an event variable. That is, if we assume that negated sentences do not involve any event, then, the unacceptability of (40) and (41) are explained because there is no event variable to be bound by the head noun in the gapless relative clause construction.

(40)   *[$_S$ komwu-ka   tha-ci   anh-nun]   [$_{NP}$ naymsay]
         rubber-NOM   burn-INF   not-ADN(pres)   smell
       'the smell of rubber not burning'

(41)   *[$_S$ achim-ul   mek-ci   anh-un]   [$_{NP}$ ccikkeki]
         breakfast-ACC   eat-INF   not-ADN(past)   leftover
       'the leftover from not having a breakfast'

        A pragmatic explanation of this fact can, of course, be attempted, saying that, for example, (40) is bad because there can be no smell without the event of rubber burning. But, sometimes there is a case where we need to refer to 'a smell which does not come from rubber burning (but from other sources)' which should be supported by an appropriate situation. However, (40) does not fit this kind of situation, showing that the event variable approach is better than the pragmatic approach here.

3.2.3 Multiple clauses

        Multiple relative clauses are not allowed for one head noun in the gapless relative clause construction as in (42), while multiple clauses are acceptable in the gappy Korean relative clause construction as in (43). The unacceptability of (42) can also be attributed to the role of event variable of the gapless relative clause, because the cause and effect relation is usually one-to-one, not many-to-one,

unless more than two events coordinate with each other to be related to one entity. This must be the place where event binding is different from gap binding in the relative clause construction.

(42) *[s sayngsen-i   tha-nun]   [s komwu-ka   tha-nun]   [NP naymsay]
           fish-NOM   burn-ADN   rubber-NOM   burn-ADN   smell
       Intended: 'the smell of rubber burning and fish burning'

(43) ?[s Mary-ka ___i sa-n]   [s John-i ___i   mek-un]   [NP sakwai]
           NOM   buy-ADN   NOM   eat-ADN   apple
       'the apple which John ate, which Mary bought'

So far, three arguments were provided toward the claim that an event variable is present in the gapless relative clause construction. And, this event variable was assumed to be responsible for binding of the head noun and the gapless relative clause lacking a syntactic gap. In the next section, this event variable will be shown to play a crucial role in the semantic representation of the gapless relative clause construction in order to realize the CAUSE and EFFECT relation between the gapless clause and the head noun.

4. Semantic representation

4.1 Ordinary relative clause constructions

Now, formulation of semantic representations of relative clause constructions is attempted in this section, beginning with ordinary relative clause constructions. In the ordinary relative clause constructions, the representation of semantics is quite straightforward since the head noun is coindexed with a gap position in the relative clause and the gap plays the role of bindee. So, with a lambda operator, the argument gap relative clause construction (2), repeated as (44), can be represented as (45), and the adjunct gap relative clause construction (4), repeated as (46), can be represented as (47).

(44) [s John-i   ___i   mek-un]   [NP sakwai]
           NOM   eat-ADN   apple
       'the apple which John ate'

(45) $\lambda x[apple'(x) \& ate'(John',x)]$

(46) [s John-i   ___i sakwa-lul   kkak-un]   [NP khali]
           NOM   apple-ACC   peel-ADN   knife
       'the knife **with which** John peeled an apple'

(47) $\lambda x \exists y[knife'(x) \& apple'(y) \& peeled'(John',y,x)]$

The fact that 'apple' is the theme of 'eating' in (45) and 'knife' is the instrument of 'peeling' in (47) can be decided by lexical properties and world knowledge related to the relative clause verb.

4.2 Gapless relative clause constructions

As mentioned already, the semantics of gapless relative clause constructions cannot be formulated based on the binding function of gap, since these construc-

tions are really gapless, as discussed in 2.1. But fortunately, evidence was provided in 3.2 that an event variable may exist in the gapless relative clause constructions, so that it can be bound by the head noun. So, the event variable can be used instead of gap in formulating semantic representations of gapless relative clause constructions. Now, using event semantics along the line of Parsons (1985), the semantics of the gapless relative clause construction (3), repeated as (48), can be represented tentatively as in (49).

(48) [$_S$ komwu-ka   tha-nun] [$_{NP}$ naymsay]
       rubber-NOM   burn-ADN   smell
       'the smell of rubber burning'

(49) $\lambda x \exists y \exists e [\text{smell'}(x) \& (\text{burning'}(e) \& \text{Theme}(e,y) \& \text{rubber'}(y))]$

But, something is missing in (49). The construction-specific semantic relation in (48) between the 'burning' event of the gapless relative clause and the head noun 'smell' is not reflected at all in (49). That is, some instance of cause and effect relation between 'rubber burning' and 'smell' should be added to (49) in some way.

Similar to basic 'natural constraints' to which intelligent systems like human beings are naturally attuned (Barwise and Perry (1981)),[14] some 'situated' constraint holds between the content of adnominal clause and the content of the head noun in the gapless relative clause construction. In order to implement this, some pragmatic constraint, supported by world knowledge, can be employed in the representation of the semantics of gapless relative clause constructions.

For this purpose, the method used in the formulation of English possessive relation (Hwang 1987: 204-207) can be adopted. In this approach, *John's book*, for example, will be represented as in (50), and, according to the context, *R* can be interpreted as 'possession,' 'authorship,' 'publication,' etc.

(50) $\lambda x [R(John, x) \& \text{book}(x)]$

Now, utilizing the system employed in (50), (49) can be revised to give out the desired result as in (51).

(51) $\lambda x \exists y \exists e [\text{smell'}(x) \& (\text{burning'}(e) \& \text{Theme}(e,y) \& \text{rubber'}(y)) \& P(e,x)]$

In (51), *P* is a special predicate which takes two arguments, eventuality and entity, and renders a semantic relation between the adnominal clause and the head noun, as specified in 3.1. So in (51), *P* indicates some instance of cause and effect relation, instantiating 'rubber burning' as causing eventuality and 'smell' as resulting entity. The relation *P* here is slightly different from *R* of possessive relation in (50), because *P* is determined both semanticically and pragmatically in that it reflects not only the gapless relative clause construction-specific CAUSE and EFFECT relation but also world knowledge that will decide the direction of the head-clause relation. Other gapless relative clause constructions as in (31-35) can also be represented in the same way with this semantic and pragmatic relation *P*.

4.3 Generalization

But then, the remaining question is how to map a gapless relative clause construction like (3) to the interpretation in the form of (51), not in the form of (45) or (47). In surface forms, both ordinary relative clause constructions and gapless relative clause constructions have the same syntactic structure except for the existence of gap.

One way to get out of this difficulty is to propose that the semantics of all the relative clause constructions, whether gappy or gapless, be represented in the form of (51), which was originally for gapless relative clause constructions. Under this assumption, (45) and (47) will be newly represented as (52) and (53), respectively, based on event semantics and the special predicate *P*.

(52) $\lambda x \exists e[\text{apple'}(x) \ \& \ (\text{eating'}(e) \ \& \ \text{Agent(John'},e) \ \& \ \text{Patient}(x,e)) \ \& \ P(e,x)]$

(53) $\lambda x \exists y \exists e[\text{knife'}(x) \ \& \ \text{apple'}(y) \ \& \ (\text{peeling}(e) \ \& \ \text{Agent(John'},e) \ \& \ \text{Patient}(y,e)$
     $\& \ \text{Instrument}(x,e)) \ \& \ P(e,x)]$

Now, we have a unified way of semantic representations for both ordinary relative clause constructions and gapless relative clause constructions. The only difference is that for ordinary relative clause constructions, *P* is rather vacuous and it does not carry any construction-specific semantic relation between the relative clause and the head noun. Thus, it is postulated that, in the ordinary relative clause constructions where a gap exists and plays the role of bindee, semantic representations with the special predicate *P* are equivalent to those without *P*. That is, (52) and (53) above are equivalent to (54) and (55), respectively, which are without the special predicate *P*.

(54) $\lambda x \exists e[\text{apple'}(x) \ \& \ (\text{eating'}(e) \ \& \ \text{Agent(John'},e) \ \& \ \text{Patient}(x,e))]$

(55) $\lambda x \exists y \exists e[\text{knife'}(x) \ \& \ \text{apple'}(y) \ \& \ (\text{peeling}(e) \ \& \ \text{Agent(John'},e) \ \& \ $
     $\text{Patient}(y,e) \ \& \ \text{Instrument}(x,e))]$

5. Conclusion

So far I have explored the properties of Korean gapless relative clause constructions and provided semantics for them, based on event-based semantics advocated by neo-Davidsonian scholars. The event-based semantic analysis was made possible since evidence was found that event variable exists in the relative clause of gapless relative clause constructions. Though gapless relative clause constructions exhibit some syntactic and semantic idiosyncrasies, a unified analysis of ordinary and gapless relative clause constructions were possible under the assumption that sentences are treated as predicates of eventualities and event variables can be bound by the head noun and the adnominal clause in the absence of the syntactic gap. One remaining problem is, the semantics of gapless relative clause constructions as represented in (51) does not reflect all the mixed properties coming from both ordinary relative clause constructions and noun complement clause constructions, as seen in the section 2 of this paper. And this can be a future topic for more fine-grained semantics of gapless relative clause constructions.

NOTES

[1] Studies of various Japanese gapless relative clause constructions can be found in the literature like Kuno 1973, Sirai and Gunji 1998 and Matsumoto 1991. Chinese informants also confirmed to me that they also have gapless relative clause constructions which show very similar properties and behaviors as Korean constructions.

[2] Some literature like Kuno 1973 argues that some sort of gap, like topic gap, exists in the gapless relative clause. But recent literature like Matsumoto 1991 and Yoon 1993 provides many counterexamples by which the topic gap approach cannot be supported.

[3] Korean is a head-final language and thus the modified head noun always goes AFTER the modifying clause. Also, in Korean, the relative clause modifies NP rather than N', since determiners and adjectives can intervene between the relative clause and the head noun.

[4] Since Korean is an agglutinative language, the role of suffixes is very important in understanding the structure of the language. The following abbreviations are used throughout the paper. As shown below, adnominal suffixes carry tense meaning with them, and thereby can be classified according to the tense of the clause. But, for simplicity, I will use the underspecified notation ADN (adnominal suffix) in this paper, unless the specification of the tense is required.

ADN(pres): present tense adnominal suffix, realized as *nun*

ADN(past): past tense adnominal suffix, realized as *un* after consonants or *n* after vowels

ADN(fut): future tense adnominal suffix, realized as *ul* after consonants or *l* after vowels

NOM: nominative case marker

ACC: accusative case marker

TOP: topic marker, realized as *nun*, a homonym of ADN(pres) *nun*

DECL: declarative sentence ending

[5] Possible kinds of thematic roles here are based on a fine-grained version of theory of thematic roles as exemplified in Jackendoff 1990.

[6] A little degradation of acceptability here appears to come from the redundancy of relevant information. However, in the unbounded dependency constructions like (i), the acceptability improves a lot.

(i) [$_S$[$_S$John-i **kukes-ulo**$_i$ sakwa-lul kkak-ass-ta-ko] Mary-ka cinswulha-n]
    NOM   **it-with** apple-ACC peel-PAST-DECL-COMPL NOM   state-ADN
    [$_{NP}$ khal$_i$]
        knife
    'the knife with which, May stated, John peeled an apple'

[7] One way of putting something in the adnominal clause of (8), keeping the original meaning, will be like this, as adopted in Park 1993:

(i) $^?$[$_S$ komwu-ka   [$_S$ ___$_i$ **naymyense**] tha-nun]   [$_{NP}$ naymsay$_i$]
         rubber-NOM   **causing**   burn-ADN   smell

But, this is not insertion of a pro-word any more because a verbal element like *naymyense* ('causing') is involved, creating a rather different structure with an embedded clause inside the adnominal clause, as shown above. The difference of the structure is also shown by the fact that, unlike in the case of a noun plus postposition (see the example (4) above), the verbal element *naymyense* *('causing')* following the gap does not disappear after relativization.

^{8} A possible interpretation of (14) is 'the smell with which I caused the rubber to burn' in some weird context as in a science fiction. But, in this case, the 'smell' is not related to the original event 'burn' any longer, but rather, related to the newly introduced 'cause' event.

^{9} I use the term 'situated' as follows. A relation or state of affair is 'situated' if it holds only when it is supported by appropriate world knowledge. On the contrary, a relation is just 'formal' if it holds regardless of world knowledge, that is, if it is mechanical rather than based on world knowledge. For example, the relation between the noun complement clause and the head noun is NOT 'situated', because the head noun can take any saturated clause as its argument only if its lexical requirements are fulfilled regardless of the content of the clause.

^{10} By 'related', I mean how the head noun gets its interpretation. In the ordinary relative clause construction, the head noun gets its interpretation by playing a role in the relative clause. In the gapless relative clause construction, the head noun gets its interpretation by constructing a *cause and effect* or *effect and cause* relation between the head noun and the clause. And finally, in the noun complement clause construction, the head noun gets its interpretation by taking a clause as its argument.

^{11} Some native speakers of Korean may have two interpretations of this expression: quotative and non-quotative. Then, they may consider the following examples instead, which do not carry any quotative meaning at all.

(i)   [John-i o-n-ta-nun] sayngkak 'the thought that John will come'
              come   thought
(ii) [John-i o-n-ta-nun]   mitum 'the belief that John will come'
              come   belief

^{12} According to Keenan and Comrie 1977's typology, most relative clause constructions in the world languages can be defined by semantic terms, not by syntactic terms. In Korean gapless relative clause construction, *semantic* properties are shared with those of ordinary relative clause construction, not with those of noun complement clause construction, as investigated so far. This is the reason why I call this special gapless construction as a 'relative' construction, not as a 'complement' construction.

[13] When the topic marker replaces the subject marker in the ordinary relative constructions like (2), the result is quite acceptable, as shown in (i) below, unlike in the gapless relative clause constructions.

(i) ?[$_S$ John-**un** ___$_i$ mek-un] [$_{NP}$ sakwa$_i$]
        TOP   eat-ADN   apple
    'the apple which John ate, (though no other person ate)'
The acceptability of (i) seems to be due to the syntactic gap of the ordinary relative clause which still can bind the head noun and the adnominal clause without the help of an event variable.

[14] Here are two examples of 'natural constraints', which approximately say: (i) if **a** kisses **b**, **a** necessarily touches **b**; (ii) if rubber burns, it must be the case that smell arises naturally. These are 'natural constraints' because they are part of natural and physical phenomena in our world.
    (i) If σ_i(kiss, **a**, **b**) = 1 then σ_i(touch, **a**, **b**) = 1
    (ii) If σ_i(burn, rubber) = 1 then σ_i(exists, smell) = 1

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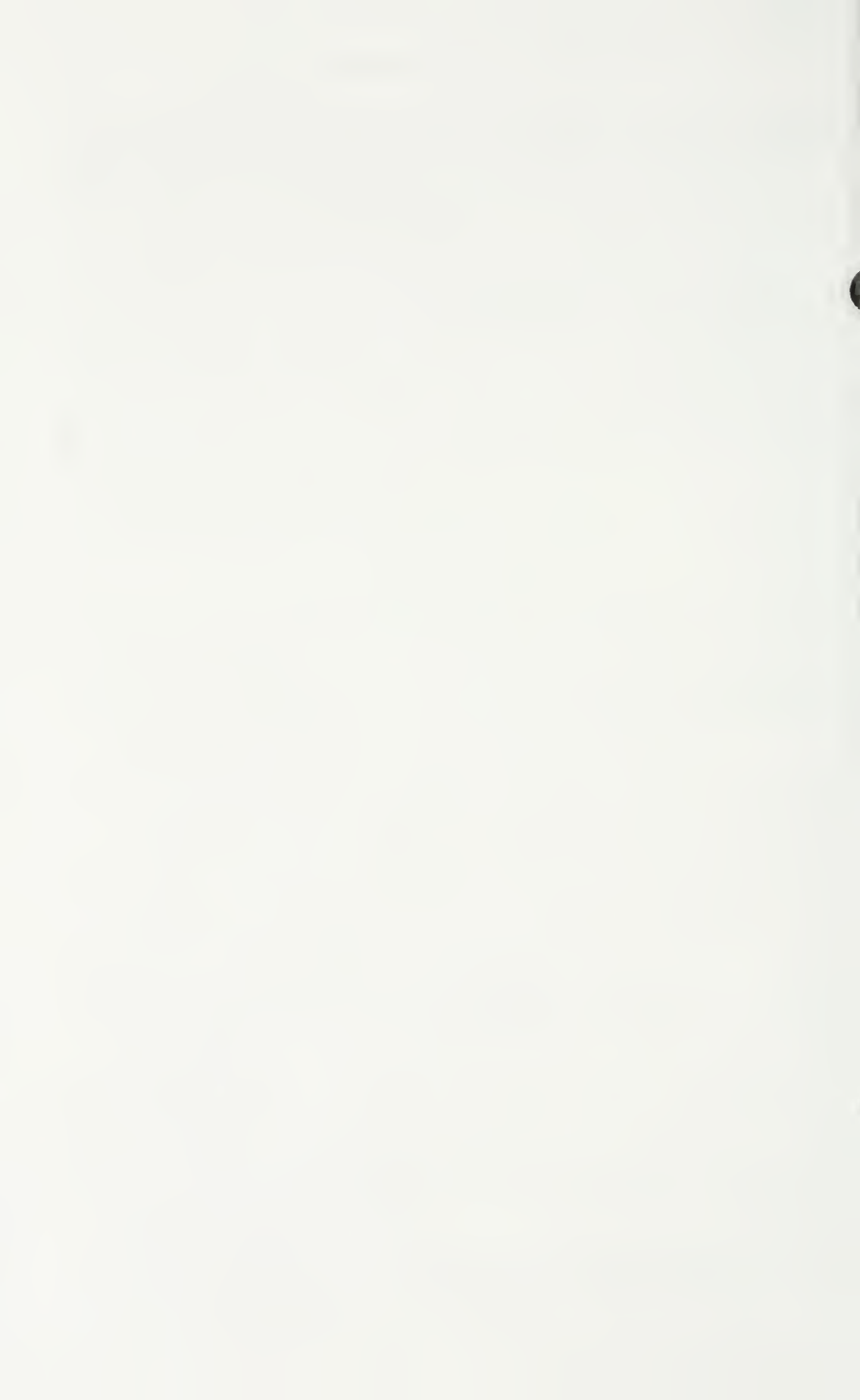
EVIDENTIAL COERCION:
USING INDIVIDUAL-LEVEL PREDICATES IN STAGE-LEVEL
ENVIRONMENTS

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Scholars frequently appeal to coercion in their analyses of the distinction between individual- and stage-level predicates (ILPs and SLPs) and yet they rarely follow up on the consequences of this claim. This article identifies the kinds of changes in interpretation that can arise when an ILP appears in a position that needs a SLP. Evidential Coercion derives a SLP from an ILP and yields, in the terms of Kratzer 1988 a predicate that denotes a function from spatiotemporal locations to individuals such that the individual displays behavioral evidence of having the property denoted by the ILP at the location. The analysis is formalized within the frameworks of Carlson 1977 and Kratzer 1988.

1. Introduction[*]

I take it to be a common assumption of semantics and pragmatics that hearers are very resourceful in their efforts to interpret whatever is said to them when they assume someone is trying to communicate with them. So, when there is a violation of one of the rules of grammar, hearers try to make what sense they can of the utterance they perceive. When possible, a minor adjustment will be made in the interpretation of the offending portion of the utterance to bring it in line with the requirements of the grammar. This kind of coercion allows some sense to be made of what was said. When the violation is serious, the hearer is also led to wonder why the speaker chose to violate the rule, and this may lead to an inference that the speaker intends to be humorous or poetic. The less obvious the violation, or the more frequent it is that a particular sort of violation occurs, the more likely it is that an adjustment in interpretation will be made without the hearer noticing.

In general, linguists appeal to coercion when there is reason for believing in a fundamental semantic classification of some sort, but where some wiggle room is possible. Placing a constituent of one class in the syntactic or semantic environment best suited to a member of another class may result in an altered interpretation for the constituent — one that is more like the interpretation typical for a member of the other class — rather than outright ungrammaticality. Coercion is frequently employed in analyses of Aktionsarten, although it is sometimes appealed to for other kinds of cases (see, for example, Hobbs 1999 and Pustejovsky 1995). Moens & Steedman 1988 and de Swart 1998 examine coercion of Aktionsarten in detail (and see Smith 1995). A typical instance of coercion results from

using a stative predicate with a modifier that is incompatible with statives. The temporal modifier *in an hour* is interpreted in Dowty 1979 as modifying the telos of a telic eventuality. Since stative eventualities are atelic, stative meanings are incompatible with modifiers like *in an hour*. Using such a modifier with a state description, however, does not necessarily result in ungrammaticality or incomprehensibility. Consider the following example:

(1)   In an hour Chris knew the answer.

Rather than being interpreted as a state, *knew the answer* has a change of state (inchoative) interpretation.

In the literature on the distinction between individual- and stage-level predicates (ILPs and SLPs), it is not unusual to find comments to the effect that a particular individual-level predicate is 'being used' as a SLP. Such a claim should have consequences — it should make predictions about how the interpretation of the predicate is affected — but past work has rarely pursued these consequences. This paper gives theoretical teeth to such claims by examining the systematic changes in interpretation that accompany such usage.

The remainder of this paper is laid out in four sections. Section 2 briefly reviews the basis for assuming that there is a grammatical distinction between ILPs and SLPs, and it presents the analyses of Carlson 1977 and Kratzer 1988. Section 3 discusses three ways in which ILPs appear to be used as SLPs. One of these, I will argue, is due to what I will call 'Evidential Coercion', which results from using an ILP in a grammatical environment that requires a SLP. The second is due to Inchoative Coercion, which is triggered by Aktionsart requirements, and interacts with the ILP/SLP distinction as a side effect. The third is an interruption in the temporal interval over which an ILP is taken to hold of an individual. I will argue that this is not a case of coercion at all, and, in fact, it does not even involve a change from ILP to SLP status. A few consequences are considered in section 4, and section 5 entertains the question of how coercion fits into a theory of generative grammar.

2.   Individual- and stage-level predicates

2.1   The diagnostics

Several syntactic environments have given evidence of a division among predicates that cuts across syntactic categories. Milsark 1974 drew a distinction between 'state-descriptive' and 'property' predicates. The terms individual- and stage-level predicate are the most widely used today and are due to Carlson 1977, who distinguished them from a third sort of predicate, the kind-level predicate. Milsark 1974 showed that the existential construction is ungrammatical when an ILP appears as its coda. This is evident in the contrast between (2) and (3).

(2)   a.   There were people sick.
       b.   There were people drunk.
       c.   There were doors open.

(3) a.   *There were people intelligent.
    b.   *There were people tall.
    c.   *There were doors wooden.

Milsark also showed that weak construals are possible for indefinite subjects only with SLPs. The data in (4) and (5) indicate this.

(4) a.   **Sm** people were sick.
    b.   A man was drunk.
    c.   People were hungry. (existential (weak) or generic possible)
          $\exists x[person(x) \ \& \ hungry(x)]$ or $G_x[person(x)] \ [hungry(x)]$

(5) a.   ***Sm** people were tall. (cf. Some of the people were tall.)
    b.   *A man was intelligent. (f. All men were intelligent.)
    c.   People were clever in those days. (generic (strong) reading only)
          $G_x[person(x)] \ [clever(x)]$

Carlson 1977 pointed out that the ability to appear in perceptual reports is restricted to SLPs, as seen in the contrast between (6) and (7).

(6) a.   Martha saw a policemen available.
    b.   I saw Sam tower over his friends.

(7) a.   *Martha saw a policemen intelligent.
    b.   *I saw Sam taller than his friends.

The ability to restrict quantificational adverbs also appears to be limited to SLPs (Carlson 1979, Farkas & Sugioka 1983, Kratzer 1988, de Hoop & de Swart 1989):

(8) a.   Ryan is often sleepy.
    b.   Kyle usually towers over his friends.

(9) a.   ??Ryan is often human.
    b.   ??Kyle is usually taller than her friends.

There are additional syntactic environments have appear to be sensitive to the ILP/SLP distinction (see Fernald 2000 for further discussion), but the ones discussed here have been the basis for theoretical accounts of the contrast.

2.2 Two analyses

2.2.1 Carlson 1977

Carlson 1997 assumed that the ontological type entity consists of three sorts: kinds, objects, and stages. Kinds are taken to be the denotata of bare plurals like *lions* and *politicians*. Objects are individuals like the referent of *Robin*, *that chair*, or *the Navajo language*. Stages are spatio-temporal realizations of individuals in various situations. Objects consist of stages. Kinds consist of objects and their stages:

(10)
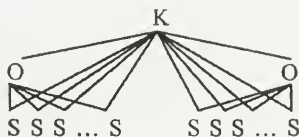
SLPs are assumed to be functions from stages to truth values; ILPs are functions from objects or kinds to truth values; kind-level predicates (KLPs) are analyzed as functions from kinds to truth values:

(11) SLP : $<e^s,t>$
      ILP : $<e^i,t>$
      KLP : $<e^k,t>$

Because Carlson argues that nominals denote only individuals (i.e., objects or kinds), a realization relation is needed to allow SLPs to compose with their subjects. There is another realization relation to allow object-level predicates (OLP) to compose with kind-denoting subjects. Two generalization relations are also posited to derive an ILP from a SLP and to derive a KLP from an OLP:

Realization relations: R: stages and individuals
                              R': objects and kinds
Generalization relations: G: SLPs to ILPs
                              G': OLPs to KLPs

These assumptions correctly predict that (12) has an existential and a generic reading, while (13) has only a generic reading.

(12) Dogs are available.
      $\exists y[R(y,d)$ & available$'(y)]$
      G($^\wedge$available$'$)(d)

(13) Dogs are intelligent.
      G$'($^\wedge$intelligent$'$)$(d)$

The subject of each sentence denotes the kind **dog**. The existential reading of (12) says that there is some stage of the kind **dog** such that the stage is available. The generic reading entails that the kind **dog** has the generic property of being available. (13) entails only that the kind **dog** has the generic property of being intelligent.

2.2.2 Kratzer 1988

Work in the tradition of Lewis 1975, Kamp 1981, and Heim 1982 has argued that indefinite nominals are best interpreted as restricted free variables. *When* adjuncts can be used to form the restriction of a null generic operator, and the clause to which they are adjoined can be used as its nuclear scope. In such cases, *when* has an atemporal reading, as noted in Carlson 1979 and Farkas & Sugioka 1983, for example. Kratzer 1988 points out that this quantificational reading is only possible when a variable is present for the quantifier to bind:

(14) a.   *When Mary knows French, she knows it well.
      b.   When a Moroccan knows French, she knows it well.

The only difference in these examples is that (14b) contains the indefinite *a Moroccan* in place of the definite *Mary* in (14a), and there is a contrast in the acceptability of the sentences. These sentences are taken to express generic quantifications. The adjunct expresses the restriction, and the main clause, the nuclear

scope. If a *when* adjunct is not used to restrict a quantifier, the same adjunct appearing in (14a) is grammatical:

(15)   When Mary knows French, she will be able to advance to candidacy.

The adjunct can be paraphrased as 'when Mary learns French'. A generic interpretation is not possible except in a bizarre world in which Mary alternates between states of knowing and not knowing French and in which advancing to candidacy can happen repeatedly.

Kratzer 1988 notes that the examples in (14) have the logical representations shown below, on the assumption that the adjunct restricts the null generic quantifier and that the main clause contributes the nuclear scope:

(16)   a.   *When Mary knows French, she knows it well.
            *G [knows (*Mary, French*)] [knows well (*Mary, French*)]
       b.   When a Moroccan knows French, she knows it well.
            G_x[Moroccan(*x*) & knows (*x, French*)] [knows well (*x, French*)]

The difference between the two logical representations is that, in (16a), the quantifier has no variable to bind. Thus, Kratzer proposes the following well-formedness constraint on logical representations:

(17)   <u>Prohibition against vacuous quantification</u>
       For every quantifier Q, there must be a variable x such that Q binds an occurrence of x in both its restrictive clause and its nuclear scope.

Violations of this constraint are taken to result in ungrammaticality.

The examples in (14) above contain ILPs in the adjunct and in the main clause. Interestingly, if a SLP takes the place of the ILPs in (14a), the sentence becomes fully grammatical:

(18)   When Mary speaks French, she speaks it well.

Since this is grammatical, it must not violate the prohibition against vacuous quantification. But this sentence does not have any more indefinite nominals in it than (14a) had; neither one has any. Kratzer proposes that SLPs, themselves, contribute a variable to the logical representation of the sentence, and this variable prevents (18) from being a case of vacuous quantification:

(19)   When Mary speaks French, she speaks it well.
       G_l[speaks (*Mary, French, l*)] [speaks well (*Mary, French, l*)]

The constraint in (29) requires a variable to appear in the main clause, as well as the adjunct. The first example below is acceptable because the adjunct contains an indefinite and the main clause contains a pronoun with the indefinite as its antecedent. The second example has a variable in the adjunct clause, but not the main clause:

(20)   a.   When Mary knows a foreign language, she knows it well.
            G_x[foreign language(*x*) & knows (*Mary, x*)] [knows well (*Mary,x*)]
       b.   *When Mary speaks French, she knows it well.
            *G_l[speaks (*Mary, French, l*)] [knows well (*Mary, French*)]

Diesing 1988, 1992 seeks to reduce the difference between the interpretation of subjects of ILPs and SLPs to assumptions about argument structure and projection. Deising assumes a Mapping Hypothesis, that material above the VP node of a syntactic tree is mapped to the restriction of a quantifier and that all material dominated by VP is mapped to its nuclear scope. Unselective existential closure is assumed to bind any variables that remain within VP at LF, even when there is no quantifier in the sentence. To account for the observation that bare plural subjects can be interpreted existentially only when the predicate is stage-level, there needs to be a way to allow the subject to appear within VP at LF only if the predicate is stage-level. Kratzer 1988 adopts this strategy and follows Carlson 1977 in assuming that SLPs fundamentally need to be associated with a point in space and time in a way that ILPs do not. Thus, *Manon was dancing* is necessarily about some eventuality that took place somewhere and at some time, while *Manon was a dancer* is not. This distinction among predicates parallels Gawron's (1986) distinction between two kinds of facts. Gawron takes it that facts characterize situations. 'Facts often obtain at particular locations, where locations are taken to be connected regions of space/time' (1986:429). The set theoretic construct that constitutes an abstract fact is an ordered n-tuple consisting of a location (possibly), a relation, its relata, and a polarity. The fact of Marc Antony addressing the Senate at some location l is represented thus:

(21) $f1$ = <l, Addressing, Marc Antony, Senate, 1>

Although this fact is located in space/time, Gawron notes that some facts are not, citing the following as an example:

(22) <man, Marc Antony, 1>

This is the fact of which the claim *Marc Antony was a man* is true.

For Kratzer 1988 the association to space and time is the defining characteristic of SLPs, and it is taken to be the crucial semantic difference between ILPs and SLPs. Kratzer points out that SLPs tend to accept temporal and locative modification more easily than ILPs. This provides further confirmation of the conclusion reached in the analysis of (19), that SLPs have a logical argument that ILPs lack. Furthermore, this suggests that the argument must be the sort of thing that temporals and locatives can have as arguments. Kratzer does not decide once and for all whether the argument is Davidsonian — recalling Donald Davidson's 1967 analysis of certain predicates and their modifiers — or spatiotemporal. Kratzer uses an l, apparently borrowed from Barwise & Perry 1983, to represent the variable associated with the spatiotemporal argument in logical form. This cannot simply be a non-stative argument: although all ILPs are stative, some SLPs are as well.

Kratzer implements her proposal by taking the spatiotemporal argument of SLPs to be a thematic role in the sense of Williams 1981. Williams assumes that the lexical entry for a head includes a list of its arguments and that at most one argument can appear outside the maximal projection of the head at deep-structure. That argument is called the external argument, and all other arguments

are projected internally, within the maximal projection. Kratzer assumes that a spatiotemporal thematic role will always be the external argument of the head. The effect of this is to prevent any other thematic role from being projected to the specifier of IP. This effect is realized by ranking the spatiotemporal role highest on a thematic hierarchy so that, if it is present, it will always be the external argument. Below are examples of argument structures for typical ILPs and SLPs:[1]

(23) SPSs:

hit	<*location*, agent, theme>
dance	<*location*, agent>

ILP:

know	<*experiencer*, theme>

Because the location argument cannot be assigned to a nominal projected in the clausal subject position, all SLPs are 'unaccusative' in the sense that all their nominal arguments will be projected within the predicate's maximal projection (the specifier of VP is taken to be a possible projection site). In (24), the (deep and surface) structure proposed for ordinary individual-level predications is shown; (25) shows the surface structure for stage-level predications:

(24)
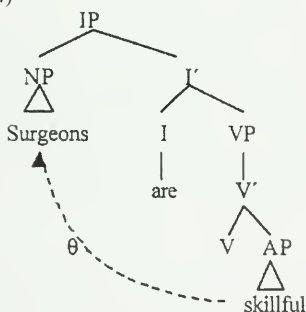
(25)
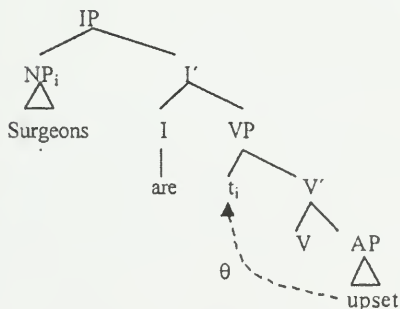
Diesing assumes that VP-internal subjects move to the specifier of IP to receive case. On the way to LF, this movement can be undone by reconstruction, allowing the NP to be caught up in the domain of unselective existential closure,

that part of the tree that is dominated by VP. Because ILPs do not have any spatiotemporal argument, some other thematic role can be projected outside the maximal projection of the predicate to the specifier of IP. Because it is projected outside VP, there is no way for the nominal to get an existential interpretation.

The spatiotemporal thematic role has the effect of causing a spatiotemporal variable to appear in Kratzer's logical representations, as shown below (Kratzer's ex. 12):

(26) Manon is dancing on the lawn
      [dancing (*Manon*, *l*) & on the lawn (*l*)]

2.3   The basis of the distinction

Some scholars hold the view that the ILP/SLP contrast is mainly pragmatic. Kratzer (1988) notes that having brown hair is an ILP, but she asserts that 'If I dyed my hair every other day, my property of having brown hair would be stage-level. Usually we think of having brown hair as an individual-level property, though, since we don't think of persons dying their hair capriciously' (1988:2). Chierchia 1995 expresses the same view, using the following sentence as an example:

(27) John was intelligent on Tuesday, but a vegetable on Wednesday.

First, Chierchia notes that the sentence has a reading we in which we take *was intelligent* to mean 'behave intelligently'. This is a case of what I will call 'Evidential Coercion' in the discussion below. He continues to note, however, that there is another reading true in case 'John has a double personality which involves switching his mental capacities on and off in an abnormal manner' (1995:178). Then Chierchia asserts, "If we all were like him, intelligent would be s[tage]-level."

Although my view is outvoted, I am not convinced by these assertions. I am not sure that we can have reliable intuitions about what sentences would be grammatical if the world differed from its current condition in certain specific ways. Let us assume a world in which people dye their hair capriciously and in which everyone has a multiple personality disorder such that certain personalities are intelligent and others are not. I agree that it would be perfectly natural to use temporal modifiers with predicates about intelligence and hair color. But I do not think we can have trustworthy intuitions about perceptual reports and the existential construction or even about readings for bare plural subjects. Thus, my view is that the ILP/SLP distinction is a more idiosyncratic one than what Kratzer and Chierchia seem to believe (cf. *I saw John tower over his friends* vs. **I saw John taller than his friends*).[2] Surely the language could change over time, but I do not think it necessarily will in the way suggested here. Greg Carlson pointed out to me the following contrast:

(28) a.   Whenever I land in New York lights are on.
      b.   ??Whenever I land in New York buildings are tall.

Example (28a) sounds perfectly fine even though lights are always on in New York. Of course, it is not necessary for lights to always be on in New York, but neither is it necessary for buildings to be tall. This leads me to believe that the ILP/SLP distinction is not simply a matter of pragmatics. It is a true grammatical distinction.

Kratzer writes, 'If a distinction between stage-level and individual-level predicates is operative in natural language, it cannot be a distinction that is made in the lexicon of a language once and for all' (1988:2). I disagree except to the extent that the ILP/SLP status can be determined compositionaly (see Fernald 2000) — and so not everything is determined in the lexicon. And of course I would not want the phrase "once and for all" to rule out the possibility of diachronic change.

Rather than these views, I prefer the idea behind Kratzer's proposal that SLPs occur or hold crucially in space and time but that ILPs do not. Or, in terms compatible with work on the thetic/categorical distinction (e.g., Kuroda 1972, Sasse 1987, Ladusaw 1994, McNally 1995) that ILPs are properties of individuals and SLPs are descriptions of the world, or perhaps a spatiotemporal slice of it. How else can we explain the difference in meaning between *I saw Robin tower over his friends* and **I saw Robin taller than his friends*.

Scholars have often claimed that an ILP is being used as a SLP when one appears where it ought to be unacceptable according to their theory. Carlson and Kratzer both have a clear take on what the basis of the distinction is. Let us assume that there is a fundamental, grammatical distinction — rather than a pragmatic one — between these sorts of predicates, and let us consider what it would mean for each of these analyses if an ILP could actually be used as a SLP.

For Carlson, the ILP/SLP distinction is due to the sort of entity with which the predicate can compose. To convert an ILP into a SLP, it would be necessary to apply operators and relations to the interpretation of the predicate to allow it to compose with stage-level sorts of entities. (Of course, since no nominals actually denote stages the predicate will need to be converted back, in effect, into an ILP before composition with a nominal expression will be possible. One could even take the view that SLPs are always coerced into ILP status whenever they must compose with a nominal. We will take this up in the final section.)

For Kratzer, a SLP has a location as its external syntactic argument, and an ILP does not. To convert an ILP into a SLP, the external argument of the ILP must be internalized (except for the unaccusative ILPs which have no external argument at all) and a location must be added as the new external argument.

For Carlson's theory, a change in interpretation is expected due to the need to introduce an operator to bind the individual-sort argument of the original ILP. For Kratzer's theory, there will need to be a way to add a spatiotemporal argument to a predicate that ordinarily cannot have one. The result should be a located eventuality that is somehow related to the meaning of the ILP used to describe it.

3. Slippage in the grammar

3.1 Evidential coercion

Many of the standard diagnostics for the ILP/SLP distinction discussed in 2.1 usually yield quite clear results, but others are far less clear. In some cases, simply putting an ILP in a necessarily SLP environment forces the predicate to take on certain SLP characteristics. The sentence may be grammatical with the reading typically associated with sentences containing a SLP, but the ILP might seem to be used in a slightly unusual way. In such cases, the diagnostic depends on a very subtle and subjective judgment.

The sentences below contain ILPs, as indicated by the ungrammaticality of the existential construction in (29), and the lack of an existential interpretation in (30).

(29) a.   *There is a man clever.
     b.   *There is a man pedantic.
     c.   *There is a man a bore.
     d.   *There is a man intelligent.
     e.   *There is a man a child.
     f.   *There is a man Bohemian.

(30) a.   People are clever.
     b.   People are pedantic.
     c.   People are bores.
     d.   People are intelligent.
     e.   People are children.
     f.   People are Bohemian.

However, these same predicates are surprisingly good with adverbs of quantification, which are usually taken as a diagnostic for SLPs:

(31) a.   Nancy is rarely clever.
     b.   Laura is often pedantic.
     c.   Sam is sometimes a bore.
     d.   Max is sometimes intelligent.
     e.   Carlos is frequently a child.
     f.   Karen is often Bohemian.

The conventional wisdom is that one is at least expected to feel a bit of a twinge whenever an ILP is used in an environment that 'prefers' SLPs. The problem posed by data like those in (31) for the diagnostic is that the twinge we are supposed to feel is quite subtle, and, sometimes, we cannot really tell whether we felt one at all. However, by carefully examining the meanings of these sentences we will find that we no longer need to hang our hopes on detecting the subtle twinge we allegedly feel. A predictable change has occurred in the interpretations of the ILPs in these sentences. These examples all entail that the subject is behaving, in some situation, in a manner consistent with having the property denoted by the ILP. This change in interpretation is due to what I will call

'Evidential Coercion' because it involves the subject giving behavioral evidence for having the property named by the ILP.

We begin our discussion assuming Carlson's 1977 framework for concreteness, and then we will see how it would work for the assumptions of Kratzer 1988 or Diesing 1988, 1992. We would like to understand what it means for a SLP to be used as an ILP. Carlson, as we have seen, assumed that SLPs have stages as their arguments and ILPs have individuals. To use an ILP as a SLP, a variable must fill the individual-sort argument, and there needs to be an abstraction over a stage-sort entity, and that entity variable must be related by the realization relation R to the individual-sort variable. Further, some quantifier will be needed to bind the individual-sort variable. Below is a first try at an informal statement of the idea using Carlson's assumptions about the ILP/SLP distinction:

(32) Evidential Coercion (first try): Let α be an ILP with interpretation α'. α can be used as a SLP with the following interpretation:
$\lambda x^s \exists Q,y'[R(x,y) \& Q(x) =$ 'x behaved in a manner supporting the judgment of $\alpha'(y)$']

Notice that (32) does not result in an entailment that the subject actually has the ILP-property, only the subject's behavior is consistant with having it. This is in fact just what we want. Consider (31e). We would not want to predict that this means that Carlos is actually judged to be a child from time to time, only that he frequently acts like one. The effect of (32) is to entail that evidence supporting the inference has been given, allowing all the while that the judgment might not turn out to be valid. The following version of (32) is more formal:

(33) Evidential Coercion [Carlson-style]: Let α be an ILP with interpretation α'. α can be used as a SLP with the following interpretation: $\lambda x^s \exists Q[Q(x) \& G_{y,s,zi}(Q(y) \& R(y,z)) [\alpha'(z)]]$

Here, G is the generic operator. The coerced predicate denotes a set of stages for which there is some stage-level property Q that holds of the stage, and in general, having Q predicated of a stage entails that the individual associated with the stage has α, the ILP, predicated of the corresponding individual. By this formulation, ?*Laura is often pedantic* will be coerced into expressing the claim that often there is some stage-level eventuality, in which Laura participates, and one would generally judge the individual who participates in such eventualities as "pedantic." The success of coercion in this case depends on the hearer's ability to imagine there being stage-level evidence of having the ILP-property, which is not difficult in the case of *pedantic*. The idea that the stage-level property Q must be a behavior is not explicit in (33), but at least the property is required to be one that holds of stages.

Before considering the consequences of (33), we will pause to see how evidential coercion can be formulated in terms of Kratzer's and Diesing's proposals. On these accounts, SLPs have a spatiotemporal argument and ILPs do not. To convert an ILP to a SLP, we have to somehow add a position for a spatiotemporal argument and abstract over it. Below is a formulation that parallels (33):

(34) Evidential Coercion [Kratzer-style]: Let α be an ILP with interpretation α'. α can be used as a SLP with the following interpretation:
$\lambda l_j \lambda x \exists Q [Q(x,l_j) \& G_{y,l}(Q(y,l))[(\alpha'(y))]$

For Kratzer's account, the thematic grid in the lexical entry for the predicate would need to have a location argument added to it as the external argument. By either formulation (33) or (34), the output of Evidential Coercion is a stage-level predicate. This story predicts that ILPs should be usable in any stage-level environment provided that coercing can take place. We have already seen in (29) and (30) that the existential construction does not induce coercion, and neither do bare plural subjects. (Without these judgments, we would not have considered the relevant predicates ILPs in the first place.) What about perceptual reports?

(35) a.   I have seen Lyle clever (on several occasions).
      b.   We have seen Laura pedantic (on several occasions).
      c.   *Robin has seen Sam a bore (on several occasions).
      d.   You have seen Max intelligent (on several occasions).
      e.   *Leslie has seen Carlos a child (on several occasions).
      f.   Robin has seen Karen Bohemian (on several occasions).

With the exception of cases in which the predicate in the perceptual report are nominals, these sentences (helped along by perfect aspect in the matrix and by frequency modifier) are not so bad. So if we assume that nominal predicates are independently ruled out in this environment by category selection, then we conclude that evidentially coerced predicates are stage-level since they are grammatical in the perceptual report. In fact, if we add a form of *be* to turn the nominal predicate into a verbal one, the results are grammatical with an evidential coercion interpretation:

(36) c'.   Robin has seen Sam being a bore (on several occasions).
      e'.   Leslie has seen Carlos being a child (on several occasions).

Our analysis captures a subtlety of interpretation that is worth dwelling upon for a moment. Ordinary perceptual reports are said to be veridical. That is, they entail that the perceived eventuality held or happened, unless the perceiver was hallucinating. However, veridicality does not hold for the ILPs in (35) and (36), but only for the SLPs derived by coercion. For example, as we saw with (31e), (36e') does not entail that Carlos was a child when Leslie saw him, only that he behaved like one. Our account makes exactly the correct distinction.

Of course, aspectual information is being added in (36) in addition to simply changing the predicate into a VP. In fact, a coerced reading is possible in simple sentences with *be* in the progressive:

(37) a.   Nancy is being clever.
      b.   Laura is being pedantic.
      c.   Sam is being a bore.
      d.   Max is being intelligent.
      e.   Carlos is being a child.
      f.   Karen is being Bohemian.

This is also noted by Stump (1985:76-79), building on Partee 1977 (and see Smith 1991:43). Stump refers to this form of *be* as be_3 and says that it 'has a meaning something like that of **act (like)**' (1985:77). It seems odd that a particular lexical item like be_3 should trigger coercion: coercion is what happens when the rules of the grammar are violated in a fairly minor way; how could a lexical item require a coerced reading rather than a basic one? On the other hand, the progressive needs to combine with an eventuality description that is non-stative. If an ILP stative is inserted into the progressive, the aspectual coercion that is triggered would result in a SLP.

We must ask what the limits are on coercion. Clearly, it is triggered by a mismatch in the grammar and its success depends on the hearer's ability to repair the mismatch. Thus, coercion is constrained by the imagination of the hearer and so we cannot nail down hard and fast rules. Despite these concerns, we can identify what is involved in successful applications of evidential coercion by examining cases where coercion is more difficult.

Not all ILPs are equally coercible. The ones we have been examining thus far are easily coerced. But now that we have a precise idea of at least one thing that is meant by saying that an ILP is being used as a SLP, we can get an idea of why some ILPs are more easily coerced than others. The following are not as easily coerced as the ones we have seen:

(38) a.   ?Sue is sometimes tall.
     b.   ?Karen is often Norwegian.
     c.   ?Nancy is rarely a human.
     d.   √/?Francis is occasionally blond.

These do seem to allow metaphorical readings for the predicates, however. For example, tall might be taken to mean something like 'highly respectable' or 'above the fray'. Thus, if we first take the predicate to indicate a set of stereotypical properties, then a reading is possible in which the subject exhibited behaviors consistent with those stereotypes. This can be seen by comparing (38b) with (31f), *Karen is often Bohemian*. (38b) is likely to be meaningful only for people with stereotypical ideas about Norwegians. Similar stories can be told, I think, about the other examples in (38). Note that (38d) is ambiguous between a stereotypical evidential coercion reading and a reading in which sometimes Lou's hair is actually blond. The other examples in (38) also can have this kind of interpretation, although they are more bizarre. We will discuss these readings in the following section. In sum, Evidential Coercion is possible when standard behaviors are associated with a certain property described by an ILP, and when the subject potentially has control over those behaviors. In each case, the success of Evidential Coercion depends on the availability of stereotyped behaviors associated with the property.

3.2 Inchoative coercion

Moens & Steedman 1988 point out that use of a stative predicate in a position that requires a non-stative often results in a change of state reading for the

predicate. In the examples below, the stative predicates are interpreted as a changes of state:

(39) a.   Suddenly, Lynne knew the answer.
     b.   After 6 years of hard work, Leslie knew Italian.

A change of state is a telic event, and is thus stage-level. Stative predicates, of course, can be individual- or stage-level. Inchoative coercion yields a change of state reading even when the input stative is stage-level, as the following examples show:

(40) a.   Suddenly Lynne was on the porch.
     b.   After 3 hours, the room was available.

Inchoative coercion is relevant to it since any ILP that is coerced in this manner will become stage-level.

3.3   Interruption

Some ILPs can appear with frequency adverbials without an Evidential Coercion reading. Adding a quantificational adverb to these induces a reading by which the property sometimes holds of its subject and sometimes does not. Schubert & Pelletier 1989 and Krifka et al. 1995 discuss this as a kind of coercion, and I will call it Interruption. The interruptions in the intervals over which the ILP is true of the subject allow a plurality of cases for the nuclear scope of a quantificational adverb. Below are some cases in which this occurs:

(41) a.   Max is sometimes a California resident.
     b.   Francis is occasionally blond.
     c.   Alice is sometimes tall.
     d.   Karen is sometimes Norwegian.

(41a&b) sound quite natural since these ILPs can easily be interrupted. (41c&d) do not fit well with the way we typically think of the world because the sentences clearly indicate that the predicate holds of its subject intermittently. Interruption fails if the hearer cannot imagine the truth-value of the proposition changing. To get a reading for (41d), we either have to think of Karen changing her citizenship from time to time or we have to think of Karen being reincarnated repeatedly, sometimes as a Norwegian.

It is important to notice that interruption is not really coercion in our terms. Taking Carlson's 1977 approach, the predicates still have arguments that are of the individual sort. In Kratzer's 1988 terms, there is no need to suppose that the predicates in (41) describe eventualities that are spatiotemporally located. The only interesting thing about the sentences in (41) is that they are interpreted as formulas that fluctuate in truth-value over evaluation times. Thus, while evidential coercion actually produces a SLP, interruption does not.

3.4   Going the other way

We have seen how a SLP can be coerced from an ILP. It is worth contemplating what it would be like to coerce a SLP into an ILP. For a SLP to become an ILP, in Kratzer's terms, the predicate would need to lose its strong connection to space

and time, and to become an atemporal property of individuals. Something would need to supply the spatiotemporal argument for the predicate and bind it. There are at least two ways in which this might happen. One is for the SLP to receive a habitual interpretation. This appears to be what happens when a non-stative SLP is employed in the simple present:

(42) a. Sam goes jogging after work.
     b. Hakeem plays basketball for a living.

The habitual interpretation seems also to be involved in what Carlson called the individual-level reading for *Bill ran*. What is involved is clearly the binding of the spatiotemporal argument by a generic quantifier along with the assertion that the subject generally has the relevant property. This can be formalized as follows:

(43) [for Kratzer's theory] Let α be a SLP with interpretation α'. α can be used as an ILP with the following interpretation: $\lambda x G_l[\alpha'(x,l)]$

Also, the thematic grid must have its location argument removed, and possibly one of the other arguments would be promoted as the new external argument.

In Carlson's terms, what happens is that the stage-sort argument of the SLP needs to be supplied and bound by an operator. Then it must be related to an individual-sort entity which is bound by a lambda operator. Since Carlson assumes that no natural language nominal has the set of stages as its denotation space, he has already built into his system various mechanisms for doing just what we have been talking about. Every time a SLP composes with its subject it must already have been, in effect, converted into an ILP. Below is the counterpart of (43) in Carlson's terms:

(44) [for Carlson's theory] Let α be a SLP with interpretation α'. α can be used as an ILP with the following interpretation:
$\lambda y' G_{xs}[R(x,y) \& \alpha'(x)]$

We should note that (44) is not really a coercion rule in the same sense that Evidential Coercion is. For the latter, coercion is the result of forcing a predicate of one level into an environment that requires a predicate of a different level. We certainly do not wish to say that SLPs are coerced into ILPs when they appear in the simple present; stative SLPs retain their ordinary readings in that environment (see Fernald 2000). (43) and (44), then, express a way in which a located description can come to denote an atemporal property. This takes place in an environment that permits both ILPs and SLPs to appear, so it differs in kind from Evidential Coercion.

The second way to derive an ILP from a SLP would be to bind the spatiotemporal location, in Kratzer's terms, or the stage-sort argument in Carlson's, with an existential operator. It seems that the past perfect is an environment in which some kind of shifting could occur from SLP to ILP status. Once a stage of an individual has done something, it becomes an eternal property of that individual that one of its stages has done whatever it is. This does not result in a gener-

alization, but an existential quantification over the stage and the location at which the eventuality took place.

4.   Consequences

I would like to comment on four consequences of our inquiry into coercion. First, unless the ILP/SLP distinction is subject to some additional sort of coercion not noted here, this analysis supports McNally 1993 arguing against Rapoport 1991. Rapoport claims depictive adjuncts are required to be stage-level. McNally cites examples like the following as counterexamples, noting that ILPs can be used as depictives when the main clause supports a reading of the depictive as a changed state:

(45) a.   The neighbor's girls entered the Army enthusiastic advocates of
            U.S. interventionism. (= McNally's (8a))
      b.   Nancy Kerrigan returned from Lillehammer an Olympic silver
            medalist.

The present argument makes it unlikely that these ILPs are "being used" as SLPs since these examples do not display evidential coercion. They also do not display interruption readings; they simply entail that the depictive is a changed state, as McNally claims.

The second consequence is related to depictives. I have claimed that interruption does not change ILPs to SLPs. This claim makes the prediction that ILPs with an interruption interpretation should not be acceptable in perceptual reports. The following examples suggest that this prediction is incorrect:

(46) a.   Robin has seen Max a California resident (on several occasions).
      b.   I have seen Francis blond (on several occasions).
      c.   We have seen Sue tall (on several occasions).
      d.   Pat has seen Karen Norwegian (on several occasions).

Interruption is clearly induced here by the perfect aspect in the matrix. My analysis forces us to the conclusion that the ILPs in these examples are depictives rather than reports of perceived eventualities. If so, following McNally, we would have to claim that a report of perception in past perfect is an environment supporting the inference that the depictive is a changed state. This prediction seems to be correct.

If we add a form of *be* in the progressive to the examples in (46), we get the following:

(47) a.   ?Robin has seen Max being a California resident (on several
            occasions).
      b.   ?I have seen Francis being blond (on several occasions).
      c.   ?We have seen Sue being tall (on several occasions).
      d.   ?Pat has seen Karen being Norwegian (on several occasions).

As we have seen, the progressive *be* induces Evidential Coercion. The examples are odd only to the degree that it is difficult imagining behavioral evidence supporting the inference of having the described property.

Third, the view of coercion proposed here is clearly distinct from one that says that an ILP has become a SLP whenever it becomes the case that the truth of a proposition containing an ILP is not constant over time. Such a view at times seems to be held by Kratzer 1989, Diesing 1992, and Chierchia 1995. This view seems to derive from the intuitive characterization of ILPs as tendentially stable, immutable properties. Researchers always hasten to acknowledge that the truth values of certain propositions based on ILPs necessarily or potentially change over time (e.g., *Rose is a child*, *Tom is a novice*), and that others, although they do not change out of necessity, change freely as the result of volitional acts (e.g., *Janet is a resident of Idaho*, *Tim has blond hair*). Despite acknowledgments of this sort, many researchers persist in reasoning that seems to be based on the assumption that ILPs denote constant sets over time (at each world).

This kind of reasoning may be behind Kratzer's 1989 discussion of the following (Kratzer's example 73):

(48) Henry was French.

Kratzer notes that (48) can be taken to implicate that Henry is no longer alive (but that he was French when he was alive) or that Henry has changed his national allegiance and is no longer French. Kratzer asserts that the difference in these construals is due to the former being derived from an ILP and the latter from a SLP. Kratzer writes, 'The past tense is an effective tool for turning individual-level predicates into stage-level predicates' (1988:41f.), and from this it seems clear that she has something like coercion in mind. Kratzer does not provide arguments for the claim that the construals line up in the manner she proposes. Presumably, the idea is that if the truth conditions of a proposition containing an ILP vary over time, the ILP has been coerced into acting like a SLP. But above we have seen several ILPs (and there are many more) that are not necessarily constant over time.

As de Swart 1991 notes, *be French*, even in the past tense passes all the diagnostics for classification as an ILP:

(49) Brain surgeons were French

Example (49) does not have an existential interpretation. Neither is the existential in (50) grammatical:

(50) *There were brain surgeons French.

What I offer to this debate is the observation that Evidential Coercion is not involved here. Instead, Interruption is involved, and, as I have argued, there is no reason to believe that this results in a SLP.

5. Where is coercion?

I have argued that Evidential Coercion derives a SLP from an ILP. Coercion needs to be induced by something, and some syntactic/semantic environments are better at inducing it than others. Adverbs of quantification are very good at getting a plurality of cases for their restrictions. Perceptual reports do not seem to induce

Evidential Coercion, but they do accept coerced predicates as descriptions of the perceived event as long as something else (the progressive, for example) has induced coercion. The progressive induces it strongly, but the existential construction and weak construals of indefinite subjects do not induce coercion at all.

This analysis offers a new diagnostic for determining when ILPs are being used as SLPs. It gives theoretical teeth to such a claim by showing precisely what change in interpretation is predicted. This is a significant contribution since it extends the domain of interpretation that is subject to empirical testing. In addition, I hope that these considerations contribute to dispelling the notion that simply because there is an interruption in the temporal interval over which an ILP holds, the predicate is being used as a SLP.

Finally, I would like to raise the question of how coercion fits into a theory of language. One possibility is that it is a matter of pragmatics — a reinterpretation that operates on an output of the grammar. The alternative seems to be that it is a morphological or morpho-syntactic process that adjusts lexical and phrasal interpretations as a part of semantic composition. The line between semantics and pragmatics has not been very sharp in recent years — dynamic semantics encompasses much of the territory once thought to be clearly pragmatic.

Something like the Maxim of Manner (Grice 1975) is involved in finding a meaning for a sentence involving coercion. A Manner-based inference is drawn when the hearer of an utterance wonders why the speaker chose to use the wording, or other manner of expression, that s/he used. The hearer is then motivated to find an alternative meaning for an utterance. This is not quite what happens with coercion. Coercion has a different motivation, and the speaker may not be conscious of it. Coercion is triggered by a mismatch in the meanings of a sentence's constituents. With sentences involving Evidential Coercion, on the analyses developed here, the component meanings are of incompatible semantic type prior to coercion, and this is the motivation to reinterpret one of the constituents. With more blatant violations of grammatical constraints the hearer may have to consciously figure out what meaning was intended by the speaker; these cases most closely resemble Manner-based inferences. Less blatant violations may not be noticed by the hearer at all. Of course, pragmatic inference is often not calculated consciously — introductory semantics students need to be taught the difference between semantic entailment and pragmatic inference — so lack of awareness is not evidence that a process is not pragmatic. De Swart 1998, writing about coercion involving aspect, states, 'The felicity of an aspectual reinterpretation is strongly dependent on linguistic context and knowledge of the world' (1998:360). Clearly, pragmatic elements are involved in coercion. However, pragmatic inference draws on general cognitive processes and assumptions about the world. Thus, it is common to assume that pragmatics is outside the realm of grammar.

However, the output of grammar — sentences and their interpretations — are also objects of manipulation in pragmatic inference. If pragmatics is as distinct from grammar as is commonly assumed we have an apparent problem: sen-

tences must be fully formed before they are 'passed along' to the pragmatic module, so to speak. As Grice showed, pragmatics is involved in reinterpreting the import of well-formed utterances. The data considered in this article contrast with Grice's examples because the former do not have a coherent interpretation until certain sentential constituents are coerced in what appears to be a pragmatic process.

What happens when coercion is needed is that the grammar outputs a syntactically well-formed string of words along with a kind of fragmented interpretation — interpretations for the sentence's constituents but not a propositional interpretation for the whole utterance. Different factors are involved in generating and in parsing these sentences. Performance error aside, a speaker will not output a sentence that is not well-formed syntactically and that does not have some sort of coherent interpretation. A speaker would not use a sentence that had incompatible constituent meanings if coercion were not possible. For sentences in which coercion is needed, the speaker already knows how to coerce the constituent meanings. The problem is then for the hearer to successfully coerce the meanings of the constituents. This is where pragmatics is involved. If the context is not adequately rich or if the intended meaning is too obscure, the attempt at coercion will fail. I propose, then, that coercion is pragmatic from the hearer's point of view but morphological from the speaker's point of view. That is, coercion is a lexical operation available to the sentence generator; coerced meanings can only be used felicitously in contexts in which the hearer has a chance of identifying the intended coerced meaning.

NOTES

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[1] Kratzer 1988 also discusses unaccusative predicates, but these are omitted from this discussion since there is nothing particularly interesting about them for the investigation of coercion.

[2] Thanks to Jack Hoeksema for calling this pair to my attention.

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GRADABLE ADJECTIVES DENOTE MEASURE FUNCTIONS, NOT PARTIAL FUNCTIONS˙

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This paper uses the distribution and interpretation of antony-
mous adjectives in comparative constructions to argue that an empiri-
cally and explanatorily adequate semantics for gradable adjectives
must introduce abstract representations — 'scales' and 'degrees' —
into the ontology. I begin with an overview of the basic assumptions
of analyses that do not make reference to scales and degrees. I then
turn to a discussion of the empirical data, and I demonstrate that such
approaches do not support a principled explanation of the facts, but a
degree-based account does.

1. Gradable adjectives and the problem of vagueness

A fundamental problem for the semantic analysis of gradable adjectives like *tall*,
long, and *expensive* is that many of the sentences in which they occur are vague.
(1), for example, could be true in one context and false in another.

(1)   The Mars Pathfinder mission was expensive.

In a context in which the discussion includes all objects that have some cost-
value associated with them, (1) would most likely be judged true, since the cost of
sending a spacecraft to Mars is far greater than the cost of most things (e.g., nails,
dog food, a used Volvo, etc.). In a context in which only missions involving inter-
planetary exploration are salient, however, then (1) would probably be judged
false, since a unique characteristic of the Mars Pathfinder mission was its low cost
compared to other projects involving the exploration of outer space (see Sapir
1944, McConnell-Ginet 1973, Kamp 1975, Klein 1980, Ludlow 1989, Kennedy
1999a, and others for relevant discussion).

What this example shows is that the criteria for deciding whether an utter-
ance of a sentence of the form 'x is φ' is true (where φ is a gradable adjective)
may vary according to factors external to the adjective, such as the meaning of x
and features of the context of utterance. Determining the truth of 'x is φ' in a par-
ticular context requires figuring out what these criteria are, and then making a
judgment of whether x 'counts as' φ in that context. A basic requirement of a
theory of the semantics of gradable adjectives, then, is to both provide a means of
making this judgment, ensuring that sentences like (1) have definite interpreta-
tions, and to allow for variability of interpretation across contexts.

One approach to this problem, first formalized in Seuren (1973) and Cresswell (1976), but since adopted in some form by many analyses of the semantics of gradable adjectives, meets this requirement by constructing an abstract representation of measurement and defining the interpretation of gradable adjectives in terms of this representation (see, e.g., Hellan 1981, Hoeksema 1983, von Stechow 1984a, b, Heim 1985, Bierwisch 1989, Pinkal 1989, Moltmann 1992, Gawron 1995, Rullmann 1995, Hendriks 1995, and Kennedy 1999; see Klein 1991 for general discussion of such approaches). This abstract representation, or *scale*, can be construed as a set of objects totally ordered along some dimension (such as *height*, *width*, *density* and so forth; the dimension value has the effect of distinguishing one scale from another), where each object represents a measure, or *degree*, of 'φ-ness'. The introduction of scales and degrees into the ontology makes it possible to analyze predications involving gradable adjectives as relations between objects in their domains and degrees on a scale, which in turn provides the basis for an account of vagueness. A sentence of the form 'x is φ' is taken to mean that the degree to which x is φ is at least as great as some other degree d_s on the scale associated with φ that identifies a *standard* for φ. The semantic function of the standard-denoting degree is to provide a means of separating those objects for which the statement 'x is φ' is true from those objects for which 'x is φ' is false (see Bartsch & Vennemann 1973, Cresswell 1976, Siegel 1980, Klein 1980, von Stechow 1984a, Ludlow 1989, Bierwisch 1989, and Kennedy 1999a). The problem of vagueness is thus recast as the problem of determining the value of the standard in a particular context.

For example, a sentence like (1), on this view, is true just in case the degree that represents the cost of the Mars Pathfinder mission is at least as great as the standard value for 'expensive' in the context of utterance.[1] In a context in which all objects in the domain of expensive are relevant, the standard value would fall below the degree that represents the cost of the Mars Pathfinder mission, and (1) would be false. In a context in which only interplanetary expeditions are considered, however, the standard value would exceed the cost of the Pathfinder mission, and (1) would work out to be true.

A question that this type of approach must deal with, however, is whether the introduction of scales and degrees into the ontology is really necessary. Is it possible instead that the semantic properties of gradable adjectives can be equally well explained in terms of some alternative mechanisms that do not make reference to abstract objects? This question is of particular importance, because such alternative analyses have been developed (see, for example, McConnell-Ginet 1973, Kamp 1975, Klein 1980, 1982, Van Benthem 1983, Larson 1988, and Sànchez-Valencia 1994). These approaches build vagueness directly into the meaning of a gradable adjective, by characterizing its meaning in terms of a family of functions from individuals to truth values, some of which may be partial. In any context of use, a particular function from this family must be selected in order to achieve a definite interpretation, but no reference to degrees or other abstract objects is required.

The goal of this paper is to address this question by investigating a set of facts that provide unusual insight into the empirical consequences of different assumptions about the nature and ontological status of scales and degrees. Specifically, I will argue that the distribution and interpretation of antonymous pairs of adjectives in comparatives indicate that an explanatorily adequate semantics of gradable adjectives must make reference to abstract representations of measurement, since it is precisely the properties of such representations that are crucial for explaining the observed facts in this domain. Before going into the data, however, I will present an overview of the basic assumptions of theories that do not make reference to abstract representations of measurement.

2.   Capturing vagueness without degrees

2.1   Gradable adjectives

For perspicuity, I focus in this section on the analysis of gradable adjectives articulated in Klein 1980, 1982, but my remarks hold equally for the other analyses mentioned above. The starting point of this approach, which I will refer to as the 'partial function analysis', is the assumption that gradable adjectives are of the same semantic type as nongradable adjectives: they denote functions from objects to truth values. Gradable adjectives are distinguished from nongradable adjectives (and other predicative expressions) in that their domains are partially ordered according to some property that permits grading, such as *cost, temperature, height,* or *brightness* (this property corresponds to the concept of 'dimension' that scalar approaches use to distinguish one scale from another). Klein 1980, 1982, building on Kamp 1975, makes a second distinction between gradable and nongradable adjectives: the latter always denote complete functions from individuals to truth values, but the former can denote partial functions from individuals to truth values. In other words, nongradable adjectives like 'hexagonal' and 'Croatian' always denote functions that return a value in $\{0,1\}$ when applied to objects in their domains, but gradable adjectives like 'dense', 'bright', and 'shallow' can denote functions that return 0, 1 or no value at all when applied to objects in their domains.

The interpretation of a proposition with a gradable adjective as the main predication can be stated as follows. First, assume as above that the domain of a gradable adjective is partially ordered according to some dimension. A gradable adjective φ in a context c can then be analyzed as a function that induces a tripartite partitioning of its (ordered) domain into: (i) a positive extension ($pos_c(\varphi)$), which contains objects above some point in the ordering (objects that are definitely φ in c), (ii) a negative extension ($neg_c(\varphi)$), which contains objects below some point the ordering (objects that are definitely not φ in c), and (iii) an 'extension gap' ($gap_c(\varphi)$), which contains objects that fall within an indeterminate middle, i.e., objects for which it is unclear whether they are or are not φ in c (cf. Sapir's 1944 'zone of indifference'). The net effect of these assumptions is that the truth conditions of a sentence of the form 'x *is* φ' in a context c can be defined as in (2).

(2)   a. $\|\varphi(x)\|^c = 1$ iff x is in the positive extension of φ at c,
       b. $\|\varphi(x)\|^c = 0$ iff x is in the negative extension of φ at c, and
       c. $\|\varphi(x)\|^c$ is undefined otherwise.

The partitioning of the domain into positive and negative extension and extension gap is context-dependent, determined by the choice of comparison class. Roughly speaking, a comparison class is a subset of the domain of discourse that is determined to be somehow relevant in the context of utterance, and it is this subset that is supplied as the domain of the function denoted by the adjective.[2] The role of the comparison class can be illustrated by considering an example like (3).

(3)   Erik is tall.

If the entire domain of discourse were taken into consideration when evaluating the truth of (3), then it would turn out to be either false or undefined, since relative to mountains, redwoods, and skyscrapers, humans fall at the lower end of an ordering along a dimension of height. As a result, the individual denoted by *Erik* would be at the lower end of the ordered domain of the adjective, and so would fall within the negative extension of tall (or possibly in the extension gap). When attention is restricted to humans, however, then a comparison class consisting only of humans is used as the basis for the partitioning of the domain of tall, and the truth or falsity of depends only on the position of Erik in this smaller set.

An important constraint on the construction of a comparison class is that it must preserve the original ordering on the domain, in order to avoid undesirable entailments. For example, consider a context in which the ordering on the domain of tall is as in (4).

(4) $D_{tall} = \langle ..., Nadine, Bill, Aisha, Chris, Tim, Frances, Polly, Erik, ...\rangle$

If no restrictions were placed on the construction of a comparison class from D_{tall}, then the ordered set K_{tall} in (5) would be a possible comparison class, allowing for a partitioning of the domain as shown in (6).

(5) $K_{tall} = \langle ..., Aisha, Frances, Polly, Nadine, ...\rangle$

(6)   a. $pos_c(tall) = \langle Polly, Nadine\rangle$
       b. $neg_c(tall) = \langle Aisha\rangle$
       c. $gap_c(tall) = \langle Frances\rangle$

In this context, (7) would be true while (8) would be false, a result which is inconsistent with our intuitions if the actual ordering on the domain of tall is as in (4).

(7)   Nadine is tall.

(8)   Frances is tall.

This undesirable result is avoided by invoking the *Consistency Postulate*, informally defined in (9) (see Klein 1980, 1982, van Benthem 1983, Sanchez-Valencia 1994, and below), which requires any partitioning of a subset of the domain of a gradable adjective to preserve the original ordering on the entire domain.

(9) *Consistency Postulate* (informal)
For any context in which '*a is* φ' is true and $b \geq_\varphi a$, then '*b is* φ' is also true, and for any context in which '*a is* φ' is false, and $a \geq_\varphi b$, then '*b is* φ' is also false.[3]

A consequence of this condition is that (6) is not a possible partitioning. Since the partitioning indicated in (6) makes (7) true, and *Frances* $\geq_{tall}$ *Nadine* with respect to the original ordering in (4), the Consistency Postulate requires it to also be the case that (8) is true.

This discussion brings into focus the fundamental ideas underlying the partial function analysis. Given any set of objects partially ordered along a dimension δ, it is possible to define a family of (possibly partial) functions that induce a partitioning on the set in accord with the Consistency Postulate. In effect, the partial function analysis claims that the interpretation of a gradable adjective with dimensional parameter δ is a value selected from this family of functions, which may vary from context to context. The vagueness of gradable adjectives stems from the fact that in any context of use, it is necessary to choose some function from this family as the interpretation of the adjective in that context.

2.2 Comparatives

The intuitions underlying the Consistency Postulate provide the foundation for an analysis of comparatives (see McConnell-Ginet 1973, Kamp 1975, Klein 1980, 1982, van Benthem 1983, Larson 1988, Sànchez-Valencia 1994). Consider, for example, (10).[4]

(10) Jupiter is larger than Saturn (is).

Given the conditions imposed by the Consistency Postulate, it follows that if there is a context that makes the proposition expressed by '*Jupiter is large*' true but makes '*Saturn is large*' false, then it must be the case that the object denoted by *Jupiter* is ordered above the object denoted by *Saturn* with respect to the ordering on the domain of *large*, i.e., it must be the case that Jupiter is larger than Saturn.

This analysis can be made precise by building on the observation made at the end of the previous section that the interpretation of a gradable adjective in a context c is a member of a family of functions that partition a partially ordered set in accord with the Consistency Postulate. Specifically, we can introduce a set of *degree functions* that apply to a gradable adjective and return some member of this family; in particular, following Klein 1980, we can assume that the result of applying a degree function to a gradable adjective is always a complete function. (In Klein's analysis, the denotations of *very, fairly*, and other degree modifiers are taken from the set of degree functions.) The underlying idea is that a degree function performs the role normally played by context: it fixes the denotation of the adjective, ultimately determining how the domain is to be partitioned. The difference is that all of the partitionings induced by a degree function are bipartite: none contain an extension gap.

Once we have degree functions, the Consistency Postulate can be restated more formally as in (11), where G is the set of gradable adjective meanings, D is the domain of discourse, and Deg is the set of degree functions (cf. Klein 1982:126).

(11) *Consistency Postulate*
$\forall \varphi \in G, a,b \in D, c \in C, d \in Deg$:
$[\|(d(\varphi))(a)\|^c = 1 \ \& \ b \geq_e a] \rightarrow [\|(d(\varphi))(b)\|^c = 1]$ and
$[\|(d(\varphi))(a)\|^c = 0 \ \& \ a \geq_e b] \rightarrow [\|(d(\varphi))(b)\|^c = 0]$

The effect of the Consistency Postulate is to ensure that the only admissible degree functions are those that induce partitionings of the domain of a gradable adjective in a way that is consistent with the inferences discussed in the previous section. Given this constraint, the interpretation of comparatives can be straightforwardly formalized in terms of quantification over degree functions. A typical comparative of the form *a is more φ than b* is assigned the truth conditions in (12) (the formalism adopted here is most similar to that in Klein 1982).

(12) $\exists d[(d(\varphi))(a) \ \& \ {\sim}(d(\varphi))(b)]$

For illustration, consider the analysis of (10), which has the logical representation in (13).

(13) $\exists d[(d(large))(Jupiter) \ \& \ {\sim}(d(large))(Saturn)]$

According to (13), (10) is true just in case there is a function that, when applied to *large*, induces a partitioning of the predicate's domain so that the positive extension includes *Jupiter*, while the negative extension contains Saturn. Assuming the domain of *large* to be as in (14) (limiting the domain to the planets in the solar system), (10) is true, because there is a partitioning of the domain of large such that Jupiter is in the positive extension and Saturn is in the negative extension, namely the one shown in (15). (To distinguish the partitioning introduced by a degree function from the context-dependent partitioning associated with the absolute construction, I have represented the positive and negative extensions induced by a particular degree function d as $pos_d(\varphi)$ and $neg_d(\varphi)$, respectively.)

(14) $D_{large} = \langle Pluto, Mercury, Mars, Venus, Earth, Neptune, Uranus, Saturn, Jupiter \rangle$

(15) a. $pos_d(large) = \langle Jupiter \rangle$
     b. $neg_d(large) = \langle Pluto, Mercury, Mars, Venus, Earth, Neptune, Uranus, Saturn \rangle$

Since the possible values of the function d must satisfy Consistency Postulate, partitionings such as (16) are impossible, and we derive the desired result that (10) entails that for any context, *Jupiter* is ordered above *Saturn* in the domain of *large*; i.e., that Jupiter is larger than Saturn is.

(16) a. $pos_d(large) = \langle Uranus, Saturn \rangle$
     b. $neg_d(large) = \langle Pluto, Mercury, Mars, Venus/Earth, Neptune, Jupiter \rangle$

3. Comparison and polar opposition

The previous section demonstrated that it is possible to construct a descriptively adequate semantics for gradable adjectives and comparatives without making reference to scales and degrees. The purpose of this section is to introduce a set of data involving the distribution and interpretation of antonymous adjectives in comparatives that indicate that this analysis cannot be maintained. Instead, these facts provide strong evidence that an explanatorily adequate semantic analysis of gradable adjectives must in fact make reference to a abstract representations of measurement–scales and degrees.

3.1 Cross-polar anomaly

The first set of empirical facts that will form the basis for my argument is a phenomenon that I refer to as cross-polar anomaly (CPA), which is exemplified by the sentences in (17). (See Hale 1970, Bierwisch 1989, and Kennedy 1997).

(17) a. ? Alice is taller than Carmen is short.
   b. ? *The Brothers Karamazov* is longer than *The Idiot* is short.
   c. ? The Mars Pathfinder mission was cheaper than the Viking mission was expensive.
   d. ? New York is dirtier than Chicago is clean.
   e. ? A Volvo is safer than a Fiat is dangerous.

These sentences demonstrate that comparatives formed out of so-called 'positive' and 'negative' pairs of adjectives are semantically anomalous.[5] This anomaly cannot be accounted for in terms of syntactic ill-formedness: structurally identical comparatives in which both adjectives have the same polarity, such as those in (18), are perfectly well-formed.

(18) a. The space telescope is longer than it is wide.
   b. After she swallowed the drink, Alice discovered that she was shorter than the doorway was low.

Given the acceptability of examples like these, we can conclude that the factors underlying cross-polar anomaly involve the interaction of the semantics of positive and negative adjectives and the semantics of the comparative construction (see Kennedy 1999b for extensive argumentation in support of this conclusion).

The second set of facts that I will focus on contains examples that are superficially similar to examples of CPA, but are not anomalous.[6] These examples, which I will refer to as comparison of deviation (COD) constructions, are illustrated by the naturally occurring sentences in (19).

(19) a. [The Red Sox] will be scrutinized as closely as the Orioles to see whether they are any more legitimate than the Orioles are fraudulent. (*New York Times*, Summer 1998)

   b. Grace especially had a forgettable playoff series that won't soon be forgotten. Grace was as cold as he was hot in the 1989 playoffs. (*Chicago Tribune*, October 4, 1998, Section 3, p. 6)

c.   I can still remember the sound it made, a lovely special sound, as light
      and thin as the clothes were solid and heavy.
      (Dibdin, M.: 1989, *Ratking*, Bantam Crime, New York, p. 178)

COD constructions have two characteristics that distinguish them from
standard comparatives. First, examples of COD compare the relative extents to
which two objects deviate from some standard value associated with the adjec-
tive (cf. Bierwisch 1989:220). The meaning of the comparative in (19a), for exam-
ple, can be paraphrased as in (20).

(20) The degree to which the Red Sox exceed a standard of legitimacy is greater
      than the degree to which the Orioles exceed a standard of fraudulence.

In contrast, standard comparatives and equatives compare the absolute projec-
tions of two objects on a scale. The most natural paraphrase of the equative con-
struction in (21), for example, is (22).

(21) It was a squarish hole, as deep as a ten-story building is tall, cut down into
      the hard and uncooperative earth.
      (Reynolds, W.J., 'The Lost Boys', in Hillerman, T.: 1994, *The Mysterious
      West*, Harper Collins, New York, p. 223)

(22) The depth of the hole is at least as great as the height of a ten-story building.

Second, unlike typical comparatives, COD constructions entail that the properties
predicated of the compared objects are true in the absolute sense. (23a), for ex-
ample, is contradictory, but (23b) is not.

(23) a.   The Red Sox are more legitimate than the Orioles are fraudulent, but
            they're not legitimate.

      b.   The hole is deeper than a two-year old is tall, but it's not deep.

This property is clearly related to the interpretation of COD, and follows straight-
forwardly in a scalar analysis (though as we will see below, it is problematic for
the partial function analysis). Since the truth of an expression of the form '*x is* φ'
in such an analysis is determined by checking whether the degree to which *x* is φ
exceeds an appropriate standard value (see the discussion of this point in section
1), the fact that comparison of deviation constructions compare the degrees to
which two objects exceed their respective standard values derives the observed
entailment patterns.

An important point to make about comparison of deviation is that in com-
paratives of the sort under discussion here–examples constructed out of positive
and negative pairs of adjectives–the COD interpretation is the only interpretation
available. This is most clearly illustrated by equative constructions such as (19b)-
(19c) and (24).

(24) The Cubs are as old as the White Sox are young.

This sentence cannot mean that the (average) age of the players on the Cubs is
the same as the (average) age of the players on the White Sox, which is what a
standard equative interpretation would give us (cf. (21)-(22) above). It can only

mean that the degree to which the average age of the Cubs exceeds a standard of oldness (for baseball teams) is the same as the degree to which the average age of the White Sox exceeds a standard of youngness (for baseball teams).

This fact is extremely important because it highlights the fact that comparatives constructed out of antonymous pairs of adjectives are anomalous on what we can call the 'standard' comparative interpretation–one in which the absolute degrees to which two objects possess some gradable property is being compared. It follows that a minimal requirement of descriptive adequacy for any semantic analysis of gradable adjectives and comparatives is that it must entail that comparatives formed out of antonymous pairs should be acceptable *only* on a COD interpretation. As we will see in the next section, this is exactly where the partial function analysis fails.

3.2 The problem of cross-polar anomaly for a Klein-style analysis

Although Klein (1980) does not explicitly discuss the differences between antonymous pairs of positive and negative adjectives such as *tall~short*, *clever~stupid*, and *safe~dangerous*, a natural approach to adjectival polarity within a partial function analysis is to assume, building on the observations about the logical properties of gradable adjectives discussed in section 2.1, that the domains of antonymous pairs are distinguished by their orderings: one is the inverse of the other.[7]

A positive result of this assumption is that it explains why sentences like (24) are valid.

(24) Jason's Honda is more dangerous than my Volvo if and only if my Volvo is safer than Jason's Honda.

If the domains of *safe* and *dangerous* are identical except for the ordering on the objects they contain, and if the ordering of one is the inverse of the other, then any partitioning of the domain of *dangerous* that satisfies the truth conditions of the first conjunct in (24) — i.e., any partitioning that makes '*Jason's Honda is dangerous*' true and '*my Volvo is dangerous*' false — will have the opposite effect on the domain of *safe*, since the two sets, in effect, stand in the dual relation to each other. For example, a function that partitions the domain of *dangerous* as in (25) must induce a corresponding partitioning on the domain of *safe* as shown in (26), with the result that both conjuncts of (24), shown in (27a)-(27b), are true.

(25) a. $D_{dangerous} = \langle ..., c, b, \text{my Volvo}, a, ..., x, \text{Jason's Honda}, y, z, ...\rangle$
     b. $pos_d(dangerous) = \langle ..., x, y, \text{Jason's Honda}, z, ...\rangle$
     c. $neg_d(dangerous) = \langle a, \text{my Volvo}, b, c, ... \rangle$

(26) a. $D_{safe} = \langle ..., x, y, \text{Jason's Honda}, z, ..., a, \text{my Volvo}, b, c, ... \rangle$
     b. $pos_d(safe) = \langle a, \text{my Volvo}, b, c, ...\rangle$
     c. $neg_d(safe) = \langle ..., x, y, \text{Jason's Honda}, z, ...\rangle$

(27) a. $\exists d[(d(dangerous))(\text{Jason's Honda}) \ \& \ {\sim}(d(safe))(\text{my Volvo})]$
     b. $\exists d[(d(safe))(\text{my Volvo}) \ \& \ {\sim}(d(dangerous))(\text{Jason's Honda})]$

This analysis runs into problems when confronted with examples of CPA, however. Consider (17a), which should have the logical representation in (28).

(28) $\exists d[(d(tall))(Alice)$ & $\sim(d(short))(Carmen)]$

According to (28), (17a) is true just in case there is a function that introduces a partitioning of the domains of *tall* and *short* in such a way that '*Alice is tall*' is true and '*Carmen is short*' is false; for example, if Alice is very tall and Carmen is not very short. Given the assumption that the domains of the antonymous pair *tall* and *short* have opposite ordering relations, in a context in which the domain of *tall* is (29a), the domain of *short* is (29b).

(29) a. $D_{tall} = \langle$ *a, b, Carmen, c, Alice* $\rangle$
     b. $D_{short} = \langle$ *Alice, c, Carmen, b, a* $\rangle$

In such a context, there is a function that satisfies the truth conditions associated with (28), namely, the one that induces the partitioning of the domains of *tall* and *short* shown in (30) and (31).

(30) a. $pos_d(tall) = \langle Carmen, c, Alice \rangle$
     b. $neg_d(tall) = \langle a, b \rangle$

(31) a. $pos_d(short) = \langle b, a \rangle$
     b. $neg_d(short) = \langle Alice, c, Carmen \rangle$

As a result, (17a) should be true. More generally, (17a) should be perfectly well-formed: nothing about the architecture of the analysis predicts that comparatives constructed out of antonymous pairs of adjectives should be anomalous.

The basic problem is that the assumption that the domains of positive and negative adjectives contain the same objects under inverse ordering relations — an assumption that is necessary to account for the validity of sentences like (24) — predicts that it should be possible to interpret sentences like (17a) in the way I have outlined here. One could stipulate that comparison between positive and negative pairs of adjectives is impossible, but there is no aspect of the analysis of comparatives within the partial function approach that derives this constraint. Moreover, such a stipulation would be empirically unmotivated, since comparison of deviation constructions show that comparison between positive and negative adjectives is possible in certain circumstances.

In fact, the interpretations of comparison of deviation constructions provide a second argument against the partial function analysis. On the surface, it appears that a logical representation along the lines of (33b) would actually be an appropriate interpretation for a comparison of deviation construction such as (33a).

(33) a.   The Red Sox are more legitimate than the Orioles are fraudulent.
     b. $\exists d[(d(legitimate))(Red\ Sox)$ & $\sim(d(fraudulent))(Orioles)]$

As noted above, (33b) would be true in a context in which, e.g., The Red Sox are very legitimate and the Orioles are not very fraudulent, which is a possible paraphrase of (33a). The problem is that although such truth conditions are consistent with the meaning of this sentence, they do not account for its entailments: (33b) requires only that there be some partitioning of the domain in which the Red Sox

are very legitimate and the Orioles are not very fraudulent, but this partitioning need not be the one associated with the context of utterance. However, as observed in section 3.1, a characteristic of COD constructions is that they entail that the properties predicated of the compared objects hold in the context of utterance. If (33b) were the interpretation of (33a), then, this inference would remain unexplained.

3.3 Cross-polar anomaly and the ontology of degrees

A solution to the problem of cross-polar anomaly and comparison of deviation is presented in Kennedy 1997, and worked out in more detail in Kennedy 1999b. (I limit myself here to an outline of the proposal, referring the reader to the above references for more extensive discussion and argumentation.) The solution relies crucially on a characterization of adjectival polarity that is available only in a model in which gradable adjectives map their arguments onto abstract representations of measurement–scales and degrees.

The analysis builds on the intuition that antonymous pairs of adjectives such as *bright~dim* and *tall~short* provide fundamentally the same kind of information about the degree to which an object possesses some gradable property (for, example, both *tall* and *short* provide information about an object's height), but they do so from complementary perspectives. The positive adjective *tall* is used either neutrally or to highlight the height an object has, while the negative adjective *short* is used to highlight the height an object does not have. This difference in perspective can be exploited in a theory of adjectival polarity in which positive and negative degrees are treated as distinct sorts of objects, an approach that was first suggested by Seuren 1978, and has since been further developed in von Stechow 1984a, Löbner 1990, and Kennedy 1997, 1999a,b (cf. Bierwisch 1989).

The basics of the approach are as follows. A scale S can be defined as a linearly ordered, infinite set of points, associated with a dimension that indicates the type of measurement that the scale represents (e.g., *height*, *length*, *weight*, *brightness* and so forth). A degree d can then be defined as a convex, nonempty subset of a scale, i.e., a subset of the scale with the following property: $\forall p_1, p_2 \in d$ $\forall p_3 \in S [p_1 > p_3 > p_2 \rightarrow p_3 \in d]$ (cf. Landman (1991:110); this is simply the definition of an interval for a linearly ordered set of points).

Assuming that gradable adjectives denote functions from objects to degrees on a scale (Bartsch & Vennemann 1973, Kennedy 1999a), adjectival polarity can be characterized in terms of the sort of degree onto which a particular gradable adjective maps its argument: positive adjectives denote functions from objects to *positive degrees*; negative adjectives denote functions from objects to *negative degrees*. Roughly speaking, positive degrees are intervals that range from the lower end of a scale to some point, and negative degrees are intervals that range from some point to the upper end of a scale. The set of positive and negative degrees for any scale (S ($POS(S)$ and $NEG(S)$, respectively), can be precisely defined as in (34).

(34) a. $POS(S) = \{d \subseteq S \mid \exists p_1 \in d \, \forall p_2 \in S [p_2 \leq p_1 \rightarrow p_2 \in d]\}$

b. $NEG(S) = \{ d \subseteq S \mid \exists p_i \in d \; \forall p_2 \in S \; [p_i \leq p_2 \rightarrow p_2 \in d \;] \}$

Finally, we can assume that for any object x, the positive and negative projection of x on a scale S ($pos(x)$ and $neg(x)$, respectively) are related as in (35), where MAX and MIN return the maximal and minimal elements of an ordered set.

(35) MAX($pos(x)$) = MIN($neg(x)$)

The result of these assumptions is that the positive and negative projections of an objects x on a scale S are (join) complementary intervals on the scale, as illustrated by the diagram in (36).

(36) S: 0 ——————— $pos(x)$——————— •——————— $neg(x)$——————→ ∞

Antonymy, in this view, holds when two adjectives share their domains but map identical arguments onto (join) complementary regions of the same scale.

The intuition that the structural distinction between positive and negative degrees is designed to capture is exactly the one I mentioned above: that antonymous pairs of adjectives provide complementary perspectives on the projection of an object onto a scale. This structural distinction is at the core of the account of adjectival polarity outlined here, but more importantly, it also provides the basis for an explanation of cross-polar anomaly in terms of very general principles of ordering relations. A fundamental property of an ordering relation is that its arguments must be elements of the same ordered set; if this requirement is not met, the relation is undefined for the two arguments, and a truth value cannot be computed. A consequence of the analysis of adjectival polarity presented above is that positive and negative adjectives denote functions with different, in fact *disjoint*, ranges: the structural distinction between positive and negative degrees has the consequence that for any scale S, $POS(S)$ and $NEG(S)$ are disjoint. It follows that ordering relations between positive and negative degrees are undefined.

This is the essence of cross-polar anomaly. Assuming that the truth conditions for comparatives are formulated in terms of ordering relations between degrees (the standard assumption in degree-based analyses), any comparative constructed out of adjectives of opposite polarity should fail to have a truth value.

For illustration of the analysis, consider the following examples. The logical representation of (37a) in which the adjective in the main clause is negative and the adjective in the comparative clause is positive, is (37b).

(37) a.   Alice is shorter than Carmen is tall.
     b. $short(a) > tall(c)$

The problem is that $short(a)$ and $tall(c)$ denote degrees in different ordered sets: $NEG(height)$ and $POS(height)$, respectively. As a result, the ordering relation introduced by the comparative morpheme is undefined for its two arguments, and the sentence is correctly predicted to be anomalous. (Examples in which the adjectives are reversed are explained in exactly the same way.)

The semantic properties of comparison of deviation constructions can also be explained in this type of model. Since degrees are defined set-theoretically,

they are subject to operations on sets. In particular, it is possible to define a difference operation between degrees that returns the amount to which one degree exceeds another one, and the semantics of COD constructions can be defined in terms of orderings between such 'differential degrees'. Specifically, COD involves a comparison between the degrees to which the compared objects exceed their respective contextually-determined standard values. The logical representation of (38a), for example, is (38b).

(38) a. The Red Sox are more legitimate than the Orioles are fraudulent.
b. $(legitimate(Red Sox) - d_{s(legitimate)}) > (fraudulent(Orioles) - d_{s(fraudulent)})$

According to (38b), (38a) is true just in case the degree to which the Red Sox exceed a standard of legitimacy is greater than the degree to which the Orioles exceed a standard of fraudulence. As shown in Kennedy 1999b (see also Hellan 1981 and von Stechow 1984a,b), ordering relations between such differential degrees is well-defined regardless of whether they are derived from differences between two positive degrees or from differences between two negative degrees. It follows that COD constructions, unlike examples of cross-polar anomaly, should be perfectly interpretable.

Moreover, the logical representation in (38b) crucially accounts for the entailment patterns observed in COD. The semantics of the difference operation is such that the degree to which the Red Sox are legitimate must exceed the standard value for *legitimate* in the context of utterance (likewise for the Orioles and the standard value for *fraudulent*). Since the truth conditions for the noncomparative state that a sentence of the form *x is φ* is true just in case $\varphi(x)$ is at least as great as the standard for φ (see the discussion in section 1), the truth conditions for the noncomparative are satisfied whenever the truth conditions for the comparison of deviation interpretation are satisfied.

Although the preceding discussion is necessarily superficial, it nevertheless makes an important point. In order to construct an analysis of the sort outlined here in the first place, it is necessary to make a structural distinction between positive and negative degrees. In order to make this distinction, however, and to use it in turn as the basis for an analysis of adjectival polarity, it must be the case that scales and degrees are part of the ontology, and that the interpretation of gradable adjectives is stated in terms of such objects. Since alternative analyses that do not make reference to scales and degrees do not provide an explanation for cross-polar anomaly, the success of the proposal I have sketched here in this regard can be taken as support for the general hypothesis that the interpretation of gradable adjectives should be characterized in terms of such abstract representations of measurement.

4. Conclusion

Although an analysis of gradable adjectives in terms of families of (possibly partial) functions from individuals to truth values does a good job of explaining most of their semantic properties, and moreover has the advantage of maintaining a simple ontology, it fails to provide an adequate explanation of the distribution

and interpretation of antonymous adjectives in comparatives. Since a principled explanation of these facts can be constructed within a model that characterizes adjectival polarity in terms of a structural distinction between positive and negative degrees (formalized as complementary intervals on a scale), the conclusion to be drawn is that an empirically and explanatorily adequate semantics of gradable adjectives must introduce abstract representations of measurement — degrees qua intervals — into the ontology.

NOTES

˙ I am very grateful to Chris Barker, Donka Farkas, Bill Ladusaw and Beth Levin for extremely helpful discussion of the material presented here. Errors or inconsistencies in the text are my responsibility.

[1] The standard assumption is that the standard value is set indexically, with respect to some contextually relevant set of objects (a comparison class in Klein's 1980 terms) that provides the basis for identification of a "norm", although there are a number of problems with this view (see Klein 1980, Ludlow 1989, and Kennedy 1999a).

[2] In a scalar approach, the comparison class is used to determine the value of the standard-denoting degree (Bierwisch 1989, Ludlow 1989, Kennedy 1999a).

[3] For two objects x,y in the domain of a gradable adjective φ, $x \geq_\varphi y$ iff x is at least as great as y with respect to the implicit ordering on the domain.

[4] I focus here on comparatives with *more* for perspicuity; see Klein 1980 and Larson 1988 for discussion of equatives and comparatives with *less*. In addition, see Larson 1988 for some refinements of the basic analysis developed to handle the interpretation of quantificational expressions in the comparative clause (the complement of *than* or *as*).

[5] The classification of gradable adjectives as positive or negative can be made based on a number of empirical characteristics (see Seuren 1978 for general discussion of this issue). For example, negative adjectives license downward entailments and negative polarity items in clausal complements, but positive adjectives do not (see Seuren 1978, Ladusaw 1979, Linebarger 1980, Sànchez-Valencia 1994, Kennedy [Forthcoming]); and positive but not negative adjectives can appear with measure phrases (compare '2 *meters long*' with '?2 *meters short*').

[6] A third set of facts that bear on the analysis of CPA in particular and antonymy more generally, but which I will not consider in this paper, is illustrated by the sentences in (i). (I am grateful to Chris Barker (personal communication) for first bringing these facts to my attention.)

(i) a. The C is sharper than the D is flat.
     b. My watch is faster than your watch is slow.
     c. She was earlier than I was late.

While these sentences appear to counterexemplify the generalization adduced from CPA — that antonymous adjectives are anomalous in comparatives — the situation is in fact more complicated. As shown in Kennedy 1997, 1999a,b, both members of the 'antonymous' pairs in these constructions have the properties of *positive* adjectives.

⁷ This idea is implicit in Klein's (1980:35) discussion of examples like *Mona is more happy than Jude is sad* (see the discussion of comparison of deviation below). Sànchez-Valencia 1994 shows how this assumption can be used to build an explanation of the monotonicity properties of polar adjectives.

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PARTS, WHOLES, AND *STILL*

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We re-evaluate a medieval sophism concerning parts, wholes and identity. A reasonable analysis of this sophism is possible if we recognize that the adverb *still* has a non-temporal use.

In his 13th century treatise on syncategorematic words, William of Sherwood considered the following problem with parts and wholes[1]:

Suppose Socrates is an animal. (*Animal* should be construed broadly enough here to include people.) Now, cut off his foot. What is left is still an animal. Thus, all of Socrates is an animal, and all of him but his foot is also an animal. But then it seems that one animal contains another as a proper part.

By this logic, we all have numerous animals inside of us. No doubt this seems a reasonable conclusion to some people, who feel them stirring even as we speak. But most people, I suspect, will agree with William of Sherwood that there is something wrong with this argument. We should try to determine exactly where it goes wrong.

William considers three possible analyses. The first analysis appeals to the collective/distributive ambiguity exhibited by phrases like *all of Socrates*.[2] Translating roughly into modern terms, this phrase can either denote Socrates in his entirety (the collective reading), or it can express universal quantification over his parts (the distributive reading). Once we add the exception phrase *but his foot*, however, the distributive reading is forced — or so the analysis claims. Unless we have several objects to quantify over, we cannot make an exception. Therefore, it is simply false that all of Socrates but his foot is an animal, since this must mean that every part of Socrates but his foot is an animal, and we would never say of Socrates' nose, for example, that it was an animal. In this way we eliminate the second animal that Socrates seemed to have inside himself, and our problem is solved.

William is rightly dissatisfied with this solution, on the grounds that *but* (*praeter*) does not really force a distributive reading. Instead, it can serve simply to indicate 'diminution of a whole', so that the phrase *all of Socrates but his foot* refers collectively to that portion of Socrates which excludes his foot but contains the rest of him. This seems correct; certainly in other examples showing a collective/distributive ambiguity, the presence of a *but*-phrase does not force a distributive reading. *All of the children but John built a table*, for example, allows a reading where the children other than John built a table collectively, and is not limited to the reading where each child other than John builds a table.

The second analysis William considers is the one which I want to argue for, though it is not quite as straightforward as it looks at first: In this analysis, we claim that all of Socrates but his foot is not an animal as long as the foot is attached, but becomes an animal once the foot is cut off. Thus, as long as all of Socrates but his foot is a proper part of Socrates, it is not an animal, and we can avoid the claim that one animal contains another as a proper part.

William makes an interesting objection to this analysis: We say that after the foot is cut off, what is left is still an animal. But 'nothing is still an animal that was not earlier an animal', and so this analysis seems incompatible with our use of the word *still*.

This objection, I think, can be met; but let us delay that for a short while. The third analysis William considers, and the one which he himself favors, is one which appeals to the distinction between body and soul. Call Socrates as a whole 'A', and all of Socrates but his foot 'B'. Now we claim that B is an animal with respect to the soul, but just part of an animal with respect to the body. One and the same soul 'completes' both A and B; with respect to the soul, B is not a proper part of A at all. But it is only with respect to the soul that B is an animal, and not with respect to the body. Thus, if we hold constant the respect in which an object is judged to be an animal, we avoid having to claim that a single object is both an animal and a proper part of an animal.

There is an easy objection to this kind of analysis: The same general problem with parts and wholes obtains with inanimate, presumably soulless, objects. For example, if I remove the rear bumper from my car, what is left is still a car. But we would not want to claim that the car has a soul.

None of the analyses that William of Sherwood considers, then, seems fully satisfactory. But what can we offer in their place? I can see two main lines of analysis we might pursue.

One way of attacking our problem views it as a matter of individual identity. Somehow or another, we continue to regard Socrates as Socrates even after his foot is cut off. It seems clear that Socrates was an animal before we cut off his foot, and doesn't stop being an animal afterwards; so it makes sense to say that he is still an animal. If we can just explain how it is that what is left after we cut off Socrates' foot is *Socrates*, it seems that we will get the fact that what is left is still an animal for free.

Unfortunately, some objects seem intuitively to lose their identities, yet we can describe what is left afterwards as 'still' having certain properties the original object. For example, suppose I destroy a hammer, by removing and discarding the handle, heating the head until it is malleable, and then beating it into the shape of a chisel. What is left after this process is still a tool, even though the hammer has been destroyed.

Of course the metal of which the head of the hammer was composed has not been destroyed. But this is just a proper subpart of the material which comprised the hammer. If we say that this smaller portion of material is still a tool,

does that imply it used to be a tool — that the hammer contained another tool as a part?

I think the answer here is obviously no. The smaller piece becomes a tool by virtue of my shaping it into a chisel. But this leaves us with a puzzle: Why can we say that something is 'still' a tool, even though it was never a tool in the past?

In fact, if we take a closer look at the way the word *still* is used, I think we can find an answer.[3]

Suppose we are driving up a mountainside. As we get higher and higher in altitude, we reach a point where you think we must be above the tree line. But then you look out the window, and see trees all around us. In this situation, it seems natural to say 'There are still trees here!' Of course there had been trees at that location all along, but that is not what the utterance means. It means we are still at a point on our ascent at which trees can be found.

Or, suppose I show you a series of boxes. I tell you beforehand that the first few boxes in the series will contain gold rings, while the remainder will contain silver rings. Sure enough, you open the first box and see that it contains gold rings; likewise the second, and the third, and so on, until you reach a point where it seems reasonable to expect that the rings in the next box will be silver. You open it up, and see that in fact the rings inside are gold. In this situation it seems natural to say 'Oh, these are still gold!' Of course the rings in this box had always been gold, but this is not what the utterance means. What it means is that we are still at a point in the series where the rings we find are gold.

More generally, sentences of the form 'X is still Y' need not mean that X was Y in the past and continues to be Y. William of Sherwood was wrong to claim that nothing is still an animal that was not an animal in the past.

What do sentences of the form 'X is still Y' mean? As a first stab, we might say that such sentences presuppose that X is a noninitial element in some pragmatically salient series $\langle ...X... \rangle$, that all elements prior to X in the series are Y, and that some element at least as late in the series as X may not be Y. Given that these presuppositions are satisfied, 'X is still Y' simply asserts that X is Y.

This semantics works well enough for atemporal examples like that of the rings in the boxes. It would be nice, however, to give a uniform analysis that can treat both temporal and atemporal examples. In order to do this, we will have to relate the elements of a series to times.

We may regard a series s as a function from some set of numbers A_s into a set of individuals U. (Depending on the series, we might let A_s consist of the first n natural numbers, for some n; or the full set of natural numbers; or the integers; or the reals.) A temporal indexation of a series s is a function i from A_s into some set of times T. A temporally indexed series is a pairing of a series s with a temporal indexation of s. Intuitively, a temporally indexed series is just a series in which every position is associated with a time.

Now we revise the semantics for *still*.

At a given time t, 'X is still Y' presupposes:

(i)   There is some pragmatically salient temporally indexed series $\langle s, i \rangle$;

(ii)   X is a non-initial element of s; that is, for some $n \in A_s$, n is not the least element of A_s, and $X = s(n)$;

(iii) t is the time associated with X's position in the series; that is, $i(n) = t$;

(iv)   Every element prior to X in the series is Y at its associated time; that is, if $m < n$, then $s(m)$ is Y at $i(m)$;

and   (v)   Some element at least as late as X in the series may not be Y at its associated time; that is, it may be the case that for some $m \geq n$, $s(m)$ is not Y at $i(m)$.

Given that these presuppositions are satisfied, 'X is still Y' asserts at t that X is Y at t.

Frequently, *still* is used to indicate that an object which had some property in the past continues to have it. For example, we can say John is still asleep, presupposing that he was asleep at all times in some set of relevant times in the past, and asserting that he is asleep in the present. In this case the relevant series has John in every position: $\langle John,....,John \rangle$; the relevant temporal indexation associates each position in this series with a different time, from earliest to latest. This is the reading which William of Sherwood seemed to take as the only reading.

In other examples, e.g., that of the gold and silver rings, we may keep the time constant but allow a variety of objects to fall into the series. In some cases, we may have both a variety of objects in the series and a variety of times in the indexation; if we regard Socrates without his foot as nonidentical to Socrates with his foot, William of Sherwood's original example is of this type. Alternatively, if we regard Socrates without his foot as identical to Socrates with his foot, this example can be treated in much the same way as *John is still asleep*.

Some people, perhaps, will find it disappointing that the analysis is compatible with either view regarding the maintenance of Socrates' identity, since this means that we cannot use the semantics of *still* to decide the issue. But this would have been quite a lot to expect of a semantics for the word *still*.

To conclude: We can maintain that when an object of a given category C loses a part, what remains is 'still' of category C, even though it was not of category C prior to the separation; sentences of the form 'X is still Y' do not entail that X was previously Y.

NOTES

[1] The discussion can be found on pp. 60-1 of Kretzmann's 1968 English translation. The problem is reminiscent of an older puzzle posed by the stoic philosopher Chrysippus (the puzzle of 'Deon and Theon'). For modern philosophical

discussion of related issues, see, e.g., Geach 1980, Lowe 1982, Lewis 1993, Burke 1994, Denkel 1995.

[2] I have rephrased the example here slightly, in order to make it sound more natural in English; William's actual discussion used *totum* 'whole' rather than *all*. It is certainly questionable whether an authentic collective/distributive ambiguity exists for *whole*; but since William's counterarguments to this analysis do not depend on denying the collective/distributive ambiguity, the substitution seems harmless.

[3] I set aside the issue of whether the English word *still* is completely synonymous with the Latin word *etiam* in William's actual example.

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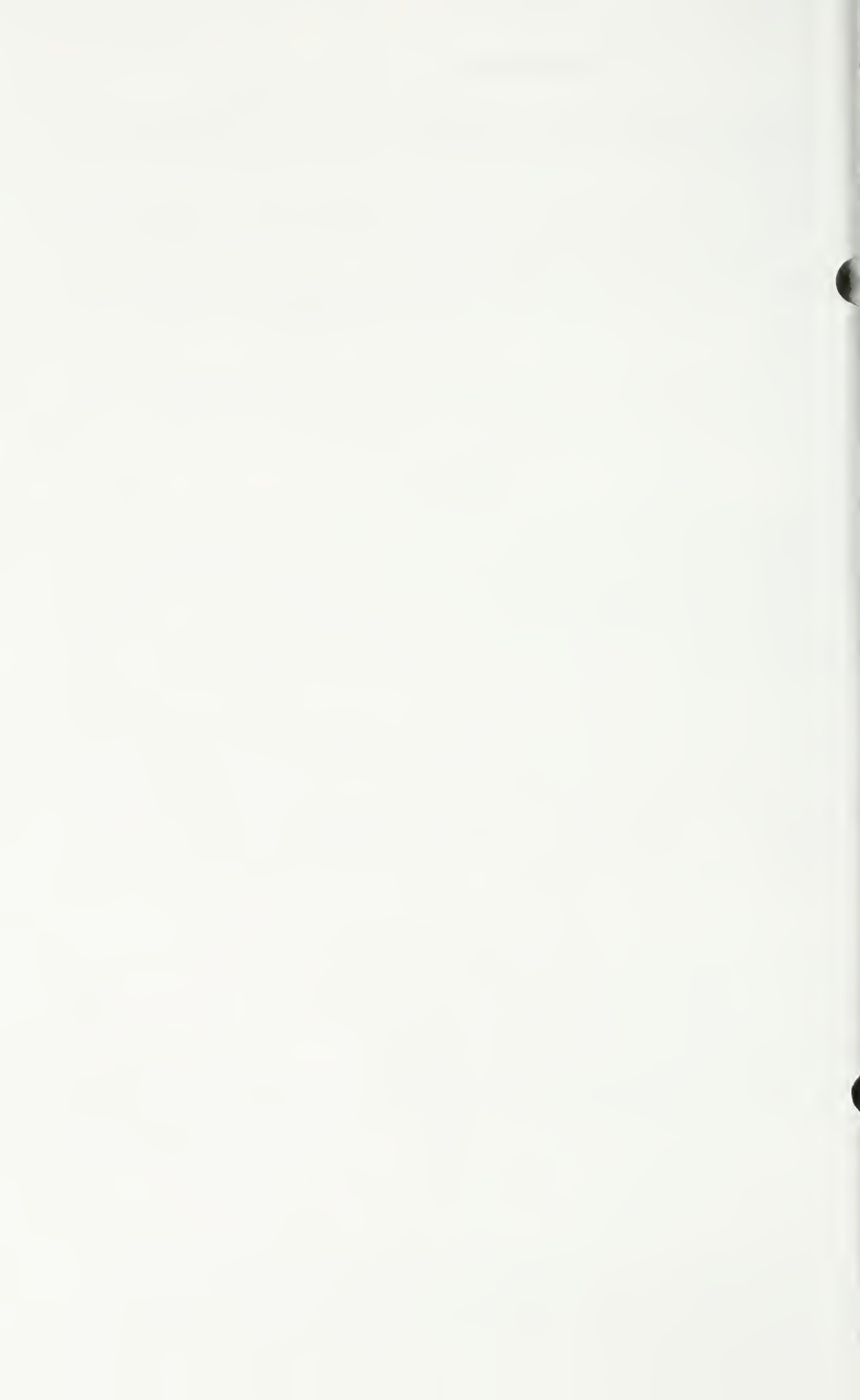
A COMPOSITIONAL SEMANTICS FOR COMPLEX DEMONSTRATIVE NOUN PHRASES IN MANDARIN CHINESE*

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This paper concerns the computation of the meaning of complex demonstrative NPs in Mandarin Chinese. I treat the extensional content of such NPs as the 'purely truth-conditional' aspect of meaning interpretation which may be computed compositionally in regular model-theoretic terms and stays the same for demonstrative NPs with regular or more stringent requirements on the set in which uniqueness must hold. Interpretive differences observed of such NPs follow from presuppositions coupled with focus-induced alternatives associated to the NPs, which jointly and systematically restrict the contexts (i.e., Models) in which the NP may be used felicitously.

1. Introduction

This paper concerns the computation of the meaning of complex demonstrative NPs in Mandarin Chinese (MC), i.e., NPs with demonstratives, numerals and classifiers, and modifier phrases marked by the particle *de* (MOD-*de*).

I assume that non-pronominal definite NPs are used to refer to individuals (or groups of individuals) who uniquely satisfy the descriptive content of the NP in contextually selected domains. For instance, *that student* is a definite NP which is used to refer to the only student occupying a spatio-temporal location indicated by pointing or other means.

It is observed that in MC, demonstrative NPs, which are definite, require referents that uniquely satisfy the descriptive content of the NP in the relevant context (more accurately, in the general direction of the pointing, which contains more than just the intended referent itself) when a modifier phrase marked by the particle *de* (MOD-*de*) precedes the demonstrative and classifier in the NP, though not necessarily so otherwise (Annear 1965, Chao 1968, J. Huang 1982, 1983). Consider the contrast in (1), for example.[1]

(1) a. [$_{NP}$ Nei wei dai   yanjing de xiansheng] shi shei?
           that cl   wear glasses de gentleman   be who
      'Who is that gentleman wearing glasses?' (Chao 1968:286)

   b. [$_{NP}$ Dai   yanjing de nei wei xiansheng] shi   shei?
         wear glasses de that cl   gentleman   be   who
      'Who is the gentleman wearing glasses?'(Chao 1968:286)

The NP in (1a) is interpreted as '*that* gentleman wearing glasses', and the expression is acceptable when at least one gentlemen wearing glasses is present

who can be the subject of ostension. It is only required that there be a unique gentleman wearing glasses at the specific location pointed at, not that there be only one gentleman wearing glasses in the general direction of the pointing. In comparison, with MOD-*de* preceding the demonstrative in the NP, (1b) may be used only if the NP referent is the only (salient) gentleman wearing glasses in the general direction of the pointing. In other words, while the demonstrative NPs in (1a) and (1b) both refer to a unique gentleman at the location pointed at, it is further required with (1b) that the gentleman be unique in the general direction of the pointing as well, which is not necessarily the case with (1a). The English translation for (1b) with the definite article *the* is meant to reflect this more stringent requirement on the domain in which uniqueness must hold. Strictly speaking, *nei* in (1b) is still the demonstrative 'that' as glossed, and an English translation for (1b) spelled out in full would be something like 'who is that gentleman wearing glasses (there is only one salient gentleman wearing glasses in the general direction of the pointing)?' To indicate that the demonstrative NPs in (1a) and (1b) have different 'pointing'-related domain requirements, I will use an indexed *that_g* instead of 'that' or 'the' in the English translation for demonstrative NPs like (2):

(2) dai   yanjing de   nei   wei   xiansheng
    wear   glasses de   that cl   gentleman
  'that_g gentleman wearing glasses'
    i.e., 'that gentleman wearing glasses (only one salient gentleman
          wears glasses in the general direction of the pointing)'

The contrast in (1) shows a correlation between uniqueness requirements and the relative order of MOD-*de* and the demonstrative in the NP. It can also be shown, however, that the correlation between word-order and NP interpretations observed in (1) is not preserved with intonational prominence in the NP. In (3a) for instance, no MOD-*de* precedes the demonstrative in the NP, yet with intonational prominence (indicated by capital letters) on MOD-*de*, the NP has only a that_g-reading and may be used felicitously only if a single salient gentleman wears glasses in the general direction of the pointing (Chao 1968:286).

(3) a. Lisi wenle [$_{NP}$ nei wei DAI YANJING de xiansheng]
       Lisi asked   that cl wear glasses de gentleman
     'Lisi asked that_g gentleman WEARING GLASSES.'

    b. Lisi wenle [$_{NP}$ dai   yanjing de NEI   wei   xiansheng].
       Lisi asked   wear glasses de that cl   gentleman
     'Lisi asked THAT gentleman wearing glasses.'

In (3b), on the other hand, MOD-*de* precedes the demonstrative. Yet with intonational prominence on the demonstrative, (3b) is compatible with there being more than one salient gentleman wearing glasses in the general direction of the pointing.

The examples in (1) and (3) represent recurring patterns where word order, focus, and uniqueness requirements of MC complex demonstrative NPs are concerned and suggest that lexical and constructional meaning, focus, and contex-

tual information as well, contribute to interpretive differences of such NPs in systematic ways. In the following, after an informal account of my analysis, I will present an extensional semantics for MC complex demonstrative NPs based on principles of focus and meaning interpretation that are not unique to MC.

2.   An informal account of the analysis

I assume the standard view that definite NPs require uniqueness in contextually selected sets and that focus associates an expression with a set of alternatives which are derived according to focus interpretation rules and are subject to contextual constraints.

In a context with three individuals Bill, Amy, and Sue, for instance, focus on *Bill* may introduce a set of contextually selected individuals as in (4), where **bill**, **amy**, and **sue** are assertable alternatives in the given context.

(4) BILL
     Alternatives = {**bill**, **amy**, **sue**}

Depending on the context, different individuals may be selected to construct the alternative set. The alternatives are of the same type, and the asserted alternative **bill** contrasts with the non-asserted alternatives **amy** and **sue**.

With focus on Bill and focus-induced alternatives {**bill**, **amy**, **sue**}, the expression in (5a) may be associated to the alternatives in (5b), where the alternative that obtains is the proposition in which Amy likes Bill.

(5) a. Amy likes BILL.
     b. Alternatives = { **amy likes bill**, **amy likes amy**, **amy likes sue** }

In MC, MOD-*de* is structurally focused when preceding the demonstrative in the NP (Wu 1994). I take it that whether focus is on the demonstrative or on part or all of the descriptive content of the NP, the referent of the demonstrative NP is the unique (salient) individual who satisfies the descriptive content of the NP at the specific location indicated in the context of utterance. For example, the NPs in (1) and (3), presented as (6) through (9) below, have the same denotation, namely, the gentleman with glasses at the location pointed at. Underlining in the English translation indicates structurally focused material in MC.

(6) nci wei   dai   yanjing de   xiansheng (pointing at location x)
    that cl   wear glasses de   gentleman
    'that gentleman wearling glasses'
    Referent: the gentleman with glasses at location x

(7) dai   yanjing de nei wei xiansheng   (pointing at location x)
    wear glasses de that cl   gentleman
    'that$_g$ gentleman wearing glasses'
    Referent: the gentleman with glasses at location x

(8) nei wei DAI YANJING de   xiansheng (pointing at location x)
    that cl   wear glasses   de gentleman
    'that$_g$gentleman WEARING GLASSES'
    Referent: the gentleman with glasses at location x

(9) dai   yanjing de   NEI wei   xiansheng   (pointing at location x)
    wear glasses de   that cl   gentleman
    'THAT gentleman <u>wearing glasses</u>'
    Referent: the gentleman with glasses at location x

The alternative sets associated with the NPs are different, however, and each gives rise to implications that affect uniqueness$_g$ readings of the NPs. In the following I will show that the NP readings may be computed compositionally based on principles of focus and meaning interpretation that are not unique to MC.

3.   A formal analysis of the NP meanings: some background

The following is some background regarding the basic assumptions and previous proposals which I adopt.

3.1   Types

I will assume the standard recursive definition of the set of types and the set of possible denotations D_x for expressions of type x given in (10) and (11) respectively.

(10)   1. e is a type.
        2. t is a type.
        3. If a and b are any types, then $<a,b>$ is a type.
        4. Nothing else is a type.

(11)   1. $D_e = E$ (i.e., entities in E, the universe of discourse).
        2. $D_t = \{1,0\}$ (i.e., truth values).
        3. For any expressions of types a and b, $D_{<a,b>} = D_b^{D_a}$
            (i.e., the set of all functions from D_a to D_b).

Terms, i.e., names and individual variables, are type e categories. Formulas, i.e., open propositions and sentences, are type t. One-place predicates such as common nouns are of type $<e,t>$, and two-place predicates such as transitive verbs are type $<e,<e,t>>$. Generalized quantifiers (GQ) are of the type $<<e,t>,t>$. Interpretation is with respect to a model and variable assignments, and the choice of domain may affect the truth values of sentences.

3.2   The logic of plurals and generalized quantifiers (Link 1983, 1987)

The Logic of Plurals (LP) proposed in Link 1983 and 1987 is a first order logic introducing a SUM operation for its individual terms. For example, a sum term a⊕b denotes a new entity in the domain of individuals which is made up from the two individuals denoted by a and b. That is, a⊕b does not denote the set consisting of || a || and || b ||, but rather another individual, namely, the INDIVIDUAL SUM (i-sum) or plural object of a and b. The i-sum operation V_i denoted by ⊕ is a two-place operation on the domain of individuals E, and the ordered pair $\langle E, V_i \rangle$ forms a semilattice, such that E is closed under arbitrary i-sums (1983, 1987).[2] As shown in (12), a, b, and c on the bottom line are atomic individuals.

(12)
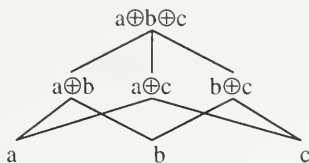
They are atomic INDIVIDUAL PARTS (i-parts) of the i-sums $a{\oplus}b$, $a{\oplus}c$ and $b{\oplus}c$, which are i-parts of $a{\oplus}b{\oplus}c$. The i-part relation is an intrinsic ordering relation '$\leq_i$' on E and is expressed by a two-place predicate Π 'is an i-part of' or its variant $^0\Pi$ 'is an atomic i-part of' as in (13a) and (13b) respectively (Link 1983, 1987).

(13)   a. $a \Pi b \leftrightarrow a{\oplus}b = b$

   b. $a\ ^0\Pi b \leftrightarrow ((a{\oplus}b = b)\ \&\ \text{Atom}(a))$

In (12), $a{\oplus}b{\oplus}c$ is the supremum of the entire lattice, i.e., the unique i-sum of all the individuals in the lattice. For any one-place predicate P, the term σxPx denotes the supremum of all objects that are Ps. Accordingly, σxPx denotes the supremum $a{\oplus}b{\oplus}c$ in (12) when the atoms a, b, and c are all Ps. The cardinality of σxPx is the number of all the atomic individuals which are Ps, which would be 3 in this case. If in (12), P is a proper portion of the lattice as a whole, e.g., if a and b but not c are Ps, then σxPx is not the sum of the entire lattice but only that of those objects which are Ps.

Link also introduces a recursive plural operator '*', which, when prefixed to a one-place predicate P, forms all the possible i-sums from the members of the extension $\|\,P\,\|$ of P. For instance, $\|\text{man}\|$ denotes the set of men, and $\|\text{*man}\|$ denotes all the possible i-sums generated by the set of men.

The following are some examples of how LP, which provides internal structure to the domain of individuals, may be lifted into the generalized quantifier framework. E is the set of all individuals in the semilattice; $\sup_i X$ means the supremum of X, i.e., the denotation for the σ–term σxPx, if $\|\,P\,\| = X$ (Link 1987).

(14)   a. $\|\text{the men}\| = \{X \subseteq E \mid \sup_i \|\text{*man}\| \in X\}$

   b. $\|\text{some men}\| = \{X \subseteq E \mid X \cap \|\text{*man}\| \neq \varnothing\}$

   c. $\|\varnothing_3 \text{three men}\| = \{X \subseteq E \mid X \cap \|\text{three men}\| \neq \varnothing\}$

   d. $\|\text{three men}\| = \{x \in E \mid x \in \|\text{*man}\|\ \&\ |x| = 3\}$

In lambda terms, these expressions translate as in (15).

(15)   a. $[\text{the men}] \Rightarrow \lambda P.P(\sigma x.\text{*man}(x))$

   b. $[\text{some men}] \Rightarrow \lambda P\exists x[\text{*man}(x)\ \&\ P(x)]$

   c. $[\varnothing_3 \text{three men}] \Rightarrow \lambda P\exists x[\text{*man}(x)\ \&\ |x| = 3\ \&\ P(x)]$

   d. $[\text{three men}] \Rightarrow \lambda x[\text{*man}(x)\ \&\ |x| = 3]$

Note that the extension of *the men* is the i-sum of all individuals that are men. The cardinality of the i-sum is that of the set of atomic individuals who are men. The extension of *three men*, on the other hand, is the set of all i-sums in $\|\text{*man}\|$ which contain exactly three atoms. The cardinality of the set of atomic individuals contained in this set of i-sums need not be exactly three.

The example in (16) illustrates Link's treatment of partitives in LP+GQ. Both x and y run over i-sums; P runs over sets of i-sums. The slash indicates the numerical presupposition on the σ-operator (Link 1987).

(16) all   of   the three   surviving   men
$\lambda P \forall x \ [[x\ ^0\Pi \quad (\sigma/3\ )y \quad *[\text{surviving' (man')}](y)] \rightarrow P(x)]$

In the analysis I propose for MC complex NPs, I will adopt Link's LP and LP+GQ analysis of plurals (1983, 1987) with minor adjustments. Namely, since MC nouns are neutral with respect to number, it will be assumed that the extension $\| P \|_{M,g}$ of a noun P in MC contains all the possible i-sums generated by the atomic i-sums in $\| P \|_{M,g}$. Also, when no overt determiner is present, I assume the NP is without a determiner. Such an NP denotes a set of entities and does not have existential or universal force. Such set-denoting NPs end up with an existential reading due to existential closure when they combine with VP to form an S or with V to form a VP.

3.3 A two-dimensional semantics for focus interpretation

I will follow Rooth 1985 and von Stechow 1991 in assuming that according to the Focus Rule in (17), a focused expression $[\alpha]_F$ is interpreted with the standard denotation $\| \alpha \|$ together with a set of alternatives $\| \alpha \|_p$ introduced by the expression.

(17) The Focus Rule (von Stechow 1991:815):
       a. $\| [\alpha]_F \| = \| \alpha \|$
       b. $\| [\alpha]_F \|_p =$
              the (contextually restricted) semantic domain
              corresponding to the logical type of the expression α.

A non-focused expression only generates its own content as an alternative, as in (18) (von Stechow 1991:815):

(18) $\| a \|_p = \{\| a \|\}$

For example, an intonationally prominent numeral *TWO* may be interpreted as in (19). The alternative set in (19b) is contextually selected and always includes the asserted alternative. In comparison, a non-focused *two* generates its own content as an alternative, as in (20).

(19)   a. $\| TWO_F \| = \| two \| = 2$
        b. $\| TWO_F \|_p = \{1, 2, 3, 4, \ldots\}$

(20)   a. $\| two \| = 2$
        b. $\| two \|_p = \{2\}$

It has been proposed that focus may be computed recursively (Rooth 1985, Krifka 1991, von Stechow 1991). For instance, the meaning of (21) may be derived recursively as in (22). Lambda notations such as $\lambda y \lambda x.\mathbf{like}(x,y)$ instead of set notations such as $\{<x,y>|<x,y> \in \| [_V \text{likes}] \|_{M,g} \}$ are used in (22) for ease of presentation. I am assuming that focus is on *CHICAGO*, not on *like CHICAGO* here.
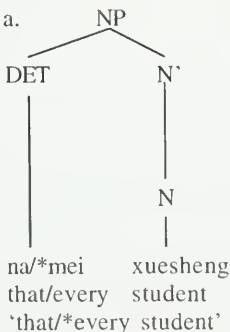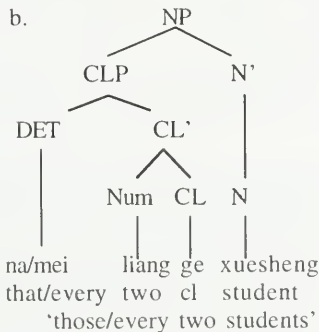
(21) John likes CHICAGO.

(22) $\| [_{NP} \text{CHICAGO}_F] \|_{M,g}$:
  a. $\| \text{CHICAGO}_F \|_{M,g} = \| \text{Chicago} \|_{M,g} = \textbf{chicago}$
  b. $\| \text{CHICAGO}_F \|_{M,g,p} = \{\textbf{chicago, boston}\}$

  $\| [_V \text{likes}] \|_{M,g}$:
  a. $\| \text{likes} \|_{M,g} = \lambda y \lambda x.\textbf{like}(x,y)$
  b. $\| \text{likes} \|_{M,g,p} = \{\lambda y \lambda x.\textbf{like}(x,y)\}$

  $\| [_{VP} \text{likes CHICAGO}_F] \|_{M,g}$:
  a. $\| \text{likes CHICAGO}_F \|_{M,g} = \| \text{likes Chicago} \|_{M,g} = \lambda x.\textbf{like}(x,\textbf{chicago})$
  b. $\| \text{likes CHICAGO}_F \|_{M,g,p} = \{\lambda x.\textbf{like}(x,\textbf{chicago}), \lambda x.\textbf{like}(x,\textbf{boston})\}$

  $\| [_{NP} \text{John}] \|_{M,g}$:
  a. $\| \text{John} \|_{M,g} = \textbf{j}$
  b. $\| \text{John} \|_{M,g,p} = \{\textbf{j}\}$

  $\| [_S \text{John likes CHICAGO}_F] \|_{M,g}$:
  a. $\| \text{John likes CHICAGO}_F \|_{M,g} = \| \text{John likes Chicago} \|_{M,g}$
  $= \textbf{like}(\textbf{j},\textbf{chicago})$
  b. $\| \text{John likes CHICAGO}_F \|_{M,g,p} = \{\textbf{like}(\textbf{j},\textbf{chicago}),\textbf{like}(\textbf{j},\textbf{boston})\}$

As suggested in Rooth 1992, it is perhaps simplest to think of the alternatives as a set of substitution instances. Intuitively, the alternatives potentially contrast with the ordinary semantic value or constitute a set from which the ordinary semantic value is drawn. Also, the alternative set consists of just those alternatives that are contextually relevant, i.e., its value is restricted by focus and pragmatics combined (1992:76-9). The alternatives in the set are assumed to be comparable (but not identical) and assertable in the relevant context, and the set itself counts as a quantificational domain (Krifka 1991, Rooth 1985, 1992).

4. Computing the meaning of complex demonstrative NPs compositionally

It will be assumed that syntactically, MC NPs have the structures in (23), and that both MOD-*de* and possessive NP-*de* may be adjoined recursively to N' or NP.

(23)

a.
```
         NP
        /  \
      DET   N'
       |    |
       |    N
       |    |
    na/*mei  xuesheng
    that/every student
    'that/*every student'
```

b.
```
              NP
            /    \
          CLP     N'
         /   \     |
       DET   CL'   |
        |   /   \  |
        | Num CL  N
        |  |   |  |
      na/mei liang ge xuesheng
    that/every two  cl student
    'those/every two students'
```

In the following, I propose an extensional semantics where the meaning of the NP is computed compositionally based on the meanings of its parts and the way they are combined.

4.1   The interpretation of classifiers and numerals

In line with Krifka 1989 and 1995, I treat the classifier as an operator which takes a numeral and a common noun type category and yields a measure function as defined informally in (24), where OU_{cl} is an 'object unit' operator of the type indicated by the subscript $_{cl}$, and x is a (plural) individual or i-sum (Link 1983, 1987) with the cardinality n such that each atomic i-part of x has the property P.[3] Combining Num with CL gives us the function in (26).

(24) $\| CL \|_{M,g}$ = the function w such that for every $n \in E$ and $P \subseteq E$,
$$w(n)(P) = \{ \ x \mid OU_{cl}(P)(x)=n \ \}$$
i.e., $CL \Rightarrow \lambda n\lambda P\lambda x[OU_{cl}(P)(x)=n]$

(25) $\| Num \|_{M,g}$ = **number**
i.e., Num $\Rightarrow$ **number**

(26) $\| CL' \|_{M,g}$ = the function w such that for every $P \subseteq E$,
$$w(P) = \{ \ x \mid OU_{cl}(P)(x)=\textbf{number} \ \}$$

i.e.,

$[_{CL'} Num\ CL] \Rightarrow \lambda n\lambda P\lambda x[OU_{cl}(P)(x)=n](\textbf{number})$
$\equiv \lambda P\lambda x[OU_{cl}(P)(x)=\textbf{number}]$

As shown in (26), the numeral simply provides the cardinality of the i-sum, i.e., the number of atoms in the i-sum x. Note that this implies that the domain of discourse contains numerals. Common nouns are type $<e,t>$ categories. The category of CL' is of the type $<<e,t>,<e,t>>$.

4.2   The interpretation of N' and NP

N' denotes a set of entities and is of type $<e,t>$, as in (27) (I take the liberty of representing characteristic functions as sets here).

(27) a. $\| N' \|_{M,g} = \{ \ x \mid x \in \| N' \|_{M,g} \ \}$
i.e., N' $\Rightarrow \lambda x.\textbf{N'}(x)$

b. $\| [_{N'} N] \|_{M,g} = \| N \|_{M,g} = \{ \ x \mid x \in \| N \|_{M,g} \ \}$
i.e., N $\Rightarrow \lambda x.\textbf{N}(x)$
$[_{N'} N] \Rightarrow \lambda x.\textbf{N}(x)$

To get the semantics right when MOD-*de* is adjoined to an NP, a free variable R over properties is introduced *à la* Bach & Cooper 1978 when N' combines with something or nothing to return an NP, as in (28). The symbol '⊓' in the semantic translation is used as a 'meet' operator which, in line with the GENERALIZED CONJUNCTION SCHEMA proposed in Partee & Rooth 1983, operates on type t categories or on conjoinable elements of the same functional type (1983:363-5).[4]

(28) a. $\| [_{NP} CLP\ N'] \|_{M,g} = \| CLP \|_{M,g} (\| N' \|_{M,g} \cap R)$

$$= \{ \; x \mid OU_{cl}(\| \; N' \; \|_{M,g} \cap R)(x) = \textbf{number} \; \}$$

i.e., $[_{NP} \; CLP \; N'] \Rightarrow \lambda P \lambda x[OU_{cl}(P)(x) = \textbf{number}](\lambda y[N'(y) \sqcap R(y)])$

$$\equiv \lambda x[OU_{cl}(N' \sqcap R)(x) = \textbf{number}]$$

b. $\| \; [_{NP} \; N'] \; \|_{M,g} = \| \; N' \; \|_{M,g} \cap R = \{ \; x \mid x \in (\| \; N \; \|_{M,g} \cap R) \; \}$

i.e., $[_{NP} \; N'] \Rightarrow \lambda x[N'(x) \sqcap R(x)]$

4.3 The interpretation of *nei* 'that'

The demonstrative *nei* 'that' may combine with N' to form an NP or with CL' to form a CLP, as in (29) and (30) respectively.

(29) $[_{NP}$ nei   xuesheng]
           that   student
        'that student'

(30) $[_{CLP}$ nei   liang-ge]   xuesheng
             that   two-cl   student
        'those two students'

Also, the demonstrative is an indexical that indicates a unique i-sum being pointed at in a given context. We could treat the demonstrative as having two different types and translations: one for *nei* 'that' combining with N', one for *nei* 'that' combining with CL'. However, such an approach is rather unappealing. Alternatively, given that demonstratives are indexicals, we could adopt a Heim style analysis (1982) and treat demonstratives as contributing a presupposition instead of additional semantic content in the NP translation. If so, then when the demonstrative is focused, presumably we will have focus-induced alternatives which are comparable to some presupposition. This is not inconceivable. However, if the demonstrative contributes not only a presupposition but also a piece of the semantic translation, then alternatives introduced by focus on the demonstrative may be derived in a more explicit and compositional way. I will adopt an analysis where alternatives introduced by focus on the demonstrative may be derived compositionally using standard focus interpretation rules.

Intuitively, the demonstrative tells us there is an i-sum x_i at location w, the location pointed at, and this x_i uniquely satisfies the descriptive content of the demonstrative NP at w. The location w is contextually selected, and the size of it matters where uniqueness is concerned. I will assume that combining a demonstrative with N' or CL' introduces a two-place predicate 'AT', as in (31) and (32), and that the resulting category is marked with a feature $^{+dem}$ which gets carried to the maximal projection of the demonstrative NP.

(31) $\| \; [_{NP+dem} \; [_{DET} \; nei] \; N'] \; \|_{M,g}$

$= \{ \; x \mid x \in (\| \; N' \; \|_{M,g} \cap R) \text{ and } <x, \| \; [_{DET} \; nei] \; \|_{M,g} > \in AT \; \}$

i.e., $[_{NP+dem} \; [_{DET} \; nei] \; N'] \Rightarrow \lambda x[(N' \sqcap R)(x) \sqcap AT(x,\textbf{DET})]$

(32) $\| \; [_{CLP+dem} \; [_{DET} \; nei] \; CL'] \; \|_{M,g}$

$=$ the function w such that for every $P \subseteq E$,

$w(P) = \{ \; x \mid \| \; CL' \; \|_{M,g}(P)(x) \text{ and } <x, \| \; [_{DET} \; nei] \; \|_{M,g} > \in AT \; \}$

i.e., $[_{CLP+dem} \; [_{DET} \; nei] \; CL'] \Rightarrow \lambda P \lambda x[CL'(P)(x) \sqcap AT(x,\textbf{DET})]$

The demonstrative will be treated as contributing two things to the meaning of the resulting category: (i) a location **w**, which is the location pointed at and the extensional content of the demonstrative meaning, and (ii) a presupposition, call it that-REQ, as defined in (33). The ordered-pair notation <extensional content, pre-suppositional content> is introduced to facilitate record keeping in meaning composition and is for expressions in general, not just the demonstrative alone.

(33) $\| [_{DET} \text{nei}] \|_{M,g} = <\mathbf{w}, \text{that-REQ}>$

    i.e., $[_{DET} \text{nei}] \Rightarrow <\mathbf{w}, \text{that-REQ}>$

        where **w** is the location pointed at, and that-REQ is the presupposition
        $\text{PRESUPP}(nei) =_{def} | \{ x \mid x \in \| NP^{+dem} \|_{M,g} \} | = 1$,
        (or, in λ-notation, $| \lambda x.\mathbf{NP}^{+dem}(x) | = 1$)
        where NP^{+dem} is the maximal NP marked by $^{+dem}$ introduced by *nei*

The location **w** is contextually selected. It is the value of a type *e* category that gets computed as part of the extensional meaning of a demonstrative NP. The presuppositional content, namely that-REQ, says that the set denoted by the demonstrative NP containing *nei* is presupposed to have exactly one member. By (33), the existence of some i-sum x_i which uniquely satisfies the descriptive content of the NP^{+dem} at the location pointed at is expected with demonstrative NPs. Note that the that-REQ makes no claims about i-sums which are not at the location pointed at and satisfy the descriptive content of the demonstrative NP.

Let's go through an example to see how the system works. The meaning of the demonstrative NP in (30) may be derived step by step as in (34).

(34) nei   liang-ge   xuesheng
      that   two-cl   student
      'those two students'
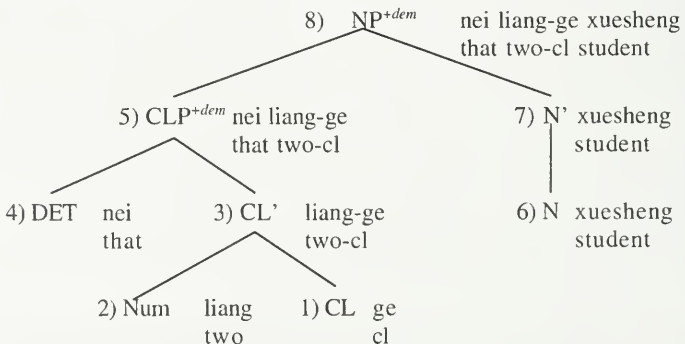
1) $[_{CL} \text{ge}] \Rightarrow \lambda n \lambda P \lambda x [OU_{ge}(P)(x)=n]$
2) $[_{Num} \text{liang}] \Rightarrow 2$
3) $[_{CL'} \text{liang-ge}] \Rightarrow \lambda n \lambda P \lambda x [OU_{ge}(P)(x)=n](2) \equiv \lambda P \lambda x [OU_{ge}(P)(x)=2]$
4) $[_{DET} \text{nei}] \Rightarrow <\mathbf{w}, \text{that-REQ}>$
5) $[_{CLP+dem} [_{DET} \text{nei}] [_{CL'} \text{liang-ge}]] \Rightarrow \lambda P \lambda x [\mathbf{CL'}(P)(x) \sqcap AT(x,\mathbf{DET})]$
    $\equiv <\lambda P \lambda x [\lambda Y \lambda z [OU_{ge}(Y)(z)=2](P)(x) \sqcap AT(x,\mathbf{w})], \text{that-REQ}>$

$\equiv \langle \lambda P \lambda x[OU_{ge}(P)(x)=2 \sqcap AT(x,\mathbf{w})], \text{that-REQ} \rangle$

6) $[_N \text{ xuesheng}] \Rightarrow \lambda x.\textbf{student}(x)$

7) $[_{N'} \text{ xuesheng}] \Rightarrow \lambda x.\textbf{student}(x)$

8) $[_{NP+dem} [_{CLP+dem} \text{ nei liang-ge }] [_{N'} \text{ xuesheng}]]$
   $\Rightarrow \langle \lambda P \lambda x[OU_{ge}(P)(x)=2 \sqcap AT(x,\mathbf{w})](\lambda y[\textbf{student}(y) \sqcap R(y)]), \text{that-REQ} \rangle$
   $\equiv \langle \lambda x[OU_{ge}(\textbf{student} \sqcap R)(x)=2 \sqcap AT(x,\mathbf{w})], \text{that-REQ} \rangle$
   i.e., { x | x is the i-sum consisting of two students in R and at $\mathbf{w}$,
   the location pointed at }

As (34) shows, the resulting NP^{+dem} in Step 8 denotes a type $\langle e,t \rangle$ category coupled with a that-REQ. This NP^{+dem} gets the singleton-set-at-w reading by the that-REQ (defined in (33)), which says that the NP^{+dem} is presupposed to denote a singleton set.

Recall that by our focus rules, non-focused expressions generate their own content as their alternatives. Accordingly, the NP^{+dem} in step 8 above may be associated with the alternative set in (35), which contains just the singleton set at the location pointed at.

(35) $\| [_{NP+dem} \text{ nei liang-ge xuesheng}] \|_{M,g,p}$
   $= \{ \| [_{NP+dem} \text{ nei liang-ge xuesheng}] \|_{M,g} \}$
   $= \{ \{ x | x \text{ is the i-sum of two students in R and at } \mathbf{w}, \text{ the location pointed}$
        $\text{at} \} \}$

We may conclude from the alternative set in (35) that with an NP^{+dem} like that in (30), the minimal size of the location pointed at could be the spatial area containing just the intended i-sum itself. In other words, the NP^{+dem} indicates that the location pointed at could be just the spatial area occupied by the two students intended. It follows that the NP^{+dem} is compatible with there being other students in R in the general direction of the pointing, which covers an area with $\mathbf{w}$ as a subpart, so long as the other students are not at $\mathbf{w}$ itself. As we have observed, 'that'-readings (as opposed to 'that$_g$'-readings as in (40) to be discussed shortly) are indeed possible with such demonstrative NPs.

When the demonstrative combines with an N' to form an NP, as in (36), its contribution to the meaning of the resulting NP^{+dem} stays the same, i.e., it provides the location pointed at and the presupposition that-REQ.

(36) $[_{NP+dem} [_{DET} \text{ nei}] [_{N'} \text{ xuesheng }]]$
   $\Rightarrow \langle \lambda x[(\textbf{student} \sqcap R)(x) \sqcap AT(x,\mathbf{w})], \text{that-REQ} \rangle$
   i.e., { x | x is the i-sum which is in (**student** $\cap$ R) and at $\mathbf{w}$, the location
        pointed at }

The unique i-sum which is in (**student** $\cap$ R) and at $\mathbf{w}$ can only be the supremum of the set of students in R at $\mathbf{w}$.[5] Like the NP^{+dem} in step 8 of (34), the NP^{+dem} in (36) generates its own content as its alternatives and is compatible with there being other students in the general direction of the pointing.

Thus far we have only considered cases without focus in the NP and have overlooked how presuppositions may be treated in alternative sets. Given the demonstrative meaning proposed in (33), where extensional content and presup-

positional content are represented as an ordered pair, alternatives to the demonstrative meaning may be represented as a set of ordered pairs. Focus interpretation rules may apply to the extensional content, i.e., the location **w** in the ordered pair, while leaving the presuppositional content alone. For instance, focusing the demonstrative as in (37) indicates that alternative pointing acts are possible in the relevant context, and that pointing singles out the intended referent from among others who also satisfy the descriptive content of the NP.

(37) NEI   liang-ge xuesheng
     that   two-cl   student
     'THOSE two students'

Accordingly, focus on the demonstrative may introduce a set of alternative locations as in (38), each a location for a different potential act of pointing. The presuppositional content stays the same in the ordered pairs. In the semantic translation, ALT(**B**) is the set of alternatives to **B**, where **B** is the normal denotation of an expression B.

(38) $\| [_{DET} \text{NEI}]_F \|_{M,g,p}$ = {<w, that-REQ>, <y, that-REQ>, <z, that-REQ>, etc.}
     i.e., ALT(**NEI**$_F$) = {<w, that-REQ>, <y, that-REQ>, <z, that-REQ>, etc. }
          where **w**, **y**, **z**, are locations selected by potential pointing acts, and
          that-REQ is as defined in (33)

The meaning of (37) may be represented in a two-dimensional semantics as in (39). As (39) shows, the standard interpretation of (39) is the same as that in step 8 of (34), where *nei* 'that' is not focused. However, the alternative set in (39b) is not like the one-member alternative set in (35) which is associated to the NP^{+dem} in step 8 of (34).

(39) $\| [_{NP+dem} [_{CLP+dem}$ NEI$_F$ liang-ge] $[_{N'}$ xuesheng]] $\|_{M,g}$
                               that   two-cl   student

     a.   Standard Interpretation:
          $[_{NP+dem} [_{CLP+dem} \text{NEI}_F \text{liang-ge}] [_{N'} \text{xuesheng}]]$
          $\Rightarrow$ <$\lambda P \lambda x[\text{OU}_{ge}(P)(x)=2 \sqcap \text{AT}(x, \textbf{w})](\textbf{student} \sqcap \text{R})$, that-REQ>
          $\equiv$ <$\lambda x[\text{OU}_{ge}(\textbf{student} \sqcap \text{R})(x)=2 \sqcap \text{AT}(x,\textbf{w})]$, that-REQ>
          i.e., { x | x is the i-sum consisting of two students in R and at **w**,
               the location pointed at }

     b.   Alternatives:
          $\| [_{NP+dem} [_{CLP+dem} \text{NEI}_F \text{liang-ge}] [_{N'} \text{xuesheng}]] \|_{M,g,p}$
          = { Q | ∃X∃Y[X∈ $\| [_{CLP+dem} \text{NEI}_F \text{liang-ge}] \|_{M,g,p}$ &
               Y∈$\| [_{N'} \text{xuesheng}] \|_{M,g,p}$ & Q=X(Y∩R)] }
          i.e., ALT(**NEI**$_F$) = {   <w, that-REQ>, <y, that-REQ>,
                                      <z, that-REQ>, etc. }
               where **w**, **y**, **z**, are locations selected by potential pointing
               acts, and that-REQ is as defined in (33)
          ALT(**liang-ge**) = { $\lambda P \lambda x[\text{OU}_{ge}(P)(x)=2]$ }
          ALT(**xuesheng**) = { **student** }
          ALT(**NEI**$_F$ **liang-ge**)

$$= \{<\lambda P\lambda x \, [OU_{ge}(P)(x){=}2 \sqcap AT(x,\mathbf{w})], \text{that-REQ}>,$$
$$<\lambda P\lambda x \, [OU_{ge}(P)(x){=}2 \sqcap AT(x,\mathbf{y})], \text{that-REQ}>,$$
$$<\lambda P\lambda x \, [OU_{ge}(P)(x){=}2 \sqcap AT(x,\mathbf{z})], \text{that-REQ}>, \text{etc.} \}$$

$\text{ALT}(\mathbf{NEI}_F \text{ liang-ge xuesheng})$

$$= \lambda Q\exists X\exists Y[X{\in} \text{ALT}(\mathbf{NEI}_F \text{ liang-ge}) \, \& \, Y{\in} \text{ALT}(\mathbf{xuesheng})$$
$$\& \, Q{=}X(Y \sqcap R)]$$
$$\equiv \{<\lambda P\lambda x \, [OU_{ge}(P)(x){=}2 \sqcap AT(x,\mathbf{w})](\mathbf{student} \sqcap R), \text{that-REQ}>,$$
$$<\lambda P\lambda x \, [OU_{ge}(P)(x){=}2 \sqcap AT(x,\mathbf{y})](\mathbf{student} \sqcap R), \text{that-REQ}>,$$
$$<\lambda P\lambda x \, [OU_{ge}(P)(x){=}2 \sqcap AT(x,\mathbf{z})](\mathbf{student} \sqcap R), \text{that-REQ}>, \text{etc.} \}$$
$$\equiv \{<\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x){=}2 \sqcap AT(x,\mathbf{w})], \text{that-REQ}>,$$
$$<\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x){=}2 \sqcap AT(x,\mathbf{y})], \text{that-REQ}>,$$
$$<\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x){=}2 \sqcap AT(x,\mathbf{z})], \text{that-REQ}>,$$
$$\text{etc.} \}$$

i.e.,$\{\{$ x | x is the i-sum of 2 students at **w**, the location
pointed at $\}$,

$\{$ x | x is the i-sum of 2 students at **y**, the location
pointed at $\}$,

$\{$ x | x is the i-sum of 2 students at **z**, the location
pointed at $\}$, etc.$\}$

According to the alternative set in (39b), more than one location is contextually relevant, and there is a unique i-sum consisting of two students at each location, which could be in the general direction of the actual pointing. It follows that the NP^{+dem} in (39) does not have a reading that there are only two students in the relevant context, and it need not have a uniqueness$_g$ reading either.

In comparison, with focus on *xuesheng* 'student', as in (40), the resulting NP^{+dem} may be associated to alternatives as in (41b). Note that the standard interpretation in (41a) is again the same as that in (39a) and step 8 of (34). But unlike (35) and (39b) and as required by the rules of focus interpretation, since the demonstrative is not focused and hence generates its own content as its alternatives, all the alternatives in (41b) concern i-sums at **w**, the location pointed at.

(40) nei liang-ge XUESHENG
　　 that two-cl student
　　 'those two STUDENTS'

(41) $\| \, [_{NP+dem} \, [_{CLP+dem} \,$ nei liang-ge$] \, [_{N'} \, \text{XUESHENG}]_F \,] \, \|_{M,g}$
　　　　　　　　　 that two-cl student

　 a. Standard Interpretation:

　　 $[_{NP+dem} \, [_{CLP+dem} \,$ nei liang-ge$] \, [_{N'} \, \text{XUESHENG}]_F \,]$
　　 $\Rightarrow <\lambda P\lambda x[OU_{ge}(P)(x){=}2 \sqcap AT(x, \mathbf{w})](\mathbf{student} \sqcap R), \text{that-REQ}>$
　　 $\equiv <\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x){=}2 \sqcap AT(x,\mathbf{w})], \text{that-REQ}>$
　　 i.e., $\{x \mid x$ is the i-sum consisting of two students in R and at **w**,
　　　　　the location pointed at $\}$

　 b. Alternatives:

　　 $\| \, [_{NP+dem} \, [_{CLP+dem} \,$ nei liang-ge$] \, [_{N'} \, \text{XUESHENG}]_F \,] \, \|_{M,g,p}$
　　 $= \{ \, Q \mid \exists X\exists Y[X{\in} \| \, [_{CLP+dem} \,$ nei liang-ge$] \, \|_{M,g,p} \, \&$

$Y \in \| [_{N'} \text{ XUESHENG}]_F \|_{M,g,p}$ & $Q=X(Y \cap R)] \}$

i.e., $\text{ALT}(\textbf{nei}) = \{ <\textbf{w}, \text{that-REQ}> \}$

where $\textbf{w}$ is the location pointed at, and that-REQ is as defined in (33)

$\text{ALT}(\textbf{liang-ge}) = \{ \lambda P \lambda x [\text{OU}_{ge}(P)(x)=2] \}$

$\text{ALT}(\textbf{nei liang-ge}) = \{ <\lambda P \lambda x [\text{OU}_{ge}(P)(x)=2 \sqcap \text{AT}(x,\textbf{w})], \text{that-REQ}> \}$

$\text{ALT}(\textbf{XUESHENG}_F) = \{ \textbf{student}, \textbf{teacher}, \text{etc.} \}$

$\text{ALT}(\textbf{nei liang-ge XUESHENG}_F)$

$= \lambda Q \exists X \exists Y [X \in \text{ALT}(\textbf{nei liang-ge})$ & $Y \in \text{ALT} (\textbf{XUESHENG}_F)$ & $Q=X(Y \sqcap R)]$

$\equiv \{ <\lambda P \lambda x [\text{OU}_{ge}(P)(x)=2 \sqcap \text{AT}(x,\textbf{w})](\textbf{student} \sqcap R), \text{that-REQ}>,$

$<\lambda P \lambda x [\text{OU}_{ge}(P)(x)=2 \sqcap \text{AT}(x,\textbf{w})](\textbf{teacher} \sqcap R), \text{that-REQ}>, \text{etc.} \}$

$\equiv \{ <\lambda x [\text{OU}_{ge}(\textbf{student} \sqcap R)(x)=2 \sqcap \text{AT}(x,\textbf{w})], \text{that-REQ}>,$

$<\lambda x [\text{OU}_{ge}(\textbf{teacher} \sqcap R)(x)=2 \sqcap \text{AT}(x,\textbf{w})], \text{that-REQ}>, \text{etc.} \}$

i.e.,$\{ \{ x \mid x \text{ is the i-sum of 2 students at } \textbf{w}, \text{ the location pointed at} \},$

$\{ x \mid x \text{ is the i-sum of 2 teachers at } \textbf{w}, \text{ the location pointed at} \},$

etc. $\}$

According to the alternative set in (41b), only the location pointed at is contextually relevant, and the location pointed at contains more than just the two students intended. In other words, the location $\textbf{w}$ needs to contain more i-sums than the intended i-sum itself and therefore must be larger than the spatial area occupied by just the intended i-sum itself. By that-REQ, the asserted NP^{+dem} that obtains still needs to denote a singleton set at $\textbf{w}$, so with such demonstrative NPs, we get a 'that$_g$'-reading requiring uniqueness in the general direction of the pointing.[6]

In summary, I have proposed that the demonstrative may be treated as indicating a location $\textbf{w}$ and a presupposition that-REQ. The location is contextually selected and provides necessary information for meaning composition and constructing alternatives associated to the resulting NP^{+dem}. However, alternative sets are also built according to focus rules, which require that focused expressions have contextually selected alternatives, and that non-focused expressions generate their own content as their alternatives. By imposing restrictions on what alternatives may be in the alternative set, these requirements restrict the possible size of the location pointed at and tell us whether more than the intended i-sum need be at the location pointed at. They also reflect which locations are relevant in the given context. Consequently, demonstrative NPs are systematically associated with different kinds of alternative sets such as those in (35), (39b), and (41b), and with that-REQ, end up with 'that'- or 'that$_g$'-readings as we have observed. Further issues concerning the interpretation of focus in demonstrative NPs will be addressed in section 4.5.

4.4 The interpretation of MOD-*de*

Informally, the phrasal constituent that combines with the particle *de* to form MOD-*de* denotes a set of individuals. I will refer to the pre-*de* phrasal constituent as MOD. MOD-*de* N' denotes the set of individuals who are in the set denoted

by both the MOD and the N'. That is, the meaning of MOD-*de* N' is the intersection of the meanings of MOD and N', as (42) shows.

(42) a.   dai   yanjing   de   xuesheng
            wear   glasses   de   student
            'student(s) wearing glasses'

      b.   ‖ dai yanjing de xuesheng ‖ $_{M,g}$
            = { x | x is a student wearing glasses }
            i.e., $\lambda x[\textbf{wear-glasses}(x) \sqcap \textbf{student}(x)]$

I assume the semantic types and translations in (43), with a syncategorematic treatment of *de*.

(43) Syntactic Category   Type   Translation
      a. MOD $<e,t>$ $\lambda x.\textbf{MOD}(x)$
      b. $[_{N'}$ MOD-*de* N'] $<e,t>$ $\lambda x[\textbf{MOD}(x) \sqcap \textbf{N'}(x)]$
      c. $[_{NP(+dem)}$ MOD-*de* NP$^{(+dem)}]$ $<e,t>$ $\lambda R[NP^{(+dem)}](\textbf{MOD}_F \sqcap R)$

That is, MOD denotes a set of entities, and its modifying role is indicated structurally. When MOD is marked by -*de* and combines with an N', the translation of the resulting N' amounts to a conjunctive interpretation of MOD and N', as in (43b). Again, '$\sqcap$' means generalized conjunction as proposed in Partee & Rooth 1983. In comparison, when MOD-*de* combines with an NP, which contains a free variable R, the R may be substituted by **MOD** via applications of λ-abstraction and λ-conversion, and the resulting NP has the type of the NP which combines with MOD-*de* in the NP, as in (43c). In (43c), the scope of λR is as bracketed; the argument that substitutes R contains a **MOD** and a free variable R which is not bound by the λ-operator and is needed to account for 'stacked' modifiers recursively and to get the desired readings with modifiers such as 'thick'. As already mentioned, MOD-*de* is structurally focused (which is indicated by the feature F) when adjoined to NP.

Adjoining MOD-*de* to an NP introduces a presupposition that plays a crucial role in the interpretation of NPs with numerals and/or quantifiers such as *mei* 'every' (Wu 1997). This presupposition has little effect on the interpretation of demonstrative NPs, however, and therefore will be overlooked in the discussion that follows.

For easy reference, the semantic translation rules already given for DET, Num, CL, CL', CLP, N, N' and NP (both CLP and NP may be marked by $^{+dem}$) are repeated below in (44).

(44) Some Relevant Semantic Translation Rules:
      a. CL $\Rightarrow \lambda n\lambda P\lambda x[OU_{cl}(P)(x)=n]$
      b, Num $\Rightarrow$ **number**
      c. $[_{CL'}$ Num CL] $\Rightarrow \lambda n\lambda P\lambda x[OU_{cl}(P)(x)=n](\textbf{number})$
         $\equiv \lambda P\lambda x[OU_{cl}(P)(x)= \textbf{number}]$
      d. N $\Rightarrow \lambda x.\textbf{N}(x)$
      e. N' $\Rightarrow \lambda x.\textbf{N'}(x)$
         $[_{N'}$ N] $\Rightarrow \lambda x.\textbf{N}(x)$

f. $[_{DET}$ nei$] \Rightarrow$ <**w**, that-REQ>
where **w** is the location pointed at, and that-REQ the presupposition
PRESSUP(nei) $=_{def}$ | λx.$\mathbf{NP}^{+dem}$(x) | = 1
Where $\mathbf{NP}^{+dem}$ is the maximal NP marked by $^{+dem}$ introduced by nei

g. $[_{CLP+dem} [_{DET}$ nei$]$ CL'$] \Rightarrow \lambda P \lambda x[\mathbf{CL'}(P)(x) \sqcap$ AT(x,$\mathbf{DET}$)$]$
$\equiv \lambda P \lambda x[OU_{cl}(P)(x) = \mathbf{number} \sqcap$ AT(x,$\mathbf{DET}$)$]$
$\equiv$ <$\lambda P \lambda x[OU_{cl}(P)(x) = \mathbf{number} \sqcap$ AT(x,**w**)$]$, that-REQ>

h. $[_{NP+dem}$ CLP^{+dem} N'$]$
$\Rightarrow \lambda P \lambda x[OU_{cl}(P)(x) = \mathbf{number} \sqcap$ AT(x,$\mathbf{DET}$)$] (\lambda y[\mathbf{N'}(y) \sqcap R(y)])$
$\equiv \lambda x[OU_{cl}(\mathbf{N'} \sqcap R)(x) = \mathbf{number} \sqcap$ AT(x,$\mathbf{DET}$)$]$
$\equiv$ <$\lambda x[OU_{cl}(\mathbf{N'} \sqcap R)(x) = \mathbf{number} \sqcap$ AT(x,**w**)$]$, that-REQ>

i. $[_{NP+dem} [_{DET}$ nei$]$ N'$] \Rightarrow \lambda x[(\mathbf{N'} \sqcap R)(x) \sqcap$ AT(x,$\mathbf{DET}$)$]$
$\equiv$ <$\lambda x[(\mathbf{N'} \sqcap R)(x) \sqcap$ AT(x,**w**)$]$, that-REQ>

4.5 Deriving the meaning of complex demonstrative NPs

In the following 1 will show that the interpretive differences among complex de-
monstrative NPs like (45), (46), and (47) follow from the meanings of their parts
and the way they are combined. The NPs share the same literal meaning, i.e., the
purely truth-conditional aspect of meaning. However, they have different non-
truth-conditional content which systematically gives rise to the interpretive dif-
ferences of the NPs. More specifically, the alternative sets associated to the de-
monstrative NPs are derived based on contextual information and focus interpre-
tation rules and restrict the possible size and contents of the location pointed at,
and different types of alternative sets may be linked systematically to 'that'- or
'that$_g$'-readings of demonstrative NPs. Underlining in the English translation in-
dicates structurally focused material in MC.

(45) nei liang-ge shuijiaode xuesheng
that two-cl   sleep de   student
'those two students [who are] sleeping'

(46) shuijiaode nei liang-ge xuesheng
sleep de   that two-cl   student
'those$_g$ two students [who are] sleeping'

(47) shuijiaode NEI liang-ge xuesheng
sleep de   that two-cl student
'THOSE two students [who are] sleeping'

The meaning of (45) may be represented as in (48), which is similar to the ex-
amples without MOD-*de* already discussed in section 4.3.

(48) $[_{NP+dem} [_{CLP+dem}$ nei   liang-ge$] [_{N'}$ shuijiao de   xuesheng$]]$ by (44h)
that   two-cl sleep de   student
$\Rightarrow$ <$\lambda P \lambda x[OU_{ge}(P)(x)=2 \sqcap$ AT(x,**w**)$]$((**student** $\sqcap$ **sleep**) $\sqcap$ R), that-REQ>
$\equiv$ < $\lambda x[OU_{ge}($**student** $\sqcap$ **sleep** $\sqcap$ R)(x)=2 $\sqcap$ AT(x,**w**)$]$, that-REQ>
i.e., { x | x is the i-sum consisting of two students sleeping at **w**, the
location pointed at }

The meaning of (46) may be represented as in (49).

(49) $\| [_{NP+dem} [_{MOD\text{-}de}$ shuijiao   de $]_F [_{NP+dem}$ nei   liang-ge xuesheng]] $\|_{M,g}$:
                    sleep   de   that two-cl   student

a. Standard Interpretation:

$[_{NP+dem} [_{MOD\text{-}de}$ shuijiao de $]_F [_{NP+dem}$ nei liang-ge xuesheng]]

$\Rightarrow \lambda R[\mathbf{NP}^{+dem}](\mathbf{MOD}_F \sqcap R)$ by (43c)

$\equiv\ < \lambda R[\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x)=2 \sqcap AT(x,\mathbf{w})]](\mathbf{sleep} \sqcap R),$ that-REQ$>$

$\equiv\ < \lambda x[OU_{ge}(\mathbf{student} \sqcap \mathbf{sleep} \sqcap R)(x)=2 \sqcap AT(x,\mathbf{w})],$ that-REQ$>$

i.e., { x | x is the i-sum consisting of two students sleeping at $\mathbf{w}$, the
        location pointed at }

b. Alternatives:

$\| [_{NP+dem} [_{MOD\text{-}de}$ shuijiao de $]_F [_{NP+dem}$ nei liang-ge xuesheng]] $\|_{M,g,p}$
$= \{ Q \mid \exists X \exists Y[X \in \| [_{NP+dem}$ nei liang-ge xuesheng] $\|_{M,g,p}\ \&$

   $Y \in \| [_{MOD}$ shuijiao$]_F \|_{M,g,p}\ \&\ Q=\lambda R[X](Y \cap R)] \}$ by (43c)

i.e., ALT(shuijiao$_F$) = { sleep, awake, etc. }

ALT(nei liang-ge xuesheng)

$= \{ <\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x)=2 \sqcap AT(x,\mathbf{w})],$ that-REQ$> \}$

ALT([shuijiao de]$_F$ nei liang-ge xuesheng)

$= \{ <\lambda R\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x)=2 \sqcap AT(x,\mathbf{w})](\mathbf{sleep} \sqcap R),$ that-REQ $>$,
   $<\lambda R\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x)=2 \sqcap AT(x,\mathbf{w})](\mathbf{awake} \sqcap R),$ that-
   REQ$>$, etc. }

$\equiv \{ <\lambda x[OU_{ge}(\mathbf{student} \sqcap \mathbf{sleep} \sqcap R)(x)=2 \sqcap AT(x,\mathbf{w})],$ that-REQ$>$,
   $<\lambda x[OU_{ge}(\mathbf{student} \sqcap \mathbf{awake} \sqcap R)(x)=2 \sqcap AT(x,\mathbf{w})],$ that-REQ$>$, etc. }

i.e., {{ x | x is the i-sum consisting of two students sleeping at $\mathbf{w}$,
        the location pointed at },

     { x | x is the i-sum consisting of two students awake at $\mathbf{w}$,
        the location pointed at }, etc. }

Since MOD-*de* is structurally focused, MOD has contextually selected alternatives as in (49b). The demonstrative is not focused and generates its own content, i.e., $\mathbf{w}$, the location pointed at, as its alternatives. Consequently, the NP^{+dem} is associated with a set of alternatives which are singleton sets at $\mathbf{w}$.[7] The alternative set in (49b) tells us that the contextually relevant location is just $\mathbf{w}$, the location pointed at, and that $\mathbf{w}$ is larger than the minimal spatial area containing the intended i-sum itself. By that-REQ, the resulting NP^{+dem} needs to denote a singleton set at $\mathbf{w}$, and we get the reading where there are only two sleeping students in the general direction of the pointing.

In comparison, the meaning of (47) with focus on the demonstrative may be represented as in (50). Note that the standard interpretation in (50a) is the same as that in (49a) but the alternatives in (50b) and (49b) are different.

(50) $\| [_{NP+dem} [_{MOD\text{-}de}$ shuijiao de $]_F [_{NP+dem}$ NEI$_F$ liang-ge xuesheng]] $\|_{M,g}$:
                    sleep   de   that two-cl   student

a. Standard Interpretation:
   $[_{NP+dem} [_{MOD\text{-}de}$ shuijiao de $]_F [_{NP+dem}$ NEI$_F$ liang-ge xuesheng]]
   $\Rightarrow \lambda R[\mathbf{NP}^{+dem}](\mathbf{MOD}_F \sqcap R)$ by (43c)

$\equiv <\lambda R[\lambda x[OU_{ge}(\textbf{student} \sqcap R)(x)=2 \sqcap AT(x,w)]](\textbf{sleep} \sqcap R),$ that-REQ>

$\equiv <\lambda x[OU_{ge}(\textbf{student} \sqcap \textbf{sleep} \sqcap R)(x)=2 \sqcap AT(x,w)],$ that-REQ>

i.e., { x | x is the i-sum consisting of two students sleeping at **w**, the location pointed at }

b. Alternatives:

$\| [_{NP+dem} [_{MOD\text{-}de} \text{ shuijiao de }]_F [_{NP+dem} \text{ NEI}_F \text{ liang-ge xuesheng}]] \|_{M,g,p}$

= { Q | $\exists X \exists Y [X \in \| [_{NP+dem} \text{ NEI}_F \text{ liang-ge xuesheng}] \|_{M,g,p}$ &

$Y \in \| [_{MOD} \text{ shuijiao}]_F \|_{M,g,p}$ & $Q = \lambda R[X](Y \cap R)] \}$ by (43c)

i.e., ALT(**shuijiao**$_F$) = { **sleep**, **awake**, etc. }

ALT(**NEI**$_F$ **liang-ge xuesheng**)

= { $<\lambda x[OU_{ge}(\textbf{student} \sqcap R)(x)=2 \sqcap AT(x,w)],$ that-REQ>,

   $<\lambda x[OU_{ge}(\textbf{student} \sqcap R)(x)=2 \sqcap AT(x,z)],$ that-REQ>, etc. }

ALT([**shuijiao de**]$_F$ **NEI**$_F$ **liang-ge xuesheng**)

= { $<\lambda R \lambda x[OU_{ge}(\textbf{student} \sqcap R)(x)=2 \sqcap AT(x,w)](\textbf{sleep} \sqcap R),$ that-REQ>,

   $<\lambda R \lambda x[OU_{ge}(\textbf{student} \sqcap R)(x)=2 \sqcap AT(x,z)](\textbf{sleep} \sqcap R),$ that-REQ>,

   $<\lambda R \lambda x[OU_{ge}(\textbf{student} \sqcap R)(x)=2 \sqcap AT(x,w)](\textbf{awake} \sqcap R),$ that-REQ>, etc. }

$\equiv$ { $<\lambda x[OU_{ge}(\textbf{student} \sqcap \textbf{sleep} \sqcap R)(x)=2 \sqcap AT(x,w)],$ that-REQ>,

   $<\lambda x[OU_{ge}(\textbf{student} \sqcap \textbf{sleep} \sqcap R)(x)=2 \sqcap AT(x,z)],$ that-REQ>,

   $<\lambda x[OU_{ge}(\textbf{student} \sqcap \textbf{awake} \sqcap R)(x)=2 \sqcap AT(x,w)],$ that-REQ>,

       etc. }

i.e., { { x | x is the i-sum consisting of two students sleeping at **w**, the location pointed at },

    { x | x is the i-sum consisting of two students sleeping at **z**, the location pointed at },

    { x | x is the i-sum consisting of two students awake at **w**, the location pointed at }, etc. }

As shown in (50b), focus on the demonstrative introduces a set of alternatives to **w**, the location pointed at. Accordingly, more than one location (possibly in one general direction) is contextually relevant, and there may be two students sleeping at each location, so long as only two students are sleeping at each location for each potential alternative pointing. The NP therefore does not have a 'those$_g$'-reading that only two students are sleeping in the general direction of the pointing.

So again, while NP^{+dem} always denotes a singleton set at the location pointed at, it may have 'that'- or 'that$_g$'-readings which are systematically linked to different types of alternative sets derived based on contextual information, that-REQ, and focus interpretation rules. It can be shown that the meaning of NP^{+dem}s like (51) follows from that-REQ and focus interpretation rules as well.

(51) shuijiao de nei   LIANG-ge xuesheng
     sleep   de that two-cl   student
     'those$_g$ TWO students [who are] <u>sleeping</u>' (contrastive context re-
          quired)

Intuitively, with focus on the numeral but not on the demonstrative, the NP^{+dem} in (51) has to be used in a contrastive context where there are exactly two students sleeping at the location pointed at and the number of students sleeping at the location is at issue. Such restrictions are expected with the analysis I propose. For example, the NP^{+dem} has the standard interpretation in (52a). It may be associated to an alternative set like that in (52b) but not one like that in (52c).

(52) $\| [_{NP+dem} [_{MOD\text{-}de}$ shuijiao de $]_F [_{NP+dem}$ nei   LIANG$_F$-ge xuesheng]] $\|_{M,g}$:
                              sleep   de   that two-cl   student

a. Standard Interpretation:
    $[_{NP+dem} [_{MOD\text{-}de}$ shuijiao de $]_F [_{NP+dem}$ nei LIANG$_F$-ge xuesheng]]
    $\Rightarrow \lambda R[\mathbf{NP^{+dem}}](\mathbf{MOD}_F \sqcap R)$ by (43c)
    $\equiv <\lambda R[\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x)=2 \sqcap AT(x,w)]](\mathbf{sleep} \sqcap R)$, that-
    REQ>
    $\equiv <\lambda x[OU_{ge}(\mathbf{student} \sqcap \mathbf{sleep} \sqcap R)(x) = 2 \sqcap AT(x,w)]$, that-REQ>
    i.e., { x | x is the i-sum consisting of two students sleeping at **w**,
          the location pointed at }

b. Alternatives:
    $\| [_{NP+dem} [_{MOD\text{-}de}$ shuijiao de $]_F [_{NP+dem}$ nei LIANG$_F$-ge xuesheng]] $\|_{M,g,p}$
    = { Q | $\exists X \exists Y[X \in \| [_{NP+dem}$ nei   LIANG$_F$-ge xuesheng] $\|_{M,g,p}$ &
       $Y \in \| [_{MOD}$ shuijiao$]_F \|_{M,g,p}$ & Q=$\lambda R[X](Y \cap R)]$ }   by (43c)

    i.e., ALT(**shuijiao**$_F$) = { **sleep**, **awake**, etc. }
    ALT(**nei LIANG$_F$-ge xuesheng**)
    = { $<\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x) = 2 \sqcap AT(x,w)]$, that-REQ> }
    ALT([**shuijiao de**]$_F$ **nei LIANG$_F$-ge xuesheng**)
    = { $<\lambda R\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x)=2 \sqcap AT(x,w)](\mathbf{sleep} \sqcap R)$, that-
       REQ>,
       $<\lambda R\lambda x[OU_{ge}(\mathbf{student} \sqcap R)(x)=2 \sqcap AT(x,w)](\mathbf{awake} \sqcap R)$, that-
       REQ>,
       etc. }
    $\equiv$ { $<\lambda x[OU_{ge}(\mathbf{student} \sqcap \mathbf{sleep} \sqcap R)(x) = 2 \sqcap AT(x,w)]$, that-REQ>,
       $<\lambda x[OU_{ge}(\mathbf{student} \sqcap \mathbf{awake} \sqcap R)(x) = 2 \sqcap AT(x,w)]$, that-REQ>,
       etc. }
    i.e., { { x | x is the i-sum consisting of two students sleeping at **w**,
            the location pointed at },
         { x | x is the i-sum consisting of two students awake at **w**,
            the location pointed at }, etc. }

c. Unacceptable Alternative Set:
    $\| [_{NP+dem} [_{MOD\text{-}de}$ shuijiao de$]_F [_{NP+dem}$ nei LIANG$_F$-ge xuesheng]] $\|_{M,g,p}$
    = { Q | $\exists X \exists Y[X \in \| [_{NP+dem}$ nei LIANG$_F$-ge xuesheng] $\|_{M,g,p}$ &
       $Y \in \| [_{MOD}$ shuijiao$]_F \|_{M,g,p}$ & Q=$\lambda R[X](Y \cap R)]$ }   by (43c)

i.e., ALT(**shuijiao**$_F$) = {**sleep**, **awake**, etc. }

ALT(**nei LIANG**$_F$**-ge xuesheng**)

= { <λx[OU$_{ge}$(**student** ⊓ R)(x)=2 ⊓ AT(x,**w**)], that-REQ>,

    <λx[OU$_{ge}$(**student** ⊓ R)(x)=1 ⊓ AT(x,**w**)], that-REQ>, etc. }

ALT([**shuijiao de**]$_F$ **nei LIANG**$_F$**-ge xuesheng**)

= { <λRλx[OU$_{ge}$(**student** ⊓ R)(x)=2 ⊓ AT(x,**w**)](**sleep** ⊓ R), that-
    REQ>,

    <λRλx[OU$_{ge}$(**student** ⊓ R)(x)=1 ⊓ AT(x,**w**)](**sleep** ⊓ R), that-
    REQ>,

    <λRλx[OU$_{ge}$(**student** ⊓ R)(x)=1 ⊓ AT(x,**w**)](**awake** ⊓ R), that-
    REQ,

    etc. }

≡ { <λx[OU$_{ge}$(**student** ⊓ **sleep** ⊓ R)(x)=2 ⊓ AT(x,**w**)], that-REQ>,

    <λx[OU$_{ge}$(**student** ⊓ **sleep** ⊓ R)(x)=1 ⊓ AT(x,**w**)], that-REQ>,

    <λx[OU$_{ge}$(**student** ⊓ **awake** ⊓ R)(x)=1 ⊓ AT(x,**w**)], that-REQ>,

    etc. }

i.e., { { x ∣ x is the i-sum consisting of two students sleeping at **w**,
          the location pointed at },

    { x ∣ x is the i-sum consisting of one student sleeping at **w**,
          the location pointed at },

    { x ∣ x is the i-sum consisting of one student awake at **w**,
          the location pointed at }, etc. }

With an alternative set like that in (52b), the contextually selected alternatives to the numeral denotation is {2}, i.e., the asserted number itself, and a contrastive context is required to satisfy the discourse function introduced by focus on the numeral. Whereas in (52c), the alternatives to the numeral denotation is the set {1,2}, and two alternatives each yield a set of i-sums consisting of sleeping students at **w** but with different cardinality. An alternative set like (52c) must be ruled out because the alternatives at issue both need to satisfy that-REQ, but only one may. That is, the cardinality of the unique i-sum consisting of students sleeping at **w** cannot be 1 and 2 at the same time. In a sense, alternative sets represent possible situations in which the NP^{+dem} may be used. The fact that the NP^{+dem} in (51) requires a contrastive context and only has an 'exactly-two-at-**w**' reading is captured rather nicely by the contrast between the acceptable and unacceptable alternative sets in (52b) and (52c).

5.   Conclusion

I have shown that the linguistic forms of MC complex demonstrative NPs encode not only purely semantic content such as the lexical meaning of words and relations between the word meanings but also context-related information such as intonationally or structurally indicated focus and presuppositions or felicity conditions. With my analysis, the 'that'~'that$_g$' distinction is not truth conditional but rather a matter of felicity conditions resulting from extensional content, presuppositions, and focus-induced alternatives combined. More specifically, the NP meaning consists of an extensional component and a presuppositional compo-

nent. Also, the NP has a standard denotation and a set of focus-induced alterna- tives. The extensional content of the NP may be computed recursively using standard procedures in model-theoretic semantics and constitutes the 'purely truth-conditional' aspect of meaning interpretation, which may be the same for demonstrative NPs with 'that'- or 'that$_g$'-readings.[8] Focus-induced alternatives are derived according to focus-interpretation rules that are not unique to MC. The alternatives are subject to contextual constraints and encode extensional as well as contextual information needed for the NP readings. Crucially, the alterna- tives coupled with the presupposition introduced by the demonstrative system- atically restrict the contexts, i.e., Models, in which the NPs may be used felici- tously, and the interpretive differences fall out.

NOTES

* The analysis presented in this paper is based mainly on ideas formulated in my dissertation *Interpreting Complex Noun Phrases in Mandarin Chinese* 1997, which investigates the connection between the linguistic form and indefinite and definite readings of MC complex NPs, including complex NPs with quantifiers and/or numerals, not just demonstrative NPs alone.

[1] Except for numerals and classifier/measure words, which I mark as a single unit with a hyphen, the pinyin orthography here is based on principles and rules by the Committees on Education and Languages 1988.

[2] The pair $\langle E, V_i \rangle$ is required to be a complete atomic Boolean algebra in Link 1983 and a complete atomic join semilattice in Link 1987. It has since been argued that further constraints are needed with a semilattice analysis to rule out structures that are not representative of natural language phenomena, and that $\langle E, V_i \rangle$ needs to have a more Boolean structure (possibly a Boolean algebra with the bottom removed) (Landman 1991:255). Accordingly, I will assume that $\langle E, V_i \rangle$ forms an atomic Boolean lattice with the bottom removed. Such a lattice can be one like that in (12).

[3] Krifka 1995 proposes that the classifier may be treated as an operator which takes a kind and yields a measure function that measures the number of speci- mens of that kind. That is, the classifier may be treated as an operator OU (for 'object unit') such that $R(x,y)$ & $OU(y)(x)=n$, where R is a realization relation and n is the cardinality of x. For example, if x consists of three individual bears, then $OU(bear)(x)=3$, which means x is the sum of three mutually distinct objects x_1, x_2, x_3, for each of which holds $OU(bear)(x_i)=1$ (Krifka 1995:400-405). For the pur- pose of this study, however, I will overlook the realization relation for simplicity's sake. Also, classifiers fall into different categories. OU_{cl} and the measure function in (24) is for classifiers that measure individual objects. Classifiers for groups need to be handled differently.

[4] Logical operators such as $\wedge$, $\vee$, and $\neg$ operate on propositions and are undefined as predicate operators. Partee and Rooth 1983 propose a generalized conjunction schema for conjunction at the sentence-level and at non-sentential-levels as well

(1983:364). According to the generalized conjunction schema, the 'meet' operator $\sqcap$ corresponds to *and*, and

$\phi \sqcap \psi = \phi \wedge \psi$ if ϕ and ψ are truth values

$\phi \sqcap \psi = \lambda z[\phi(z) \sqcap \psi(z)]$, where ϕ and ψ are a (single) functional type, and z is a variable of an appropriate type not occurring free in ϕ or ψ.

[5] For some reason, it is hard to get a plural reading 'those students' for (36). However, plural readings are readily available with expressions like *nei shu* 'that book/those books', and *zhei qizi* 'this flag/these flags', as shown in the example below. The example is from a dialog about the theater. That two flags are used as a prop for a vehicle is mentioned in the preceding conversation.

Yi   fu   **zhei qizi**,   zhe jiusuan   zuo chele.
Just hold on to this flag(s),   this counts as ride vehicle
'Just hold on to these flags, and it counts as riding a vehicle.' (Hou & Guo nd.)

The expression *zhei qizi* is interpreted as 'these flags' or 'the flags (here)' in the given context, although it may read as 'this flag' or 'the flag (here)' elsewhere. Neither the demonstrative nor the nominal head is morphologically marked for plurality here. The demonstrative NP denotes the set of flags at the indicated location, and the cardinality of the set is contextually determined.

[6] The non-asserted alternatives may require a narrower range of pointing (i.e., a sub-location of **w**) where uniqueness holds. For example, the expression in (40) may be used felicitously in a context where there are two students and three teachers at **w**, in which case that-REQ concerning the non-asserted alternative given in (41b) can only be satisfied in a sub-location of **w**. I assume that if this is the case, then either a Range-of-Pointing Accommodation Rule which says that-REQ must hold for the non-asserted alternative in a sub-location of **w** may apply, or we need a that-REQ-related Cardinality-at-w Accommodation rule to take care of such non-asserted alternatives. In a context with two students and one teacher at **w**, cardinality accommodation concerning the non-asserted alternative will be necessary, too.

[7] As already mentioned in section 4.3. fn.6, the non-asserted alternatives may require a sub-location of **w** in which uniqueness holds. I assume that a Range-of-Pointing Accommodation Rule or a Cardinality-at-w Accommodation Rule may apply if this is the case.

[8] For expository purposes, I have been representing the meaning of an expression α in terms of direct interpretation (where $\| \alpha \|_{M,g}$ is the semantic value of α relative to a model M and an assignment g) and as semantic translations (where, for example, an expression B translates as $\mathbf{B}$). Semantic translations need to be further interpreted themselves. The predicate calculus adopted in my analysis is augmented with a λ-operator, Link's 1983, 1987 $\oplus$-operator, σ-operator, Π-operator and $^0\Pi$-operator, Partee and Rooth's 1983 $\sqcap$-operator, and set-theoretic operators such as $\cap$ and $\bigcap$.

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THE LINGUISTIC REALIZATION OF PARALINGUISTIC FEATURES IN ADMINISTRATIVE LANGUAGE

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This paper complements a previous one (Longe 1981:103) in which reference was made to the need to examine institutional com- munications with a view to discovering the devices used to compen- sate for situational differences with the speaking medium and how such devices are manifested. Accordingly, we first examine the nature of communication in the speech situation and how this differs from the written medium. This is followed by an analysis of samples of texts of institutional communications in order to show the kinds of devices commonly used in such texts to compensate for the absence of para- linguistic features available in speaking.

1. Introduction

In any communicative situation, the writer/speaker (addresser) has to ensure that the means of communication available make it possible to perform the following functions (Longe 1981:103):

(a) the modal function serving to indicate the writer's attitude to- ward what is being said and toward the person to whom it is said;

(b) the metalinguistic function serving to define exactly what the writer intends terms to mean or what the terms refer to;

(c) the contact function serving to ensure that the channel of con- tact or communication remains open.

Since language is what humans use for communication, the expectation is that language will be used to perform these functions. But this expectation is modified by two factors. The first is that language manifests itself in two media of commu- nication — speaking and writing. The second is that the two media of communi- cation are not in free variation. In other words the situations that invite speaking are not the same as those that call for writing. Rather, situations determine the type of medium of communication to be used. The questions then are, what are the situations that call for speaking and what are those that call for writing? In addition, what are the features of those situations that influence the way lan- guage is used to realize the three basic functions it must perform in a communica- tive event and how do these features help language to perform these functions?

2.   The nature of communication in a speech situation

The situations that call for speaking are those in which the addressee is physically present. But in speaking, we usually rely on two phenomena which are complementary to the actual utterance of language items. Such reliance, according to Davies & Widdowson (1974:163-4), is to a degree that is perhaps not always appreciated'. They go on to assert that 'the actual phonetic realization of language elements is only one component of face-to-face communication'. In addition to purely verbal elements, we have nonverbal or paralinguistic elements like 'tone of voice and gesture'.

An utterance represented graphologically as OMEIME LOVES NGOZI could be spoken in such a way as to carry implications of irony, impatience, and so on. The structure itself is neutral as to these different interpretations: it must be provided with some additional paralinguistic features, an element of what Abercrombie (1967:164) calls 'voice dynamics', before it can count as communication.

Although Davies & Widdowson equate paralinguistic elements with nonverbal elements in face-to-face communication, Abercrombie himself observed that although paralinguistic behaviour is nonverbal communication, not all nonverbal communication is paralinguistic. Therefore, for nonverbal behaviour to qualify as paralinguistic, it must

(a)   communicate, and

(b)   be part of a conversational interaction'. A nervous twitch of the eyelid during conversation is not paralinguistic, although it is a nonverbal behaviour, so also many personal mannerisms and tics are not paralinguistic. A wolf 'whistle' communicates, but if it does not enter into conversation, it cannot count as a paralinguistic feature.

The use of paralinguistic features, such as voice dynamics, facial expressions, and gestures, is meant to complement linguistic utterances. In the first place they are used to convey implicational meaning, or as Davies & Widdowson (1974: 164) put it,

The principal purpose of the paralinguistic elements in speaking is to express the speaker's attitude either to what he is saying or to whom he is saying it: their function is essentially a modal one.

The second phenomenon associated with the speech situation is feedback. Since there is constant interchange between speaker and audience, the performance of the speaker is modulated by the reactions of the audience expressed either linguistically or paralinguistically. There is also the maintenance of contact between the participants in a speech situation. This ensures that the speaker is getting through to the listeners, who in turn are not mistaken about the point being made by the speaker. Therefore, paralinguistic features assist language to perform the basic modal metalinguistic and contact functions within a speech situation in the ways described above.

3.   The nature of communication in the written medium

Now, the situations in which written language of the institutional kind is used are those in which the addressee is physically absent and sometimes unknown to the writer. Even when the addressee is personally known to the writer, such knowledge is not recognized in official circles. The kind of writing produced in response to such situations has been called institutional communication (Longe 1981:101). This is the focus of attention in this paper, with special reference to written communication within the public service domain, especially the university system, in Nigeria.

We noted earlier that in face-to-face communication, the actual realization of linguistic elements is just one of the components of the speech situation, and not necessarily the most important component of the speech event. In the case of writing, however, the linguistic elements carry almost the entire burden of the communication. Written language has to make use of the linguistic system in such a way as to make up for the absence of the various paralinguistic features available in speech situations. What, then, are the devices used by institutional communication to compensate for the deprivations, viz: absence of the addressee from the speech situation and the uncertainty about the free flow of communication through the designated channel?

4.   Officialese vis-a-vis administrative language

There is a tenacious correspondence between officialese and administrative language. Both of them are kinds of language used in work situations. The term *officialese* from the point of view of a neutral definition derives from *official*, which is a corresponding term for *civil service*. Consequently, officialese can be regarded as the language associated with civil servants. But this is a bland definition because the civil service is composed of many ministries with different responsibilities. The ministries in turn are structured hierarchically, ranging from the Permanent Secretary to the Messenger, each with a different schedule of responsibility. For managerial purposes, the civil service is classified into 6 functional groups — industrial civil servants, the administrative group, the professional and technological group, the scientists, nonprofessional specialists, and the ancillary group. What these groups have in common is not so much the language they use as the fact that they are all civil servants.

But the central role of the civil servants is to ADMINISTER the functions of government. In other words, they implement the policy decisions of government. This assignment rests with the administrative group. It is the language used by this group to perform the functions of government that is referred to as officialese. Therefore, whether in the civil service or in public institutions, the language we are concerned with is the administrative language. Officialese is also referred to as the register of public administration (Longe 1985:306) or administrative language. What in the civil service is called officialese, in public institutions is called administrative language. Thus the two kinds of language will have many features in common.

Now, in transacting the business of administration, whether in the civil service or in public institutions, the major modes of communication are minutes, letters (including circular letters), memoranda, briefs, and notices (Longe 1989:203). Minutes are the most frequently used mode of communication. They are used either within the hierarchy of a ministry or an administrative department of a public institution to seek or give advise on issues addressed to them. Decisions arrived at through this mode are communicated eventually to the addressee by the officer under whose schedule of duty the issue falls. A major feature exhibited by minutes is the high rate of abbreviations. Examples include those in Appendix B.

These abbreviations should form part of an administrative officer's linguistic repertoire so that that officer may function effectively with colleagues in the place of work.

Letters are the second most frequently-used mode of correspondence, followed closely by memoranda. Although memoranda are informal letters used internally within the organization, they can sometimes be used to perform the formal functions of letters, but only within the organization.

For the formal transaction of the business of administration, either in the civil service or in a public institution, letters and memoranda constitute the modes of operation. Therefore, features of officialese and administrative language are those revealed in the letters and memoranda used in administering the functions of government. Hence, we concentrate on these two modes of communication for the purpose of this paper, which is to show how, by virtue of the mechanical design of administrative letters, the paralinguistic objectives of communication are compensated for.

5.   Sampling

In order to address the subject-matter of this paper, we collected 50 pieces of institutional correspondence. By this is meant either letters or memoranda from any public institution other than the civil service. Thus the materials are from the universities and parastatals connected with the universities — the National Universities Commission and Joint Admissions and Matriculations Board. These materials were then analyzed in terms of the devices used to compensate for the absence of paralinguistic features. Our analysis follows.

6.   The mechanics of instrumentality in administrative correspondence

Mechanics are usually discussed under the instrumentality dimension of language analysis. By instrumentality is meant the totality of the agencies of communication, which are channel, medium, and mode of communication. However, the focus of attention in this section is on the mechanics or the structural frame within which administrative correspondence is couched; in other words, on the technical design of these letters. The features are identified as follows (roman numerals refer to the similarly marked items in the letter reproduced in Appendix A):

6.1   Heading (I)

The heading is in the form of the official letterhead. This consists of the address of the institution, which is usually the originator/sender of the correspondence. It usually forms part of the letterhead and the dateline which ends flush with the right hand margin. Added to this are the references (Our Ref.; Your Ref.) above the inside address.

6.2   Inside address (II)

This contains the name, title, and address of the recipient of the correspondence. It is placed at the left hand corner of the paper immediately below the reference line.

6.3   Salutation (III)

This is optional in that not all the letters in our samples contain a salutation. In those that exhibit a salutation, it takes the forms of

Dear Sir/Madam

Dear Sir

Dear Mr. ...

Sir,

6.4   Main-body (IV)

This is the location of the contents of the letters preceded by a sub-heading (V). Such contents are arranged in paragraphs, most of which are of medium length (i.e., 5 lines of foolscap). Types of setting vary from block to indented, but with a predilection for block-setting. The number of paragraphs in each correspondence varies from 2 to 7, with an average of 3.

6.5   Complimentary close/valediction (VI)

The documents that are not introduced by a salutation also lack a valediction. Therefore, this feature is optional. In the case of those that have a valediction, it take the forms:

Yours faithfully

Yours sincerely

Sincerely yours

Yours truly.

6.6   Identification/signature (VII)

This is the point at which the identity of the agent of the correspondence is disclosed. The name of the sender is typed below the complimentary close, followed on the line immediately below it by the position the sender occupies in the institution:

(a)   S.E. Eghagha (Mrs)
       Administrative Officer

(b)   Idris A. Abdulkadir
       Executive Secretary

When the sender is acting on behalf of another in whose schedule of responsibility the subject of the letter falls, the format differs. The name of the sender is followed below by the declaration that the writer is acting for another — usually superior — officer:

(a)   R.A. Ogunmoroti
       For: Registrar

(f)   F. Akin Awoma
       For: Principal Assistant Registrar

7.   Identifying initials

This is meant for the identification of the sender of the letter and the typist or secretary. It contains the initials of both sender and typist/secretary separated by either a colon or a diagonal line. This feature is located at the lower left-hand corner of the letter:

(a)   FAA/JA

(b)   TOI:MA

8.   Functions of the identified features

We observed in Section 1 that the paralinguistic features perform three basic functions in face-to-face communication: Contact, metalinguistic, and attitudinal. The functions that hold fascination for our investigation are contact and attitudinal ones, and not the metalinguistic one, which deals with the use of language to talk about language — a purely linguistic exercise which is the domain of written language. We may, however, make reference to this function in order to demonstrate how it performs its functions. Meanwhile, we shall consider how written language of the mode under consideration performs contact and attitudinal functions usually performed by paralinguistic features in face-to-face interaction.

9.   Contact function

Contact function sets out in the first place to define the role of the participants in the communicative event and also to ensure that the channel of communication is not blocked. In face-to-face communication, blockage could result from distance, in which case the message will not arrive at its target. It could also occur as a result of lack of understanding, in which case the interlocutor will signal paralinguistically (shaking of the head or interrupting the speaker) that understanding has not taken place. Noise could also disturb the channel. We may also observe that the situation defines the location of the interaction in the face-to-face type. The need does not arise to state categorically the location of the communicative

event. These exercises are performed differently in written language of the administrative type.

In order to ensure that the addressee in not mistaken about the place of origin of the letters, the writer/sender composes the letter on a paper with letterhead. The letterhead, therefore, is used to specify the location of the communication set-up. (CONTRACT FUNCTION). He uses the REFERENCE number to identify the file containing the subject matter of the letter. He then follows it up with the SUB-HEADING, which is the point at which the writer introduces the subject matter of discourse. The INSIDE ADDRESS is meant to identify the receiver while the writer discloses his own identify at the SIGNATURE POINT. We summarize graphically the different functions performed by the mechanical features of administrative correspondence in Table 1.

FEATURES	FUNCTIONS PERFORMED		
	CONTACT	ATTITUDINAL/MODAL	METALINGUISTIC
i. Letterhead	+		
ii. Date	+		
iii. Reference	+		
iv. Inside Address	+		
v. Salutation		+	
vi. Subheading	+		
vii. Paragraph Types	+		
viii Valediction		+	
ix. Signature	+		
x. Identifying Initials	+		
xi. Enclosures	+		
xii. Attention Line	+		

Table 1: Mechanical features of administrative correspondence.

The significance of the emphasis placed on the contact function in Table 1. lies in the fact that communication in written language is one-sided. Whereas in face-to-face communication the receiver is available to send feedback as to how the message is being received, it is not the case in written communication. Therefore, the writer does not take anything for granted in order to ensure that the message is received correctly, keeping the channel of communication constantly open so that contact is established throughout the duration of the communicative event by means of the devices listed above. The metalinguistic function of language is even designed to complement both the attitudinal and contact functions.

10.   Attitudinal function

Paralinguistic elements are attitudinal in function. But because they are nonlinguistic by nature, they can only be present in situations in which both participants are physically present. In the type of communication treated here, only the writer is present and the only means by which the message can be conveyed, and the writer can direct how the message should be received, is through language.

The category of language that is readily available for the performance of attitudinal function is the modal auxiliary verb. There are two main kinds of mean-

ings for modal auxiliaries. These are what Greenbaum & Quirk (1990:60) refer to as

(i)   Intrinsic modality which involves some intrinsic human control over events; intrinsic modality includes concepts such as 'PERMISSION', 'OBLIGATION', 'VOLITION'.

Examples include:

(1)   You CAN relax now (You are allowed/permitted to ...)

(2)   I'LL phone as soon as I return (I intend to phone ...)

Intrinsic modality is also referred to variously as 'deontic', 'root' (Palmer: 1986: 11), and 'modulation'.

(ii) Extrinsic modality which involves 'human judgement of what is or is not likely to happen'. It is also referred to as epistemic modality which is concerned with the degree of commitment by the speaker to what he is saying — attitudes and opinions of the speaker (17). Examples include:

(3)   Even a professor CAN make mistakes (it is possible)

(4)   You MUST be very careless (It is obvious that you are ...)

Each of the modal auxiliaries has both extrinsic and intrinsic uses. This leads to situations in which there is an overlap of the two uses. But more serious problems occur when modals are used where it is not possible to decide which of the two uses is involved:

You MUST report at once.

This means either

(a)   You are compelled to report ... or

(b)   It is logically necessary that ...

In addition to the numbered examples in the discourse above, the following attitudinal uses of the modal auxiliaries were also discovered from our sample texts.

(5)   I hope you WILL be able to serve ...
       The two kinds of meanings or modality are demonstrated here:

       (a) The extrinsic modality which has a predictive value realized by the modal auxiliary *will*. The predictive value of *will* is reinforced by the choice of verbal 'hope' (the wish for something to happen).

       (b) the intrinsic modality of 'ability'. This is realized with the non-verbal structure
            be + able + to as we explain later.

(6)   I WILL be delighted to receive your reply as soon as possible.

Will in (6) expresses an intention, i.e., deontic modality accompanied by the sense of prediction, 'as soon as possible', which is the epistemic kind of modality.

(7)   It WOULD be highly appreciated if ...

The modal *would* here also expresses 'intention' but in the past form, the modal is both more tentative and more polite. Therefore the intention of the writer is a more polite one here than if he had used the present form *will*.

(8)   We SHOULD be grateful to have all the relevant documents.

The use of *should* in (8) is in the sense of logical necessity or obligation. In other words 'It would be logically necessary for us to be grateful ...' On the other hand *should* as used in (8) could have meant 'intentionality' if it had been in the present form.

(9)   We SHOULD be grateful if you could please indicate your travel plans.

Should in (9) also means the same thing as in (8) but *could* in the conditional clause means 'tentative possibility'. We may paraphrase example (9) as follows:
It will be a logical necessity for us to be grateful if it were possible for you to indicate ...

(10)   All your papers SHOULD reach the Personnel Office before the end of the month

In example (10) *should* stands for obligatoriness. In other words it is obligatory that the papers be received on the stipulated date, failing which the opportunity would be lost.

(11)   You WOULD be paid your travelling allowances when you return.

Would expresses promise but in a more polite manner than *will*.

All the identified modal auxiliary verbs and the uses into which they were put can be summarized as in Table 2:

MODAL AUXILIARY	USES							
	INTRIN- SIC/ DEONTIC					EXTRIN- SIC/ EPISTEMIC		
	ABIL- ITY	PER- MIS- SION	OBLIGA- TION	VOLITION		POSSI- BILITY	NECES- SITY	PREDIC- TION
				INTEN- TION	INSIS- TENCE	(TENTA- TIVE)		
1 CAN		x(2)						
2 COULD						x(30)		
3 WILL								x(60)
4 WOULD			x(68)	x(45)				
5 SHOULD			x(20)					

Table 2: Modal auxiliaries and their uses
(Figures in brackets indicate the number of occurrences with that meaning.)

We observe the scanty use of modal auxiliary verbs in our sample texts. For instance, of the 10 possible modal auxiliaries in the system, only 5 are selected for use. Out of the five used, *can* occurred only twice in the total corpus. We should not lose sight of the semantics of *can* which may explain its rare occurrence. We may also observe the total absence of the use of MUST in the materials. *Must* usually expresses 'compulsion' and absolute certainty. Such an attitude, toward either propositions or participants in a communicative event, may tend to be arrogant, pompous, and high handed. Consequently, administrators, cognizant of the people they are corresponding with, tend to avoid such attitudes. On the other hand, we observe a preference for such modals that reflect the corresponding desire for politeness, tentative volition, and obligation on the part of the writer. The general tendency toward politeness is heightened by the use of such explicit modal devices as we shall explain below.

11. Other exponents of modality

Although modality is attitudinal in function and the obvious grammatical category available for the performance of this function is the modal auxiliary verb, modality can also be realized by other modal devices, i.e., attitudinal devices such as an attitudinal adverbial like the 'modal adjuncts' and 'disjuncts'. For instance, examples of such explicit modal devices as 'intensifying adverbial modifiers' abound:

(12) You are INDEED part of the success ... (15 times)

(13) It would be HIGHLY appreciated if ... (20 times)

(14) ... in expressing our PROFOUND gratitude. (10 times)

(15) I WHOLEHEARTEDLY express our appreciation (5 times)

Even the volition 'WILLINGNESS' is expressed explicitly

(16) The Vice-Chancellor is willing to approve (4 times)

When the imperative mood or command becomes inevitable in these texts, it is usually toned down by the addition of such courtesy adjuncts as *please* and *kindly*:

(17) KINDLY bring along any useful documents (15 times)

(18) You will PLEASE familiarize yourself with the rules (18 times)

(19) You are invited to PLEASE serve ... (30 times)

(20) PLEASE accept our most sincere thanks (20 times)

(21) KINDLY refer to our letter ... (15 times)

(22) The Vice-Chancellor CORDIALLY invites you to ... (10 times)

In addition to the tendency towards politeness in administrative language, formality is equally an attitude adopted in the texts.[1] This feature is revealed by the use of such a formal verb for neutral volition as *wish*.

(23) I WISH to convey the appreciation of ...

(24) We WISH to inform you that ...

Other means of realizing modality in the text are such verbal structures as *be* + adjective - *to:*

(25) I trust you will BE ABLE to serve ...

(26) The Vice-Chancellor hopes TO BE ABLE to approve ...

(27) The Board IS WILLING to accept ...

in which the structures have been used to realize the deontic meaning 'ability' and 'willingness' explicitly.

12.   Further realization of contact function

In addition to the mechanical features of instrumentality, most of which are used to perform contact function, we also find that the contents of the letters are introduced with the following expressions:

(28) Attached is a copy of request made by ... (2 times)

(29) Your letter of ... refers (20 times)

(30) With reference to my letter
No. JAMB/EXAM/3 Vol. I ... (5 times)

(31) Please refer to your memo reference ENG/CS.9 (10 times)

These are to ensure that since communication is one-sided, the addressee is not mistaken about the issues being discussed. Their function is therefore to open up the channel of communication with the reader. This is done by using expressions to single out and identify the points under discussion. Also within the letters, we find expressions like

(32) A photocopy of the ... is attached

(33) I enclose herewith an extract of ...

(34) Please find enclosed a copy of ...

There are also such redundant expressions as

(35) Once again thank you ...

(36) Kindly, I enclose herewith ...

(37) Once again, please accept ...

These are signals that the writer is about to conclude the points that he is making in these letters. Their main purpose is to compensate for the absence of feedback in written language.

13.   Metalinguistic function

An interesting observation from our sample texts is the relative absence of the metalinguistic function in the strict sense of language being used to define terms.

Rather, what we find is the writer using language to explain how his points are to be understood:

(38)   There is no more allocation to your Department because your quota has been exhausted.

(39)   The Board intends holding a workshop for the item writers and moderators of test items to improve the quality of the items ...

In (38), the reason for there not being any more allocation is, 'because your quota has been exhausted' In (39) the reason for holding the workshop is also given.

These uses are not unique to written communication. Rather, it is the significance attached to the uses that is of importance. Accordingly, such METALINGUISTIC uses of language are designed to perform the kind of contact function performed in face-to-face interaction by FEEDBACK. This is why we said earlier that in writing, language is used METALINGUISTICLY to perform contact function. For, in a speech situation, if there is lack of understanding, the listener can immediately signal this paralinguistically through either facial expression or other kinds of body movement that demonstrate a block in understanding. But by showing in writing, either through explanation or definition, (i.e., metalinguisticly) how terms are to be understood, the writer tries to maintain contact with his reader.

14.   University administrative language and officialese compared

The following observations could be made in comparing the two kinds of language. Both are languages composed by administrators, either in the university or the civil service.

With reference to the CHANNEL of communication, the instrument of administration — the letter — consists of bilateral print which involves one participant writing at a time. In terms of MODE, the letter is written to be read as written. We might add that it is dialogue. As regards MEDIUM, we are dealing with institutional communication, writing produced in response to a situation where the addressee is both absent and unknown.

In other words, the letters are produced in response to the situations that exist either in the ministries which make up the civil service or the public institution. Thus members of the general public — the clients — are absent from the situations. Even among colleagues, the addressee is absent from the situation in which the addresser is operating. Also such an addressee is unknown. Even when the addressee is known, such knowledge is not admitted. The only knowledge of the addressee admitted by the addresser is that — the addressee — is a role-filler. Hence the letters are written in formal tenor of discourse.

In terms of the mechanics of instrumentality, the features in both types of correspondence are the same, viz, heading, inside address, references, salutation, subheading, main-body, valediction, identification/signature. However, differences between the two situation-types were noticed in the following respects in terms of method of operation:

(a)   salutation/valediction

(b)   paragraphing

(c)   identification/signature

With reference to officialese, salutation and valediction occur very rarely, whereas both are regular features of the language of university administrators. As regards the complimentary close (valediction), it is more varied in administrative language — taking the forms:

Yours faithfully (8 times)

Yours sincerely (40 times)

Sincerely yours (2 times)

In officialese, valediction takes two main forms:

Yours faithfully

Yours truly

Occasionally, we find

Your obedient servant.

Paragraphs in officialese are usually numbered to indicate the number of points being made. This is not the case in the other situation-type, where paragraph setting is either indented or blocked.

The composers of the letters in both organisations are carrying out instructions or orders from their superior officers who are the permanent secretary (head of a ministry) or the registrar in the university, and so on. That such an officer is carrying out an instruction is made clear in the opening sentence of the first paragraph through an indirect statement or reported in imperatives. But the forms of the reported imperatives are different in the two kinds of language.

In the case of University administrative language, it takes the forms

... you are hereby invited to please ...

I write on behalf of Senate ... you have been appointed ...

In officialese it takes the form

I am directed to ...

This is the most common form.

In the case of identification, the civil servant in officialese always carries out his writing on behalf of the Permanent Secretary.

Yours faithfully
(M.A. Ifeta)
for Permanent Secretary

But in university administrative language, officers do not normally sign letters on behalf of their superior officers unless such officers are carrying out specific orders from their superior officers.

Yours sincerely
R.A. Egborge (Mrs)
for Registrar

Otherwise, the writer takes responsibility for the letter thus

(i) Yours sincerely
E.O. Adesanya (Mrs)
Deputy Registrar (PGS)

(ii) C.M. Ordia
Faculty Officer

An interesting feature of a complimentary close in officialese is the enclosure of the name of the writer in brackets.

(M.A. Ifeta)
for Permanent Secretary

Brackets are used to supply additional information (inclusion) which is not central to the discussion. The implication here is that the writer is unimportant. But this feature is absent in administrative language.

15.   Conclusion

Our objective in this paper has been the examination of administrative correspondence taken from universities and their parastatals in order to ascertain the devices used by it to compensate for its situational differences from speech or spoken English. We confirmed that language is not the only means of conveying meaning in face-to-face interaction. This is because attitudinal meaning is conveyed not by language, but by paralinguistic elements. But in written language virtually the entire burden of communication falls on linguistic elements. Therefore written communication has to manipulate language in such a way as to make it perform all the functions required of it in any communicative event.

Attitudinal or modal function in the present paper is performed by modality, which is realized by modal auxiliary verbs and other agencies of modality.

Contact function is realized mainly by the mechanical features of instrumentality as well as through the use of redundant expressions. Metalinguistic function is not a prominent feature of this language. But when it occurs, it is used in the language to perform a contact function. Some of the devices identified are unique to this situation-type, but most are shared with officialese. In other words, any situation-type that features the totality of the linguistic devices identified in this paper must be that of administration.

NOTES

[*] The materials for this section derive from Longe (1985:306-13). The source also contains the register analysis of officialese and administrative language. Hence a genre analysis of administrative language would be repetitive. Rather, we have concentrated on the instrumentality aspect of the analysis of language in situation.

[1] Formality is a consequence of the role relationships that obtain among participants who refer to themselves either in terms of the roles they perform in the organization — (status) or in terms of their surnames. Politeness on the other hand is an attitude of the mind that enables a junior officer to avoid being rude to a superior officer. A junior officer who is mandated to order a superior officer to do something may choose to give the order in a polite manner, unless such an officer is dealing with a superior officer that he does not respect. But in administrative language, politeness is the rule.

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APPENDIX A.

(I) JOINT ADMISSIONS AND MATRICULATION BOARD
MATRIC. & EXAMS DIVISION

Telephones: 01-603220, 603221   13 Hawksworth Road, Ikoyi
Telegrams: ADMISSIONS. IKOYI, LAGOS   PMB. 127468
Telex: 21146 JAMB NG   Lagos, Nigeria
Ref. No. JAMB/EXAM/M/3/Vol.V/20   17th March, 1986

(II) Dr. V.U. Longe,
Dept. of English,
University of Benin,
Uenin City,

(III) Dear Sir/Madam,
(V) 1986 Moderating Committee Meetings for the
Joint Matriculation Examination

(IV)   With reference to my letter No. JAMB/EXAM/M/Vol. V/1 dated 31st January, 1986
on the above mentioned subject, you are hereby invited to please serve as a Moderator in
the moderation of the Joint Matriculation Examination test items in Use of English.

A photocopy of the syllabus is attached to help you prepare for the meeting. It would
be appreciated if you would please familiarize yourself with the syllabus before the meet-
ing, In subjects where texts are prescribed, it would be appreciated if moderators faniliarize
themselves with the texts. Kindly bring along any useful reference books to the meeting.

Hotel accommodation has been reserved for you, Please find attached the timetable,
information on accommodation and venues for the meetings. You are requested to please
check into the hotel on the eve of the meeting.

Your meetinq is scheduled for two full days and you would be paid an honorarium of
one hundred naira (N100.00). In addition, your travelling expenses will be re-imbursed at
the meeting.

Meetings commence at 9.00 a.m. daily.

Wishing you a pleasant trip.

(VI) Yours faithfully,

[signed]

(VII) E. Fabyan (Mrs.)
for Registrar

REGISTRAR: M. S. ANULU, B.A. (LOND.)

APPENDIX B.

A FILE MINUTE

Perm. Sec.   **XXXXX**
DMST
SAF
DPHS
DNHP
DFDLS

Attached a.b.c are five copies of stenciled minutes of the meeting of the Central Departmental Promotion Board for your signature

Pls.

PAS(Admin.)

06/1/78

A SOCIOLINGUISTIC PROFILE OF
THE SENEGALESE SPEECH COMMUNITY

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The object of this study is to provide a linguistic profile of the Senegalese speech community and of the speakers' attitudes toward the various languages spoken in that country. After giving the geographical location of Senegal and a brief historical account of the impact of the French colonial linguistic policies in the country (which partly explains the present sociolinguistic situation in Senegal), the linguistic characteristics of the Senegalese speech community are described and the attitudes of speakers towards their own and other languages are discussed.

1.   Geographical location: The country and the people

Senegal is located in West Africa between the 11th and the 17th parallels west and 12th and the 16th parallels north (see the map in Figure 1). The country spreads 400 kilometers from north to south, and 600 kilometers from east to west, covering a surface of about 200,000 square kilometers. It borders Mauritania in the north, Mali in the east, Guinea-Conakry in the southeast, and Guinea-Bissau in the south. The Republic of the Gambia is wedged into the south of Senegal, dividing the latter into two parts. In the west, Senegal borders the Atlantic Ocean with about 500 kilometers of coastline (Dialo 1983:4). The country is divided into 10 administrative counties: Rufisque, where Dakar (the national capital) is located, Thies, Kaolack, Diourbel, Saint-Louis, Ziguinchor, Tambacounda, Louga, Fatick, and Kolda. Each of these counties represents the domain of particular ethnic groups with their own languages. Thus, several ethnic groups are found in the different counties of the country, among which the major ones are: the Wolof, found everywhere; Seereer, mainly in Thies and Kaolack; Pulaar, spoken by the Tukulor in Saint-Louis (heavily influenced by Wolof) and by the Fulakunda in Kolda (influenced more by Mandinka); Mandinka and Joola (in Ziguinchor); and Soninke (in Tambacounda).

United Nations estimates in mid-1997 gave the total population of Senegal as 8.8 million. Over half of the population lived in towns, with the capital Dakar containing about two-thirds of the total urban population. The country is very unevenly populated, since poor farmers and jobless people move into big cities, especially Dakar, in search of jobs and a better standard of living.

Map 1. Senegal
Approximate distribution of the six major national languages
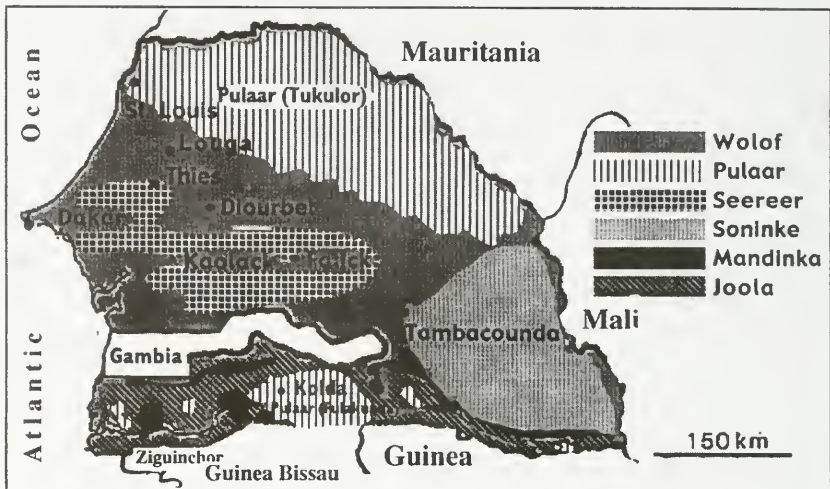
2.   The linguistic impact of colonialism in Senegal

The country came into contact with France in the early 17th century, when French commercial companies started trading at the mouth of the river Senegal, first entered by Europeans in 1445 (Crowder 1962:7). By the end of the 18th century, Saint-Louis, with a population of 7,000, had a European colony numbering 600, the largest on the whole coast of West Africa (Crowder 1962:8). It also had an important assimilated mulatto community, whose descendants are known today as Saint-Louisians. Most French men there took African mistresses, known as *signares*, and ensured the education of any children they had by them (Crowder 1962:8).

The French, like most Europeans who came to Africa in colonial times, denied the humanity and culture of the dominated people and used both religious and political means to achieve the economic-based *mission savatrice* ('salvation mission' to civilize the uncivilized). The so-called 'salvation mission' was primarily motivated by the socio-economic problems that resulted from the religious wars affecting the European nations. These problems ultimately led to the colonization of Africa and the settlement of the American continent. The French used colonization to implement a direct assimilation rule in their colonies. This policy was based on the belief that in order to change 'the uncivilized people', they had to 'enter into their minds'. Consequently, they started building schools and churches to achieve their assimilation objectives , i.e., to annihilate the culture, beliefs, and languages of the local people, to make them accept willingly an inferiority complex vis-à-vis French colonialists. The assimilation process was mainly implemented through the introduction of French as the sole language of education.

Ultimately, the process was designed to make local people use only French as their major means of communication and at the same time feel grateful to have the 'favor' of speaking the 'super-language' of the 'civilized masters.'

Thus, French started to be used as the official language of the colonial French government based in Saint-Louis. The French general Faidherbe created some schools for assimilation purposes. The program was called *l'école des fils de chef* 'the school of the children of chiefs'. The French colonial government launched the program as a means of assimilating the local chiefs and their entourages.

Such a policy was mainly motivated by the belief that once these chiefs and families were assimilated, the assimilation process would be easier, since the assimilated people would be already shaped by the French world-vision and culture, and would be able to perpetuate the acculturation and assimilation process among their own people. The Senegalese who attended this program were given either political or other governmental functions in order to participate actively in the assimilation process set by the French colonial power.

However, as noted by Bokamba (1984:6), French education for the colonials was not an end in itself, but rather a means through which acculturation and servitude were achieved. The post-World-War II era was pivotal in the demystification of the invincible "master", since many Senegalese were drafted to participate in the war. Those Senegalese who participated in the war, known as 'Tirailleurs', saw the real 'face' of the French 'masters'. The myth of the invincible, wealthy, almighty, and honorable master was destroyed by the German invasion of France. The perennial problems of sundry nature created by the German invasion of France (which required the help of the colonials in order to free France from German control) displayed the weakness and dissipated the colonial myth of the 'almighty French masters'. Thus, the post-war period was characterized by Senegalese self-assertion and protests against the injustices of colonial rule (Diop 1989:23), which ultimately led to the independence of the country in 1960.

However, the long presence of the French colonial power in the country resulted (as in many African countries) in the adoption of Standard French as the official language. Thus, Standard French became the language of the government from its independence onward and pervades the whole educational system. Standard French was adopted after independence as the official language of the country mainly for the following reasons:

(1) The first post-independence government inherited Standard French with the belief that it was the appropriate language to run the government and to allow for the maintenance of national unity. This belief resulted from the fact that French was already used in all the sectors of the 'inherited' independent government.

(2) French was considered to be the way to technology and science, and the means to communicate with the outside world.

(3) Their was no substantial work on codification and standardization of any local language (including Wolof, the major lingua franca) that could be used as the official language of the government.

The adoption of French as the official language of the country produced new relationships among local languages and diminished the scope of Wolof (Diop 1989:26). However, French did not replace the functional roles played by local languages. French only occupied the official domain, while local languages continued to be used in the daily lives of the people.

Today, the long co-existence of French and Senegalese languages has produced interesting sociolinguistic phenomena in the country. In the cities, not only Standard French is found in formal governmental settings, but Urban Wolof and non-standard French are used in informal settings. Other local languages are found in both formal traditional and informal situations. Each of the languages and varieties fulfills specific functional roles in certain geographic locations in the country.

3.   The Senegalese speech community

Given the difficulties encountered in the definition of 'speech community' in the field of sociolinguistics, we adopt Romaine's 1994 definition, which provides good tools for the description of the Senegalese speech community.

A 'speech community' is defined as a group of people who do not necessarily share the same language, but rather a set of norms and rules for the use of language (Romaine 1994:23). In this respect, the social, cultural, and conceptual knowledge is more crucial than the linguistic one in determining whether or not a person belongs to a given speech community.

Thus, on the basis of the cultural, conceptual, and social norms that all ethnic groups in Senegal have shared for generations, despite their different languages, the Senegalese speech community can be said to be very complex. The Senegalese speech community is a multilingual one in which each language and variety plays a given role in certain areas. The Senegalese speech community consists of Standard French, non-standard French, Urban Wolof, Kajoor Wolof (Pure Wolof), and the 5 national languages. Kajor Wolof and local languages have special national status in the country, as will be seen in the following section.

3.1   Standard French and non-standard French:

There are two varieties of French spoken in Senegal: Standard French and non-standard called *Faranse Njalaxaar*. Standard French is used in formal governmental settings, such as in the Senegalese National Assembly, throughout the educational system (from the elementary level to the university), in the radio, newspapers, and television.

The major characteristic of Standard French in Senegal is its respect for the rules prescribed by the French Academy, which is intended to maintain the 'purity' of the language from borrowings and other foreign linguistic influences.

Although this institution is located in France, its 'fingers' (effects) are felt in many other former colonies, such as the republics of Ivory Coast, Gabon, Mali, and the present Republic of Burkina Faso, to name only these. Thus, Standard French in Senegal is grammatically identical to the standardized middle-class Parisian vari- ety of French (Standard French).

Although, the African accent is obviously heard when Senegalese intellec- tuals speak Standard French, it still remains that the variety they use is lexically, syntactically, and morphologically based upon Standard French. As a matter of fact, Léopold Sédar Senghor, the first Senegalese philosopher-statesman-poet- president, who ruled the country from 1960 to 1980 (Swigart 1994:183), was the first African intellectual to be admitted to membership in the French Academy. Al- though his admission to the French Academy implies the degree of the success of the French assimilation policy in Senegal, it also illustrates linguistically that the Standard French variety is well implemented in Senegalese society through the government, the educational system, and the elite.

Nowadays, Standard French is used in very few Senegalese families as a mother tongue. It is mainly used by those Senegalese families of French origin, early-Christianized families, and by a few Senegalese families who took part in Faidherbe's program (l'école des fils de chef). These groups represent not more than 5% of the overall Senegalese population. Most of the intellectuals who led the early government after independence, such as Galandou Diouf, Lamine Guéye, Léopold Sédar Senghor, to name only a few, were from these groups.

Given the role played by Standard French in Senegalese society, it is obvi- ous that it enjoys high prestige. Standard French is generally associated with education and high social class. It is required for formal business jobs and in all governmental services. Thus, although it is not used as the mother tongue of the overwhelming majority of the people in the country, due to its pivotal role in the economic and political field of the country it is associated with high prestige. However, despite the prestige of Standard French, its scope is basically limited to educational and governmental domains in the country. In other domains, Urban Wolof, Pure Wolof, non-standard French, and other local languages are used.

Although many of the intellectuals who work in the government speak Standard French perfectly, they do not use it in their daily life. Instead they use Urban Wolof, or one of the local languages (their mother tongue) outside their work places.

People who have not attended the French school and those who have only been to primary school are the users of non-standard French. This variety is used when these people talk to French speakers, such as tourists, the few Sene- galese native speakers of French, other African francophone speakers, or members of other ethnic groups who do not speak Senegalese local languages. This variety is mostly heard in market places and in other informal settings.

Assuming that 'creole' is the 'nativized form' of pidgin (mother tongues of some people), while 'pidgin' is nobody's mother tongue (Romaine 1994:163), it

can be said that non-standard French in Senegal is a pidgin, since no Senegalese person refers to it as his/her mother tongue.

In fact, there is a Portuguese-based creole (simply called Creole) spoken on the border between Senegal and the Republic of Guinea-Bissau. However, given the small number of speakers of this Creole in the country (less than 2% of the Senegalese population), the language is not commonly used, except by the few Guinean immigrants who live on the border between Senegal and Guinea-Bissau. I will not discuss it in this study, as it is not recognized as one of the Senegalese languages. This Creole is the major lingua franca used in the Republic of Guinea-Bissau, where it plays the same role as Wolof in Senegal.

I use some data taken from letters written by a woman who is 25 years old, and a boy who is 18 years old to show the linguistic characteristics of non-standard French in Senegal. Both of them are Wolof native speakers, and have only attended French primary school. Examples (a) and (b) are correct Standard French constructions of examples (c) and (d). The boy wrote example (c), and the woman example (d).

Standard French

(a) Cher frère aîné, j'ai préparé les bagages moi-même....

(b) ...mon frère, prend pas ça à la légère, car c'est un problème sérieux pour nous.

Non-standard French

(c) Sér garand férér, sé péréparé lé bagaas awek matét...

(d) ...mon férér, pa prend sa kom sé lésér, kaar sé poroblèm diir pur nous.

In comparing (a) and (c) we notice that all the words used in the non-standard variety come from French. However, it is obvious that these words have been adapted to the linguistic system of Wolof, the language of the user.

Phonologically, the non-standard variety is different from Standard French. Various phonological processes characterize the non-standard variety. In (c), an epenthesis rule is used to insert the low open vowel [a] to the consonant cluster in the Standard French word [grã] *grand* 'big or elder'. Similarly, in both (c) and (d), the vowel [e] is inserted to break the consonant cluster found in the Standard French word [frɛːr] *frère* 'brother', creating [ferer]. In the non-standard variety (d), the back mid vowel [o] is introduced to break the initial consonantal cluster in the Standard French word *problème* [problɛm]. The epenthesis rule copies the vowel of the Standard French word to the new first syllable.

These rules are conditioned by the phonotactic constraints of Wolof, which (like most West Atlantic languages) favors a CV syllable in word-initial position. Consequently, this epenthesis is one of the phonological features that separate non-standard French from Standard French. The epenthesis rule can be regarded as a variable that indicates the low social status, or rather the lack of education, of Senegalese who use non-standard French.

In addition, the palatal fricative [š] in the French word 'cher' [šer] is rendered as the alveolar fricative [s] in [ser] in (c). The Standard French voiced bilabial [v] in 'avec' [avek] is replaced by the glide [w] in [awek] in example (c). The Standard French voiced palatal fricative [ž] in 'j'ai' [že] and in 'bagages' [bagaž], is also replaced in (c) by the voiceless alveolar fricative [s] in [sé] and [bagaas].

These phonological phenomena are referred to as segmental substitutions (Ndiaye 1996:109). They represent elements of identification of non-standard French in Senegal and constitute variables showing that a given individual belongs to the uneducated class.

Morphologically, the non-standard variety does not display the plural morphological inflections found in Standard French. In (c), the plural inflexions found in the transcription of Standard French *bagages* in (d), is missing in *bagaas* in the non-standard variety. The Standard French reflexive pronoun *moi-même* 'myself' is replaced by *matét*, which comes from *ma tête* 'my head' in Standard French. The fusion of the two Standard French words *ma + tête* to form *matét* in the non-standard variety is due to the influence of the Wolof system, in which *sama-bopp* literary means 'my head', and 'myself' in such contexts.

In (b) the Standard French phrase *prend pas ça à la légère* is rendered as *pa prend sa kom se lésér* in (d), *un problème sérieux* is rendered as *un porobolem diir*. Note that the Standard French negative *pas* [pa] precedes the verb *prend* in the non-standard variety, whereas it follows it in the standard.

The replacement of *sérieux* by *diir* is due to the fact that in Wolof the ready-made phrase to be used in such contexts is 'a hard problem' [jafe-jafe ju meti], and not 'a serious problem', as in Standard French. Consequently, the choice of the word *diir* by non-standard French speakers is the result of a lexical transfer from the Wolof linguistic system to that of Standard French.

The indefinite article *un* 'one' in the Standard French noun phrase *un problème sérieux* is deleted, and the adjective *sérieux* is replaced by the French word *dur* 'hard', which is adapted to the Wolof sound system, and becomes [diir], since Wolof does not have the high front rounded vowel [y]. Thus, Wolof speakers commonly replace the French vowel [y] with the closest existing Wolof high front long vowel: [i:]. These linguistic patterns characterize the non-standard variety of French spoken in the country.

The base or the lexifier language of this variety is obviously French, and the substrate is Wolof. It important to underscore that non-standard French varies slightly from region to region in Senegal, due to the major influence of languages spoken in each area. However, Wolof, as the major lingua franca of the country, represents the major substrate of Senegalese non-standard French. Thus, the grammar of non-standard French is mostly a simplified grammar based upon Wolof, while the lexicon comes from Standard French.

3.2   Urban Wolof and 'Pure' Wolof

The long contact between French and Wolof has created two Wolof varieties in Senegal: Urban Wolof, used especially in cities such as Dakar (the capital city of the country), and Kajoor Wolof (Pure Wolof).

According to Swigart (1994:176), Urban Wolof refers to a wide range of linguistic forms that are commonly used in Dakar. She notes that these forms differ from one another in phonology, structure, and lexicon. They have in common the following features: they are all made up of elements deriving from both Wolof and French (occasionally other languages). The switch between languages is of the unmarked variety (if one assumes that the unmarked variety is the expected one in a given speech context).

In Urban Wolof, Wolof and French operate together 'naturally' and most often subconsciously on the part of the speaker, and Urban Wolof is used in informal situations (Swigart 1994:176). In most formal speech situations, where the topic, participants, aim, and/or physical setting create a serious atmosphere (e.g.; religious events, courtroom proceedings, or classroom activities), a bilingual speaker would choose and attempt to maintain the use of either French or Wolof as pure as possible (Swigart 1994:176-7).

The following is an example of the Urban Wolof conversation borrowed from Swigart's (1994:177) work, in which urban forms are used. A male university student in his 20s discusses the difficulties he encountered while participating in a team of Senegalese researchers working in rural areas. The bold letters represent the Wolof words. In this variety, sometimes French words will be inflected by Wolof tenses or aspect morphemes (Swigart 1994:176) as shown in the following examples.

> (e) **Dafa** *décéder*-**woon** 'he had died'
> (Wolof morphemes in bold, French words in italics)

In this variety, French words or phrase may be followed by several words, phrases, or sentences in Wolof, creating a back-and-forth pattern that proceeds without pauses or hesitation phenomena (Swigart 1994:176). This variety also displays word-for-word translations of Wolof words into French or a French expression is rendered literally into Wolof, which would sound weird to monolingual speakers of either language. The following expressions illustrate this fact:

> (f) **Damay jel** *décision* 'I am going to take a decision',
> (from French *je vais prendre une décision*.)

This variety is the code of preference of the educated elite and of urban people, especially in Dakar. It is associated with the loss of the traditional language and culture, the (linguistic) incompetence of its user, and his/her vulgarity or disrespect (Swigart 1994:175). The following examples illustrate interesting code-switching instances found in Urban Wolof.

> (g) Parce que tu te rends compte que en fait **fii,** ...
> Because you realize that in fact **here,** ...

> **Yaa ngiy lakk Wolof** mais en fait **am na** …
> **you speak Wolof**, but in fact **there are**…

(h) **Te yow,** tu dis que **Wolof nga,** mais …
   And you say that **you are Wolof,** but …

This variety takes the form of a Wolof matrix embedded with a number of French lexical items, which creates a subtle stylistic or connotational effect (Swigart 1994:176). This variety is often heard in middle-class homes and offices, on street corners, and in public transportation. It shows that speakers of Urban Wolof are bilinguals who have both French and Wolof at their disposal and combine them to create a unique and expressive style not available to the less proficient French-speakers(Swigart 1994:177).

Swigart notes that this variety is not what a linguist would call creole, since a creole starts with a piginized form of language used as a means of communication for people who do not share the same language. She states that this urban variety emerges for opposite reasons. It is a code used by people who share more than one language and who use both in order to communicate more fully. Thus, this variety differs structurally from a creole in that a creole has developed its own structural system, and thus can be regarded as a full-fledged language, whereas the urban variety remains true to its 'roots', since its own grammatical structure is not compromised (Swigart, 1994:178). So far, no linguistic or sociolinguistic argument has been found to support the contention that Urban Wolof is a creole.

Nowadays, some French words that do not exist in Standard French are coined in the country, contrary to the prescriptive rules of the French Academy. The following French-based words are regularly used in Urban Wolof: **essenserie** (standard French: *station d'essence* 'gas station'), **dibiterie** (a type of restaurant where only meat is served). The word **essenserie** is built on French morphemes: *essence* and the suffix *-erie.* The word **dibiterie** is built on a non-French word **dibi** and the French suffix *–erie*(with the insertion of epenthetic /t/ to avoid a vowel cluster).

Although these words are not considered to be either Wolof or Standard French, they are regularly used in Urban Wolof. This shows that the French language is undergoing important changes in the country. In other words French is being 'Senegalized', i.e., used to fit the new bi-cultural reality of Senegalese society

The urban variety of Wolof is linguistically different from the 'pure' Wolof spoken in the rural areas. The urban variety of Wolof is characterized by various code switching and borrowings from French, while Pure Wolof is not. Pure Wolof is generally referred to as Kajoor Wolof, since Kajoor is the origin of the Wolof people. This variety of Wolof is free from French influence and expresses both the Senegalese speakers' pride toward their own language and their reticence toward the French language and culture.

Today, this variety is found in the religious city of Touba (the religious city of the Murid Brotherhood), and in rural areas. In Touba, Pure Wolof is granted a

high prestige, and is used in all domains of life. It shows, contrary to Urban Wolof, that one knows the culture and is proud of his or her own language. It is not however, uncommon for Urban Wolof speakers to not understand some Pure Wolof speakers, since many words and concepts of Pure Wolof are rendered with French words by Urban Wolof speakers. The following sentences contrast Pure Wolof (i) and Urban Wolof (j):

(i) **Tey, war nanu tambale sunu kureel gi.**
'Today we should start our organization'

(j) **Tey, war nanu** commencer **sunu** organisation **bi.**
'Today we should start our organization'

Not all Urban Wolof speakers would understand the two Pure Wolof words *tambale* 'to start' and *kureel* 'organization, group', since these worlds are nonexistent in the Urban Wolof lexicon. Instead, as shown earlier, Standard French synonyms such as *commencer* 'to start' and *organization* 'organization' are used. Thus, speakers of Urban Wolof display a lack of Pure Wolof words and concepts, hence their loss of moral and traditional Wolof values conveyed through Pure Wolof.

3.3 Local languages in Senegal

Senegal comprises six major ethnic groups: Wolof, Pulaar, Seereer, Joola, Soninke, and Mandinka. Each of these ethnic groups speaks its own language within its own community, located in different parts of the country. Each of these languages represents an element of identification of a given people, since each language refers to a particular ethnic group. Each ethnic group is identifiable by the language of the group, and by the linguistic forms of their names. Thus, while local languages convey historical and cultural references of its speakers, Standard French, non-standard French, and Urban Wolof do not necessarily convey the same information.

Although all of the ethnic groups are proud of their language as a cultural reference, the overwhelming majority of speakers of other languages use Wolof as their second language. This is due to the fact that the rural exodus of seasonal workers to cities led to the adoption of Wolof, since it is the primary spoken language in the country. Thus, the different ethnic groups use Wolof as the lingua franca to communicate with other groups. The spreading of Wolof in the country, and even into the neighboring countries, is historically due to the fact that Wolof people were the main mobile traders in Senegal, followed by the Pulaars.

While most Senegalese speak Wolof as a second language, irrespective of their ethnic groups, the other local languages are used in rural areas and in certain conservative families in the cities. These languages entertain mutual borrowings with Wolof, Classical Arabic, and French, due to their long co-existence.

However, within each ethnic group, the predominant language is that of the group. Thus, local languages are used in traditional and nontraditional settings in the geographical locations of their speakers. For example, in Casamance (the region of the Joola people), Joola is used in most Joola families in the rural area, in

traditional activities, such as naming ceremonies, village meetings, circumcisions, etc.

The same phenomenon is also observed in Pakawu (in the county of Kolda), where the Mandinka and some Pulaar people (the Fulakunda) are located. It is also found in the north, where the majority of the Pulaar people (the Tukulor) are located, in the center, where the Seereer people live, and in the East among the Soninke people. Each of the ethnic groups uses its language as the major means of communication in its community.

In each of these areas, Wolof, Standard French, or non-standard French is generally used when people have to communicate with government officials or others who do not speak their language. However in each of these communities, the language of the people is used in both formal and informal situations. Each of the local languages has a particular speech style used in formal and informal communicative contexts. Thus, these languages are granted equal national prestige, since they fulfill similar social functions in different regions of the country.

4. The attitudes of speakers

4.1 Attitudes toward Standard French and non-standard French

Negative reactions against Standard French have been displayed in Senegalese society for a long time for several reasons. In colonial times, many local people were against sending their children to the French school for fear they would become assimilated to French culture and change their religion. Religious identity plays an important role in the Senegalese speech community, since Islam is the major religion of the country. The linguistic resistance against French assimilation is essentially found in the Murid Brotherhood discussed above. In addition, a number of intellectuals have also reacted negatively to the French assimilation.

Before the advent of modern linguistics, African languages were considered by Europeans as being incapable of expressing certain deep philosophical thoughts, and were referred to as 'dialects', i.e., 'sublanguages'. Such a view, designed to show the superiority of European languages and people over the local languages and colonial people, was scientifically disproved in Senegal when Professor Sakhir Thiam, former Minister of Higher Education translated university mathematical programs into Wolof, and the Egyptologist Professor Cheikh Anta Diop translated the *Theory of Relativity* into Wolof (Bokamba 1987:2).

Many intellectuals have chosen to cleanse their Wolof from all French influence, using a Wolof lexicon that is often difficult for Urban Wolof speakers to grasp. This movement is called 'revernacularization'. The movement represents an antidote to the 'devernacularization' that Wolof has undergone in the last years (Thiam 1990:10-12). The 'revernacularization' led to an attitudinal shift toward speakers of Pure Wolof. Instead of showing that one is uneducated, speaking Pure Wolof in Dakar may mark one as an active intellectual expressing his/her rejection of French assimilation.

One of the better-known intellectuals in the 'revernacularization' field is the Senegalese journalist Ahmed Bachir Kunta. He is known for coining new Wolof words or for borrowing Arabic words, which he would adapt to the Wolof linguistic system, when confronted with the problem of finding the right word to use.

Thus, the use of French without at least some recourse to Wolof expressions or lexical items in a friendly conversation, or even in an informal discussion in the workplace, marks one as a too-willing victim of the French civilization mission (Swigart 1994:179). In fact, most Senegalese do not wish to display that kind of admiration or closeness with the cultural 'center' of colonial times (Swigart 1994:179).

For this reason, Swigart 1994 notes that to speak French is desirable, but to speak French too much is inappropriate. Thus, no one wants to speak French exclusively. Consequently, the young people who have been brought up in France or in a very francocentric Dakar family, and who consequently have no knowledge or only a poor command of Wolof, find social interaction very difficult (Swigart 1994:179).

Although many efforts have been made to reduce the status of Standard French in Senegal, the fact still remains that colonial policies have helped the French language to become well established in Senegalese society. Standard French is still associated with a high social class, since it is the language of the decision-makers and the decision-making centers of the country.

As for non-standard French, given that it is no-one's mother tongue in the country, it is the least prestigious variety. This variety is equated with lack of education in the French school system. Although this variety implies that one is not educated in French, it does not always mean that one belongs to a lower class. In Senegal, it is not always correct to equate the lack of French education with low social class.

In fact, many people who use this variety have been successful businessmen in the informal sector of Senegalese society. Note that one cannot be a speaker of both Standard French and non-standard French in Senegal, since Standard French is exclusively used by the educated elite while non-standard French is mainly used by French-illiterates or near-illiterates. Senegalese people who use the non-standard French variety, such as the Wolof natives called the *Baol-Baol* and the Pulaar people, are very successful businessmen of the informal sector in the country and many of them would belong to the Senegalese upper middle class. Ndiouga Kébé and Djily Mbaye are two of the many wealthy people in the country who have never attended a French school. Despite their illiteracy in French, such people belong to the upper middle class. Thus, although non-standard French implies that one is not working in the government and that one is illiterate in French, it does not necessarily mean that one belongs to a low social class in the Senegalese speech community.

It is worth mentioning that most of the French-illiterates in the country have studied Classical Arabic for religious purposes. Although they do not use it for

oral communication purposes, they do use the Arabic writing system to keep their records, run their businesses, and write letters. This practice started before colonization. The majority of Senegalese people were Muslim before colonization. People were educated in Muslim schools and wrote Arabic and their own languages using Arabic characters (Diop 1989:28). However, interestingly, the Arabic language is never used as a medium of communication in the daily life of Senegalese people. Its use is mainly for religious purposes. Classical Arabic is a very respected language and is granted a HOLY STATUS in the Senegalese speech community, as it is the language of the Holy Kuran, which is the book of Islam, the religion of about 90% of the Senegalese population.

4.2   Attitudes toward Urban Wolof and 'Pure' Wolof

Due to the fact that Urban Wolof is used in the cities where the educated elite (government officials, students, businessmen, etc.) is located, this variety is associated with high social class. The use of a vernacular language mixed with a European language marks a speaker as educated, or of a relatively high socioeconomic status, and as someone who values both their indigenous and their more international status (Swigart 1994:178). This variety has undergone a process of 'devernacularization', whereby it has become dissociated from the values traditionally linked to its use in rural village settings (Thiam, 1990:10). Moreover, many French-illiterates show ingenuity in their imitation of Urban Wolof, while retaining an essentially Wolof phonology, as shown in the following example (Thiam 1990:15):

(k) Begg naa **woyase**, waaye amuna **moyee**.
    'I want to **travel**, but I do not have **means**.'

This sentence is commonly heard in the cities. Some uneducated people usually use it. The 'Wolofization' of the French words *voyage* = **woyaas** 'travel', and *moyen* = **moyee** 'means' is due to the fact that the illiterates in French are trying to use the Urban Wolof variety to show their elite status, since it is equated with the urban educated Senegalese elite. In other words, such speakers are trying to borrow the prestige (Labov 1966:65) associated with Urban Wolof to mark their elite status.

However, it is common to find the reverse in Touba (the religious city of the Murid Brotherhood in Senegal). In fact, once in Touba, many Urban Wolof speakers pay attention to their speech, and make efforts to speak without any French words when talking to spiritual leaders or their entourage, for fear of being labeled *tubaabe*, the equivalent of the French word *assimilé* 'assimilated'. In Touba and in many other rural areas in the country, to speak Pure Wolof is highly desirable, while speaking Urban Wolof is less desirable, and speaking French is undesirable.

Today, any excessive use of either French or Pure Wolof is discouraged in the cities, especially in Dakar. Commonly, Urban Wolof speakers who can speak without any French words may be referred to as *kaw-kaw* 'hick' (Thiam 1990:14). It is important to note that these speakers are differentiated from the

few intellectuals who would use Pure Wolof as a means of conveying anti-assimilation messages.

In addition, because of the position of the English countries in the world, various influences from English are also noticeable in Urban Wolof. English words like *boy, truck, cool, girl* pronounced [gel], to name only a few, are commonly used by youngsters in the cities, especially in Dakar. The introduction of English words into Urban Wolof is associated with the speech of the *jeunes bandits de Dakar* 'the young Dakar lowlifes' (Swigart 1994:181).

This variety is mostly associated with the loss of traditional values, such as respect for elders — good manners that are almost extinct in the cities. Thus, one can predict that code mixings and lexical borrowings from Wolof, French, and English will become characteristic of Urban Wolof in the future.

4.3 Attitudes toward local languages

The speakers of each of these languages regard their own language as the expression of their cultural identity and pride. As a matter of fact, in each of the provinces, a native is looked down upon if s/he cannot speak the language of his/her own people. S/he is considered to have been uprooted. Although most of the speakers of these languages are bilingual in that they can speak at least Wolof, and another national language, or either variety of French, the social function of each of the local languages within specific native communities is still very important.

For example, in the Mandinka community, the following phrase is commonly used to express the pride associated with the Mandinka language: *Moo Kaŋo* (literally) 'human language'. When Mandinka speakers refer to their language, it is common to hear them use *Moo Kaŋo*, which conveys the pride that Mandinka people associate with their language and culture, since it implies that only Mandinka people speak a 'human language' in Senegal.

This example shows that in the Mandinka community, it is assumed that, given their culture and their historical empires in West Africa (empire of Mali and of Gaabu), Mandinka has always been a great language. Thus, other ethnic groups and their languages are referred to by their regular names, while Mandinka is referred to as 'human language' to imply that all other languages are ordinary languages, but Mandinka is a 'superlanguage'.

The same attitude is found in other communities where other languages are used as the major medium of communication. Speakers of Kajoor Wolof (Pure Wolof) refer to their language as *Lakku Cocc Barma* 'the language of the philosopher Cocc Barma'. Cocc was known in the country for his wit in solving most difficult social problems without having to shed blood. Thus, for the native speakers of Kajoor, Wolof is above all other languages, since it is the language of wisdom and knowledge.

Similar attitudes are also found in all other national languages, although each language may express this attitude in a different way. These few examples are only used to show the kind of attitudes that native speakers of local lan-

guages share toward their own languages and others. This is the reason why the advent of French and the expansion of Wolof have not succeeded in eliminating the social function of these languages and the pride associated with them within the Senegalese speech community.

The negative reactions toward Standard French have raised the awareness of the Senegalese government to the necessity of promoting local languages. For this reason, a Ministry of Literacy was created in the late 1980s, and all local languages have been codified and used in the media. Ultimately, the government plans on introducing them into the educational system.

Nowadays, these languages are codified and are used in literacy programs to educate rural people who have not attended French school, so that they may be able to read and write their own languages. Newspapers are also produced in national languages, and the news on radio and the television is also given in all national languages.

5. Conclusion

Senegalese society is culturally hybrid in that it has one foot in African and the other in French culture, due to the long contact with France. Swigart (1994:180) refers to Senegal as a culturally creolized society, although she admits that none of its languages displays the structural linguistic characteristics of a creole.

The major particularity of the Senegalese speech community is the fact that, although the country may be 'culturally creolized', 'pure' distinct forms of the major language (Wolof) and French are simultaneously used in informal discourse to express the communicative needs and the intricacies of urban life, without displaying creole linguistic properties.

Moreover, despite the colonial attempt to undermine local languages and promote Standard French, the functional role of local languages, as well their status in their respective geographical domains, is still very important. The pride and the cultural patterns that speakers associate with their own languages have helped the status of local languages survive the expansion of Wolof and the imposition of French as the official language of the country.

Multilingualism in Senegal has positive effects on Senegalese society. Nowadays, all national languages are taught in rural areas to illiterate people. Several national organizations and scholars in C.L.A.D (*Centre de Linguistique Appliquée de Dakar*) are working on didactic materials for the promotion of the six national languages. Today, compared to ten years ago, many French-illiterates in Senegal can write and read their own languages. Thus, although French is the official language of the government and Wolof is the most widely-spoken language in the country, each of the local languages is prestigious in its own domain. These languages represent the cultural references of the people. Each of the ethnic groups can be said to be conservative in respect to its own language, and at the same time, is open to other languages which speakers do not hesitate to use to communicate with the world outside their community.

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INSTRUMENTAL MOTIVATION IN OL2 LEARNING:
A CASE STUDY OF EXOGLOSSIC BILINGUAL PROFICIENCY
AMONGST CAMEROON UNIVERSITY STUDENTS

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This paper investigates instrumental motivation in second official language (OL2) learning. Cameroon university students are required to study through the media of two exoglossic languages, French and English. This is in line with the government's policy of exoglossic bilingualism. The situation is further complicated by the fact that French and English are superimposed on a multilingual situation of about 273 indigenous languages, pidgin English and some form of pidgin French.

We notice that at the end of three and five years of study in an agricultural university, when the students graduate they possess a higher competence in their OL2. We investigate the strategies applied to accomplish this task, the degree of success in OL2 learning, and the problems encountered in studying through two exoglossic languages with one of them constituting an OL2. We also attempt to look at better and less strenuous approaches to the acquisition of the OL2 which is a must for every effective Cameroonian citizen.

1. Introduction

This study was carried out among the students of Dschang University Center of Cameroon in 1986. The findings of the study are still very relevant to the Cameroon situation today.*

The government of Cameroon is implementing an official policy of exoglossic bilingualism. French and English are used as official tools of communication. Historical factors are responsible for this position. Eight of Cameroon's ten provinces were colonized by France. So, French is the first official language (henceforth OL1) for the people of these provinces.

The remaining two provinces were colonized by the British. English naturally constitutes the first official language (henceforth OL1) for the population of these provinces. With the official policy of bilingualism, French and English become second official languages (henceforth OL2) for the Anglophone and Francophone populations, respectively. It is worth noting that French and English were superimposed on an endoglossic multilingual situation. There are 273 indigenous languages in Cameroon, a lingua franca of pidgin English in the two Anglophone provinces, and some form of pidgin French in the eight Francophone provinces.

Until 1994, Dschang University Centre was only the College of Agriculture of Cameroon University, the country's lone university. From 1995, following university reforms in Cameroon whereby six universities were created,, four other colleges were added to the College of Agriculture, and Dschang University Centre became the full and independent University of Dschang. The students at Dschang were grouped in two curricula: ENSA (Ingenieur des Conceptions Agricoles) and ITA (Ingenieur des Travaux Agricoles). ENSA students spent five years of study while ITA students spent three years, and they all graduated into the Cameroon Civil Service to Category A_2 and A_1 respectively.

2.   Statement of the problem

Students of Dschang University are taught through the media of French and English. These students have spent the first fourteen years of their pre-university years (i.e., primary, secondary, and high school years) learning only through the medium of French for the Francophones and English for the Anglophones. English is only studied as a curricular subject by the Francophones and French by their Anglophones counterparts. It is realised that the performance in English by the Francophone students and French by the Anglophone students is generally very poor. This is at the General Certificate of Education examinations for the Anglophone students and the *Probatoire* and *Baccalaureate* examinations for the Francophone students. Upon admission into the university these students are shocked to meet both French and English as media of instruction at the university. The introduction of both French and English as media of instruction is in line with the government's policy of exoglossic bilingualism. Since the government of Cameroon is predominantly Francophone, this policy is a manifestation of French assimilation and its consequent legacies in Francophone Africa, as vividly described in Bokamba (1991) . However the government realised that when students spend three to five years at the university, they will possess a high degree of competence in their OL2 when they graduate. Thus, the students' competence in these languages increases, compared to when they first gain admission into the school. This work seeks to establish the fact that there is actually an improvement in the students' competence in their OL2. The work also investigates the factors actually responsible for students' improvement in OL2 in an establishment that is agriculturally oriented, and not a language school.

Also, we wish to explain the reasons for a faster acquisition of OL2 by linguistic adults within a very short period of stay in an agricultural university. We also wish to examine problems involved in learning through the OL2 media. Finally, there is also the need to look at the various attempts made by students to solve academic problems associated with learning through two exoglossic language media.

3.   Review of the literature

The term bilingualism has an open-ended semantic coverage, and hardly any single definition of it is totally free of criticism. However, Haugen (1953:6) presented a more flexible and extensive description, thus: 'Bilingualism is a behavioral pat-

tern of mutually modifying linguistic practices varying in degree, function, alter nation, and interference'. Other linguists who have also looked at the concept of bilingualism with varying degrees of acceptance include Bloomfield 1933, Weinreich 1957, and William F. Mackey 1977. They have all dealt with various degrees of mastery of two or more languages.

On language acquisition, Gardner and Lambert 1957 and Gardner 1960 car ried out experiments on the learning of French by English-speaking Montreal high school students. They established two groups of factors: firstly, natural apti tude and intelligence, and secondly, indices of motivation: type of orientation to ward the language and social attitude toward the speakers of the language the learner seeks to acquire. Furthermore, there are the works of a team of psycholin guistics and researchers headed by Gardner and Lambert (1972:3) who worked in Canada, the United States, and the Philippines. They state that 'an individual suc cessfully acquiring a second language gradually adopts various features of be havior which characterize another linguistic and, as is often the case, another cul tural group. The learner's ethnocentric tendencies and his attitudes toward the other group are believed to influence his success in learning the new language'. From the foregoing, we realize that intelligence and natural aptitude are primary factors for second language acquisition. Integrative motivation plays a secondary role. We are saying that instrumental motivation could be very important, and really plays a crucial or in other words, a primary role in second language acquisi tion.

Ellis 1995 observes that there is widespread recognition of the fact that mo tivation is of great importance for successful L2 acquisition. However, he points out that there is less agreement about what motivation actually consists of. He goes further to explain that motivation can be causative (i.e., have an effect on learning) and it can be resultative (i.e., influenced by learning) He also said that motivation can be intrinsic(i.e., derive from personal interests and inner needs of the learner) and that it can be extrinsic (i.e.derive from external sources such as material rewards)

He furthermore brings to light the fact that the main body of work in Sec ond Language Acquisition research is that associated with Gardner, Lambert, and their associates, whose assumption is that the main determinants of motivation are the learners' attitudes towasrd the target language community and their need to learn the L2. He comments that motivation so measured affects the extent to which individual learners persevere in learning the L2, the kinds of learning be havior they employ, and their actual achievement. However, recent discussions on L2 learning such as Crookes and Schmidt 1990 emphasized the need for in vestigating other aspects of motivation in L2 learning such as intrinsic motiva tion.

This research is an appropriate response to the demand of intrinsic as well as extrinsic motivation in L2 learning. In other words, instrumental motivation in OL2 learning is in effect a form of instrinsic and extrinsic motivation. This position is in line with arguments presented in Pinker 1994, where the instinctive nature of

language is investigated. Human beings are endowed with instinctive qualities and the need for survival will take prominence in every circumstance. Language is crucial for human growth and survival, and with its instinctive nature humans will acquire it whenever the need arises. We are in effect saying that, instumental motivation in OL2 learning by Cameroon university students is a natural manifestation of the instinctive nature of language acquisition.

4.   Research methodology

a.   Population and Subject:

The population used for this study is Dschang University. The subjects of the study are the students of ENSA and ITA.

b.   Instrument:

The instruments used for investigation include the questionnaire, a direct observational language comprehension test, and a language assessment test.

c.   Procedure and design:

The questionnaire designed comprises questions grouped into two major categories. The first category of questions sought to investigate the linguistic background of the students, most especially before they gained admission into the university. Also, there were questions designed to find out the aptitude and intelligence of the students. The questions sought to establish their level or degree of bilingualism before their admission. There was also an attempt to discover the languages used with close relatives. Also, there was an attempt to find out whether the second official languages were used with close relatives, like parents and siblings. There was also a move to find out the languages used between friends who speak different first official languages and consequently, to establish the status of the second official languages in the day-to-day activities of the students. To that end, the first twenty questions of part one of the questionnaire were designed to meet the objectives mentioned above.

The questions in the second category try to investigate the position (weight) of the second official language as medium of instruction. Hence, the number of courses delivered through the medium of the second official language was sought. The questions also attempt to find out whether or not the students encounter problems learning through this medium, and the steps taken to solve such problems. The questions sought steps made by individual students towards the reading of materials published in their second official language. Also, whether or not, as a result of language problems, the students avoid materials written in their second official language. The questions here also attempt to enable the students to establish their level of bilingualism. From these questions, one could establish the stage of the program at which a higher degree of bilingualism existed.

Of greater relevance here, the questions in this section seek to find out the motivation and attitude of the students toward the learning of their second official language. Here, the questions were highly motivational and attitudinal in orientation There was use of a direct observational language comprehension test.

This sought to establish the degree of comprehension of lectures delivered through the medium of the second official language and how well notes were written on such lectures. Also, the verbal expressions during such lectures were observed.

In this connection, the researcher attended a total of sixteen lectures in both the ITA and the ENSA curricula , with eight of the lectures delivered in French, and eight delivered in English. In the ENSA curriculum , the researcher attended two lectures, each in the first, second, third, fourth and fifth year. Of the two lectures attended in each of the classes, one was delivered in French and the other in English. By the end of each lecture delivered in French, the notebooks of all the Anglophone students were collected and assessed. Likewise, by the end of each lecture delivered in English, the notebooks of all the Francophone students were collected and assessed. The same operation was carried out in the ITA curriculum . These notebooks were graded for comprehension of the topics treated and grammatical constructions of notes written during the lectures delivered in the OL2. Also, during the lectures, there was a general observation of the mode of expression and language used outside the classroom and around the corridors.

Finally, there was a language test administered to all the students of ENSA and ITA. For the Francophones, this test consisted of a passage on 'The History of Agriculture', written in English. The students were required to read this passage and proceed to answer ten questions in English from the passage. This was to test the level of comprehension of material written in their second official language and also to test their ability to write English words and sentences correctly. They also wrote an essay of four-hundred and fifty words on the topic 'Agriculture in the Third World'. This permitted us to assess their understanding of a topic in their field of study expressed in their OL2. We were also able to test their grammatical construction of sentences and their vocabulary use as well as their general mode of expression.

On the other hand, the Anglophone students had the same comprehensive passage in French, 'L' Histoire de l'Agriculture'. They also read the passage and answered ten questions from it in French. Finally, they also wrote an essay of four-hundred and fifty words on the same topic in French 'L'Agriculture dans le Tiers Monde'. They were all tested for the same goals as their Francophone counterparts.

5.   Analysis and discussions

A total of five hundred and sixty (560) copies of the questionnaire were distributed to both the ENSA and the ITA curricula . Of these, 264 went to the ENSA curriculum , while 296 went to the ITA curriculum . A total of 560 responses were obtained from both the ENSA and ITA curricula . Questions related to the period of exposure and contact with the OL2 gave the following results. All the respondents, that is, five-hundred and sixty (560) students, were taught the OL2 as a curricular subject in secondary school, that is 100% of the total

population. Still, five-hundred and sixty (560) students, which is 100% of the population, were taught the OL2 in high school.

With regard to the students' performance in their OL2 at the General Certificate of Education ordinary level examination, the following results were obtained: All the respondents (560 students) wrote their OL2 at the General Certificate of Education ordinary level in examinations. 110 students (making 20% of the students) secured a passing grade in the examination, while 450 students (80% of the total) failed.

These results reveal the fact that every student had had the opportunity to study their OL2 as a curricula subject both in the secondary and high school. Therefore, every student had seven years of training in their OL2. However, only 20% of the entire group secured a passing grade in these languages in the General Certificate of Education ordinary level examination or its French equivalent.

From this performance, one can infer that these students either did not have good conditions to do well, or that they were not sufficiently motivated to take studies in their OL2 seriously. The students could not be generally weak in foreign language acquisition because they all had passed their OL1, a condition for admission to the university.

Questions dealing with languages used in communicating with close relatives showed the results tabulated below.

From these results, the following conclusions can be drawn: First, Cameroon languages play a dorminant role in the home or domestic environments. Secondly, pidgin English plays a significant role in informal communication in Cameroon as a whole. This is particularly true for the Anglophone families. Just a handful of Francophones and Anglophones use English in their communications. There is code switching between French, English, and Pidgin English. The OL2 is neither a domestic nor an intimate language of communication. It is a language of formal communication used mostly in the classroom and the school environment.

Myers-Scotton's study of code switching (quoted in Eastman 1991:143) shows that regardless of what legally mandated languages hold sway in a polity, the choices that people make reveal and also form their multiple identities. This point is further pursued in Bokamba (1991:196) when he appreciates the difficulties in learning French by children in French-speaking African countries whose parents are mostly illiterate and have no clue in the use of the French language. Just as the results seen in our table above, the preference is for the mother tongue and then for pidgin English, a lingua franca that is almost creolized in a home and intimate setting.

Questions on the media of instruction and the number of courses taught through them gave the following results: A total of 83 courses were taught in the school. Each class had an average of twelve courses. Sixty-four lecturers taught in the school. Twenty eight taught in English, while thirty-six lectured in French. Of the 83 courses offered, forty-two were taught in English and forty-one in

French. A major observation here is that French and English hold almost the same status as media of instruction in the school.

Table I A:
Languages used in communicating with close relatives:

Anglophones

Total no. of students	Relatives	The different languages used by the students with the different relatives:				
55		MT	OL1	OL2	Pdg. Eng.	English + Pdg. Eng
	Mother	44 (i.e., 80%)	1	-	7	3
	Father	44 (i.e., 80%)	2	-	6	3
	Siblings	33 (i.e., 60%)	4	-	8	10

Table 1 B:

Francophones

Total no. of students	Relativess	The different languages used by the students with the different relatives				
505		MT	OL1	OL2	Pdg. Eng.	English + Pdg. Eng.
	Father	404 (i.e., 80%)	96	-	5	-
	Mother	449 (i.e., 89%)	54	-	2	-
	Siblings	273 (i.e., 54%)	227	-	2	3

Table 2 A:

Anglophones

Total no. of students	Total no. of Anglophone students	Total no. of Anglophone students with Francophone friends	The different languages used by the Anglophone students to communicate with their Francophone friends				
			French	Eng.	MT	Pdg. Eng.	French + Eng.
560	55	55 (i.e., 100%)	44	3	2	2	4

Table 2 B:

Francophones

Total No of students	Total no. of Francophone students	Total no. of Francophone students with Anglophone friends	The different languages used by the Francophone students to communicate with their Anglophone friends				
			French	Eng.	MT	Pdg. Eng	French + Eng.
560	505	500(i.e.99%)	489	3	2	2	4

Secondly, since there are far more Francophone students, more students in the university are studying through the OL2 medium. When asked whether students encountered difficulties studying through the OL2 media, students responded positively. In fact, in the first year of both ENSA and ITA, 36 out of 50 students and 80 out of 102 students, representing 72% and 78% respectively, acknowledged such difficulties. Again, when students were asked to list their three least-preferred courses, most of the courses listed by the lower-level students, and especially the first-year students, were those taught through the OL2 media. This shows that learning through the OL2 poses problems especially to lower level students. However, when students were also asked to list their three most-preferred courses; the response showed that many students selected at least one course taught through the OL2 medium. In fact, almost all the students at the final levels selected at least one course taught through the OL2. This fact indicates that many students were improving their skills in the use of the OL2. This was especially true in the case of the higher level students and, most especially, of the final-year students.

Questions relating to how the students were resolving the OL2 learning problems gave the following results: First, they were taking their OL2 learning program, i.e., *formation bilingue*. seriously. They read more material on nonagricultural subjects in the OL2.They also read agricultural text books published in the OL2 with the help of bilingual dictionaries. Many students were spending their vacations in the provinces where their OL2 was used as OL1. Also, the students indicated the importance for them of traveling abroad to countries where their OL2 was used as a mother tongue to give them the opportunity to meet native speakers of these languages and have direct contacts and exchanges. Also, students were watching more TV, as well as listening to more radio programs in their OL2.In this connection, many Francophone students were listening to the Voice of America and the British Broadcasting Corporation. The Anglophone students on their part were listening to Radio France Internationale (RFI) and Africa No 1 programs. All these steps showed that they were highly motivated to learn the OL2 to facilitate overcoming learning problems associated with studying through the OL2 media.

A direct observation test of OL2 performance during lectures was also undertaken. This exercise sought to establish the degree of comprehension of lectures delivered through the media of the OL2. We also investigated students'

ability to write down notes. We took into consideration subject comprehension, grammatical construction, vocabulary use, and correct spelling of words. The following averages were obtained from each class.

Table 3A:
ENSA curriculum : Percentage of students who scored 50% and above in the following language tests from the different levels

Anglophones

Class	Subject comprehension	Grammatical constructions	Vocabulary use and spelling	Total performance average for each class
1st Year	40%	10%	25%	25%
2nd Year	49%	!7%	30%	32%
3rd Year	60%	23%	37%	40%
4th Year	72%	32%	51%	62%
5th Year	89%	45%	80%	71%

Table 3B:
ITA curriculum

Francophones

Class	Subject comprehension	Grammatical construction	Vocabulary use and spelling	Total performance average for each class
1st Year	35%	8%	20%	21%
2nd Year	50%	15%	40%	38%
3rd Year	66%	28%	58%	51%

From the tables above, the following results can be drawn. The final-year ENSA students performed best with a total class average of 71%. The students performed best in the subject comprehension and their worst performance was in grammar. There is progressive improvement with an increase in the duration of stay at the university. It was observed that some of the students wrote parts of their notes in their OL1. Therefore, there was code-mixing between OL1 and OL2. In this connection, we realised that students are more concerned with the understanding of their subject matter and pay less attention to the construction of grammatical sentences.

Finally, a language test written by all the students gave the following results: Fifth-year students of the ENSA curriculum scored an average of 77%, fourth-year 65%, third-year 59%, second-year 56%, and first-year 55%. For the ITA curriculum , we had the following results: The first year students had an average class score of 51%, the second year 58%, and the third year 62%. The results of this test, like some other types of tests observed earlier, reveal a general improvement in performance with an increase in the length of stay at the university.

6. Conclusion

From results obtained in this research, the following conclusions can be drawn.

First, students' competence in their OL2 improves during their stay at the University of Dschang. This competence is commensurable with the length of stay in the school. Also, the improvement in the competence of the OL2 is due to certain factors. The most important of these factors is students' motivation and attitude toward their OL2. This motivation is more instrumental than it is integrative. The students are instrumentally motivated in the acquisition and proficiency of their OL2 primarily to enable them to comprehend their courses and consequently to pass their examinations. To some extent, the students are also integratively motivated. Other factors include intelligence and aptitude.

Again from these results, it is evident that the OL2's constitute very vital media of instruction in the University of Dschang. This is the case for all the other institutions of higher learning in Cameroon. The students in the junior institutions are hardly sufficiently aware of this fact until they find themselves in the higher institutions of learning. From results obtained in this research, it is quite evident that the OL2 as a medium of instruction poses academic problems to students. This is especially true in the comprehension of lectures, writing down of class notes, reading of textbooks written in the students' OL2 and discussion among classmates with different OL1's.

To facilitate studies and improve the standard of education, there is a need to address the OL2 problem. In this connexion, the necessity for a very efficient mastery of the OL2 by Cameroonian students cannot be overemphasised. An efficient mastery of languages in general is faster and easier between the ages of two and thirteen. During this period, the act is spontaneous and natural. Hence, a country like Cameroon, with her singular situation of two exoglossic languages, can only boast of an efficient educational policy by extending a sound language policy to the nursery, primary-, and secondary-school levels. This could later be extended to the universities. With a sound language policy at the junior levels, the student will acquire a reasonable command of their OL2 before they ever proceed to the university. This will help to facilitate their studies at the higher levels of learning .

The above goals can only be obtained if the government will begin by putting in place the facilities that will enable the children to be taught their OL2 efficiently at the nursery, primary-, and secondary-school levels along with their OL1. This will require the appropriate training of language teachers to help in the accomplishment of these goals. Good television and radio programs for children will help them in OL2 learning. The children should be motivated to participate in these programs by making them win awards and giving them different prizes for good performance. This could take the form of quizzes organized in the OL2. There could also be debates and plays by primary and secondary school children in the OL2. In schools, one day of the week should be set aside for the use of the OL2 only. This will give the children an opportunity to express themselves in

their OL2. It will make them begin to face the realities of their future lives as Cameroonian citizens. At this level, the children are still too young to cultivate any strong political inclination to any of the languages. The children should be adequately informed and constantly reminded that French and English will be used as media of instruction at the university level.

NOTE

* I am greatly indebted to Ms. Joyce B. G. Sukumane at the University of Illinois at Urbana-Champaign for her kind help with the bibliographic references.

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REVIEW

Mike Beaken. *The Making of Language.* **Edinburgh, Great Britain: Edinburgh University Press, 1997. ISBN   0-7486-0717-X.   Price: $19.50 (paper). Pp. viii + 196.**

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As the title suggests, this is a book about the origin and evolution of language. It argues that language was born out of a collective human labor in human prehistory. As the author admits, it is a Marxist approach. He argues that language is neither a product of some biological mutation nor a derivation from a form of animal communication, but is a social creation, 'the product of the individual's part in a collective social unit interacting with the world' (19). Herein lies the rationale that, when one looks for the origin of language, one must look for the origin of the social life of human beings. The author sets out to do so in the rest of the book.

Beaken criticizes and departs from the traditional linguistics whose focus is on the individual speaker-hearer, but follows a long tradition established by Marx, Engels, and Vygotsky in seeking to explain language as the product of human labor.

Even the size of the brain, which is the sacred creator of language, has a social origin. Beaken cites an anthropological study that showed there is a strong correlation between the relative size of the neocortex of a species and the size of its social group, i.e., the larger the social group, the larger the brain, which implies that, if language is a biological product, its stimulant for growth is a social life. This is to say that 'humans created language … just as they created pots and pans, bows and arrows, in the course of the co-operative activity'(23), such as gathering and sharing food, hunting, raising a family, etc. In the course of this joint activity, they 'arrived at the point where they had something to say to each other' (24, cited from Engels 1954:232). Beaken sees the collective activity associated with common problem-solving and technical developments as the precondition for communication, for this enables the creation of signs. Once a system of signs, a simple language, becomes established, then it becomes possible … to start to create a system of relations between phenomena -- structures of syntax' (27). There is a leap in this line of argument. The author does not explain how a system of signs among a group of individuals becomes a social memory and gets established as a language. The view that social life creates and influences the form of language is contrary to linguistic determinism, which suggests that the form of language creates or construes our social reality and refracts our view of the world, and hence determines our social life.

As precursors of language, Beaken examines animal communication, especially that of apes, and gestural communication, and it is in gestural signs that he sees, as does Armstrong, et al. 1994, 1995, a sentence in embryo, containing the elements 'agent', 'action', 'goal', etc. This suggestion that within gestures are all elements of the utterance — agent, action, patient — implies that syntax develops in the process not just of building, but also by way of analysis and decomposition of signs. But there is no mention of how this is done. As Beaken rightly observes, thematic (= semantic) relations and syntactic relations are not the same. Beaken argues that semantic relations are not simply present in the world, waiting to be discovered, but are the creation of human beings interacting with the world. It is because these relationships underlie the process of labor, not because they reflect the intrinsic nature of gestures, that they feature so prominently in human languages. But how did visual gesture become oral speech? Beaken argues that it was not because of commonly cited disadvantages, e.g., slow speed of information processing, difficulty in expressing abstract and arbitrary ideas, etc. He argues that gesture can match speech in every respect step for step. He goes further to say that 'if there was an increase in syntactic complexity at a certain point in our history, it was not due to a change from gesture to speech, but rather to an increase in the range of communicative demands made on language, and this can only have been due to an increase in the range of activities in social life' (73). Beaken argues that 'it was not language that made us human, but us humans that made language' (72).

In search of evidence for changes in behavior and social organization among ancestral humans, and therefore for the emergence of language, Beaken traces the prehistory of man (from c. 5 million to 100,000 B.P.) by dividing it into three periods:

Australopithecines (c. 5 mil - 1.5 mil B.P.)

Homo habilis and Homo erectus (2.5 mil - 250K B.P.)

Archaic Homo sapiens (250K - 100K B.P.)

Beaken traces both biological and social changes, mostly the latter, during these periods. He contends that from the herd life of the Australopithecines, a new form of social organization must have evolved as practices of sharing food and raising the young have been institutionalized into the first form of family. This is relevant to the development of language, for 'kinship leads to naming of individuals' (88). Strangely, this oral language regresses into a gestural language in *Homo erectus* who appears to have a language based on what is called 'mimesis', which is not imitation or mimicry, but 'the invention of intentional representations, as in pantomime' (90). In ancient *Homo sapiens*, evidence of culture such as control of fire, construction of shelters, preparation of animal hides for clothing, etc., is suggestive of a well-developed social organization based on co-operative labor and hence some form of language. According to Beaken, 'it is probable that forms of language would have arisen/arose around fire-keeping and fire-making ... Fire may also have had an influence on the evolution of speech. ...

once food is cooked ... the mouth is less specialized, leading probably to increased flexibility of the tongue ... requisite for human speech' (94).

One important question is, if gesture came first, how and why did oral speech replace it? Beaken argues that the usual advantages of speech over gesture, such as freeing of hands, effectiveness across a visual barrier, volume and speed of information flow, etc., are not convincing by themselves because ASL signers can communicate as effectively as speakers. Beaken thinks that 'intentional vocalisation' (109), as opposed to intuitive vocalization, in certain limited contexts, such as hooting when driving animals, rhythmic chanting when pounding roots, etc., is a precursor of speech. Beaken draws for us a linguistic nativity scene: For a group of dispersed foragers over variable terrain it is absolutely imperative to maintain a vocal contact and communication. Language is thus born in the forest out of foraging. Here again is the theme of the book, i.e., speech is a work-related activity.

Let's grant that it is plausible to trace the origin of speech to socially-based activities, but how did speech acquire structures such as syllable and grammar? Beaken's answer is that since animal vocalization already contains vowel-like sounds, what one has to explain is the emergence of consonants. Here Beaken's imagination soars to a dangerous height. He says: 'The route to control of consonants must have emerged from some kind of rhythmic sound-based activity, in other words singing or chanting' (112).

For Beaken, syntax is also socially constructed from a collective analysis of experience of its speakers. Language then is the product of social themes which change as the lives of their creators change, 'shape grammar in a reflection and a record of life and labor' (143). Beaken cites noun classes in Bantu languages, a dichotomy of alienable and inalienable possessives in Mekeo (Melanesian), Dyirbal (Australia), Kiriwinian (Trobriand), etc., a distinction between active (animate) and inactive (inanimate) nouns in many Amerindian languages (e.g., Navaho, Tlingit) as examples of a semantic grammar that has its roots in people's perceptions of the world.

To Beaken, not only the origin of language, but also its evolution, stems from a socially organized activity. Changes in human activity 'give rise to new notions and new concepts, and in response to new types of cognitive content, human beings have created new forms to express this content' (156), i.e., a language change has taken place. Beaken exemplifies this with ergativity. He views ergative grammar as 'a hybrid form of syntax, transitional between the totally semantic system of Active grammar type, and the syntactic system of accusative grammar'(159). Ergativity is a mode of expression of people whose life is relatively at the mercy of external forces and less in control of events. Beaken cites Plank 1979 who contrasts the attitude of the 'agent' in foraging and agricultural societies: faragers see themselves as subject to the vagaries of nature, while farmers see themselves as responsible for success or failure of the crop. Hence an ergative language in the former, but an accusative language in the latter.

Beaken also seeks an explanation for the historical transition from a more trans-
parent semantic system to a more abstract syntactic system in the rise of civiliza-
tion, with dramatic expansion in activities that accompanied the growth of cities.
Just as a system of recording of commodities with token symbols in clay tablets
led to emergence of cuneiforms in the Sumerian culture in 3000 B.C., the rise of
trade and its accompanying acts, such as counting, weighing, measuring, etc., in
industrial societies necessitated men to handle abstract relations such as value,
weight, measure, etc.

     Scientific writing constitutes another example of content influencing form
for Beaken. A series of such events of social turmoil in England in the middle
ages, as the English Revolution, the Hundred Years War, the Peasants' Revolt,
etc., brought a revolution in social relations, which in turn caused dramatic
changes in the English language itself, such as a new system of modal auxiliary
verbs (*can, could, shall, should, will, would, may, might, must*), which 'provides
speakers with a flexible means of expressing interpersonal relations, values and
judgements … this change in the grammar of the language was a response to the
requirements of speakers, to the cognitive tasks of considering and debating pos-
sible future actions, alternative outcomes' (167). This implies that 'language form
can be related to the predominant activities that taken together constitute social
existence. New activities bring with them new communicative demands, forming
new registers, and new forms of language' (169). Thus, 'the syntax of modern
languages … is not the result of the simple addition of more and more transforma-
tions on an original base, but rather a fundamental transformation in the base, in
response to the content of human activity' (170-1).

     The book reads well and is intelligently and intelligibly written. The prose is
lucid and even poetic at times, for example:

>   Human existence depends on this ability to see beyond appearances,
>   to see in a dry stick the potential for fire or the material for construct-
>   ing a shelter; to see in shrivelled seeds a source of a future harvest; to
>   see in a lump of mud the potential for a pot (33).

One major problem is convincibility. Although the author's arguments are sup-
ported with a wealth of references, both dated and recent, the nature of the sub-
ject matter necessarily involves a great deal of speculation. In fact, almost every
page contains words or phrases of uncertainty and speculation. For example, in
the three pages 78-80, I counted five occurrences of 'may/must have', and just as
many occurrences of other such words as 'probably', 'suggests', 'appears',
'implies', etc. Nevertheless, the book provides an interesting alternative view of
the birth of language, and it should be listed in a supplementary reading list on
the topic of the origin and evolution of language in an introductory linguistics
class.

     The following typos were noted: p. 19, line 2 from bottom. *leads > lead*; p.
36, line 4 third para. *is > in*; p. 38, line 11 second para. *it > 0*; p. 67, line 2 from top.
remove > removed; p. 100, line 13 second para. *though > through*; p. 108, line 2
second para. *ot > to*; p. 158, line 2 third para. *the principle element > the princi-*

pal element. Halliday 1992, which figures prominently and is cited on pp. 36, 141, 150, 167, and 168, is not listed in the Bibliography.

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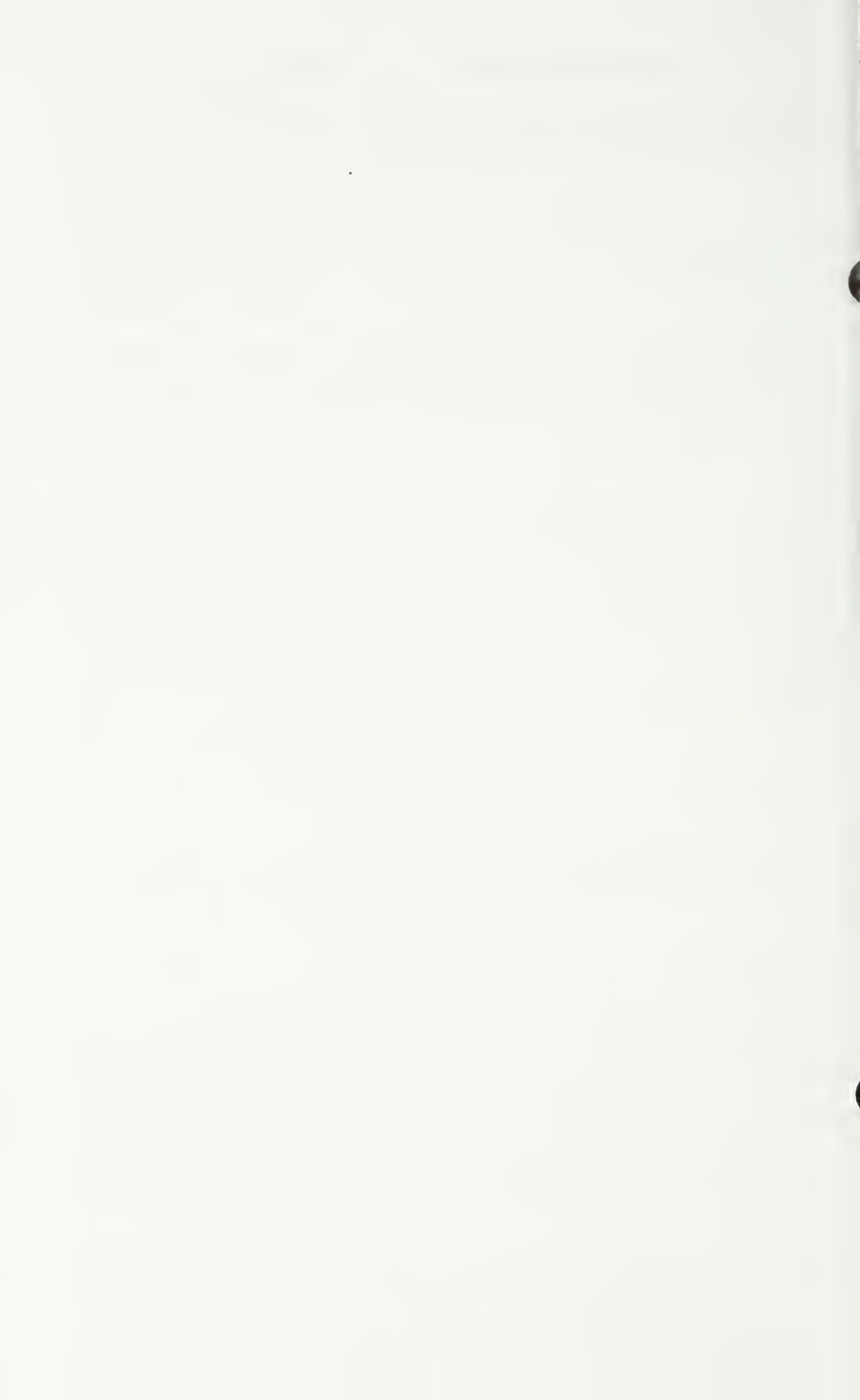
REVIEW

Andrew Dalby: *Dictionary of Languages: The Definitive Reference to More than 400 Languages*. New York: Columbia University Press, 1999. Pp. xviii + 734. Price (cloth) $50.00. ISBN: 0-231-11568-7.

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The dust jacket tells us that this book is 'the essential guide to the languages of the world, comprehensively dealing with more than 400 languages in a clear A-Z style' and covers 'the political, social and historical background of each language … highlighted by maps and charts of scripts, while proverbs, anecdotes and quotations reveal the features that make a language unique.' From this description it is clear that the work is aimed at the general reader rather than at specialists, and once that is understood, the book can be highly recommended for those for whom, for example, *The World's Major Languages* (ed. by Bernard Comrie, New York: Oxford U. Press, 1987) is too technical, or who simply want to find general background information on a particular language or group of languages. Linguists seeking information on the phonological, morphological, or syntactic structure of a language will not find it here, but it is nevertheless an excellent reference work for the enlightened layman, and the kind of book that can entice younger readers to delve deeper into the study of languages and linguistics, and through them into the broader study of cultures.

While the arrangement of the main body is alphabetical according to the name(s) of each language, there are also treatments of language families with cross-references to the individual members considered in the book. The many maps are useful for purposes of orientation, although I find the world maps (presented in a kind of conformal projection) too rough to be completely helpful. An Introduction (vii - xvi) presents the scope of the languages treated (400 out of more than 5,000 spoken today) and the reasons for the selection: the languages 'spoken by the great majority of the people of the world … national languages of independent countries, languages of important minorities that will make news, classical languages of the past' (vii), and languages of more than a million speakers. There is also discussion of 'Why languages grow apart', 'Why languages converge', 'Tracing language history', 'What do proto-languages mean in historical terms?', 'How to use languages', 'The names of languages', 'Facts, real facts and statistics', 'Language families of the world', 'Questions and answers', and 'The survival of ancient languages'. Most of the observations and remarks in this section are eminently sensible and defensible and should be enlightening, especially to nonspecialists.

Each language is presented with an indication of the number of native speakers, the countries in which it is spoken, and a broad sketch of the dialect divisions, the political, social, and cultural significance of the language for its particular region or broader areas, and a thumbnail sketch of the history of the language, with frequent cross-references to related languages and dialects. A superficial impression of the structure of each language is presented through the quotation of a short literary text or of the first ten numerals in the language with accompanying translation and a reproduction of the script (if the latter varies from the Latin alphabet).

This is, of course, a massive undertaking and the volume contains a wealth of information in convenient and readily comprehensible form difficult to find in any one other source. It also lies in the nature of the beast that specialists will, of course, find minor infidelities here and there.

I hesitate to mention any at all, but cannot refrain from pointing out the fact that German (218) is spoken not only in 'Germany, Austria, Switzerland, Russia, Kazakhstan, Romania, United States', but also in France (Alsatia), as well as in Denmark (North Slesvig, Sønderjylland), where it enjoys official status in schools and churches, as does Danish (146) in Germany (northern Schleswig-Holstein). From the statement under Norwegian (459): 'Norway separated from Denmark in 1814', one could well get the impression that this was an act of the Norwegians to dissolve the 400-year old union with Denmark, whereas Norway was taken from the united Kingdom of Denmark-Norway and united with Sweden in 1814 by the Treaty of Vienna without the consent of the Norwegians, who then immediately demanded a high degree of autonomy and eventually complete independence in 1907. In the depiction of the older (or Germanic) runic alphabet (472), the rune for **i** is incorrectly given as ↑ instead of l.

One problem I encountered in trying to use this dictionary is perhaps an insoluable one: how to deal with languages that have varying names, in this case Ekegusii. The dictionary does indeed list variant names for many languages, but I could not find Ekegusii as an independent listing nor in the index, nor in the list of Bantu languages, all of which is surprising, since this language has approximately 1,500,000 speakers. Of course, if one knows that Bantu language-names have a prefix in their native forms, like kiSwahili, it becomes apparent that one might try Gusii (under which the language is listed), but this is asking too much of an enlightened layman and even a great deal of a non-African specialist. It would therefore have been very helpful if the index had contained cross-references to the native form(s) of each language-name.

I have found it fascinating to browse through this dictionary (like any other dictionary!) and have learned a great deal from doing so. I recommend it very highly for all high-school, undergraduate, and public libraries, and to all persons who find language an object of fascination, even those who may be specialists in some area of linguistics. There is much here that any reader will not know.

REVIEW

Nanette Gottlieb: *Kanji Politics: Language Policy and Japanese Script*. New York: Kegan Paul International Limited/Columbia University Press, 1996. Pp. ix + 245. Price (cloth) $76.50. ISBN 0-7103-0512-5.

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The orthographic system of the Japanese language in place today is the re- sult of more than eighty years of controversy over the relative merits of tradition and convenience in the area of script. The modernization, selection, simplification, and/or establishment of guidelines on the use of four types of scripts (explained below) have been planned and implemented to a large extent through the Japa- nese government's language policy. The book *Kanji Politics: Language Policy and Japanese Script* traces and explores the history of this language policy as it relates to script in twentieth-century Japan — from the establishment of the Na- tional Language Research Council in 1902 to the completion of the postwar pol- icy review by the National Language Council in 1991. Of the various reviews and discussions of language policy processes during the designated period, the book unquestionably is one of the most comprehensive currently available in the Eng- lish language.

Not all language planning during this century has concerned the written language, of course; various matters relating to the spoken language, such as the issue of standardization and the use of honorifics, have been addressed by lan- guage policy as well. This book, however, focuses on the written language and its script. This focus is justified by the author on the basis of her preliminary assess- ment of policy documents since 1902; it is further supported by Haugen's 1966 claim that language planning attempts primarily to shape the formal written mani- festation of language. Additionally, the script and particularly the *kanji* script (Chinese characters) may merit particular attention from a sociolinguistic perspec- tive, insofar as the tradition and history of writing systems of East Asian lan- guages represent the cultural unity and identity of East Asian cultures.

A brief introduction to the Japanese writing system, which the book in- cludes as a short section of the first introductory chapter, may be appropriate at this point. The Japanese language today is normally written in a mixture of three scripts: *hiragana*, *katakana*, and *kanji*. The first two are syllabaries known as *kana*; two kinds of *kana*, namely *hira-gana* 'plain kana' and *kata-kana* 'partial kana', have been developed as a simplification of the so-called *mon'yoo-gana* — the phonetic use of Chinese characters to provide a purely phonetic representa- tion of words. *Kanji* (the word also appearing in the title of the book) refers to Chinese characters that are used as logograms in the Japanese writing system.[1]

The earliest systematic written records of Japanese (for example, *Kojiki,* 'Record of Ancient Matters' A.D. 712) were written exclusively in Chinese characters, and by the time *Man'yoshu* (an anthology of Japanese verse, A.D. 769) was completed, the Japanese had developed the use of Chinese characters as a phonetic means of writing Japanese words. Although *kanji* and *kana (hiragana* and *katakana)* were used independently of each other for centuries, the contemporary writing system is characterized by a mix of these scripts, using *kanji* for content words, *hiragana* for grammatical function words such as particles and inflectional endings, and *katakana* for foreign loan words, telegrams, and certain onomatopoeic expressions. In addition to these scripts that originate in Chinese characters, there is a fourth writing system, called *romaji*, which is a phonetic transliteration system using the Latin alphabet. Two major systems of *romaji* have been developed. The first of these, the Hepburn system, was based on the third edition of the Japanese-English Glossary $(1886)^2$ written by the American missionary James Curtis Hepburn. Later, the Japanese government, in its attempt to unify all the different *romaji* systems, introduced the *kunrei* system 'cabinet directive system' in 1937, with a revision in 1954. Whereas the Hepburn system is designed to be accessible to English speakers who know English spelling and pronunciation, the *kunrei* system is phonemic in nature.

Romaji is not mentioned in Gottlieb's introductory section in Chapter 1, but the *romaji* systems and their significance in the early stages of language planning are taken up in Chapter 2. Discussed in this introductory section, among other matters, is the size of the *kanji* vocabulary as found in *kanji* dictionaries and other documents in Japanese. The mention of such figures as 49,964 for the largest 12-volume *Daikanwa* Dictionary, and 9,921 for the *Shinjigen,* is instructive: it enables readers to appreciate the truly drastic reduction in the number of characters permitted for official use (to as few as 1850) through the language policy put forth in the year 1946, as discussed later.

The overall content of the book *Kanji Politics* is highly accessible to readers having no background in the Japanese language, and the topic and issues addressed in the book are of great significance and interest to researchers in general sociolinguistics and language policy, even those who do not know any Japanese. However, given the brevity of the book's introductory discussion of the Japanese writing system and sound system, such readers may find it useful to refer to Chapters 6 and 8 of Shibatani 1990 in order to supplement what the book leaves unexplained. The first six chapters of Hadamitzky and Spahn 1981 my also be useful as a further general introduction to the Japanese writing system and particularly to the nature of *kanji*.[3] For the history of the Japanese writing system prior to 1902, readers can refer to Seeley 1991.

Chapter 1 also outlines the major intellectual issues which have shaped the debate around language policy and script, referring to influential linguists (including Masatsugu Ando, Motoki Tokieda, Tatsuo Miyajima, and Susumu Ono) and novelists and language activists (e.g., Yuzo Yamamoto), as well as sketching the historical, political, and philosophical background of the time under investiga-

tion. This discussion also serves to preview the major themes to be detailed in Chapters 2 through 5.

Chief among the issues raised regarding the formulation and implementation of writing system policy during the period from 1902 to 1991 are the following three: first, the modernization of *kana* usage (*kana-zukai*); secondly, the selection of major script type(s) — i.e., whether *kana* only, *romaji* only, *kanji-kana* mixture, etc.; third, and most importantly and pervasively, issues concerning the *kanji* vocabulary itself. Major matters relating to *kanji* included the readings and shapes (mostly simplification in this period) of the *kanji* characters, and the matter of *okuri-gana* (i.e., *kana* added on to *kanji* characters in inflected words to show which part of the word inflects). The determination of the size of the kanji vocabulary permitted for official use and education was, however, by far the most crucial issue. This last issue engendered a long and vitriolic debate and post-reform review cycle around the limitation of the NUMBER of the *kanji* characters for general use, the SELECTION of particular *kanji* characters to be included in the general-use list, and the NATURE of such a list (i.e., whether it should rigorously prescribe limitations for public use or only recommend such guidelines).[4]

Rather than structuring the presentation of materials according to these issues, however, the book organizes the remaining chapters 2 through 5 chronologically, according to the major events and policies planned, announced, and implemented in each period of time. This presentational scheme, to be sure, has the advantage of serving better as documentation and review of the major steps in the language planning process that have taken place since 1902. Indeed, for just this reason, the book stands a good chance of becoming a major reference work on language planning and policy in Japan for international audiences. Such a mode of presentation, however, may give some readers the impression that the presentation (and possibly the analysis itself) is weak on synthesis. The addition of a comprehensive concluding chapter after Chapter 5 would perhaps have resolved this problem without sacrificing the organizational strength of the book.

Chapter 2 presents the beginning of Japanese language policy during the pre-war period, covering the activities of the National Language Research Council (*Kokugo Chosa Iinkai*, established in 1902) and its successor the Interim National Language Research Council (1921 — 1934), and the setting up of the National Language Council in 1934. Also significant during this period, as described by Gottlieb, are the influence of the press, the role of private pressure groups in promoting script reform, and the rise of ultranationalism and its role in thwarting reform.

Chapter 3 moves on to the war years, a period of increasing tension in Japan, with the growing power and influence of the military, culminating in the invasion of China in 1937 and the war in Asia and the Pacific. Gottlieb first discusses the myth of *kotodama*, the 'spirit of the Japanese language' ('logopneuma'), a loaded term used to convey the idea prevalent at that period that this somehow 'unique' language was inextricably bound up with the essence of the Japanese national spirit and hence must never be tampered with. Chinese charac-

ters and historical *kanazukai* (*kana* usage based on the old Japanese sound system) in particular were highly venerated in this connection; advocates of *kana* or *romaji*, on the other hand, became the target of right-wing persecution. The chapter then discusses (i) military moves for script reform as a matter of practical necessity, (ii) unsuccessful reform proposals by the National Language Council, and (iii) the language policies formulated for the teaching of Japanese in the colonies and later as the common language of Asia in the occupied territories. Despite the recognized expediency of the language reform that had been implemented by the military and formally proposed by the National Language Council, the ultranationalists were not disposed to allow the new character limits to pass into wider society. Six ultranationalists, led by a prominent right-winger, Toyama Mitsuru, submitted a petition to the Ministry of Education stressing the long history of characters in Japan and their close connection with the life of the Japanese people. To continue opposition to all forms of language reform, a pressure group, the *Nihon Kokugokai* [National Language Association of Japan], was established. Also opposing the reform proposal was the *Bungaku Hokokukai* [Patriotic Literary Association].

Chapter 4 presents the climax of the script reform process during the postwar period. During this Occupation period, a cycle of reforms began in 1946 with the adoption of both the List of Kanji Characters for Interim Use, containing 1,850 *kanji* characters, and the policy of Modern Kana Usage. The former policy concerning *kanji* officially imposed tight limitations on the hitherto unrestricted use of *kanji* characters in the press, publications, and compulsory education. The latter policy concerning *kana* usage revised the age-old canons for usage of the syllabary (the historical *kana-zukai),* part of which no longer reflected the pronunciation of present-day spoken Japanese due to the natural process of sound change since the time *kana* was created. The Modern Kana Usage replaced this historical *kana-zukai* with a system reflecting the actual pronunciation of modern Japanese.

Gottlieb first explores 'the democracy argument' which underlay the reforms. She explains the socio-political background of this postwar period, which 'was characterized by a desire to forget the immediate past and to start again, rebuilding Japan from the ashes of defeat.' Guided by the Occupation authorities, various democratically oriented reforms were carried out in major political and educational systems (e.g., revision of the Constitution, land ownership reform, and educational system reform). In terms of script reform, this democracy movement adopted the view that the huge vocabulary of complex *kanji* characters and the remaining vestiges of archaic style were something that belonged to the old ruling class, and that these script systems should be changed in such a way that the entire nation could master and understand the written language easily. With this new direction, the advocates of romanization and *kana*, whose activities had been suppressed during the war, now surfaced again; instead of being censured as harmful to *kotodama* 'spirit of the Japanese language', their theories now gained the backing of the 'democracy argument'. Gottlieb's discussion of this matter encompasses various sources, including an editorial in a Japanese newspa-

per in 1945 which suggested that 'the abolition of *kanji* would clear away the remaining feudal mentality and enable Japan to achieve American-style efficiency'; '[by] using the Western alphabet instead of [*kanji*] characters, there would be an increase in national intellectual standards which would lead to maturity as a democratic government and a civilized nation.'[5] Also examined in this chapter is the reorganization of the National Language Council, and the setting up of the National Language Research Institute in 1951 to provide scientific research and data to inform policy decisions.

Another key problem dealt with in this chapter is the question of, and policy pertaining to, how best to organize the teaching of *kanji* characters on the new list (i.e., Toyo Kanji, the List of Kanji Characters for Interim Use, 1946) in schools through compulsory education. In 1948, following deliberations by a specially constituted subcommittee of the National Language Council, the Toyo Kanji Beppyo [Separate List of Characters for Interim Use] was announced. This list, which came to be known as the *Kyoiku Kanji* [Kanji Characters for Education], selected 881 *kanji* characters, out of 1850 on the larger list, to be taught for both reading and writing during the nine-year period of compulsory education.

As a result of the postwar reforms, in addition to the aforementioned two major reforms and the Kanji Characters for Education, the shapes of the *kanji* characters on the List were simplified by reducing the number of strokes, and the ways in which each particular *kanji* character were to be pronounced in different contexts were limited, reducing the number of readings people were expected to remember. Further issues investigated and planned during the 1950s by the Council and the National Language Research Institute were the characters to be used in personal and place names (an attempt at revision of the List of Characters for Interim Use), and the rules for using *okuri-gana* — an attempt to bring a degree of uniformity to *okuri-gana* usage. The gradual spread of these reforms was facilitated through their adoption in textbooks, government documents, and the printed media.

The fifth and final chapter covers the period of the policy review cycle from the 1960s through 1991, which can be characterized as a period of reversal reforms. Gottlieb examines the increasing tension between conservatives and reformers in the late 1950s, the building of a power base by the former, the tactics they used to impede and finally stall the progress of further activities, LDP (the Liberal-Democratic Party) complicity in this matter, and finally the process of review and partial reversal of the earlier changes. For example, the drastic limitation on the number of *kanji* characters (to as few as 1850) in the postwar reform of the 1940s was questioned, and gradually loosened. The size of the List of Kanji Characters for Interim Use increased to a total of 1900 characters in the revised list proposed in 1977. This revised list was reported to the Minister in March 1979 under a new name — the Joyo Kanji-hyo An' [Proposal of the List of Characters of General Use][6]; the name *joyo kanji* (*joyo* means 'daily use') gained the most votes in a questionnaire circulated to all members, and this list was now implemented as the official recommendation of guidelines for general use. Gottlieb's discussion of this report also includes the Council's proposal for education, to the

effect that with the appearance of this list the earlier separate list of 881 characters for education was to be repealed; the matter of how to teach the new list was reserved for separate enquiry along with that of name characters. With further additions and revisions, the *kanji* list was finally fixed at 1945 characters in 1981, and promulgated under the new name Joyo Kanji Hyo [the List of Characters for General/Daily Use].[7]

The bibliography of the book merits particular praise. The references to Japanese materials, and particularly government documents and reports, are very impressive; they include various materials that are difficult to obtain outside of libraries and research institutions affiliated with the Japanese government. Gottlieb's research is obviously based on extensive fieldwork in Japan, including the National Language Research Institute, and her bibliography reflects this breadth.

In terms of style and presentation, the book should be very readable by laymen having no knowledge of Japanese history and society or background in language planning and policy in Japan. However, one surprising lack, considering the general purpose of the book as a useful reference and documentation in addition to its theoretical contribution, is the total omission of summary tables, charts, or lists. The addition of several key tables schematizing major reforms of various aspects of the scripts, or a table chronologically summarizing the major language policies implemented, could have helped novice readers get past the preliminary stage of establishing a clear factural overview of the relevant language policy issues, thereby enabling them to concentrate better on the more crucial conceptual issues underlying the policy process.

As pointed out by the author, the language planning and policy issues explored in the present book for the case of modern Japan are different in nature from many other cases of language planning, in that they center around selection of scripts rather than selection of language. Further, except for the brief initial section of the first chapter, no explicit cross-linguistic and cross-cultural comparisons are attempted even within East Asia in the book. Nonetheless, its careful review and investigation yield an important case study, both for future cross-linguistic and cross-cultural comparison and for more general theoretical work.

NOTES

[1] Throughout the book, with the exception of the title and initial mention, Gottlieb uses the term 'characters' to refer to the Chinese characters used in the Japanese writing system (i.e., *kanji*). For clarity, I will instead use the Japanese term *kanji* in my discussion to refer to the same. Notice that the term *Kanji* appears in the book title.

[2] *Wa-ei gorin shusei* (Japanese-English Glossary) was first published in 1867.

[3] Shibatani 1990 and Hadamitzky and Spahn 1981 are not included in the bibliography of the book; Seeley 1991 is included.

[4] During the last stages of this period, finally, yet another issue regarding foreign words was taken up: how foreign words should be spelled in *katakana*. In 1990 the *Gairaigo no Hyoki (An)* [The Writing of Foreign Loan-words: Proposal] was put forth and officially adopted by the Cabinet in June, 1991.

[5] This, however, never resulted in romanization or *kana*-only writing system; as explained at the beginning of the present review, the writing system used at present and throughout the reforms involves a mixture of *kana* and *kanji* characters.

[6] The *Joyo Kanji-hyo An* [Proposal of the List of Characters of General Use] reported in 1979 contained 1926 characters. For this list, see the National Language Council Report 13.309-467, or the National Language Research Institute's Annual Report *Kokugo Nenkan* 1979. The list of characters that were not included in the earlier *Toyo Kanji* [the List of Kanji Characters for Interim Use] of 1946 but were added to the *The Joyo Kanji-hyo An* can also be found in this report (p. 49).

[7] See the National Research Institute's Annual Report *Kokugo Nenkan* 1981 (Date and Materials, 37-190), or the National Language Council Report 14.129-298). Both the list (*Joyo Kanji Hyo* 'The List of Characters for General/Daily Use') and the whole text of the official proposal submitted in 1981 (Shintaro Fukushima, chairman of the National Language Council, 14th Period) can be found in these reports.

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REVIEW ARTICLE

REVIEW

PREFACE

The 1999 Linguistic Institute was held at the University of Illinois 21 June – 30 July, 1999. The theme was 'Form and Function: Western and Non-Western Perspectives'.

More than eighty courses were offered, and a half dozen large conferences and more than a dozen workshops were held during the six-week period. 282 students and 104 affiliates from all over the world registered for classes. The initial groundwork for the Institute was laid by Hans Henrich Hock, who resigned the post of director in 1998 to become Director of the Program in South Asian and Middle Eastern Studies at UIUC. We thank the teaching faculty, affiliates, and students for creating such a warm, lively, and stimulating environment.

We also wish to thank the sponsors of the Institute, including the Linguistic Society of America (LSA), the American Association for Artificial Intelligence (AAAI), the Association for Computational Linguistics (ACL), the Beckman Institute for Advanced Science and Technology, Cambridge University Press, the Cognitive Science/Artificial Intelligence Program at UIUC, the College of Liberal Arts and Sciences at UIUC, the Japan Foundation, Microsoft, the National Science Foundation, the University of Illinois, and Xerox Corporation.

Forum Lectures

An invitation to present a Forum Lecture at a Linguistic Institute is one of the highest honors a linguist can receive. Speakers for the 1999 Institute were chosen on the basis of their broad and timely research by the Institute's Local Committee (Eyamba Bokamba, Jennifer Cole, Adele Goldberg, Georgia Green, Hans Henrich Hock, Chin-Woo Kim, Peter Lasersohn, Jerry Morgan) in consultation with the Linguistic Society.

The Forum lectures were presented on the following dates:

June 22, 1999: The Grammar and the User's Manual, **The Sapir Lecture**
    Arnold Zwicky, The Ohio State University and Stanford University.

June 29, 1999: Acquisition in Conversation
    Eve Clark, Stanford University.

July 6, 1999: What People Know about Sounds of Language,
    Janet Pierrehumbert, Northwestern University.

July 13, 1999: Speaker's Choices in Language Change,:**The Collitz Lecture**
    Sarah Grey Thomason, University of Michigan.

July 20, 1999: Virtual Reality
    Ronald W. Langacker, University of California at San Diego.

July 27, 1999: Dative Subject Constructions Twenty-Two Years Later
Masayoshi Shibatani, Kobe University.

The papers published here have been kept generally in the same oral style as the original lectures, although none of the papers conforms exactly to the text of the actual talk.

Clark, in 'Acquisition in the course of conversation', observes that the input children receive for acquiring the semantics of words is much richer than is often assumed. She notes that adults often provide explicit information about how a new word is related to known words, and further observes that children regularly make use of such explicit information in their own subsequent word-choices.

Thomason in the Collitz lecture on 'Speakers' choice in language change', echoes a similar theme, arguing that deliberate choices can lead to major lexical and grammatical changes. This is contrary to the received wisdom that most historical changes result instead from unconscious factors.

Shibatani, in 'Dative subject constructions twenty-two years later', considers constructions in which the subject is marked with a dative or other oblique case from a cross-linguistic perspective. He argues that such sentences are not transitive, as he and others had argued previously, but instead have two grammatical subjects (corresponding to two logical subjects), an inner ('small') subject and an outer ('large') subject. The outer subject is argued to delimit the relevant domain in which a particular state of affairs holds. This analysis relates dative subject constructions to double subject constructions; the relationship is strengthened by Shibatani's proposal that different case-marking options on the outer subject reflect differing degrees of semantic dependency between the outer subject argument and the inner clause.

Langacker, in 'Virtual reality', emphasizes the dramatic role of construal in language — language is clearly not a veridical reporting of events in the world, but rather results from how we construe the world. He ties together aspects of language as diverse as implicature, 'fictive motion', conceptual metaphor and blending, and various grammatical uses of the English present tense to make the point that the effects of construal cannot be overestimated.

Arnold Zwicky presented the Sapir lecture; the contribution to this volume is brief, due to personal circumstances. His paper, 'Same but different', suggests a typology of various types of semantic relationships between different uses of the same phonological string.

Pierrehumbert, in 'What people know about sounds of language', documents just how specific speakers' knowledge of phonetic detail is. Since the phonetic details of languages differ systematically cross-linguistically, such knowledge must be considered part of our learned competence. In addition, summarizing many recent experiments, she argues that phonological knowledge is best represented as statistical generalizations over the lexicon.

Although the papers in this volume analyze language from quite different perspectives, certain themes are evident. In each paper there is an emphasis on the cognitive contribution of the speaker: It is often more conscious than is often ac knowledged, both in acquisition (Clark) and in historical change (Thomason), more detailed and input-driven than is generally recognized (Pierrehumbert, Lan gacker), and more directly reflective of the semantic construal than is commonly appreciated (Langacker, Shibatani). The papers also all adopt a surface-oriented approach to syntax (Shibatani, Langacker), morphology (Zwicky), and phonol ogy (Pierrehumbert).

23 May 2000   Adele Goldberg, Director
Urbana, Illinois   1999 Linguistic Institute
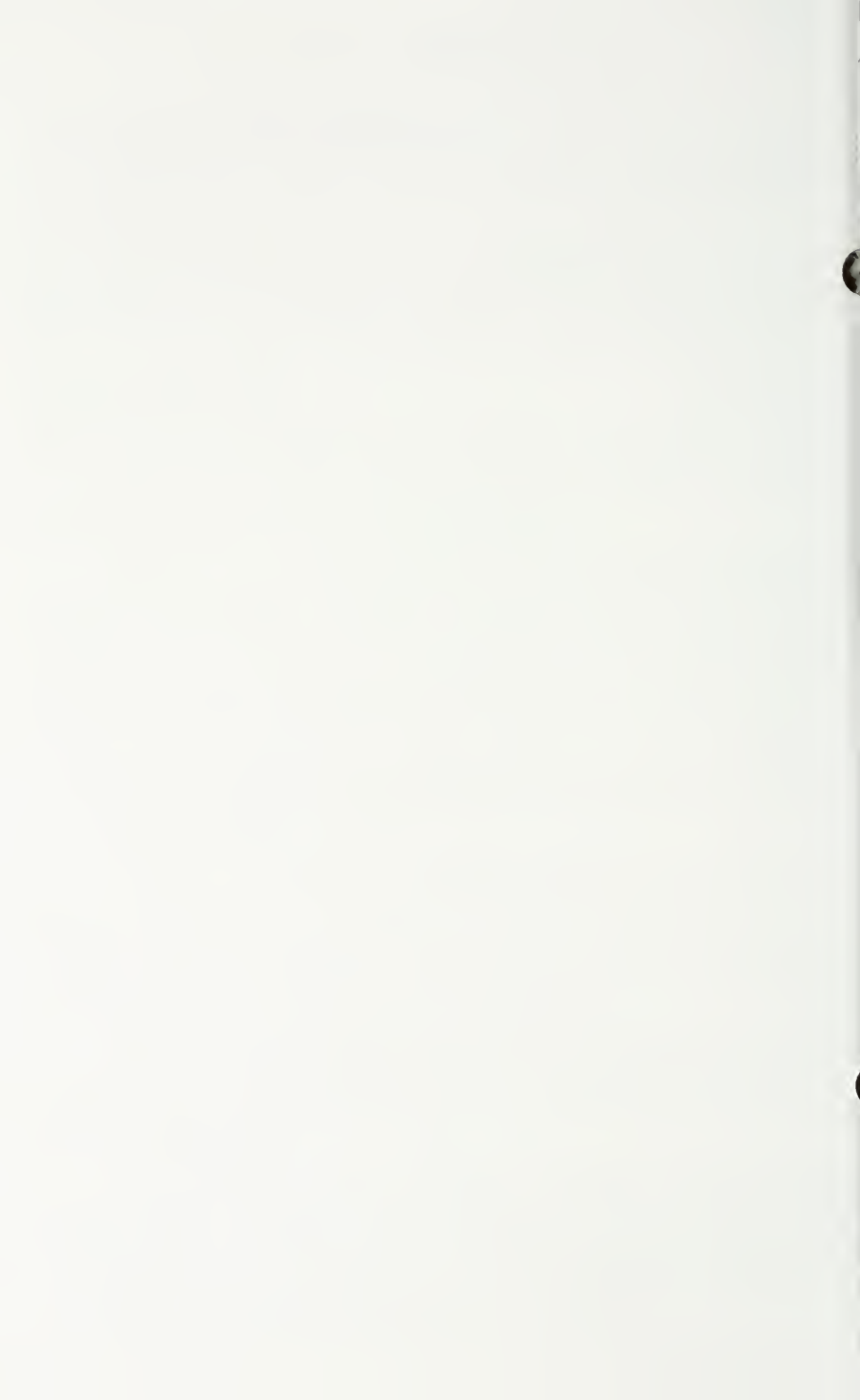
ACQUISITION IN THE COURSE OF CONVERSATION*

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Children readily take up new words they hear in the course of conversation, and they substitute these, when necessary, for the words they began with. Adults also offer them pragmatic directions about how to relate such terms to familiar words (*is a part of*, *is a kind of*, *belongs to*, *looks like*, etc.). In short, children aged 2;0 and younger can and do make use of what adults tell them about words and about meaning relations among words. The consistent patterns of adult offer and child uptake support the view that lexical acquisition takes place in the course of conversation. Findings from spontaneous exchanges are further supported by experimental data. In word-learning tasks, very young children are attentive to specific pragmatic directions and make use of them in word-learning. But when children receive no pragmatic directions, they resort to a range of coping strategies, both to assign meanings and to relate new meanings to each other. Early lexical acquisition therefore appears to be constrained less by innate limits on children's assumptions about meaning and reference, and more by the information adults offer about meanings and meaning relations, information that young children make active use of in their acquisition of lexical meanings.

0. Introduction

To communicate with language, children need to master the conventional meanings of the terms in use around them. For this, they must acquire a good number of the stock of conventional words and word meanings in use in the community where they are growing up. In this paper, I will argue that much of this acquisition takes place in conversation. As adults and children talk to each other, adults OFFER children information about unfamiliar words and their meanings, and children TAKE UP this information in the course of conversation.

What basics do children need to know in order to attach some meaning to a word-form? First, they need to know what the conventional word-form IS for the intended meaning; second, they need to track any distinguishing information that they can use to keep that form-meaning combination DISTINCT from any neighboring terms; and third, they need to know how each word is RELATED to its neighbors. Given these requirements, we need to establish how children actually go about acquiring the meanings of unfamiliar words — what the process of acquisition looks like, and what evidence there is for different steps in that process

as children start to build up lexical entries in memory for the words being acquired.

Researchers have typically taken one of two general positions on how the process of acquisition proceeds with respect to the lexicon: The first position is what I will call the CONSTRAINTS VIEW. In this view children are assumed to rely on certain CONSTRAINTS ON LEXICAL ACQUISITION that guide the learning of unfamiliar words (Markman 1989:8; my italics):

> When a child hears a word used to label an object, [...] an indefinite number of interpretations are possible for that word. [...] Given the impossibility of ruling out every logically possible hypothesis, how is it that children succeed in figuring out the correct meanings of terms? Part of the answer is that *children are constrained or biased to consider only some kinds of hypotheses.*[1]

These constraints have been widely assumed to be 'built-in' or innate in some sense, but with little specification of what precisely would have to be innate for each constraint to hold, briefly, and then be either abandoned or severely modified as children find out more about the properties of the lexicon as a whole in a specific language. Some of the major constraints that have been proposed include the following:

- WHOLE-OBJECT ASSUMPTION — Words pick out whole objects, not just a part or a property of an object (Markman 1989, Mervis 1984).
- TAXONOMIC ASSUMPTION — Words pick out coherent categories of objects (Markman & Hutchinson 1984)
- MUTUAL EXCLUSIVITY ASSUMPTION — Words are mutually exclusive, so each object will have one and only one label (Markman & Wachtel 1988, Merriman 1986)
- TYPE ASSUMPTION — Words pick out types, not individuals (Clark 1991)
- BASIC-LEVEL ASSUMPTION — Words pick out objects in basic-level categories (Mervis 1984)
- EQUAL-DETAIL ASSUMPTION — Words pick out equally-detailed instances of object categories from within a domain (Shipley, Kuhn, & Madden 1983)

Even cursory inspection of these constraints shows that they all 'fail' at certain points for lexical acquisition and therefore cannot hold as general constraints. The whole-object assumption is violated by every term that is not a noun for a concrete object (e.g., verbs like the verb *to run*, adjectives like *red*, prepositions like *in*, or nouns for parts of objects like *ear* or *tail*, or for more abstract entities like *justice*); the taxonomic assumption fails for all terms that refer to complex arrays (e.g., terms like *circus*, *breakfast*, or *shopping center*). Mutual exclusivity is violated every time an object can be referred to in more than one way (e.g., a dog referred to as *a dog*, and as *a spaniel*, *an animal*, or *a pet*); the type assumption is violated by proper names since these pick out individuals rather than types; the basic-level assumption is violated by both superordinate-level and specific-level terms (e.g., *animal* or *mammal* for a dog on the one hand versus *spaniel* or the even more specific *King Charles spaniel* on the other), and the equal-detail as-

sumption is violated by uses of terms from different domains for the same referent (e.g., *setter* versus *pet*).[2] None of the constraints that have been proposed hold across the board for the adult lexicon, so as soon as children have acquired even a very small vocabulary, they are likely to learn terms that violate one or more of these constraints. The puzzle here is how they can learn such terms if the constraints really hold: Just what kind of information (and how much) is required to push children to abandon one or other constraint? For none of the constraints has this been specified.

Notice that in the constraints view, children are conceived of as being more-or-less autonomous in their learning of meanings for unfamiliar words. That is, they are seen as treating each unfamiliar word as a problem to be solved in a two-step process (Miller 1986:175):

(a) They notice an unfamiliar word and immediately assign it to a semantic category;

(b) They discover and learn the distinctions among words in the same category.

Children's autonomy here is supported by the existence of built-in constraints on lexical learning, in that each constraint makes specific predictions about how children should assign meanings to unfamiliar words. Take the predictions made by the whole-object and the mutual exclusivity assumptions. The whole-object assumption makes two main predictions: (i) Children will not look for words to pick out actions, relations, or events, but only objects; and (ii) they will therefore mis-map words and meanings because they attach wrong meanings to non-object terms. The mutual exclusivity assumption predicts (i) children will refuse to use or accept more than one term per category, and (ii) they will mis-map words and meanings. For example, if they hear a part term for an unfamiliar (and as-yet unla-belled) object, under this view, they should map that term to the object itself (rather than just to the part). Then, when they hear the term for the object proper, they will be unable to map its meaning appropriately because they will already have assigned that meaning. In other words, the Whole-object assumption would block the uptake of any words except words for objects, and it would lead to the mis-mapping of non-object words. Mutual Exclusivity would block the uptake of semantic relations between words because these entail use of more than one term for the same referent (e.g., a dog that could be called both *the dog* and *the span-iel*); it would also lead to the mis-mapping of many meanings (e.g., for part and property terms among others) that would then block the uptake of other terms for instances of the target category.

The issues these consequences raise are serious and they seem inconsistent with much of what we know both about adult language and about language ac-quisition in children. They also raise these further questions: In the case of the whole-object assumption, how would children ever acquire non-nouns — verbs, adjectives, and prepositions, say — if they were to start out with the assumption that words apply only to objects? And how could children go on to acquire words for parts, properties, and activities associated with objects if words apply

only to whole objects? In the case of mutual exclusivity, how would children learn words for other levels of categorization, superordinate or subordinate to the basic-level (e.g., *that animal* or *the Siamese* compared to *the cat*)? Or how could they learn additional words from orthogonal domains for the same referent object (e.g., *the cat* versus *his pet*)? Mutual exclusivity leads them to assume that only one word can refer to any one referent-type so they should therefore reject all other terms that appear to apply to the same referent.

This constraints-based approach contrasts with what I call THE INTER-ACTIONAL VIEW. The latter assumes that children learn words from observing how they are used in everyday conversations with the people around them. It does NOT require that children rely on built-in constraints on which kinds of words they can learn at the outset. Rather, it assumes first, that children — like adults — are sensitive to certain basic pragmatic conditions, namely, that (a) the speaker and addressee share a joint focus of attention during any conversational exchange; (b) the speaker and addressee make use of physical co-presence in identifying referents; and (c) the speaker and addressee make use of linguistic co-presence in identifying referents. These pragmatic conditions guide speakers and addressees as they try to establish what the intended referents are in each successive utterance in a conversation. But in order to make use of the third condition (linguistic co-presence), speakers and addressees must agree on the conventional meanings of the words being used. Since young children have yet to build up an adult-like vocabulary, they lack many or most of the words and meanings they might require. This deficiency is made up for largely by the extensive pragmatic information adults offer children about language use, and in particular the information they offer about word uses and word meanings.

In short, in the interactional view, children acquire words in the course of conversations, either with parents or other adults, or, as in many cultures, with older siblings. Every use of a term that children hear tells them more about the conventional meaning of that term in that community of speakers. In offering such information, adults appear to do three things: (1) they offer children new words by telling them what to call instances of unfamiliar categories; (2) they inform children about how the referents of new words differ from the referents of familiar words in the same conceptual domain; and (3) they inform children about how the referents of new words are connected to the referents of other words, both familiar and unfamiliar.

When adults introduce unfamiliar words and their uses to young children, they do so in the middle of ordinary conversations. And in these conversational interactions, adults depend critically on the pragmatic principle of contrast such that the use of each term is motivated. That is, there is a reason to use this new, unfamiliar term rather than some other term already known — namely because the speaker means to convey something different, something that could not be conveyed, conventionally, by the use of another term instead. In effect, contrast pervades language use since speakers take every difference in form to mark a difference in meaning (Clark 1993:69):

For each contrast, the address must work out just where the contrast resides — and this will depend in part on whether the term used is familiar or unfamiliar, and what else the speaker uses it with in the utterance.

Such reliance on contrast, of course, assumes that speakers and their addressees, in each exchange, act co-operatively in the sense that speakers make their intended meanings as accessible as possible to those particular addressees, and the addressees in their turn make their best efforts to arrive at the speakers' intended meanings on each occasion (Clark 1990, 1993):

Speakers assume in using whatever expression that have chosen on a particular occasion that, for their addressees, they are denoting a situation, object, property, or relation that the addressee can readily arrive at or compute on that occasion.

In general, then, the INTERACTIONAL VIEW differs from the CONSTRAINTS VIEW in focusing on how speaker and addressee exchange information during conversation, and in particular on how adult speakers offer young children information about both word meaning and word use. In this paper, I will argue for THE INTERACTIONAL VIEW over the CONSTRAINTS VIEW, in that I propose that meaning acquisition normally occurs in the course of conversation. I will focus on the kinds of information adults OFFER children about words and word use, on children's UPTAKE of that information, and how the two together inform us about the PROCESS of meaning acquisition.

1. Child-directed speech

We know a great deal about some of the kinds of modifications adults tend to make in talking to less-skilled addressees (here, young children), but what we know is somewhat deceptive — in the sense that most of the studies done in the 1970s and 1980s focused almost exclusively on what adults did to modify the FORM of what they were saying. What we know about form in child-directed speech is summarized in Table 1. However, hardly anyone has looked at the CONTENT of what adults say to young children, specifically what they say about words and word use. When we do look at conversations between adults and children, we see that adults:

(a) make offers of new words to children in everyday exchanges,

(b) make offers of distinguishing information for terms in the same domain, and

(c) make offers of information that relates one term to another in meaning.

This information consists of PRAGMATIC DIRECTIONS, what I have called METALANGUAGE DIRECTIONS, for language use in general, and — here, word-use in particular. In the same conversations, children for their part:

(a) take up new words when they are offered,

(b) take up information about how words are to be distinguished,

Table 1: Modifications in form in child-directed speech

1. Rate of speech
— Slow (compared to adult-to-adult speech)
— Short, grammatical utterances
— Reliance on 'frames'
— Pausing between utterances (rarely within)
— Reliance on repetition
2. Prosody
— High pitch and extended range (1.5 octaves, double the adult-to-adult range)
— Exaggerated intonation contours (over the whole pitch range)
— Some use of whispering (directly to the child-addressee)
3. Word choice
— 'Baby talk' (specialized, conventional vocabulary; often parallel to the first 20-30 words children learn to produce)
— Reliance on attention-getters (child names, exclamations [*hey*], deictics [*see*, *there*])
— Selection of vocabulary (at the level of utility)

and

(c) take up information about how words are connected.

1.1 Adult offers

Adults offer new words all the time in the course of conversation — that is, these words are not yet known to young children. Their offers can be DIRECT, as when the adult speaker introduces the child to a new type of object ('That's an owl') or activity ('That horse is trotting'). Note the direct offers in the exchanges in (1) and (2):[3]

(1)   Child (1;7.19, looking at a book and pointing at the page with a picture of a kangaroo)
       Mother: Yeah. (laughs) It's called a kangaroo. Kangaroo.
       Child: **roo**.   (neweng:N20:0152,1557)

(2)   D (1;8.2, having his shoes put on; points at some ants on the floor): Ant.
           Ant.
       Father (indicating a small beetle nearby): And that's a bug.
       Child: **bug**.   (Clark, diary)

These DIRECT OFFERS are initiated by the adult, often during such activities as playing with blocks or looking at a picture book.

Many adult offers, though, are INDIRECT in that adults often appear to assume that their children can readily compute what a new term most likely refers to in context. For instance, they might introduce an entirely unfamiliar animal from a zoo set by simply asking 'D'you want the tapir?' Since it is the only unfamiliar animal on the table, they assume implicitly that the child can reason that the unfamiliar word must denote the unfamiliar object. In their classic study of rapid mapping, Carey and Bartlett 1978 exploited just this reasoning in introducing

nursery school children to an unfamiliar color term, *chromium* — here used to denote an olive-green color. As the teacher was setting up the classroom for snack-time, she introduced the new term by saying to a child:

'You see the two trays over there? Bring me the chromium one.
Not the red one, the chromium one.'

Notice that the adult speaker here takes for granted that the child-addressee can identify the entity picked out with the unfamiliar adjective in the referring expression 'the chromium one'. Indirect offers like this may be initiated by the adult speaker, as here, or may follow a child-initiated exchange and so take the form of an embedded repair. Embedded repairs typically have the form illustrated in (3), where the speaker initiating an exchange proposes one term (on this occasion, *wales*, a term for ridges in corduroy material); the second speaker, identifiable in this context as the expert, substitutes another term for the one first offered (*threads*), and the first speaker then takes up this offer of the substitute *threads*, without any comment, in his next turn (Jefferson 1982:63):

(3)   Customer in a hardware store looking for a piece of piping:
      Customer: Mm, the WALES are wider apart than that.
      Salesman: Okay, let me see if I can find one with wider THREADS.
              (Looks through stock)
              How's this?
      Customer: Nope, the **threads** are even wider than that.

Two typical adult-child exchanges containing embedded repairs are shown in (4) and (5) (from Clark, unpublished diary, and Gelman et al. 1998, respectively):

(4)   D (2;2.6, after asking for and being given the tape-measure; as he pulled out the tape): I tape with a measure.
      Mother: I think you're gonna *measure* with a tape myself.
      Child (as he measured a toy on the table, to his Fa): Herb, I **measuring** my
              man.   (Clark, diary)

(5)   Child (2;11, pointing to picture of an aardvark): That's a kangaroo.
      Mother: Well, that looks like a kangaroo but it's called an *aardvark*.
      Child: **Aardvark.**   (Gelman et al. 1988:97)

In short, when adults offer an alternative term for the referent in question, children frequently take it up explicitly in their next turn in the exchange.

2.   Children's uptake of new words

When offered new words, children often provide quite direct evidence that they are taking up an offer. They repeat the new word, and thereby both ACKNOWLEDGE the adult offer, and RATIFY the new word as the appropriate term for the target referent. Notice that this repetition shows that children can identify the new word as the pertinent element to change and extract it from its context in the adult's utterance. In order to repeat an adult offer, then, children must be tracking their own utterances and the words they have used, tracking the adult's utterance offered in response, and detecting the mismatch in the term proposed

for the referent that is currently the locus of joint attention in the conversational exchange.

In younger children, these repeats take the form of single word utterances, as shown in the exchanges in (6) and (7) (from the Sachs and Brown corpora, in CHILDES, respectively):

(6) Naomi (1;6.16, with her mother who's showing her a pair of glasses)
     Mother: Um, what are these? Um, what are they? They are called
         glasses. Glasses.
     Naomi: [**gaga**]. [**gaga**]...[**gaga**].   (N02,1084)

(7) Adam (2;3.18, talking to his mother)
     Mother: And the last car on a train is called what?
     Adam: Call too-too train.
     Mother: It's called the caboose.
     Adam: Call [bu].
     Mother: Caboose.
     Adam: [**kabut**].   (Adam02,212)

But, roughly speaking, once children have begun to combine two or more words in their utterances (around age 2;0), they no longer just repeat the target word produced by the adult; instead, they incorporate it into their next utterance, so the repeat no longer occurs as a single word on its own. Consider two typical examples from Abe in (8) and Adam in (9) (from the Kuczaj and Brown corpora, in CHILDES, respectively):

(8) Abe (2;10.27): What's that? What's that? I haven't tasted that.
     Mother: It's called cream cheese. That's part of the ingredients for your
         milkshake.
     Abe: That's good **cream cheese**.   (Abe051, 137)

In this exchange, after tasting the cream cheese, Abe incorporates the term into his next utterance.

(9) Adam (4;6, wanting his mother to take the top off a bottle): Untie dis for me.
     Mother: Untie what?
     Adam: Untie dis.
     Mother: What d'you call what you do to a bottle? Do you tie a bottle?
     Adam: No.
     Mother: What d'you do to a bottle?
     Adam: I don't know.
     Mother: Screw, unscrew.
     Adam: **Unscrew** a bottle, please.   (Adam49,461)

In (9), Adam and his mother go through a protracted, five-turn, side-sequence as she tries to elicit the appropriate word from him, and finally offers it herself with a direct comparison of the terms for the positive and negative actions (*screw*, *unscrew*), probably accompanied by the appropriate gestures as well. Adam then goes back to his original request and incorporates the appropriate verb for the action he wants done.

Repeats like these, of targeted terms — whether as single words or as parts of larger utterances — show clearly that children are both ATTENDING to the adult offer, and OBSERVING how and where the new term is being used on that occasion.

2.1 Making use of contrast

Since speakers take every difference in form among conventional terms to mark a difference in meaning, it is important for children to be able to establish just how one term contrasts with another. When adult speakers make offers of new words, they should therefore include information about any properties relevant to contrast. And they do, as shown in the exchanges in (10) and (11):

(10) Child (1;8.12, looking at a picture of owls in a new book): duck duck.
　　Mother: yeah those are birds. (looks at the picture) they're called owls.
　　　　(points at the picture) owls, that's their name. owls. (looks at child)
　　Child: **birds**.
　　Mother: and you know what the owl says? (points at the picture again)
　　　　the owl goes 'hoo'. 'hoo.'
　　Child: **owl**.
　　Mother: that's what the owl says.
　　Child: **hoo**. (smiles)
　　Mother: that's right.　　　　　　　　　　　　　(neweng:NE20:0571,1936)

(11) Child (2;11, looking at a book)
　　Mother: Do you know what that one is?
　　Child: Ummm.
　　Mother: I don't know if you know what that one is.
　　Child: That's a snake.
　　Mother: It looks like a snake, doesn't it? It's called an eel. It's like a snake
　　　　only it lives in the water. And there's another one. (Gelman et al. 1998:97)

In these exchanges, the adults offer information about how to distinguish owls from ducks, for instance, by offering the distinctive sound made by owls, or how to distinguish eels from snakes by offering information about the usual habitat of eels compared to snakes. In effect, such information allows children to accumulate information that will help motivate the contrast between pairs of terms like SNAKE and EEL by attaching distinctive information to one or both terms. The information offered under these circumstances typically pertains to surface characteristics of object-types along with other kinds of observable information such as habitat, characteristic motion, sound, preferred foods, and so on (see Gelman et al. 1998). Children, for their part make use of this information, relying on it, as we will see, in order to establish how new terms contrast with familiar ones or with each other.

2.2 Relating one word to another

Adult offers also contain information about how different words are related to each other. These relations, of course, are derivative from relations in the world that link entities and events in various ways. Some common relations in the data we are currently analyzing include the following:

(a)   SET RELATIONS AND SET MEMBERSHIP: Adults introduce new terms and relate them to the superordinate term for the relevant domain, using such expressions as ' sort of', 'kind of', as in utterances like 'Oaks are kinds of trees', 'A pug is a kind of dog', where *oak* and *pug* are presented as included in the larger set or domain. Or they may identify the term for set in relation to known set-members, as in 'A cat and a dog together are both animals', or 'All of them together are vehicles' (Callanan 1985, Clark 1997, 1998). But adults do not always make the relation of inclusion here explicit, but simply tell children what an instance of the superordinate set IS CALLED, as is the exchanges in (12) and (13) (from Sachs and Kuczaj, in CHILDES, respectively):

(12) Naomi (3;3.27): and I like that flower.
     Mother: that's called a shamrock.   (N83,599)

Here, the child offers the superordinate term, *flower*, and the mother supplies the more specific term, *shamrock*, that is included in the set of flowers, introducing it with 'that's called a ——'. The exchange in (13), between Abe and his mother, is very similar: here the mother introduces the term *ram* implicitly as a kind of *sheep*:

(13) Abe (3;2.26, looking at a picture of a ram): and this is a sheep?
     Mother: uhhuh.
     Abe: know what? sheeps don't have horns and stuff like this.
     Mother: some do I think. that one's called a ram.   (Abe80,214)

(b)   PARTS AND PROPERTIES: Adults also introduce parts and properties related to wholes for which the child already knows a term. Parts are introduced, typically, with the phrase 'is part of', as in 'Your thumb is part of your hand'. Properties are generally introduced by 'is made of' or 'has a ', as in 'A walrus has tusks' or 'The ball is made of rubber', or 'belongs to' (Clark 1997). Two typical offers of part-terms are illustrated in (14) and (15), again from Sachs and from Kuczaj, in CHILDES respectively:

(14) Naomi (2;7.16, looking at an alphabet book):
     Father: 'E' is for ....
     Naomi: train.
     Father: engine. engine is the part that pulls the train.   (N68,72)

(15) Abe (2;10.3): what's in there? what's in there, mom?
     Mother: it's a wick. you can't burn a candle if you don't have a wick.
     Abe: a wick is a candle.
     Mother: not exactly. a wick is part of a candle.   (Abe044,228)

In fact, parents appear to offer part-terms to young two-year-olds in a very consistent fashion: they typically introduce the terms for the whole entity first, then identify the part, as in sequences like 'This is a rabbit, and there are his ears' (see further Masur 1997).

(c)   COMPARISONS AND ALIGNMENTS: Adults often offer comparisons as a prelude to either indicating that something belongs to same larger set, or as a way of highlighting points of difference between two entities that, although similar, must be distinguished from each another. Typical utterances of this type are ones like

'A zebra looks a bit like a horse' or 'Tusks are like teeth'. A typical exchange with distinguishing information is (11), repeated as (16), where the parent waits until the child has offered a term (*snake*), and then provides an alternative (*eel*), followed immediately by a piece of information about habitat ('it lives in the water') that will allow the child to distinguish between snakes and eels:

(16) Child (2;11, looking at a book)
  Mother: Do you know what that one is?
  Child: Ummm.
  Mother: I don't know if you know what that one is.
  Child: That's a snake.
  Mother: It looks like a snake, doesn't it? It's called an eel. It's like a snake
    only it lives in the water. And there's another one.

(Gelman et al. 1998:97).

Adults may also offer a new word as an element in a larger list of familiar terms, as in an alignment like 'This is a bear, this is a lion, and this is a LEOPARD' (where *bear* and *lion* are already known). In fact, this manner of introduction was used in some of the earliest studies of children's ability to make appropriate inferences about possible meanings for unfamiliar words. In one of the first of these studies (see Dockrell 1981, Dockrell & Campbell 1986), four- and five-year-olds were presented with a scenario much like the following:

  Adult and child have just gone into a small room where they find a number
  of plastic toy animals 'out' on the table; the adult asks the child to help her
  put them away:
  Adult: Can you give me the pig? Give me the cow. Give me the gombe.

That is, the adult first listed two or three terms for familiar animals known to the child, then, as the next item, added a completely new word. On the table, all the toy animals except one, an ant-eater say, were familiar. The result: all the children immediately inferred that the unfamiliar word went with the unfamiliar animal, and none of them asked the adult what that new word meant.

Alignments or lists of familiar terms, then, offer a basis for making inferences about the possible meaning of an unfamiliar term included at the end of the list (here, a list of animals) because the earlier (familiar) terms in the list identify the domain the new word belongs to and simultaneously also license the inference that the new entity mentioned contrasts at the same level with the familiar entities. That is, such lists allow children to infer both category membership (a gombe must be an animal) and status within that category (a gombe must be a subtype of animal on a level with pigs or cows).

In summary, whenever speakers relate a new term being offered to some term or terms already familiar to the child, they license a range of inferences about the possible meaning of that new term. These connections within the lexicon are provided by way of a variety of metalanguage directions on how to link unfamiliar words with familiar ones.

2.3   Further evidence for uptake

Further evidence for the ready uptake of information about words by young children comes from some recent experimental studies of word learning (Clark & Grossman 1998). In order to complement the observational data on uptake, we posed two experimental questions: first, could two-year-olds learn two distinct terms for the same referent (in violation of mutual exclusivity, for example)? And second, could they take into account a single metalanguage direction, used just once, linking those two terms, to make use of subsequently?

We introduced each of two new words in relation to sets of referent-objects, for example: the term *dax* in connection with a set of six honey sticks with different colored handles, in such utterances as 'Can you stir the water with a dax?', 'Can you give me another dax?' 'D'you want to play with that dax?'. The general procedure was (a) to teach word-A for set-1 (e.g., *dax* with the intended meaning of 'honey-stick used to stir water'), then (b) to teach word-B for set-2 (e.g., *ruk* with the intended meaning of 'small whisk used to stir water').[4] In teaching the second word, the experimenter offered a single instance of an inclusion relation linking words A and B (here, *dax* and *ruk*), right after introducing the term *ruk* for the first time, saying: 'A *ruk* is a kind of *dax*'. Once the teaching session for the second word was complete, each child was tested on what they knew about the meanings of both words. If they had taken in the information about how A and B (*dax* and *ruk*) were connected, they should choose objects from both set-1 (honey-sticks) and set-2 (whisks) as instances of A (*dax*), but only the whisks as instances of B (*ruk*). When shown objects from both sets plus some additional, unrelated objects, and tested on both words just taught with a series of questions like 'Can you show me all the As?', 'Are there any other As?', 'Is this an A?' (asked of a B or some third type of object), even the youngest group of children gave evidence of uptake for how words A and B were related from the single utterance offering them that information. In fact 94% of the two-year-olds (mean age 2;2) gave evidence of inferring that while A included B, B did not include A (Clark & Grossman 1998).

In short, these children provided strong evidence (a) they could learn two different terms for the same referent, and (b) they could learn how those terms were related to each other when given just one exposure to the pertinent information. The children's ability to take up both new words and the relation between them, from as young as age 2;0, offers further support to the generality of the observations made of spontaneous uptake in the course of conversation. As in the conversational data, children in the experimental study would repeat the new words and, after hearing them only once or twice, make spontaneous use of them. In short, children as young as 2;0 readily take up new words when they are offered, whether in the course of conversation or in pragmatically natural experimental settings.

3.   The process of acquisition

What do these offer-and-uptake exchanges tell us about the process of meaning acquisition? They tell us is that adult offers can provide a sequence of

pieces of information pertinent to a new meaning. Consider what is needed in order to set up a potential meaning for an unfamiliar term:
the word form itself,

- any categorial information that can be inferred in context from the most probable referent,
- any information that distinguishes that meaning from near neighbors already known,
- any linking information that relates the new word to others already known.

Now let's look at how identifying each type of information plays a role in one child's uptake of the unfamiliar term *owl*, in the exchange given earlier in (10), repeated below as (17):

(17) Child (1;8.12, looking at a picture of owls in a new book): duck duck.
   Mother: yeah those are birds. (looks at the picture) they're called owls.
       (points at the picture) owls, that's their name. owls. (looks at child)
   Child: **birds**.
   Mother: and you know what the owl says? (points at the picture again)
       the owl goes 'hoo'. 'hoo.'
   Child: **owl**.
   Mother: that's what the owl says.
   Child: **hoo**. (smiles)
   Mother: that's right. (NE20:0571, 1936)

The first step in the process of setting up a meaning for the new word is captured by the first three turns in this exchange, shown in (18a):

(18a)   Child (1;8.12, looking at a picture of owls in a new book): duck duck.
   Mother: yeah those are birds. (looks at the picture) they're called owls.
       (points at the picture) owls, that's their name. owls. (looks at child)
   Child: **birds**.

> New word: **owl**
> Category: bird
> Distinct from **duck**?

The information offered by the parent, along with the new word *owl* is that owls (like ducks) are birds, and it is this that the child seizes on first, as shown by the uptake of *birds*. The offer and this ancillary information is represented in the box below (18a). As the exchange continues, in (18b), the child can now add to the information already adduced, and infer both that an owl is a subtype of bird and that owls differ from ducks:

(18b)Mother: and you know what the owl says? (points at the picture again)
       the owl goes 'hoo'. 'hoo.'
   Child: OWL.

> New word: OWL
> Category: bird
> Subtype: owl
> Differs from DUCK

Notice that just prior to the child's production of *owl* in (18b), the mother has provided a property that distinguishes owls from other birds (including ducks), by telling the child what the owl 'says'. So now the child can add the information that owls are a kind of bird (subtype), as shown in the amended box below (18b). As the exchange continues, the parent stresses the property ('says 'hoo'') that distinguishes owls from other birds, as shown in (18c):

(18c) Mother: that's what the owl says.
　　　Child: HOO. (smiles)

> New word: OWL
> Category: bird
> Subtype: owl; differs from subtype: duck
> Property: says 'hoo'

So the child can add that distinguishing property to the information about the term *owl*, and can add to the subtype line the information about ducks being another subtype of bird. And after the child then says HOO, the mother ratifies the whole exchange by saying 'that's right.' Notice that in the course of this one exchange, the child has potentially made a whole series of inferences about the new word *owl*, and, with each inference, has added information about the category involved, the subtype (or subtypes) now known, and at least one distinguishing property.

The same process of setting up a possible meaning for an unfamiliar term can be seen at work in older children too. Consider the introduction of the supposed color term, *chromium*, for an unfamiliar color, to four- and five-year-olds (Carey & Bartlett 1978:18), illustrated in (19), and the inferences each part of this introduction licenses for child-addressees, shown in (20).

(19)　While setting up the classroom for snacks, the teacher says to a child:
　　　You see these two trays over there. Bring me the chromium one.
　　　Not the red one, the chromium one.

The steps each child might go through in reasoning about the possible meaning of the unfamiliar term *chromium* are represented in (20a) and (20b), where the shadow-boxed segments specify the child's tacit inferences at each stage in the teacher's request:

(20a) Teacher: You see those two trays over there.
　　　　　　　Bring me the chromium one.

> Child:　New word: CHROMIUM
> 　　　　Domain: trays
> 　　　　Property?

First, the child identifies the new term (*chromium*) and assigns it to the domain of trays, the object-type to which the teacher applies it in his utterance. As a color term, of course, it will actually apply to a wide array of domains and, itself, belongs to the domain of colors, but at this point, the child can not yet infer this. As the teacher continues, the child can both add to and adjust her initial inferences:

(20b) (Teacher continuing) Not the red one, the chromium one.

> Child: New word: CHROMIUM
> Domain: colors
> Property of objects (trays)
> Subtype: specific color; differs from RED

By mentioning 'the red one', the teacher licenses the inference that *chromium* is also a color term since he contrasts it with *red*, one of the colors for the trays he is talking about. The child can therefore adjust her inference about the domain from trays to that of colors, where these (on this occasion) are a property of trays. And she can add the information that the new term designates a subtype in that domain, a color that differs from the color red.

Effectively, the inferences licensed for one- to two-year-olds appear very similar to those licensed for four- to five-year-olds in the two scenarios just analyzed. In both instances, the adult speaker offers information that allows the child-addressee to make appropriate inferences about the domain the new word belongs to and about the subtype it designates in that domain. In both instances, the adult also offers some distinguishing information that allows the child to both relate the new word to one already known (and thereby get a fix on both domain and subtype) and to contrast it with what is already known.

This general process, I propose, is what takes place whenever children are offered unfamiliar words. And once they have set up preliminary information about a word, they can add to it, adjust it, and also remove irrelevant information as they are exposed to further uses and so make further inferences about its conventional meaning. On many occasions, of course, their inferences will be tacit ones, and children may give no outward sign at that point that they have taken in the new word and any attendant information. Nonetheless, I argue that they actively store such inferences and rely on them later as they observe further uses of the same words. On other occasions, their uptake of a new word is attested right away by their producing it in the course of the relevant conversational exchange.

4.   Interaction or constraints?

Let me return to the contrasting views that I began with. In the interactional view, children notice and acquire new words in conversational interactions, either with parents and other adults, or, in some cultures, at first with older siblings. Furthermore, every use of a term children hear can tell them more about the conventional meaning of that term — how it can be used, what it contrasts with, and what it is related to. In this paper, I have shown how children make use of such information when they are offered new words and information about those words. The interactional view stresses the metalanguage directions adults offer to children in the general course of conversation. In interaction, children — like adults — depend critically on joint attention and Gricean cooperation between speaker and addressee for identifying the object or event being talked about. Along with Gricean cooperation, notice that speakers also depend critically on the pragmatic notion of CONTRAST to guide their inferences about the

general domain of meaning for a new word as well as for their more specific inferences about differences between the meaning of the new word and any near neighbors.

In the constraints view, children are viewed as virtually autonomous in their approach to learning word meanings. They notice new words and infer possible meanings on the basis of a priori constraints. These constraints limit their possibilities far beyond any actual limits in adult usage, so children eventually have to give up each constraint in order to be able to learn the options that are available in the conventional lexicon. However, the interactional data contradict the predictions of the constraints view, both in general and in detail. For example, children as young as 2;0 can readily learn and use two distinct terms for the same referent, and they are able to take up information that relates two terms from an early age (e.g., Clark & Grossman 1998, Waxman & Hatch 1992).

In the course of learning unfamiliar words, children take up what adults offer, and consistently repeat the target word. By doing this, they both ACKNOWLEDGE what the adult speaker has offered, and RATIFY it as the term to be used. At first, these repeats are simply single-word utterances. (They have often coded simply as imitations in children at the one-word stage.) Older children incorporate the new words offered into longer utterances that have the same functions as the earlier one-word repeats: they simultaneously acknowledge what the adult has offered and ratify it as the 'right' term. Finally, children take up not only information about how words can be kept apart (the 'local' contrasts within a domain), but also information about how these words may be related to others already known.

In short, children are far from autonomous in their assignments of possible meanings to unfamiliar words. They make active use of the pragmatic information offered them by adults about (a) which word to use, (b) how it differs in meaning from near neighbors, and (c) how it is related in meaning to other words in the same domain. So in order to find out more about the PROCESS OF WORD ACQUISITION, we must pay more attention to just what adults say to children about both words and word use in the course of conversation.

5.   Conclusion

In their conversations with children, adults offer metalanguage directions within everyday conversational exchanges about which (conventional) words to use when and where, how they are distinguished from other words, and how they are related to them. Children in their turn take up this information about words and word use, the distinctions among words, and the relations among them, from the very start. This collaborative process of offer and uptake is critical to models of lexical acquisition: it informs us about the process by which children ADD to what they know about a new word meaning. We need to take into account how pervasive information about words and word-meanings is: Children can and do make use of what they hear about words and word uses from every exchange in which some target form appears. It's time for us to take all this into account when

we propose theories about what children can draw on as they build up their lexicon.

NOTES

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[1] Golinkoff and her colleagues summarized this position as follows: '[...] lexical acquisition proceeds in the rapid, relatively effortless way that it *does because the child operates with a set of principles that guide the task of word learning*' (Golinkoff et al. 1994:126; my italics).

[2] See further Clark 1997, Clark & Svaib 1997, Deák & Maratsos 1998, and Waxman & Hatch 1992.

[3] The exchanges cited in this paper are all drawn from one of several sources: the CHILDES Archives (the New England corpus collected by Catherine Snow, and the longitudinal corpora collected by Roger Brown, Stan A. Kuczaj II, and Jacqueline Sachs) see further MacWhinney & Snow 1985, my own unpublished diary study (Clark, unpublished diary), and several published articles.

[4] We assigned the same function to the objects in each pair of sets; the objects were also similar in size, but differed in overall properties between sets, and in many small details within sets (see further Clark & Grossman 1998).

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SPEAKERS' CHOICES IN LANGUAGE CHANGE*

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The conventional wisdom among historical linguists has always been that changes resulting from deliberate, conscious actions by speakers are relatively trivial, confined mainly to lexical innovations, words, and the adoption of a few structural features from a prestige dialect. This paper presents evidence that adult speakers sometimes make deliberate choices that bring about sweeping lexical change and significant grammatical change, and that this can happen in a whole speech community to an extent that can cause the Comparative Method to fail in attempts to establish genetic relationship and subgrouping within a language family and to reconstruct proto-languages. Most of the examples that have emerged to date come from language contact situations, but speakers are clearly able to manipulate their stylistic repertoires consciously to bring about significant internally-motivated change as well. The paper concludes with an argument that such linguistic events only rarely cause serious problems for the Comparative Method, in spite of the fact that the methodology largely relies on the assumption that language change is not subject to speakers' conscious manipulation.

1. Introduction

Historical linguists have always known that some linguistic changes result from deliberate, conscious actions by speakers. But the general assumption has been that such changes are relatively trivial, confined mainly to the invention or borrowing of new words, changes in lexical semantics, and the adoption of a few structural features from a prestige dialect. In this paper I show that adult speakers can and do make deliberate choices that bring about nontrivial lexical and structural change; I also show that the scope of these changes, at the community level, can be extreme enough to disrupt the application of the Comparative Method in attempts to establish genetic relationships, to reconstruct proto-languages, and to construct a subgrouping model for a language family. Most of the evidence presented here comes from language contact situations, but there is enough evidence from internally-motivated change to show that the phenomenon is not confined to contact-induced change. The particular categories that I'll focus on are correspondence rules applied in lexical borrowing, deliberate non-change, and deliberate change. A major implication of these examples is that efforts to develop deterministic predictive theories of contact-induced change — either by setting theoretical limits on its extent or by proposing specific outcomes under specific

linguistic and/or social conditions — are doomed; but I won't explore this point in the present paper (see Thomason 2000 for discussion of the general issue).

Finally, I'll argue that these dramatic linguistic events do not spell disaster for standard historical linguistic methodology, in spite of the fact that the standard methods largely rely on the assumption that language change is not subject to speakers' conscious manipulation. In other words, the examples of deliberate change do not provide support either for those who argue that speakers cannot deliberately change their language enough to disrupt the application of the standard methods or for those who argue that the standard methods don't work and should therefore be abandoned.

Before we consider speakers' choices, a few background comments on the importance of the historical linguist's standard methodology are in order, for the benefit of readers who haven't worked extensively with it: it's hard to understand why a threat to the methodology is a matter of concern without understanding the vital importance of the Comparative Method, in particular, to the field of historical linguistics. The Comparative Method is by far the most impressive tool in the historical linguist's toolbox. It dates from the 1870s in essentially its modern form, though of course we know much more about the mechanics and results of language change now than we did a hundred years ago. Because it enables us to reconstruct sizable portions of proto-language lexicon, phonology, and morphology, and to a lesser extent syntax as well, the Comparative Method greatly expands our ability to examine language changes over considerable time depths. If our knowledge of language change were confined to actually attested past changes and the very recent studies of ongoing change, our understanding of processes and probabilities of change would be based on evidence from a tiny handful of languages in a tiny handful of language families — namely, at present, for languages that have been documented for several hundred years or more. And our understanding would be extremely impoverished in comparison with what we actually do know, thanks primarily to the Comparative Method.

Most significantly, then, the Comparative Method provides us with a window on prehistory. Historical linguistics is not unique among the historical sciences in being able to recover specific information that is not directly attested, from a period before any direct attestations are available, but it is certainly one of the most successful historical sciences in this regard. Certain other historical sciences, for instance paleoanthropology, have borrowed and adapted our Comparative Method in efforts to achieve comparable results. It's true, of course, that the time depths reached by the Comparative Method — perhaps 10,000 years, possibly a bit more — are very shallow compared to the time depths for such historical sciences as evolutionary biology. Still, we are envied by many other historical sciences for our ability to trace linguistic features back into prehistory. The body of information about language families and their proto-languages, including the paths and results of a huge number of phonological and morphological changes, enables us to make fairly confident statements about common vs. uncommon changes, if not about possible vs. impossible changes.

A threat to the Comparative Method is not, as some language-contact specialists and long-range comparison fans have suggested, a purely technical matter of interest only to hide-bound traditionalists. Instead, it is a threat to the entire body of knowledge about language change that has been accumulated painstakingly by generations of scholars. Abandoning the Comparative Method would mean calling all those results into question.

But from a historical linguist's viewpoint, the Comparative Method is too powerful to be shaken by a discovery of intractable data or a demonstration that certain results obtained by means of the method are in fact false. The reason for this confidence in the method is that it incorporates tests, and the vast majority of the changes that have been investigated pass those tests. The method includes ways of checking its results and also ways of telling when it isn't working.

A prime example — or, better, the prime example — is the regularity hypothesis of sound change, the cornerstone of the Comparative Method. Here's a typical formulation of the hypothesis (from Warren Cowgill, p.c. 1963):

> If x in one morpheme of language A turns into y in environment z in
> A', a changed later form of A, then x will turn into y in environment z
> in every morpheme in A', unless the process is disturbed.

What kinds of disturbances? Unfortunately, there are quite a few. Dialect borrowing can produce irregular-looking results, in doublets like English *person* vs. *parson* and *university* vs. *varsity*. In this case there were no irregular sound changes, but rather a regular change in one dialect, from which words were subsequently borrowed into the other dialect. Analogic change can also lead to apparent exceptions to the regularity hypothesis. So, for instance, Old Russian had a consonant alternation in certain inflectional categories that originated in Proto-Slavic in the palatalization of velar consonants before a front vowel. In the *a*-stem noun declension, for instance, most forms of the word for 'hand' had a stem-final *k*, as in nominative singular *ruka*, but the dative singular was *rucě*. Later, the Old Russian *a*-stem declension was leveled in favor of the velar, so that the Modern Russian dative singular (with an unrelated vowel change) is *ruke*. Then there are the several categories of 'minor sound changes' — changes that are so called precisely because they are usually or always sporadic, not regular. Metathesis (as in the alternation between *ask* and *aks*, which dates from Old English times) and dissimilation (as in English *pilgrim*, a borrowing from Latin *peregri:nus*) can also be found in some languages as regular sound changes; but haplology (as in *probly* from *probably*), for instance, is only very rarely a regular process of sound change.

A different type of disturbance is the common pattern in which a sound change is regular at its center of innovation, but irregular at the periphery of its geographical spread. The most famous example is the Rhenish fan in Germany, at the periphery of the spread of a set of changes known collectively as the High German Consonant Shift. The center of innovation was in the south of German-speaking territory, and the changes spread northward. Along the Rhine River, about half-way in its northward course through Germany, there's a complex set

of isoglosses that were laid down as various parts of the Consonant Shift stopped spreading, until the northernmost isogloss distinguishes a region to the north in which none of the changes occurred from a region to the south in which the only trace of the changes is that some — but not all — of the words with original k underwent the change from k to $(k)x$.

With all these exceptions to the regularity hypothesis, one might suppose that the hypothesis states merely that sound change is regular except when it isn't. If this were the entire story, there wouldn't be much point in hanging onto the hypothesis at all. But in fact, intensive study of sound changes over the past century and a quarter has shown that in the great majority of languages where the Comparative Method has been applied, it works fine, including the assumption of regularity. There are always some irregularities, of course, but the method identifies them and sets them aside as unanalyzable residue. That is, the irregularities very rarely interfere with the application of the Comparative Method, because they don't occur in large enough numbers to make the regular lines of descent untraceable. As we'll see below, there are exceptions to this general rule, but they are easily recognizable as exceptions, and they are uncommon. Thanks to the evaluation procedures that form a vital part of the Comparative Method, then, the method is a powerful tool for the elucidation of language history and even prehistory — one that no historical linguist is likely to want to abandon.

2.   The effects of speakers' choices are not always trivial

If asked what kinds of linguistic changes speakers are most likely to make deliberately, most linguists would think first of lexical innovations. Every generation of teenagers has its own slang vocabulary and every specialized field has its own technical lexicon, to take the most obvious examples. So, for instance, a few generations ago the word *crazy* took on a slang meaning 'terrific, wonderful' — a lexical semantic innovation, added to its earlier meaning 'insane' — and around 1960, college students in California replaced *crazy* in its slang meaning with *napa*, derived from the location of a state mental institution. Still later, another generation replaced *crazy* (and, in California, *napa*) with *cool*.

Other lexical innovations are words invented either entirely (e.g., names of new products such as *Kleenex* and *Xerox*) or by combining pre-existing morphemes to form new words, e.g., *photocopy*, which has now largely replaced lower-case *xerox* as a generic term. Of course there are also more complicated coinages; *email*, for instance, combines the first letter of *electronic* with the noun *mail*, and *snoo* 'insane' was derived as a slang term by inmates at the State Correctional Institution at Pittsburgh from the acronym of the Special Needs Unit, where mentally disturbed inmates are confined within the prison.

The reason lexical changes like these are generally considered trivial is that they don't affect a language's structure. But even linguists who recognize that structural changes can be made deliberately seem to assume that such changes will have only minor structural effects, at least in structural subsystems below the pragmatic level. Romaine, for instance, argues that while speakers can relatively

easily change their pragmatics, they can't easily introduce deliberate changes into their phonetics (1996:111). Probably the best-known proposal about deliberate speakers' changes is William Labov's (1994:78):

> Any general consideration of linguistic change must first distinguish between change from above and change from below .... 'Above' and 'below' refer here simultaneously to levels of social awareness and positions in the socioeconomic hierarchy. *Changes from above* are introduced by the dominant social class, often with full public awareness ... *Changes from below* are systematic changes that appear first in the vernacular, and represent the operation of internal, linguistic factors. At the outset, and through most of their development, they are completely below the level of social awareness. ...

Labov does not say that changes from above must be relatively minor, but the example he gives — the borrowing of a constricted postvocalic *r* into an English dialect that had lacked postvocalic *r* — suggests a belief that only superficial changes are likely to be made deliberately. He observes that borrowed features may be inconsistent with the receiving dialect's (or language's) system, so that integrating them might require significant changes in that system; but the initial change, in his account, appears to be non-dramatic structurally. This interpretation of his view is supported by his more general statement, later in his book, about the possibilities for extensive deliberate change (1994:598):

> There is a part of language behavior that is subject to conscious control, to deliberate choice, to purposeful and reflective behavior. But as far as I can see, it is not a major part of the language faculty, and it has relatively little influence on the long-range development of language structure.

Labov's views are (as far as I can tell) typical of those held by historical linguists more generally: deliberate change is not something that is at all likely to have more than minor influence on a system. I believe that this comfortable assumption is invalid. The circumstances under which speakers make deliberate changes in their language are not confined to a need or desire for new words and a need or desire to sound more like people of a higher social class. There's a much broader range of circumstances, and a much deeper range of deliberate structural changes, than has generally been recognized.

My own position on the possibilities in this domain is quite radical: I have argued elsewhere (Thomason 1997) that the question of linguistic possibility of a change — in this case a deliberate change — is settled as soon as a single speaker produces a single instance of the change at a single time. Whether a deliberate change will become a permanent part of that one speaker's idiolect or of the speech community as a whole is then a matter of social and linguistic probability, not possibility. Some of the examples below, therefore, will be potential language changes, not actual ones. From my viewpoint, they are linguistically equivalent to actual changes: they show that speakers have the ability to manipulate their language(s) in those particular ways.

In the rest of this section, I will give examples of three types in support of the claim that speakers' deliberate changes can affect a language's structure significantly. First, I'll discuss examples of phonological correspondence rules that bilingual speakers often use in adapting loanwords to their own language's structure (§ 2.1).[1] These rules serve to highlight the extent to which speakers can and do make deliberate changes. Second, and somewhat paradoxically, I'll discuss deliberate non-changes — resistance to lexical interference, in particular (§ 2.2). Here, too, my goal is to show that speakers can, to a surprising extent, control what does or doesn't happen to their language. And finally, I'll discuss examples of deliberate structural changes (§ 2.3).

Before beginning this survey, I should add two preliminary comments. First, all the examples of correspondence rules and deliberate non-change are from language contact situations. This does not mean that there are no examples, at least of deliberate non-change, in (relatively) monolingual contexts, but I haven't found any yet. (Possibly the famous archaizing of Icelandic as part of the process of standardization fits here, for instance, though one might prefer to argue that two different languages were involved, Modern Icelandic and Old Norse.) Only the third category, deliberate change, includes some examples of changes within a single language. Second, I must emphasize that it can't be proved that every example below was actually deliberate, or at least potentially deliberate (because the speaker recognized the 'error' when it was brought to his/her attention). But all are cases in which speakers can be shown to have the conscious knowledge required to effect the change.

2.1   Correspondence rules

Correspondence rules, or (in Jeffrey Heath's 1989 terminology) borrowing routines, are well known from a wide variety of situations in which related languages are in contact. They provide excellent evidence of bilingual speakers' ability to manipulate equivalent forms, usually phonological, in their two languages. A typical example is reported from Fayyoum Oasis Arabic by Rudolf de Jong (p.c. 1995). Fayyoum Oasis is about 100 km. from Cairo, and since Fayyoumis sell their agricultural products in Cairo markets and/or work in the construction industry in Cairo, they have extensive contacts with Cairene Arabic. Two correspondence sets, due to an earlier monophthongization in Cairene, are Cairene *o:*, *e:* vs. Fayyoum Oasis *aw*, *ay*, as in *be:t* : *bayt* 'house' and *mo:t* : *mawt* 'death'. When European loanwords enter Fayyoum Oasis Arabic via Cairene Arabic, the borrowers adapt the words in a way that shows that they've applied correspondence rules to diphthongize the Cairene (and the original European) monophthongs: so Cairene *tilifo:n* 'telephone' turns up in Fayyoum Oasis as *talafawn*, and Cairene *gine:h* 'guinea' is *ginayh* in Fayyoum Oasis.

A less typical example, because it involves two competing correspondences, is a Thompson River Salish borrowing from another Salishan language, Chilliwack. Thompson cognates with Chilliwack have two different correspondences involving *l*, namely, *l* : *l* and *n* : *l*; and speakers display their knowledge of these correspondence sets in their handling of loanwords. So, for instance, the loan-

word $k^w \acute{u}k^w ns$ 'high cranberry' has an *n* in Thompson in spite of the fact that the Chilliwack source word has an *l*. As Kinkade observes in analyzing this example, 'Recognizing that Chilliwack *l* was often derived from *n*, the Thompson form changed this consonant 'back' to *n*, although the Squamish cognate shows that it is actually derived from *l*' (1995:35; Squamish is another Salishan language).

The question arises, of course, as to whether the application of this correspondence rule is conscious or subconscious. Certainly it needn't be the case that application of correspondence rules is always accessible to the borrower's conscious mind, and some authors appear to take the position that subconscious knowledge is the norm. This may be true, for instance, of Ross & Durie, who say that speakers who 'regularly use two or more lects ... have an intuitive grasp of...sound correspondences' and use them 'to convert the phonological shapes of words from one lect to another' (1996:29).

But there is direct evidence that speakers often know exactly what they are doing, at least retrospectively, but also beforehand, when they apply correspondence rules. Martha Ratliff has observed that 'speakers of languages like Arabic and Tamil, who have knowledge of a literary standard that is quite different from the colloquial language ..., can retard the process of natural language change in the colloquial quite consciously so that the two do not drift apart past a tolerable limit' (p.c. 2000). An example is a deliberate change introduced by Tamil speakers into their colloquial speech: they deliberately reversed an umlaut rule, modeling the change on literary Tamil, when the changed vowels became socially stigmatized (Pargman 1998).

Here's a particularly striking example of conscious manipulation of correspondence rules, from Alan Dench (p.c. 1993 and Forthcoming). Some years ago, Dench was eliciting a wordlist while conducting salvage linguistic research with one of the two last speakers of Martuthunira, a western Australian language. At one point he was given the word *ngal.yu* for 'wild onion'. But later he checked the list with the other remaining speaker, who gave him *partunya* for 'wild onion' instead of *ngal.yu*. Dench went back to the first speaker and told him what the second speaker had said; ah yes, said the first speaker, that's right, it is *partunya*. But then why did you tell me it was *ngal.yu*?, Dench asked. Well, said the first speaker, Panyjima speakers say *ngarlku*, and Yindjibarndi has *ngarku*, and Kurrama has *ngartku*; so it OUGHT to be *ngal.yu* in Martuthunira! The sound correspondences among these closely-related languages are quite regular, and the speaker was perfectly aware of the regularities. Was Dench's consultant applying his correspondence rules to invent a loanword? Maybe, maybe not; if Martuthunira weren't moribund, and if his coinage of *ngal.yu* stuck in his own idiolect and then spread to other speakers (who would also have been multilingual), then the native word for 'wild onion' would have been replaced by the multiple-source loanword. The point is that the first step in the process was taken as soon as he came up with *ngal.yu*.

Nor are correspondence rules strictly a phonological phenomenon. A (rather embarrassing) personal anecdote shows how they can include morphology, too.

Many years ago, desperate for a job, I reluctantly agreed to teach Russian, in spite of the fact that I was far from fluent in the language. At the time I was quite fluent in Serbo-Croatian, however, because I had recently spent a year in then-Yugoslavia. All Slavic languages are very closely related; most of the basic vocabulary items are cognate throughout the family, for instance, and there are many close correspondences in the grammar too.

But not everything matches. Among the non-matches is the numeral for 'forty', which is *sorok* in Russian and *četrdeset* in Serbo-Croatian. The Serbo-Croatian word follows a regular pattern for counting in tens, which consists of the lower numeral followed by 'ten': the word for 'four' is *četiri*, and the word for 'ten' is *deset*. Russian generally has the same basic pattern, though there are phonological differences between the two languages; compare, for instance, Russian *semj* 'seven', *desjatj* 'ten', and *semjdesjat* 'seventy' with Serbo-Croatian *sedam* 'seven' and *sedamdeset* 'seventy'.

The Russian word for 'forty' is obviously different. Its original meaning was apparently 'a bundle of forty sable pelts', a traditional measure of value, and the word eventually came to be used to designate forty of anything. This word was my downfall. In a careless moment, while drilling my second-year Russian students on 'twenty, thirty, forty, fifty, ...', I rephonologized Serbo-Croatian *četrdeset* into pseudo-Russian *četyredesjat'* (which is what the Russian word would have been if it hadn't been replaced by *sorok*) and gave them that as the word for 'forty'. They objected; I blushed; but that mistake now provides a good example of a correspondence rule that exploits both the Serbo-Croatian/Russian phonological correspondences and a pattern of numeral formation that is otherwise valid for both languages. Note, too, that I was not fully fluent in either of the two relevant languages. This point is important in showing that correspondence rules are not the exclusive property of fluent speakers: they are also applied by non-fluent second-language learners in attempts to speak a target language.

It's also noteworthy that, as in the case of the Martuthunira speaker, I knew what I'd done with 'forty' as soon a student pointed out my mistake — I did know the Russian word for 'forty'; it just hadn't been as close to the tip of my tongue as the Serbo-Croatian word was — but I certainly didn't invent a wrong word on purpose. Nevertheless, I clearly had the knowledge to produce the wrong form, and I could easily have made conscious use of it if I'd wanted to.

Can the use of correspondence rules be so extensive as to interfere with attempts to apply the Comparative Method, especially for subgrouping related languages? The answer to this question is definitely yes. In a number of cases from different parts of the world, closely-related languages have exchanged so many loanwords, with (and probably also without) the application of correspondence rules, that the subgrouping of the languages is impossible to determine. The fact of genetic relationship is not in doubt, but the varying degrees of relationship within the family or sub-family and the actual changes undergone by individual daughter languages cannot be established. This problem was noted at least as early as 1965, by Wayne Suttles. After noting that 'the possibility of pervasive

intrafamilial borrowing [among Halkomelem-Straits Salish languages] is great enough to cast doubt on the whole procedure of subgrouping by percentages of shared vocabulary',[2] Suttles suggests that borrowings might not be recognizable as borrowings in part because 'the borrowers were quite aware of the correspondence [between certain vowels] ... and simply reshaped the word accordingly' (1965:21-22, 25).

Ross & Durie 1996 also emphasize the subgrouping problems raised by multiple phonological correspondences in closely-related languages. They report George Grace's finding, from his research on Melanesian languages of New Caledonia (Grace 1996, and also, e.g., Grace 1981, 1990), that multiple phonological correspondences yield a 'system' with 'just a few examples of each correspondence', and his conclusion that 'it is impossible to separate "regular" (inherited) from "irregular" (borrowed) words' (Ross & Durie 1996:28, 29). This is the context for their own remark, quoted above, about speakers applying correspondence rules.

2.2 Deliberate non-changes

Resistance to change, or refusal to change, manifests itself primarily in the nonborrowing of words. It's easy to find examples in the literature, from cultures all over the world. It is much less clear to what extent speech communities can resist structural interference, given the lesser salience of structural, as opposed to lexical, features. Among the Tewa people of Arizona, for instance, language mixing and borrowing are heavily frowned upon (Kroskrity 1993). All Arizona Tewas are bilingual in Hopi, whose speakers have surrounded the Tewas for three hundred years; but Tewa is used especially in religious ceremonies, where any use of Hopi is considered inappropriate. Tewa has therefore undergone very little lexical interference from Hopi. Arizona Tewa has also borrowed very little from Spanish, which many Tewas also speak. There has, however, been some structural borrowing into Arizona Tewa from Hopi, including a passive suffix (Kroskrity 1993:64, 74-75).

By contrast, Montana Salish speakers in Montana have borrowed neither lexicon nor structure from English, in spite of a hundred and fifty years of increasingly intense pressure from the dominant Anglo culture and language. The absence of loanwords is not complete, but the handful of English loanwords, mostly placenames, hardly matches the degree of modern Salish speakers' acculturation to mainstream U.S. culture, which is very extensive, even extreme. The names for new things are constructed by Salish speakers out of native morphemes, and usually with native concepts. So, for instance, the Salish word for 'automobile' is *p'ip'úyšn,* literally 'it has wrinkled feet' — named after the appearance of tire tracks — and the word for 'drive a car' literally means 'make a domestic animal go straight'.[3]

In any case, resistance to lexical borrowing has been more widely noted than resistance to structural interference. Here are a few more examples. Walapai (Hualapai), a Yuman language spoken in Arizona, has undergone 'negligible' in-

terference from English, '[i]n spite of prolonged and intensive contact between speakers of Walapai and speakers of English'; this is 'a strictly monolingual response in an increasingly bilingual situation' (Winter 1992:222). Tariana, a North Arawakan language of the Vaupes River region in Brazil, has borrowed very few words from either neighboring East Tucanoan languages or Portuguese in spite of very close contacts and extensive multilingualism (Aikhenvald 1996:85); the apparent reason, Aikhenvald argues, has to do with the importance in the region of language as a 'badge of ethnic identity', and the consequent disapproval of language 'mixing', specifically lexical mixing. According to Norman (1988:20), current Modern Chinese 'is very resistant to borrowing foreign terms outright', instead creating new words out of native parts. By contrast, early 20th-century Chinese borrowed many words for new Western 'technology and political and economic concepts' from Japanese. A final example is the Eastern Ijo language Ibani of Nigeria's Niger Delta region, as described by Kay Williamson (p.c. 1996, in part citing work by Robin Horton). In the main Ibani town, Bonny, Ibani speakers are all bilingual in Igbo, but they are much concerned to maintain the purity of Ibani. When eliciting Ibani wordlists, outside scholars find that Ibani speakers carefully avoid Igbo loanwords. They do in fact have some Igbo loanwords in their language, but they know which words are borrowed and avoid them deliberately in a formal elicitation setting — a potential resistance to interference, if not an actual one.

A question arises in connection with these examples are there perhaps structural deterrents to lexical borrowing in all these cases? Maybe, as has sometimes been suggested, morphological complexity makes it difficult or impossible to insert a borrowed lexical item into a potential receiving language's word structure? If there are such barriers, then the reason for the lack of loanwords in (for instance) Montana Salish could be that, rather than speakers' choices. But the answer to the question is no: there's solid evidence to show that even the most elaborate morphological structures can accommodate borrowings. A fairly trivial example is the Montana Salish neologism *mumuwlš* 'the sound of mooing', which was invented as a joke by a Salish elder in 1998; it isn't a permanent loanword, but it could in principle become one, and it has both an appropriate Salish suffix *-wlš* and the Salish prefixed reduplication (*mu-* in this case) that regularly accompanies this suffix. More elaborate examples, morphologically speaking, have been reported for the most polysynthetic languages of the Americas, including Athabaskan, Algonquian, and even members of the polysynthetic and incorporating Eskimo-Aleut language family.

In addition, we often find contrasts between languages without much borrowing and closely-related languages with lots of borrowing. Although Arizona Tewa has borrowed very little from Spanish, for instance, and has no phonological interference at all from Spanish, the Tewa spoken near the Rio Grande has considerable interference from Spanish (Kroskrity 1993). And while Ibani speakers have borrowed little from Igbo and are quite aware of Igbo loanwords, speakers of the closely-related Eastern Ijo language Kalabari use Igbo loanwords unselfconsciously, although they are reluctant to confess to knowing any Igbo at all

(Kay Williamson, p.c. 1996). It seems clear, then, that it is the speakers' attitudes that dictate the borrowing or non-borrowing of material from another language, not the linguistic structures themselves.

2.3 Deliberate structural changes

Deliberate changes can be found in all grammatical subsystems, from the phonology to the morphology to the syntax and the lexicon, including lexical semantics as well as the forms of words; examples are easiest to find for phonological and lexical changes. Motivations for making deliberate changes, as we've already seen, vary considerably from culture to culture. In this section, I'll try to illustrate the widest possible range of both linguistic features and social motivations.

One general type of motivation corresponds to what Trudgill has called hyperdialectism — a change made to increase the difference between one's own speech and someone else's. In England, for instance, Trudgill found examples of added postvocalic *r*'s along the borderlands between rhotic and non-rhotic English dialects. On the rhotic side of the border, rhotic speakers inserted an *r* after vowels that appear elsewhere in rhotic V*r* vs. non-rhotic V correspondences — namely, in words like *walk, calf, straw*, and the first syllable of *daughter* (1986:75). Trudgill (1986:76) observes that

> We can regard hyperdialectal /r/ on the rhotic side of the rhotic/non-rhotic border areas as a way of reacting to and resisting new, nonrhotic pronunciations, since it is obvious that throughout England rhotic pronunciations are receding quite rapidly in the face of nonrhotic.

A variant of this motivation can be seen in an example from Ma'a, a mixed language spoken in northeastern Tanzania. Over the past two or three centuries Ma'a has undergone such extensive Bantuization that vestiges of its original Cushitic (or at least non-Bantu) structure have virtually disappeared, though much non-Bantu lexicon remains. One of the few remaining non-Bantu structural features is a voiceless lateral fricative, typical of Cushitic languages but not of the Bantu languages of the region. This phoneme, which has always been present in the Cushitic vocabulary of Ma'a, is viewed as particularly difficult and exotic by the Bantu speakers among whom the Ma'a people live. So Ma'a speakers emphasize the differentness of their other language (they are all bilingual, speaking at least one Bantu language fluently in addition to Ma'a) by introducing the lateral fricative into Bantu words too, thus making their speech less Bantu-like (Mous 1994:199).

The urge to make one's own speech more different from the neighbors' speech is not confined to phonology. Wright 1998 describes the following case, citing Yakov Malkiel. Malkiel, Wright says, 'pointed to several cases in which sixteenth-century Portuguese had two variants available (in morphology or phonetics, but it also applies to vocabulary), both indigenous, and they — perhaps consciously — chose the one that was least like Spanish, asserting their identity that way'. Wright observes that this is still happening today in non-Castilian regions of Spain, especially in vocabulary: where Catalan or Galician 'has two

words that are for practical purposes synonymous, one of which is like the Castilian word for the same meaning and the other of which is not, the dictionaries and the standardizers ... have tended to prefer the one that isn't like Castilian'.

The difference-enhancing alterations discussed so far don't introduce major changes into the linguistic system, but sometimes the urge to be different results in more dramatic distortion — distortion that potentially, at least, could interfere with the application of the Comparative Method. The creation of entirely new languages belongs in this general category, but it's so much more extreme that we'll consider it separately at the end of this section. In the present context, a morphological change described by Laycock 1982 and cited by Kulick (1992:1-2) is especially impressive. Usai, a language spoken on Bougainville Island in Papua New Guinea, has 1,500 speakers; it is a dialect of Buin, which otherwise has 17,000 speakers distributed among several dialects. Concerned about the close similarity of their language to the other Buin dialects spoken by their neighbors, Usai speakers switched all their masculine and feminine anaphoric agreement markers so that masculine elements systematically correspond to feminine elements in neighboring dialects, and vice versa. Kulick (1992:1-2) comments that

> New Guinean communities have purposely fostered linguistic diversity because they have seen language as a highly salient marker of group identity....[they] have traditionally seized upon the boundary marking dimension of language, and...have cultivated linguistic differences as a way of 'exaggerating' themselves in relation to their neighbors....

Similar comments on the New Guinea situation can be found in Foley (1986:9, 27, et passim). Kulick also mentions a meeting in which villagers in one community decided to replace certain words with other words in order to 'be different' from speakers of other dialects of the same language (ibid. p. 2).

The same urge to be different seems to have played a decisive role in a dialect of Lambayeque Quechua, where speakers systematically distorted their words in order to make their speech less like their neighbors' speech (David Weber, p.c. 1999, citing research by Dwight Shaver). A major (or perhaps the major) process of lexical distortion in this case was metathesis, as in *yaw.ra* from *yawar*, *yurqa* from *yuraq*, *-tqa* from *-taq*, *-psi* from *pis*, and *kablata* from *kabalta*.

The crucial point here is that such changes — especially, probably, lexical distortion and lexical replacement — could easily disrupt the application of the Comparative Method completely, if they were thoroughgoing enough. In fact, as we'll see below, sometimes these processes have produced effects this extreme. And it is probably not coincidental, for instance, that New Guinea is one of the few parts of the world in which some languages present apparently insurmountable problems for the Comparative Method.

Another common motivation for introducing deliberate changes on a large scale is to keep outsiders at a distance — a linguistic distance — either by making a language unintelligible to outsiders who are fluent bilinguals or by preventing

outsiders from learning the language in the first place. This phenomenon is familiar to anyone who ever learned a 'secret language', like Pig Latin, or invented one as a child (and the percentage of secret-language-inventers is probably higher among linguists than in the general population). Pig Latin involves systematic universal metathesis at the word level; other invented children's languages, like the one my friend Molly Mason and I made up around 1952, have inserted elements. We called our private language Harpy Garpy Larpanguarpage, and it had one grammatical rule: 'Insert -*arp*- before the vowel of every syllable'. Here's a typical sentence in it, using standard orthography:

> Tharpis sarpentarpence arpis wrarpittarpen arpin marpy sarpecrarpet larpanguarpage, arpand arpif arpI warpere sarpayarping arpit arpalarpoud yarpou prarpobarpablarpy warpouldarpn't barpe arpabarple tarpo arpundarperstarpand arpit arpeasarpilarpy arpunlarpess yarpou arpare arpa varperarpy tarpalarpentarped arpinstarpant darpecarpodarper.

Made-up languages like Pig Latin and Harpy Garpy Larpanguarpage, with their very simple rules, are crude but effective: unless you know the rule, you can't understand what's being said. But cracking the code is easy, given a reasonable amount of data, so it probably isn't surprising that no entire speech community (as far as I've been able to discover) makes use of such a language for ordinary communicative purposes. Another reason might be that speech communities with hundreds of members are more complex social entities than small groups of schoolchildren, and that the simplicity of children's secret languages can't be maintained in a larger group. Whatever the reason is, community-wide secret languages do exist, but their construction is much less regular and less straightforward than children's play languages.

Sometimes, though very rarely, a secret language can become stabilized and embedded in daily life to the extent that it becomes a speech community's main language. One example is Mōkkī, a language that was spoken in Baluchistan, in what was then British India and is now Pakistan, early in the 20th century (and, for all I know, may be spoken there still). It was reported by Bray in the Baluchistan volume of the 1911 *Census of India*; because his account shows the complexity of the lexical distortions so clearly, I'll quote it at some length (1913:139-140):

> There is a certain appropriateness in winding up a survey of the languages of this province with Mōkkī, *t*he cant of the Lōṛīs, for it's a hotchpotch of the lot. ... It is an artificial jargon, which the Lōṛīs have mechanically invented on the basis of the language of the people among whom they live, and which they more especially employ when they want to keep their meaning to themselves ... And yet so universally and successfully is the jargon used, that it seems doubtful whether its artificiality suffices to debar it from being classed as a language. However artificial its origin and character, it is at any rate acquired naturally and as a matter of course by Lōṛī children; it is no

longer, it would seem, simply a secret patter; it is becoming a language for the home-circle. ... It is all very simple. Take any word from any language, and turn it inside out: ... *chukak* 'dog' [from] Brahui *kuchak*; *randum* 'man' [from] Persian *mardum*. But though this is their chief device for obscuring the meaning of everyday words, there are several others. ... Sometimes they add a suffix. ... Prefixes are affected still more. ... or they resort to sound-changes ... the thin disguise of isolated words and the rapidity of connected sentences, blurred in the rapidity of speech, [make] both Brahui and Baloch admit freely that Mōkkī is beyond them.

I don't know of any other stable community languages that had their origin in massive lexical distortion, but other cases have been reported of the same general type — though apparently without a stable enough existence to include either first-language acquisition or everyday usage throughout the community. One is Lunfardo, which Jose Hualde (p.c. 1992) describes as a 'jargon that was developed in Buenos Aires at the beginning of [the 20th] century among certain social groups'. The language became well enough known that dictionaries of it were published, according to Hualde. Some Lunfardo words come from Italian dialects without distortion, but many others were derived from Spanish words via metathesis, e.g., *feca con chele* from *cafe con leche* and *gomia* from *amigo*. Hualde reports that many Lunfardo words made their way into common usage in Argentina.

It's not hard to find similar reports of secret languages elsewhere in the world. To give just one further example, during the 17th century a visiting European once attended a meeting at which the Delaware Indians planned to substitute different words for their native lexicon when they went to war against the Iroquois, so that their enemies wouldn't understand them (Lindeström 1925:203-204).

Less drastic but still significant distortions have been made by people who wish to prevent outsiders from learning their language. In a sizable number of contact situations around the world, there's direct evidence that people have deliberately withheld their language from others, either by refusing to speak it to outsiders at all or by distorting it. The second method of withholding is the one of interest here. It has been reported from a variety of situations in which pidgin languages have emerged, languages that are based in part on the foreigner-talk of the lexifier-language speakers. The 17th-century Delaware-based pidgin, for instance, was thought by many Europeans to be the regular language of the Delaware Indians, but at least one Dutch missionary, Michaëlius, noticed the difference and said that the Indians deliberately distorted their speech in conversing with Europeans (Jameson 1909:128):

> [They] rather design to conceal their language from us than to properly communicate it, except in things which happen in daily trade; saying that it is sufficient for us to understand them in that; and then they speak only half sentences, shortened words ...; and all things

which have only a rude resemblance to each other, they frequently call by the same name.

Similar distortions and simplifications are reported from other places, too, among them Ethiopia, where foreign fieldworkers spent seven months learning what they thought was Hamer, but which turned out to be a kind of Pidgin Hamer (Lydall 1976:397), and New Guinea, where a late-19th-century missionary tried to learn Motu but discovered, very belatedly, that Motu speakers had spoken to him only in a foreigner-talk version of their language — a version that later, together with other varieties of foreigner-talk Motu, coalesced into the pidgin Hiri Motu (Dutton 1997:16-7).

A related motive underlies the men's version of Mayrinax, a dialect of Atayal (a Formosan language). For ritual purposes connected with the hunt, Mayrinax-speaking men distorted many of their words in ways that are reminiscent of Mōkkī, — not by a simple rule, but by various phonological manipulations, among them metathesis and the replacement of certain sounds by others; they also apparently made up new words to replace ordinary ones (Stan Starosta, p.c. 1999, citing Li 1980, 1982). The result is a sharp lexical differentiation between men's and women's speech.

A different, but still related, motive seems to have been at work in a much less sweeping, but still very interesting, case of withholding — specifically, the withholding of a single phoneme in the presence of outsiders. Daniel Everett (p.c. 1995), after studying Pirahã intensively for years while visiting and then living among its speakers, had become fully fluent in the language. He was therefore astonished when he suddenly heard a new sound, new not only to him but virtually unique in the world's languages: a linguo-labial stop in which the tongue came far out of the mouth. Previously, speakers had substituted other phonemes (which occurred elsewhere as well) in words that now turned out to have this phoneme. Everett could account for its sudden appearance only on the assumption that the Pirahã speakers — for whatever reason — had deliberately withheld it from him until they finally accepted him fully into their community.

Yet another motive for introducing deliberate changes into one's language could be called the zeal of language standardizers. The story about how Standard English acquired such rules as the anti-split-infinitive rule — namely, by 18th-century grammarians' decision to follow a Latin model — is familiar. But the impact of the changes introduced into Estonian by the language reformer Johannes Aavik is more impressive by far. Early in the 20th century, Aavik invented about 200 new words to fill what he saw as lexical gaps and to replace 'linguistically inferior and awkward compound constructions' (Saagpakk 1982). About 30 of these neologisms were included in Muuk 1940, an official dictionary of Estonian, and according to Saagpakk 'many of these are now in general usage', e.g., *relv* 'weapon' and *roim* 'crime'.

But Aavik's innovations were not confined to the lexicon. He introduced morphological and syntactic features as well, and some of these have also been generally accepted in the language (Ilse Lehiste, p.c. 1999). Commenting on this

phenomenon, Oksaar observed that Aavik's innovations 'are proof that arbitrarily coined new derivational and inflectional morphemes and new grammemes — such as the synthetic superlative — can be wholly accepted by the language users and...incorporated into the language' (1972:491).

A final category of deliberate change is convergence toward another language. One example — though not of a completed change or even of a change in progress — occurred in a single elicitation session with a Montana Salish elder. As noted above, Montana Salish speakers don't borrow either structure or words from English. But they certainly have the knowledge and ability to do so, and occasionally, often for fun, they make use of that knowledge. In a striking instance of deliberate accommodation to English, during a sentence-elicitation session, the elder translated several English sentences into Salish with sentential calques. When asked for a translation of 'Johnny stole huckleberries from Mary', for example, he gave *Čoni naqʷ' t stša tl' Mali* (lit. 'Johnny steal PARTICLE huckleberry from Mary') — with a structure, most notably an uninflected intransitive verb form, that makes the sentence look quite close to the English word order and superficial structure. Such sentences are fully grammatical in Montana Salish, but they're very odd except in certain stylistically marked discourse contexts. A more usual translation of this sentence would have a morphologically complex transitive verb form: *T Čoni naqʷ'-m-ɫ-t-s Mali ci t stša* (lit. 'PARTICLE Johnny steal-DERIVED.TRANSITIVE-RELATIONAL-TRANSITIVE-he Mary that PARTICLE huckleberry'). When I finally asked if these English-like sentences weren't rather, um, Englishy, he agreed that they were, but said that he thought that's what I wanted, since I'd given him English sentences to translate. He then offered the more natural Salish versions of the ditransitive sentences, showing a ready ability to go back and forth.

Although this example is startling in its degree of alteration of ordinary Salish structure, it's not unique — probably far from unique, though I haven't seen many comparable examples in the literature. At least one other very similar example has been reported, however. In eliciting data from bilingual Nisgha/English speakers, Tarpent 1987 found an interesting, and quite systematic, accommodation of ergative Nisgha structure to accusative English structure, specifically in the use of object pronouns. The ordinary Nisgha usage is reflected indirectly in some Nisgha speakers' English, in the deletion of an object under identity with the object of a previous clause, as in *They heard him, but couldn't see* (Tarpent 1987:157). Overt object pronouns are stylistically marked in such constructions in ordinary Nisgha and are used only for emphasis, but they are inserted freely into Nisgha clauses when 'the Nisgha speaker strives to approximate the English utterance' during an elicitation session (158). In fact, Tarpent observes, 'some bilingual speakers asked to translate an English text into Nisgha tend to stick very close to English surface structure, resulting in strange sentences if not misunderstanding' (157).

These two examples show that bilingual speakers are able to manipulate one language's resources quite consciously to approximate the structure of another language. Interference could certainly occur if speakers were to start exploiting

this mechanism systematically; Montana Salish morphology and syntax would change drastically if all the remaining speakers began producing such English- like sentence structures outside the restricted discourse contexts where they are appropriate, and Nisgha syntax would change significantly if the speakers in- serted object pronouns in conversation as well as during elicitation sessions. But, as already noted, they choose not to do so.

Some readers may doubt that the motives and linguistic processes discussed so far in this section would ever lead to results that could cause serious problems for the application of the Comparative Method. Although some of them seem rather convincing — especially the more extreme instances of lexical replacement and distortion — none is as conclusive as the handful of well-documented bilin- gual mixed languages that emerged abruptly as part of a process of creating a new ethnic group. I'll describe just two cases very briefly here, Michif and Med- nyj Aleut.

Michif, a combination of Cree and French, is spoken primarily in North Da- kota, Manitoba, and Saskatchewan. It arose as one of the languages of the mixed- blood French/Indian population known as the Metis, and has existed at least from the early decades of the 19th century (Bakker & Papen 1997:301) — namely, from the period at which the Metis first emerged as a clearly identifiable political and economic population. The origin of both the people and the language lies in the mixed marriages between French Canadian trappers and traders and Algonquian- speaking wives, most or all of whom spoke Cree, either natively or as a lingua franca. The structure of Michif is more Cree than French, and the Cree parts leak into the French parts (but not vice versa). Specifically, the verb phrase — includ- ing fully elaborated Cree morphology, which is very complex indeed — and the sentence structure are Cree, while the noun phrase is comprised of French lexi- con, phonology, morphology, and syntax. There is no question about the lan- guage's independence from Cree and French; most current speakers know nei- ther Cree nor French, though they are fluent in English and sometimes in Ojibwa as well.

Mednyj Aleut, a combination of Aleut and Russian, is named for the island on which it was spoken until fairly recently, when the few remaining speakers were moved to a neighboring island. Like Michif, it emerged in a mixed-blood speech community, in this case one that arose in the 19th century when Russian fur seal traders came to work on Mednyj (Copper) Island and produced offspring with Aleut women. The children of these unions held an economic position that was more favorable than that of the Aleut seal hunters, but they were looked down on by both Russians (for being non-white) and Aleuts (for being illegiti- mate). The structure of the language is primarily Aleut, with moderate interference from Russian — except for the finite verb morphology, which was borrowed wholesale from Russian to replace the original Aleut finite verb inflection. Nonfi- nite verb inflection, as well as nominal inflection, is still Aleut, with all the catego- ries and morphemes that are characteristic of Aleut elsewhere, but the finite verb inflection has all the quite different Russian categories and morphemes.

One crucial point about both Michif and Mednyj Aleut is that they are not the product of ordinary gradual language change of any kind. When compared with ordinary contact-induced change, which may proceed more quickly than (most?) internally-motivated change, the genesis of these and other bilingual mixed languages is still aberrant. In fact, it does not look like language change at all; instead, it looks like the deliberate creation of a new language by bilinguals, over a relatively short period of time (probably two or three decades at most). It isn't hard to find a motive for language creation in these cases, either: both of these mixed-blood populations were politically and economically distinct from the 'pure'-blood communities, and both therefore had a motive for distinguishing themselves further by their language. And that seems to be what they did: each group exploited the linguistic repertoires of its two languages to form a new language to mark its ethnic identity. And finally, both of these cases, as well as other bilingual mixed languages, pose an obvious challenge to the Comparative Method, which is designed to establish the existence of, and to reconstruct, at most one parent language. The Comparative Method would set aside the entire noun phrase of Michif and the entire finite verb inflectional system of Mednyj Aleut as unanalyzable residue, for instance.

3.   Implications for the Comparative Method

Given the kinds of deliberate changes we've examined, an important question arises: why is it that the Comparative Method works so well, if speakers can and do decide (at least in some cases) what changes to make in their language? It seems to me that there are three different answers to this question; the first stands apart, but the second and the third conspire (as it were) to explain the overwhelming success of the Comparative Method in the great majority of cases.

3.1   Answer #1

First, it's clear by now that the Comparative Method doesn't always work. As we saw above, subgrouping fails in such cases as Halkomelem-Straits Salish (Suttles 1965) and the languages of southern New Caledonia (Grace 1996), thanks to truly pervasive borrowing and the application of correspondence rules that further obscure the distinction between loanwords and inherited vocabulary. This result, which is by no means unique to these two cases, should perhaps not be surprising: as Lass has pointed out, there are parallels in biology, where 'assignments to higher taxa like phyla, orders, and classes are often easier and less controversial than to genera or species' (1997:143). And, although it's not relevant to the issue of deliberate change, numerous scholars have also pointed to the difficulty or impossibility of arriving at a solid subgrouping model for languages (or dialects) that arose as a dialect continuum.

Sometimes, however, the Comparative Method fails completely. It can give no solid result for abruptly created bilingual mixed languages, since they didn't arise by ordinary language change and (therefore) their structures and lexicon can't all be traced primarily back to a single parent language. Sometimes, too, gradual change can lead to a language that must be considered mixed because it

preserves only part of the lexicon and perhaps a few structural features of its putative parent language. In some such cases, at least, speakers' choices are also involved — for instance in New Guinea, where, as we have seen, speakers make deliberate changes in their languages to differentiate them more sharply from their neighbors' languages. So when we read, for instance, that the Adzera language 'has been so heavily influenced by the adjoining Papuan languages that it betrays its Austronesian affiliation only in some basic vocabulary and a few morphemes' (Foley 1986), we might want to question whether it can now be properly said to have any Austronesian affiliation. If Adzera has little or no Austronesian structure, then it will be impossible to find systematic correspondences between Adzera and Austronesian languages in all grammatical subsystems, and impossible to use Adzera data in reconstructing Austronesian structure, including phonology.

Another case that has been suggested as a failure of the Comparative Method is Australia, which can be called one huge linguistic area. Many or most Australian linguists believe that all Australian languages belong to a single family, but the evidence is still rather sparse, especially as concerns the northern 'non-Pama-Nyungan' languages (as opposed to the geographically more widespread Pama-Nyungan languages). In trying to account for the murky historical picture in Australia, Dixon has suggested that a 'language family may have emanated not from a single language, but from a small areal group of distinct languages, with similar structures and forms' (1997:98). Australia isn't a good test case for a theory like Dixon's, though. For one thing, the Comparative Method hasn't yet been fully exploited for Australian languages, so we don't yet know whether it will succeed in elucidating the histories of all the Australian languages or not. For another thing, an areal picture that includes extreme structural and lexical convergence is something unknown elsewhere among the world's Sprachbünde, so it's an appeal to the unknown on the basis of the unknown — namely, on the basis of a situation that isn't at all well understood historically. The most reasonable stance toward the history of Australian languages, at present, is therefore agnosticism.

3.2 Answer #2

The second answer to the question about why the Comparative Method works so well is that the most extreme results of speakers' choices are — by all the available evidence — very rare. Secret languages, for instance, are certainly common, but almost all of them are either ephemeral or socially marginal, or both. Only a very few, like Mōkkī, have come into community-wide use and have even become a community's main language.

In a Sprachbund, there are social (not linguistic!) barriers to total amalgamation of the languages over an entire area, and even to total structural amalgamation — namely, in the opposition between the 'other-directed' world view that promotes convergence and the 'self-directed' world view that promotes divergence, or at least maintenance of distinctions (Foley 1986:27 et passim). It is probable that a speech community that abandons its 'self-directed' world view

will shift to a neighbor's language rather than simply continuing to adopt its structure and lexicon until nothing at all is left of the group's original language. (Even in a case like Ma'a, which has borrowed virtually all its grammar and about half of its lexicon from neighboring Bantu languages, about half the vocabulary is maintained as a group-identity symbol.)

Stable bilingual mixed languages like Michif and Mednyj Aleut are also very rare, although again ephemeral mixtures of these types may well be more common. We know they are rare because applications of the Comparative Method have so rarely encountered subsystem mismatches that would betray a prior mixing event. There are other kinds of mixed languages too, languages in which the operation of speakers' conscious choices is harder to establish. Gradually evolved mixed languages like Ma'a, whose speakers gradually adopted Bantu features over several hundred years (see § 2.3 above), pose the same kinds of problems for the Comparative Method as the abrupt mixtures created by bilinguals, and so do the numerous pidgins and creoles around the world: in all these cases, the history of mixture is revealed by subsystem mismatches. Still, the number of languages whose genesis was clearly controlled by speakers' deliberate choices remains tiny.

This means that the Comparative Method is not seriously threatened by the existence of deliberately changed and deliberately created languages: although speakers can change their language deliberately and dramatically, they don't usually do so, even in small speech communities. (A case like the Usai example above, though certainly striking, would not be sufficient by itself to disrupt the operation of the Comparative Method. It could, however, make it difficult or even impossible to trace the history of the gender agreement system.)

3.3. Answer #3

The third answer is that historical linguistics ultimately involves statistical regularities, and is like any science that uses such regularities in having to reconcile macrophenomena with the apparently random behavior of local populations. In economics, for instance, although individuals certainly make their own decisions about (for example) whether to buy a house trailer or a six-bedroom house, macroeconomic theories make predictions over whole populations of consumers (see, e.g., Nelson 1984 for discussion of relationships between microeconomics and macroeconomics). In statistical thermodynamics, although both slow and fast particles display random movement, over large spans of time fast particles can be predicted to invade the slow particles' space, providing a justification of the law of entropy (see Callender 1999). In both cases, we have to reconcile the unpredictability of individuals' behavior with the predictability of the behavior of a large population. The closest analogy to historical linguistics, of course, is provided by biological evolution, which also is a historical science making use of statistical regularities. Individual members of a breeding population choose their mates in ways that evolutionary theory does not attempt to predict, but statistical principles still apply to a population as a whole (see, e.g., Lewontin 1974).

These comparisons with other sciences are relevant to historical linguistics because they highlight the influence of population size on the likelihood of drastic effects resulting from speakers' linguistic choices. Speakers' choices are most likely to affect a single speaker's idiolect and least likely to influence a large group's norm. In other words, speakers' choices are likely to have potentially dramatic effects only in quite small speech communities. The general point is hardly news: as Otto Jespersen observed many years ago (and he was almost certainly not the first to make this observation), 'The moving power [for linguistic change] everywhere is an impetus starting from the individual, and ... there is a curbing power in the mere fact that language exists not for the individual alone, but for the whole community' (1921:261).

4. Conclusion

It is still quite possible to find dogmatic assertions in the literature about the impossibility, or at least the extreme improbability, of conscious, deliberate linguistic changes capable of affecting an entire community's language in any significant way. The survey of speakers' choices in this paper points to a different conclusion. First, speakers' choices can indeed lead to drastic linguistic changes. Second, these changes only rarely have a permanent effect on the speech of an entire community; and where they do have a permanent effect, it is because of particular social circumstances. First, the speech community must be small. But in addition, there must be other contributing social factors, though not all of them can be identified on the basis of currently available information. One common factor is very widespread multilingualism, with or without socioeconomic dominance by one group in the contact situation, so that the tension between an other-directed world view and a self-directed world view may come into play. Another potential contributing factor, probably less common, is the deliberate actions of language standardizers. A third is the emergence of a new ethnic group that seeks a language to symbolize its new identity.

There are surely other contributing social factors as well, but these are probably a fairly representative sample. It must be emphasized, however, that no contributing factors, no matter how powerful they are in some contexts, will permit us to predict when speakers' choices will produce major changes in a language: contributing social factors are necessary conditions for the kinds of changes we're talking about, but not sufficient conditions. Even where small groups live as close neighbors, with very extensive mutual multilingualism, we don't always find widespread structural convergence; whether it occurs or not depends on cultural factors that are likely to remain permanently beyond our predictive grasp.

One further conclusion can be drawn from the robust evidence for potential effects of speakers' deliberate changes in their language. It's still fairly easy to find discussions of 'natural' vs. 'unnatural' change in the literature. Joseph Greenberg, for example, recently made the following assertion in an article denying the existence of mixed languages (1999:632):

> It is indeed hard to imagine how a truly mixed language in ... the usual sense, could arise by a natural process. Suppose someone had a dictionary and grammar of two quite distinct languages. He or she could then take alternate words and grammatical morphemes first from one and then the other. This would truly be a mixed language but, of course, not arising by any natural process.

Greenberg's hypothetical example is more exotic than some of the examples I've surveyed, but not all that much more so than, say, the Mōkkī case. And his very narrow definition of a mixed language — for him, Ma'a is an unmixed Cushitic language, in spite of the fact that it now has virtually no Cushitic grammar and at least a half-Bantu lexicon! — would probably not attract many fans. But the really interesting point in his statement is his implicit distinction between 'natural' and 'unnatural'. If real speakers of real languages make deliberate changes, are those change processes unnatural? Only if one assumes that unconscious changes alone qualify as natural change. But as I've tried to show, speakers are much more able and willing to manipulate their linguistic resources consciously than they've usually been given credit (or blame) for, and I see no way in which one could establish that this type of linguistic behavior, which is actually quite common in individuals and not vanishingly rare in speech communities, is less natural than unconscious linguistic change.

Finally, although the Comparative Method has worked very well for the great majority of languages around the world to which it has been applied, the method fails, and can in fact be predicted to fail, in cases where speakers' choices do have a drastic effect on a language's lexicon and grammar. Unfortunately for historical linguists' hopes of elucidating language history, such cases can be impossible to unravel retrospectively — except, of course, that we can identify a given language as having had an aberrant history, because the Comparative Method itself alerts us to that fact. Fortunately for our hopes, however, the number of areas in the world where speakers have chosen to make such drastic changes is small, and even within those areas the situation is usually not completely hopeless.

NOTES

* I'm very grateful to members of the audience who provided useful comments and further examples after I presented this paper as the Collitz Lecture at the 1999 Linguistic Institute at the University of Illinois at Urbana-Champaign, and to other friends and colleagues who also gave me relevant examples. Thanks too to Rich Thomason for helping me understand some of the broader theoretical issues raised by the phenomena under discussion. But, of course, I alone am responsible for any gaps and errors that remain in the paper.

[1] All the comments I make in this paper about bilingual speakers and situations also apply to multilingual speakers and situations. To avoid stylistic clumsiness, I'll usually use the term 'bilingual' as a cover term for both, whenever both apply.

[2] Suttles is talking here about lexicostatistic techniques, but similar difficulties will arise with currently standard methods of subgrouping.

[3] This lack of borrowing appears to be an areal Northwest feature. Nez Percé, a Sahaptian language whose speakers have had close ties to the Montana Salish people for many generations, shares the lack of borrowing and the coining of native words for borrowed cultural items, and the same phenomenon has been reported for Salishan languages spoken elsewhere, as well as for other Northwest languages.

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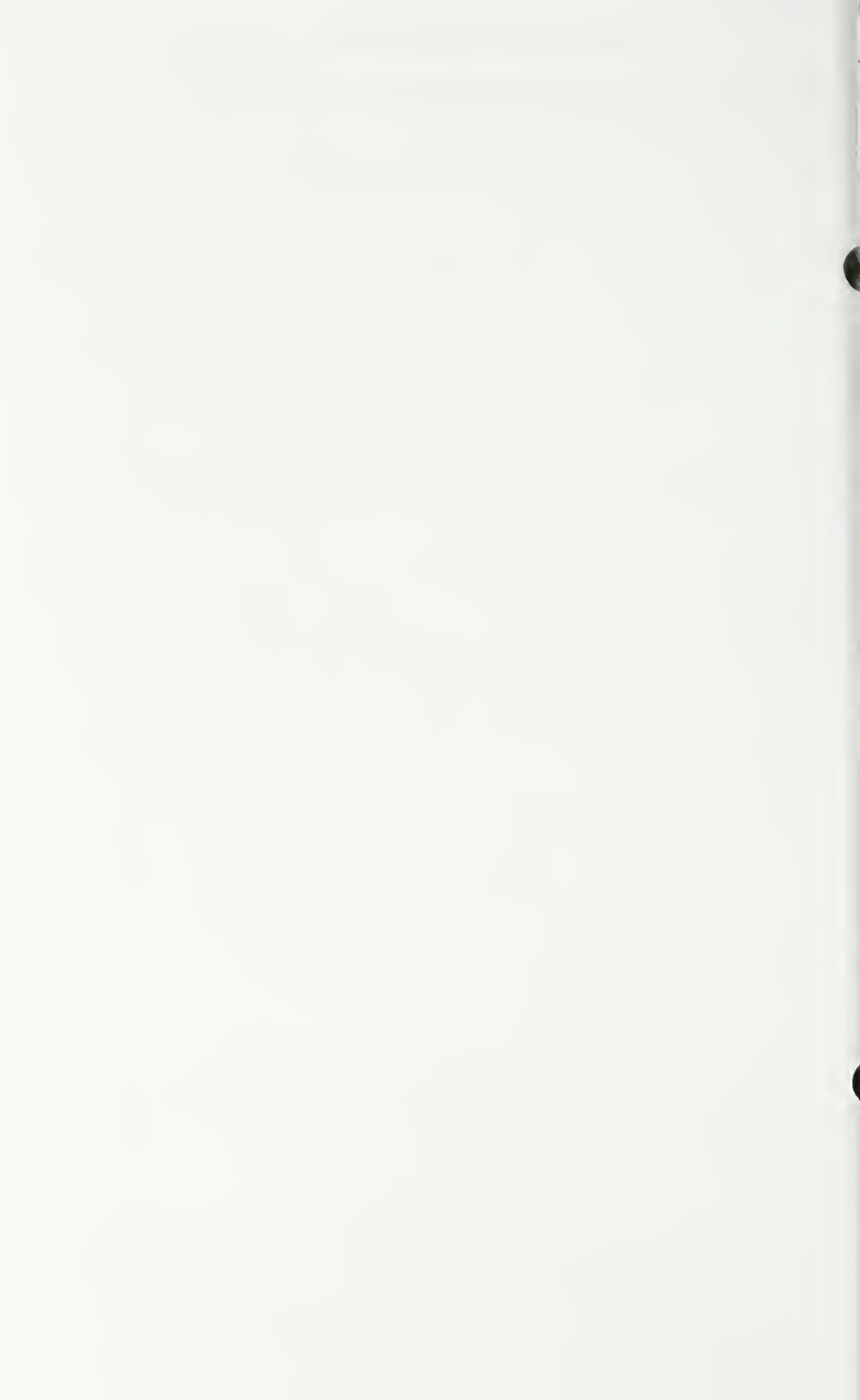
DATIVE SUBJECT CONSTRUCTIONS TWENTY-TWO YEARS LATER*

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The so-called dative subject constructions, where what appears
to be a subject is marked by a dative or other oblique case as in the
Latin example, *Mihi est liber* 'I have a book', have been the center
of focused attention for more than the last two decades, especially
among the specialists of South Asian languages, Japanese, Icelandic,
Quechua, and others in which a similar type of construction exists.
The past analyses assume that the construction-type in question is
transitive at least at some level of representation as in Relational
Grammar, and that the dative-marked experiencer/possessor nominal
is the subject of a simplex clause. I claim that these past efforts,
including Shibatani 1977, are misguided — literally misguided by the
structure of Modern English, in which the possessors/experiencers of
the near-synonymous expressions are encoded as grammatical
subjects in the transitive frame. In this paper I endeavor to show that
the so-called dative subject constructions are similar in structure and
meaning to the double subject construction, instantiated, for example,
by the so-called external possessor or possessor ascension construc-
tion; e.g., Japanese [Taroo ga [atama ga ookii]] (Taro NOM head
NOM big) 'Taro has a big head', Nepali [ram-ko [taauko dukheko
cha]] (Ram-GEN head.NOM hurt be) 'Ram has a headache'. Namely,
the constructions in question have a complex structure with two
subjects, 'large' subject and 'small' subject. Semantic motivations for
the distributional pattern of subject properties over these two
subjects are also explored.

1. Introduction

Among noncanonically coded constructions, the so-called dative subject
constructions, as exemplified in (1-1)-(1-23) below, have received focused
attention over the last quarter of a century. Relevant studies cover a wide variety
of language data, ranging from Indic and Dravidian languages (e.g., the papers in
Verma 1976 and those in Verma & Mohanan 1990) to Georgian (e.g., Harris
1984), and from Japanese (Kuno 1973) to Italian (e.g., Perlmutter 1984) and
Quechua (e.g., Jake 1985). I also touched on the matter dealing with Japanese
some twenty-two years ago (Shibatani 1977). Most of these studies, including my
own, share the basic assumption that these constructions with two nominal
arguments are transitive (or at least at some level of representation as in the
Relational Grammar treatments). I argue in this paper that this assumption is

incorrect and that dative subject constructions are distinct from both canonical transitive constructions and straightforward intransitive constructions. I advance a novel analysis that treats dative subject constructions as variants of double subject constructions widely attested among Asian languages such as Japanese, Chinese, and Indonesian.

(1-1) use   gussaa   aayaa.
       he.DAT   anger   came
       'He became angry.' (Hindi; adapted from Kachru 1990:63)

(1-2) sudhaa-laa   ek   moTar   paahije.
       Sudhaa.DAT   one   car   wants
       'Sudhaa wants a car.'   (Marathi; Pandharipande 1990:163)

(1-3) mare   jAvuu joiie.
       I.DAT go needed
       'I want/need to go.' (Gujarati; Lambert 1971)

(1-4) maTA   lamaya-wA   penAwa.
       I.DAT   child-ACC   see.PRES
       'I see the child.' (Sinhala; Kumara, p.c.)

(1-5) aaja   ma-laaii   jaaDo   laag-yo.
       today   I-DAT   cold   feel-MASC
       'I feel it cold today.' (Nepali; Clark 1963:17)

(1-6) avanige   jvara   bantu.
       he.DAT   fever   came
       'He got a fever.' (Kannada; Sridhar 1976:132)

(1-7) avanukku muham   malarndadu.
       he.DAT   face   bloom.PAST.it
       'His face bloomed; he felt pleasure.' (Tamil; Lindholm 1976:175)

(1-8) baalanA   baalikayooTA werupuppA   wannu.
       boy.DAT girl.COM   hatred.NOM   come.PAST
       'The boy felt hatred for the girl.' (Malayalam; Mohanan & Mohanan 1990:53)

(1-9) Amake   Aiyã   ora   hiju   ketAna.
       you.DAT 1   house   come   have to
       'You have to come to my house.' (Mundari; Abbi 1990:259)

(1-10) Ji-ta   dhebaa   yawa   maai.
        I-DAT   money   much   need
        'I need a lot of money.' (Newari; Kiryu, p.c.)

(1-11) nga-r   tsha=ba   'dug.
        I-DAT/LOC/ALL   fever=exist/DISJUNCT
        'I have a fever.' (Tibetan; DeLancey, p.c.)

(1-12) Mihi   est   liber.
      I.DAT   be   book.NOM
      'I have a book.' (Latin)

(1-13) Me   gusta   la cerveza.
      I.DAT   like   the beer
      'I like beer.' (Spanish)

(1-14) Mir   gefallen diese   Bücher.
      I.DAT   like   these   books
      'I like these books.' (German)

(1-15) þam   cynge   licodon   peran.
      the   king.DAT liked   pears
      'The king liked pears.' (OE; Jespersen 1954)

(1-16) Mne   rabotaetsja.
      I.DAT   work.REFL
      'I can work.' (Russian)

(1-17) Gelas   uqvars   nino.
      Gela.DAT   loves   Nino
      'Gela loves Nino.' (Georgian; Harris 1984)

(1-18) Tal   on   külm.
      she.ADE be.SG   cold
      'She is cold.' (Estonian; Matsumura, p.c.)

(1-19) Ban-a   para   lazIm.
      I-DAT   money   need
      'I need money.' (Turkish)

(1-20) Atsuv   la.
      sad   she.DAT
      'She is sad.' (Modern Hebrew; Hartenstein, p.c.)

(1-21) Ken-ni(-wa)   eigo-ga   hanas-e-ru.
      -DAT(-TOP)   English-NOM   speak-POTEN-PRES
      'Ken can speak English.' (Japanese)

(1-22) ku yoca-eykye(-nun)   Inho-ka   silh-es-ta.
      the woman-DAT(-TOP)   -NOM   dislike-PAST-IND
      'That woman disliked Inho.' (Korean; Lee, p.c.)

(1-23) Eia   ia'u   ka puke.
      here   to me   the book
      'I have the book here.' (Hawaiian; Cook, p.c.)

(1-24) nu-na   mhesiki   alia-mha.
      1SG-OBJ hunger   EXIST-PRES.NON.VIS
      'I am hungry.' (Tariana; Aikhenvald, p.c.)

Although a wide variety of genetically and areally unrelated languages exhibit dative subject constructions (referred to simply as 'dative constructions' hereafter), these constructions center around well-definable predicate types indicating that there is some semantic motivation calling for the specific coding pattern observed. The relevant predicate types are those expressing:

(1-25)
- (a) Possession/Existence (e.g., 1-12, 1-23)
- (b) Psychological states (e.g., 1-1, 1-20, 1-22)
- (c) Physiological states (e.g., 1-5, 1-24)
- (d) Visual/auditory perceptions, including the notion of 'appearance/seeming'(e.g., 1-4)
- (e) Modal states of necessity and wanting including the notion of obligation ('must') (e.g., 1-2, 1-3, 1-9,1-10)
- (f) Modal states of potentiality, including ability and the notion of permission ('may') e.g., 1-16, 1-21)

2.   Case patterns

The relevant case marking patterns are shown below, where canonical (or direct) patterns are contrasted with the dative patterns to be examined in this paper.

(2-1) Canonical constructions:
[NP-**NOM** PRED] (Intransitive)
[NP-**NOM** NP-**ACC** PRED] (ACC-Object Transitive)
[NP-**NOM** NP-**DAT** PRED] (DAT-Object Transitive)
[NP-**NOM** NP-**DAT** NP-**ACC** PRED] (Ditransitive)

(2-2)   Dative constructions:
[NP-**DAT** PRED]
[NP-**DAT** NP-**NOM** PRED]

Many languages allow alternate coding patterns, whereby the following kind of doublets of canonical and dative constructions are observed.

(2-3)   Canonical:
Boku-ga/wa   Ken-o   totome   nikum-u.
I-NOM/TOP   -ACC   very   hate-PRES
'I hate Ken very much.' (Japanese)

(2-4)   Dative:
Boku-ni(-wa)   Ken-ga   totemo   niku-i.
-DAT(-TOP)   -NOM   very   hateful-PRES
'To me, Ken is very hateful.' (Japanese)

3.   Dative nominals as subjects

While the alternate coding patterns shown above may be construed as a piece of evidence for considering dative constructions to be transitive, there has been more compelling evidence supporting the view that the dative nominals are like nominative subjects of canonical transitive clauses. Consider word order first. While many languages show flexible word order, it is normally possible to identify unmarked order. For example, take dative object transitive sentence (3-1) and

dative subject sentence (3-2) in Japanese. In the former, the order of NOM-DAT-PRED (3-1a) is unmarked, whereas in the latter, DAT-NOM-PRED (3-2a) is unmarked. A similar observation can be made in other languages as well. Thus, word order indicates that the dative nominal of a dative construction occurs in subject position (sentence-initially in Japanese) in contradistinction to a dative-marked object.

(3-1)   Dative-transitive

  a.   Ken-ga   Ai-ni   at-ta   (koto)
        -NOM   -DAT   meet-PAST   (that)
        '(that) Ken met Ai'

  b.   ?Ai-ni   Ken-ga   at-ta   (koto)
        -DAT   -NOM   meet-PAST   (that)
        '(that) Ken met Ai'

(3-2)   Dative-subject

  a.   Ken-ni   eigo-ga   hanas-e-ru   (koto)
        -DAT   English-NOM   speak-POTEN-PRES   (that)
        '(that) Ken can speak English'

  b.   ?eigo-ga   Ken-ni   hanas-e-ru   (koto)
        English-NOM   -DAT   speak-POTEN-PRES   (that)
        '(that) Ken can speak English'

The dative subject and the dative object show a similar contrast with regard to the so-called behavioral subject properties. Shibatani 1977 first showed this for Japanese. Take the phenomenon of subject honorification, which involves complex change in verbal morphology — replacement of a simple verb form by a verbal complex involving the predicate *naru* 'to become' together with the adverbial form of a verbal nominal marked with the honorific prefix *o-*. For example, the subject honorific form of (3-4a) is (3-4b).

(3-4) a.   Sensei-ga   ik-u.
            teacher-NOM   go-PRES
            'The teacher goes.'

   b.   Sensei-ga   o-iki-ni   nar-u.
         teacher-NOM   HON-go-ADV   become-PRES
         'The teacher goes.' (Subject honorific)

Notice that nonsubjects do not trigger this honorification process. Dative objects, for example, fail to do so. (3-5b) is acceptable only by construing that the referent of the subject nominal *Ken* is being deferred. The other, object honorification process must be invoked in a situation where the speaker wishes to show his or her deference to the referent of a nonsubject nominal, as in (3-5c).

(3-5) a.   Ken-ga   sensei-ni   a-u.
            -NOM   teacher-DAT   meet-PRES
            'Ken will meet the teacher.' (DAT-object transitive)

   b.   #Ken-ga   sensei-ni   o-ai-ni   nar-u.
         -NOM   teacher-DAT   HON-meet-ADV   become-PRES
         'Ken will meet the teacher.' (Subject honorific)

c.   Ken-ga   sensei-ni   o-ai   su-ru.
     -NOM   teacher-DAT   HON-meet do-PRES
     'Ken will meet the teacher.' (Object honorific)

Now turning to the dative construction, it is the dative nominal that triggers subject honorification (3-6b), and which fails to trigger the object honorification process (3-6c).

(3-6) a. Sensei-ni-(wa)   eigo-ga   wakar-u.
         teacher-DAT(-TOP) English-NOM understand-PRES
         'The teacher understands English.' (Dative subject)

     b. Sensei-ni(-wa)   eigo-ga   o-wakari-ni   naru.
        teacher-DAT(-TOP) English-NOM HON-understand-ADV become PRES
        'The teacher understands English.' (Subject honorific)

     c. *Sensei-ni(-wa)   eigo-ga   o-wakari   su-ru.
        teacher-DAT(-TOP) English-NOM HON-understand do-PRES
        (Object honorific)

Though languages, as well as specific constructions within a single language, differ as to the extent the dative nominals in question exhibit subject properties, the situation in Japanese is paralleled by Indic and Dravidian languages in general. Kachru et al. 1976 summarizes the behavioral subject properties of different types of subjects in selected Indic languages as below:

(3-3)   Behavioral properties of Hindi-Urdu, Kashimiri, and Panjabi subjects
          (Kachru et al. 1976:94)

RULE	CONTROLLER	ACCESSIBLE
Reflexivization	SI, ST, **S DAT**, S OBL, SP	
Equi	SI, ST, **S DAT**, S OBL, SP	SI, ST, **S DAT**
Conjunction reduction	SI, ST, **S DAT**, S OBL	SI, ST
Raising	SI, ST	SI, ST

(SI=intransitive subject, ST=transitive subject, S DAT=dative subject,
 S OBL=oblique subjects, SP=derived subject of the passive)

4.   Past analyses

Based on the observations of the above kind, the past analyses of dative constructions have tended to assimilate them to canonical transitive constructions, whereby the dative nominal and the nominative nominal are respectively treated as subject and object. Both Gair 1990 and Masica 1991 are quite explicit in their analyses, using parallel structures for the canonical transitive construction and for the dative construction as below:

(4-1) Gair (1990:25) on Sinhala

     a.   mamA   ee   wacAne   kiwwa.
          I.NOM   that word   say.PAST.A
          'I said that word.' (Canonical transitive construction; Gair's 6a)

```
mamA            ee wacAne        kiyAwA-
NOMINATIVE      (ACCUSATIVE)     'say'
'I'             'that word'
```
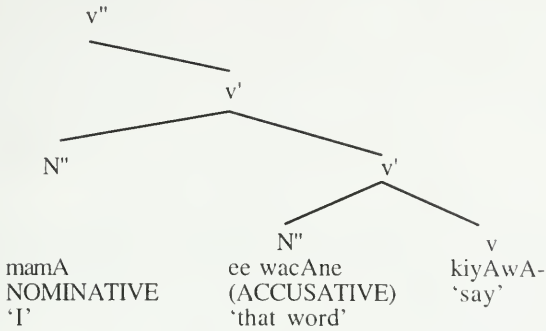
b. maTA   ee wacAne kiyAwuna.
    I.DAT   that word   say.PAST.P
    'I blurted that word out.' (Dative construction; Gair's 6b)


```
maTA      ee wacAne        kiye-
DATIVE    (ACCUSATIVE)
'I'       'that word'      'say-P'
```
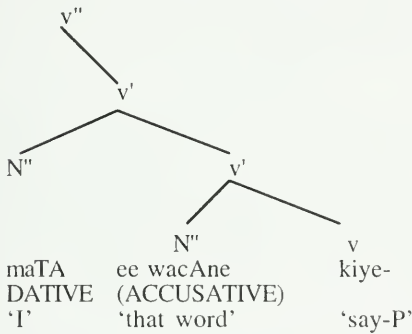
(4-2)   Masica (1991:363) on Hindi

a.   raam   caay   piitaa   hai.
     Ram.NOM   tea   drink   AUX
     'Ram drinks tea.'
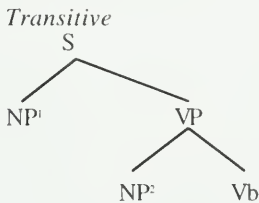
b.   raam-ko   bhuukh   lagii   thii.
     Ram-DAT   hunger   strike   AUX
     'Ram was hungry.'

Dative-Experiencer

```
              S
         /         \
   NP¹+ko          VP
                  /    \
              NP²        Vb
```
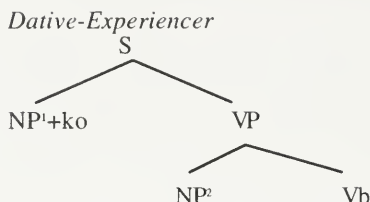
While these studies have little to say about the status of the nominative
NP's involved in these constructions — whether or not they are grammatical
objects —, Kuno 1973 is explicit about it, as seen in the following quote:

(4-3) Kuno (1973:81) on Japanese (emphasis added):

> ...I shall show that GA IS USED not only for marking the subject but
> ALSO FOR MARKING THE OBJECT OF ALL TRANSITIVE ADJECTIVES AND
> NOMINAL ADJECTIVES ... AND OF A CERTAIN CLASS OF TRANSITIVE VERBS.
> I shall further show that these verbals which take GA for object
> marking have the common semantic characteristic that they represent,
> not actions, but states.

Once the relevant structure is determined, the next task is accounting for the
case-marking pattern. The question is why dative constructions exhibit the DAT-
NOM-PRED case pattern, not the canonical NOM-ACC-PRED pattern, if they are
transitive in structure. The past analyses, except for Kuno 1973, concentrated
their efforts on accounting for the dative marking, largely ignoring the nominative
marking. They mostly tended to resort to the thematic relations borne by the
dative subject.

A general impression based on the predicate types — see (1-24) above —
leads one to associate dative marking with the thematic role of experiencer. That
is, the subject of a dative construction is marked dative because it bears the
experiencer role, as opposed to the agentive of the subject of a canonical
transitive construction. However, there is no consistent correspondence between
dative marking and the experiencer role; not all experiencers are marked dative,
as, e.g., in (2-3), and not all datives are experiencers, as, e.g.; in (1-10) and (1-12).

Other proposals such as Mohanan & Mohanan 1990, who analyze dative
subjects as bearing the goal role, and Pandharipande 1990, who proposes the
locative solution, are equally problematic, as many dative subjects are hard to
construe in term of these roles, e.g., (1-4), (1-16). Whereas the marker used for the
goal and the locative roles is often identical to the dative marker across languages
— and while this fact calls for some explanation —, these proposals are not quite
adequate in handling a large number of similar constructions with a variety of
marking on what appears to correspond to the dative subject; e.g.,

(4-4) Taroo-ga Hanako-ga   suki da.
     -NOM   -NOM   like COP
     'Taro likes Hanako.' (Japanese)

(4-5)   nay-ka   nuktay-ka   mwusep-ta.
        I-NOM   wolf-NOM   afraid-IND
        'I am afraid of the wolf.' (Korean; Lee, p.c.)

(4-6)   taar   ThaaNDaa   laaglo.
        he.GEN   cold   affected
        'He got chilled.' (Bengali; Klaiman 1980:279)

(4-7)   mage   oluwe   kaekkumak   tiyenAwa.
        1.GEN   head.LOC ache.INDEF   be-INANIMATE.PRES
        'I have a headache.' (Sinhala; Kumara, p.c.)

(4-8)   bacce   se   shiishaa   TuuT   gayaa.
        child   INST mirror   break   went/PASS
        'The child (inadvertently) broke the mirror.' (Hindi; Kachru 1990:60)

(4-9)   lamAya-atin   kooppe   biNduna.
        child-INST   cup   break.PAST.P
        'The child (inadvertently) broke the cup.' (Sinhala; Wijayawardhana, et al.
        107)

(4-10) ma-baata   sisaa   phuT-yo.
        1-ABL   glass   break-PERF
        'The glass broke (and inadvertently I happened to be its cause).'
        (Nepali; Madhav, p.c.)

(4-11) mara-thii jAngAl-mã   ekla   nAhi   jAv-a-y.
        1-ABL   jungle-in   alone   not   go-PASS-PAST
        'I couldn't go into the jungle alone.' (Gujarati; Lambert 1971:169)

(4-12) rAm-cyA-hAt-Un   ukun   zopDI   cirD-l-l   ge-i-l
        Ram-GEN-hand-ABL mistake   hut.F   crush-PERF-F go/PASS-PERF-F
        'The hut got crushed by mistake at the hands of Ram.' (Marathi; Prashant,
        p.c.)

(4-13) asit par   apne puure   parivaa   kii jimmevaarii   hai.
        Asiton   self whole   family   of responsibility be
        'Asit is responsible for his whole family.' (Kachru 1990:60)

(4-14) nuca-ta-ca   uma-ta   nana-wa-n-mi.
        I-ACC-TOP   head-ACC   hurt-1OBJ-3-WIT
        'My head hurts.' (WIT=witnessed) (Imbabura Quechua; Jake 1985:196)

(4-15) Nup   snl   yob alkjon   ay-a-k.
        him   boil big armpit   form-3SG-PAST
        'A large boil has formed in his armpit.' (Kalam; Pawley et at.
        forthcoming:12)

(4-16) d- agavuno-k-i-e
        me-pain PROG-fasten-3SG-IND
        'Pain is gripping me; i.e. I am feeling pain.' (Yagaria; Renck 1975:145)

Relational Grammar (Perlmutter 1984; Harris 1984; Jake 1985, etc.) handles
the problems of dative constructions in terms of 'inversion,' which entails the
following relational network, where 1,2, and 3 represent the subject, the object,
and the indirect object relation, respectively:

(4-17) a. Ken-ni   nihongo-ga   wakaru.
           Ken-DAT Japanese-NOM understand
           'Ken understands Japanese.' (Japanese)

   b. 1   2   P   (initial stratum)
       3   1   P   (final stratum)
       Ken nihongo wakarru

Under this analysis, the surface dative nominal is said to behave like a subject because it is subject in the initial stratum of the relational network. The surface nominative NP is so marked because it is a final subject. Since Relational Grammar allows multi-strata relational networks, it is a very powerful theory, allowing various 'explanations' for possible objections. For example, one may wonder why a surface indirect object in the dative construction occurs in initial, rather than in the normal sentence internal position. To this, an answer can be; because this indirect object is not an ordinary indirect object — it holds the subject relation in the initial stratum. Thus, it is not easy to argue against this kind of analysis, which is backed by a very powerful theory of grammar.

However, I will attempt to show that the RG analysis is problematic on an empirical ground; namely, dative constructions are not transitive in the first place. For another, those constructions given in (4-4)-(4-17), which I consider to be variants of dative constructions, require separate inversion treatments. Though different case-marking patterns can be handled by providing different kinds of inversion, what is really needed is a unified account why all these constructions exhibit the following pattern.

(4-18) [NP-NOM/DAT/OBL   NP-NOM   PRED]

5.   Transitive and intransitive predications

I consider all these past analyses entirely wrongheaded in assuming dative constructions (and their variants) to be transitive. First, consider the relevant predicates. They typically consist of verbal complexes involving intransitive heads like 'come,' 'become,' 'go,' 'be/exist,' and adjectives and adjectival nominals (in Japanese), or else derived intransitives as in the case of the reflexive -*sja* forms in Russian and the so-called P-forms in Sinhala, which I assume to be later developments of the passive morphology. Indeed, many languages provide transitive and intransitive pairs such that the transitive predicates call for the canonical transitive coding pattern and the corresponding intransitive versions the dative or variant noncanonical coding pattern.

Canonical-Dative/Nominative pairs

(5-1) Japanese

VERBS (NOM-ACC) ADJECTIVES (DAT/NOM-NOM)

nikumu	nikui	'hate(ful)'
tanosimu	tanosii	'enjoy'
sitau	sitawasii	'endear'
kowa-garu	kowai	'fear'
natukasi-garu	natukasii	'long for'
ayasi-garu	ayasii	'to be suspicious'

ADJECTIVAL	**NOMINALS**	
kirau	kirai da	'despise'
suku	suki da	'like'

(5-2)   Korean

NOM-ACC	**DAT/NOM-NOM**	
kuliw-e ha-ta	kulip-ta	'long for'
mayw-e ha-ta	mayp-ta	'taste hot/spicy'
twulyew-e ha-ta	twulyep-ta	'fear/fearful'
sil-e hata	silh-ta	'hate/hateful'

(5-3) Hindi (Kachru 1990:68)

ACTIVE (**NOM**)	CHANGE-OF-STATE (**DAT**)	STATIVE (**DAT**)	
gussaa karnaa	gussaa aanaa	gussaa honaa	'be angry'
pasand karnaa	pasand aanaa	pasand honaa 'like'	
yaad karnaa	yaad aanaa	yaad honaa 'remember'	

The fact that these pairs/triplets have different predication pattern is shown from the pattern of prenominal modification. In Japanese, when we convert a transitive predication into the prenominal modification pattern, we obtain the reading in which the transitive subject is modified[1]; e.g.,

(5-4) a.   **Otoko**-ga   onna-o   oikakeru.
              man-NOM   woman-ACC   chase.PRES
              'The man chases the woman.' (Japanese)

      b.   oikakeru   otoko
            chase.PRES   man
            'a chasing man/*a man being chased'

When an intransitive predication is so converted, naturally the only subject nominal is modified, as in;

(5-5) a.   **Hanako**-ga   kawaii.
              -NOM   cute.PRES
              'Hanako is cute.'

      b.   kawaii   Hanako
            cute.PRES
            'cute Hanako'

Now, pairs of canonical transitive verbs and the corresponding noncanonical predicates show the following pattern, where the noncanonical versions show the modification pattern similar to true intransitive predicates.

(5-6) a.   **Hanako** ga   Taroo o   nikumu.
              -NOM   -ACC   hate/VERB
              'Hanako hates Taro.' (canonical transitive: NOM-ACC))

      b.   nikumu   hito (transitive pattern)
            hate.PRES   person
            'a hating person/*a person to be hated/*a person inspiring hatred'

(5-7) a.   Hanako-ga   **Taroo**-ga   nikui.
            -NOM   -NOM   hate/ADJ
            'Hanako hates Taro.' (noncanonical; NOM-NOM)

      b.   nikui   hito
          hateful person
          'a person to be hated/a hateful person/a person inspiring hatred/
              *a hating person' (intransitive pattern)

(5-8) a.   kowa-garu   hito
          to be afraid(V) person
          'a person afraid of someone/something' (transitive pattern)

      b.   kowai   hito
          scary(ADJ)   person
          'a scary person/a fear inspiring person' (intransitive pattern)

The observation above and the fact that the predicates of the dative construction and its variants are essentially intransitive lead us to the analysis in which the nominative NP, rather than the dative or its variant NP, is considered to be the subject of the clause over which intransitive predication applies. That is, the canonical construction and the dative construction and its variants have the following predication relations, where the NP indicated in boldface is the subject of the clause:

(5-9) Transitive predication (canonical transitive construction)
     [**NP-NOM**   NP-ACC PRED]
     SUBJ

(5-10) Intransitive predications
     [**NP-NOM**   PRED] (intransitive construction)
     SUBJ
     [NP-DAT   **NP-NOM** PRED] (dative (subject) construction)
                 SUBJ
     [NP-NOM **NP-NOM** PRED] (double nominative variant)
                SUBJ
     [NP-INST   **NP-NOM** PRED] (oblique (subject) variant)
                SUBJ

In addition, there are 'impersonal' dative constructions of the following form:

(5-11) a.   [NP-DAT (NP-ACC) PRED] (impersonal dative construction)

      b.   Mne   rabotaetsja.
          I.DAT   work.RELF
          'I can work.' (Russian)

      c.   maTA   lamaya-wA   penAwa.
          I.DAT   child-ACC   see
          'I see the child.' (Sinhala)

I claim that the canonical transitive construction and the dative construction and its variants represent two different conceptualization patterns. In a subsequent section 1 advance a claim that the dative and other obliquely marked nominals (as well as the initial nominative NP of the Japanese double nominative constructions) are not direct arguments of the relevant predicates. That is, they

are not in the theta-marking relation with the predicate. As I have demonstrated here, these predicates are one-place intransitives predicating over the nominative NP (see (5-10)). This is in sharp contrast to the canonical transitive coding pattern, in which both subject and object are direct arguments of the predicate.

6.   The NP-NOM as a grammatical subject: [NP-DAT NP-NOM PRED]

There is ample evidence pointing to the subjecthood of the nominative NP in the proposed analysis of the dative construction. Indeed, it is surprising how little attention this fact has attracted among those proposing transitive analyses, in which the dative nominal is considered to be the subject. First, consider agreement. In an agreement language, it is the nominative NP with which the verb agrees, as shown in the following examples from German, Russian and Modern Hebrew.

(6-1)a.   Mir   gefällt   dieses   Buch.
          I.DAT   like.SG   this   book.SG.NOM
          'I like this book.' (German)

     b.   Mir   gefallen   diese   Bücher.
          I.DAT   like.PL   these   books.PL.NOM
          'I like these books.'

(6-2)a.   Mne   nravitsja   kniga.
          I.DAT   like.3SG. REFL   book.SG.NOM
          'I like the book.' (Russian)

     b.   Mne   nravjatsja   knigi.
          I.DAT   like.PRES.3PL.REFL book.PL.NOM
          'I like books.'

(6-3)a.   Le Moshe haya   sefer.
          DAT   be.3SG.MASC.PAST   book.MASC.SG
          'Moshe has a book.' (Modern Hebrew; Anne Hartenstein, p.c.)

     b.   Le Moshe hayu   shlosha   sfarim.
          DAT   be.3PL.MASC/FEM.PAST   three   book.MASC.PL
          'Moshe has three books.'

Nepali is interesting in that the ergative NP of a transitive clause agrees with the verb, indicating that agreement in this language operates in the accusative fashion regardless of the morphological ergativity entailed in the so-called perfective tense.

(6-4) **haamro   choraa**   aaja   aa-**yo**.
      our   son   today   come-3SG.MASC.PAST
      'Our son came today.' (Nepali; Clark 1963:17)

(6-5) tyo paanii   lyaauna   dhaaraa-maa   ga-**ii**.
      3SG water   fetch   dhaaraa-at   go-3SG.FEM.PAST
      'She went to dhaaraa to fetch water.' (Clark 59)

(6-6) **raam-le**   nayōō   lugaa   laa-**yo**?
      Ram-ERG   new   clothes   wear-3SG.MSC.PAST
      'Has Ram put on the new clothes?' (Clark 20)

The situation above, especially the agreement pattern in (6-6), contrasts with other major Indic languages, whose agreement systems are sensitive to case marking in some such a way that an ergatively marked transitive subject does not trigger agreement. From this it is expected that the dative NP of the dative construction in Nepali would trigger agreement if it were the subject of the clause. However, this is not the case; as seen below, agreement takes place between the nominative NP and the predicate, indicating that the nominative NP, rather than the dative nominal, is the subject of the clause.

(6-7) keTaa-laaii   **keT-i**   raamr-i   laag-**ii**.
      boy-DAT   girl-FEM   beautiful-FEM feel-FEM
      'The boy likes the girl.' (Madhav, p.c.)

(6-8) keTi-laaii **keT-o**   raamr-o   laag-**yo**.
      girl-DAT boy-MASC   beautiful-MASC   feel-MASC
      'The girl likes the boy.' (Madhav, p.c.)

The existential predicates in Sinhala, like Japanese, impose an animacy selectional restriction, and it operates between the nominative NP and the predicate, not between the dative NP and the predicate, as seen below:

(6-9) maTA   **duwek**   **innAwa**
      I.DAT   daughter.INDEF   be-ANIMATE-PRES
      'I have a daughter.' (Sinhala; Kumara, p.c.)

(6-10) *maTA **duwek**   **tiyenAwa**
      I.DAT daughter.INDEF   be-INANIMATE-PRES
      'I have a daughter.' (Kumara, p.c.)

(6-11) maTA   **potak**   **tiyenAwa**
      I.DAT   book.INDEF   be-lNANIMATE-PRES
      'I have a book.' (Kumara, p.c.)

(6-12) *maTA **potak**   **innAwa**
      I.DAT book.INDEF   be-ANIMATE-PRES
      'I have a book.' (Kumara, p.c.)

A similar selectional restriction is seen in Gujarati with respect to the verbs of pleasing or liking. When what is pleasing is food, *bhave che* is used, but when it is nonfood, *gAm-* is used;

(6-13) Ramesh-ne   **pen**   gAm-y-**i**.
      Ramesh.OBJ pen. FEM like-PAST.FEM
      'Ramesh liked the pen.' (Mistry 1976:249)

(6-14) apne   **gujAratI khorak   bhave   che**?
      you.OBJ Gujarati   food   be liked   be
      'Do you like Gujarati food?' (Lambert 1971:53)

The nominative NP in question also shows behavioral subject properties. Thus, it may trigger subject honorification in Japanese (see earlier discussion on this phenomenon in section 3).

(6-15) Yamada-sensei-ni(-wa)   utukusii okusan-ga   iru.
      Yamada-prof-DAT(-TOP)   beautiful wife-NOM   exist
      'Prof. Yamada has a beautiful wife.'

(6-16) Yamada-sensei-ni(-wa)   utukusii okusan-ga   oide-ni naru.
      Yamada-prof-DAT(-TOP) beautiful wife-NOM   exist-HONORIFIC
      'Prof. Yamada has a beautiful wife.'

In the honorific version in (6-16), it is hard to tell which of the two nominals is triggering the honorification process since both are equally plausible candidates as a recipient of the speaker's deference. However, the following example, (6-18), reveals that it is the nominative NP that is responsible for the honorification process. This example is inappropriate because the speaker's deference is directed to the lice. If the dative nominal were the subject, there is no reason why this sentence should be inappropriate.

(6-17) Yamada-sensei-ni(-wa)   **sirami-ga** iru.
      Yamada-prof-DAT(-TOP)   lice-NOM exist
      'Prof. Yamada has lice (i.e. lice-infested).'

(6-18) #Yamada-sensei-ni(-wa)   **sirami-ga** oide-ni naru.
      Yamada-prof-DAT(-TOP)   lice-NOM exist-HONORIFIC
      'Prof. Yamada has lice.'

Thus, all in all, there is a great deal of evidence that argues for the subject status of the nominative NP. This, however, comes into direct conflict with our earlier discussion in section 3, where we saw evidence arguing for the subject status of the dative nominal. This dilemma is easily resolved in Relational Grammar, in which some subject properties are attributed to the initial subject status of the dative nominal and some to the final subject status of the nominative NP (see (4-17b)). However, I will attempt to show that the distribution of subject properties over these two kinds of nominals is not as uniform as the Relational Grammar analysis predicts. Before discussion this issue, we must deal with another problem that holds the key to all the essential problems surrounding dative constructions and their variants.

7.   Elliptical nature of the relevant intransitive predication

Besides the syntactic dilemma noted above, there is a more serious dilemma that has not been dealt with in the past analyses of dative constrictions. This has to do with the fact that while the relevant predicates are intransitive in nature, they appear to require two arguments realized as a dative and a nominative NP. Perhaps the strongest reason that the past analyses consider dative constructions to be transitive comes from the fact that these two arguments are required. (But it does not seem to have bothered the proponents of the transitive analysis that the relevant predicates are intransitive.) Thus, the following expressions without dative nominals are considered to be either elliptical or ungrammatical. They are readily accepted in those languages that freely allow omission of understood arguments (pro-drop), and in those languages where pro-drop is not a prevailing feature, their occurrence is limited to a highly specific context as in the Russian examples in (7-6) and (7-7) provided by Vera Poddlesskaya (p.c.).

(7-1) a.   Ken-ni(-wa)   nihongo-ga   hanas-e-ru.
            -DAT(-TOP)   Japanese-NOM speak-POTEN-PRES
            'Ken can speak Japanese.' (Japanese)

      b.   Nihongo-ga   hanas-e-ru.
            Japanese-NOM speak-POTEN-PRES
            '(Someone) can speak Japanese.' (elliptical)

(7-2) a.   Ken-ga   Hanako-ga   suki da.
            -NOM   -NOM   like COP
            'Ken likes Hanako.' (Japanese)

      b.   Hanako-ga   suki da.
            -NOM   like COP
            '(Someone; likely to be 'I') like(s) Hanako.' (elliptical)

(7-3) a.   use   gussaa   aayaa.
            he.DAT   anger   came
            'He became angry.' (Hindi)

      b.   gussaa   aayaa.
            anger   came
            '(Someone) became angry.' (elliptical)

(7-4) a.   Mir   gefallen   diese Bücher.
            I.DAT   like   these books
            'I like these books.' (German)

      b.   *Gefallen diese Bücher.

(7-5) a.   Me gusta la cerveza.
            I.DAT like the beer
            'I like beer.' (Spanish)

      b.   *Gusta la cerveza.

(7-6)   a. Mne   nravitsja   kniga.
                I.DAT   like   book
            'I like the book.' (Russian)

      b.   Nravitsja   kniga?
            '[Do you] like the book?'

(7-7)   a. Vase   nravitsja   ego novaja   mashina?
                Vasja.DAT like   his new   car.SG.NOM
            'Does Vasja like his new car?'

      b.   Mashina   nravitsja   a   tsena   ne   ochen'.
            car.SG.NOM   like.3SG.REFL but price.SG.NOM not very
            'The car [itself] is OK, but not the price.'

In order to understand the elliptical nature of these constructions, I now turn to double subject constructions, whose structure and semantics are better understood.

8. Double subject constructions

A fair number of Asian languages exhibit double subject constructions of the following type, where there are two nominative subjects, or their equivalents if the language, e.g., Chinese, does not have case marking.

(8-1)a.   Zoo-ga   hana-ga   nagai   (koto)
           elephant-NOM nose-NOM   long   (that)
           '(that) an elephant has a long nose/trunk' (Japanese)

b.

Zoo-ga   **hana-ga**   nagai
elephant-NOM   nose-NOM   long
LARGE SUBJ   SMALL SUBJ
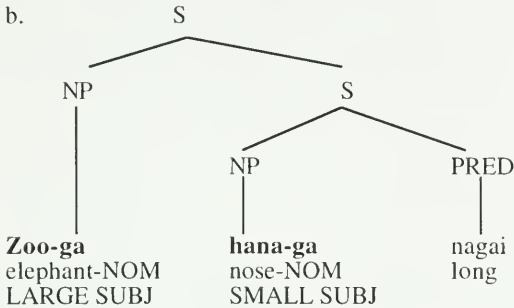
Here, everyone agrees that the predicate *nagai* 'long' is a one-place intransitive predicate predicating over the NP *hana-ga* 'nose-NOM'. Indeed, sentence (8-1a) says that the nose (i.e., the trunk) is long, not the elephant. Thus, the second nominative NP is the subject of the predicate *nagai* 'long'. On the other hand, *zoo-ga* 'elephant-NOM' is also a subject in the sense that the entire sentence is about an elephant. The sentence is understood to mean that an elephant is such that the state of affairs of a nose's being long is true with respect to it. In other words, the clause *hana-ga nagai* 'a nose is long' is predicating over the NP *zoo-ga* 'elephant-NOM,' giving rise to a double subject, double predication structure. For ease of reference, I shall call the internal subject 'small subject,' and the external one predicated over by the clausal predicate 'large subject,' as indicated in (8-1b).

What is interesting about double subject constructions of this type is that the internal clause cannot stand by itself. Thus, (8-2) below is decidedly odd as a statement.

(8-2)   Hana-ga/wa   nagai.
          nose-NOM/TOPlong
          'A nose is long.'

Just like the accompanying English translation, there is nothing syntactically wrong about this sentence. It is the truth-value of the sentence that is being questioned, since the sentence makes a universal claim that a nose is long, which is not in fact true. Compare this sentence with the following, which is acceptable since everyone is believed to agree that it is universally true that a flower is beautiful.

(8-3)   Hana-ga/wa   utukusii.
           flower-NOM/TOP   beautiful
           'A flower is beautiful.'

There are basically three types of sentences with regard to the point being made. Some sentences describe what is not universally true, while some others describe what is generally accepted as expressing a universal truth. And there are sentences between these two, i.e., those which can be contested about their truth and therefore can specify the domain of their application. Compare the following patterns in English. Sentence (8-4a) states a universal truth, and hence it is odd to contextualize it as in (8-4b) — the sentence is perhaps only possible when uttered by a dissenter of the Flat Earth Society. (8-5a), on the other hand, can be contested and therefore can be 'personalized,' as in (8-5b).

(8-4)   a.   The earth is round.
           b.   ?To me the earth is round.

(8-5)   a.   Fish tastes good.
           b.   To me fish tastes good.

The internal clause of the double subject construction typically expresses those states of affairs that are not universally true; and accordingly their domain of application must be limited in one way or another. One simple way of achieving this is in terms of narrowing down the referent to a specific entity, turning a universal statement to a specific one, as in (8-6a), which is also the method employed in English and a large number of other languages.

(8-6)   a.   Zoo-no   hana-ga   nagai.
                 elephant-of   nose-NOM   long
                 'The elephant's nose/trunk is long.'

           b.   Zoo-ga   hana-ga   nagai.
                 elephant-NOM   nose-NOM   long
                 'An elephant has a long nose/trunk.' (= 8-1a)

Some languages have an additional means of delimiting a universal statement, and it is by means of couching the expression in the double subject construction, as in (8-6b), where the large subject provides a domain to which the truth of the predicate clause is limited[2]. Thus, the literal meaning of sentence (8-6b) is something like: 'An elephant is such that in this domain the truth of the proposition that a nose is long obtains.' Another way of looking at the situation is in terms of the dependency relation between the large subject and the predicate clause. That is, the truth of the state of affairs expressed in the predicate clause is dependent upon (the domain provided by) the large subject. This notion of dependency figures prominently in our understanding of the structure of the dative construction and its variants.

Before we turn to the dative construction, let us make sure that the large subject of the double subject construction behaves like a subject syntactically as well.

The Japanese subject honorification process simply attaches the prefix *o-* or *go-*, when adjectives and adjectival nominals are involved, as in (8-7) below:

(8-7)   Hata-sensei-ga wakai/o-wakai.
          -prof-NOM   young/HON-young
          'Prof. Hata is young.'

The large subject triggers the same honorification process, as the comparison of
the behaviors of the possessor nominal and the large subject nominal reveals.

(8-8) a. Hata-sensei-no migi-me-ga   warui/???o-warui.
          -prof-GEN   right-eye-NOM bad/HON-bad
          'Prof. Hata's right eye is bad.'

     b.   Hata-sensei-ga migi-me-ga   warui/o-warui.
          -prof-NOM   right-eye-NOM bad/HON-bad
          'Prof. Hata has a bad right eye.'

     The large subject, just like a regular subject, raises into the main clause
object position under predicates such as *omou* 'to think,' and *minasu* 'consider.'

(8-9) a. Hata-sensei-wa [Ken-ga totemo baka da] to   omotte   i-ru.
         -prof.-TOP   -NOM   very stupid COP that think-CONJ be-PRES
         'Prof. Hata thinks that Ken is very stupid.'

     b. Hata-sensei-wa Ken-o [totemo baka da]   to   omotte   i-ru.
        -prof.-TOP-   ACC very   stupid COP that think-CONJ be-PRES
        'Prof. Hata considers Ken to be very stupid.'

(8-10) a. Hata-sensei-wa[Ken-ga totemo atama-ga   warui] to omot-te
          -prof.-TOP   -NOM   very   head-NOM bad   that think-CONJ
          i-ru.
          be-PRES
          'Professor Hata thinks that Ken has a very bad brain.'

     b.   Hata-sensei-wa Ken-o [totemo atama-ga   warui]   to
          think-CONJ   be-PRES
          'Professor Hata considers Ken to have a very bad brain.'

     Thus, there is evidence for the syntactic subject status of the large subject,
providing syntactic justification for the term 'double subject construction' for the
relevant structure.

9.   Dative constructions as double subject constructions

     I shall now advance a claim that dative constructions and their variants are
in fact variants of double subject constructions. My claim boils down to this. The
intransitive predication involved in the dative and the variant construction
expresses a state of affairs that cannot be considered universally true or a
cognitive state whose realization is dependent upon a particular cognizer. The
dative nominal and its variants provide such a domain and a cognizer just as the
large subject of the double subject construction does.

     Consider a Japanese potential expression like (9-1a)'. It is not true that
Japanese can be spoken anywhere or by anyone. This statement thus needs to be
confined to a particular domain. This can be done either by providing a location
in which Japanese can be spoken, as in (9-1b), or a person who can realize the
potential state, as in (9-1c).

(9-1) Potentials

    a.   Nihongo-ga   hanas-e-ru.
            Japanese-NOM speak-POTEN-PRES
            'Japanese can be spoken.' (Japanese)

    b.   Hawai-de(-wa) nihongo-ga   hanas-e-ru.
            -in(-TOP)   Japanese-NOM speak-POTEN-PRES
            'In Hawai'i Japanese can be spoken.'

    c.   Ken-ni(-wa   nihongo-ga   hanas-e-ru.
            -DAT(-TOP)   Japanese-NOM speak-POTEN-PRES
            'Ken can speak Japanese/Ken can be spoken Japanese to; (lit) With respect to Ken, it is true that Japanese can be spoken.' (Dative construction)

Dative constructions expressing possession are similar. Things cannot exist in the vacuum. They must be anchored to either a location or a person. Thus, the Korean existential expression (9-2a) is decidedly odd by itself. When the existence of money is localized with respect to a particular location, we obtain an existential sentence (9-2b), while if a person is to provide a domain of existence, a possessive dative subject sentence obtains, as in (9-2c).

(9-2)   Existentials/possessives

    a.   Ton-i   mahni   iss-ta.
            money-NOM   a lot   exist-IND
            'A lot of money exist.' (Korean)

    b.   Chaeksan-uy-ey   ton-i   mahni   iss-ta.
            desk-top-on   money-NOM   a lot   exist-IND
            'There is a lot money on the desk.' (Existential)

    c.   Inho-eykye(-nun)   ton-i   mahni   iss-ta.
            -DAT(-TOP)   money-NOM   a lot   exist-IND
            'Inho has a lot of money.' (Possessive)

States of affairs involving psychological and physiological states are similar, but here only a cognizer can provide a domain. That is, realization of a psychological or physiological state is entirely dependent upon its cognizer. There is no anger, sadness, headache, or hunger unless someone recognizes it. Thus, the Hindi sentence (9-3a) is an incomplete expression unless some cognizer, such as the speaker, is understood. The same obtains for the Japanese sentence (9-3b). Though the predicate *suki da* is translated as 'likable' in (9-3b), Japanese emotive predicates, like the Spanish verb *gustar* 'like' and the German counterpart *gefallen*, are different from the English adjective *likable*, which can be used as a descriptive adjective independent of its cognizer. The sentence 'Mary is likable' is comparable to 'Mary is tall' and 'Mary is intelligent.' The emotive predicates in Japanese, Spanish, German, and Russian, are like psychological verbs such as 'happy' and 'angry' in that they must occur together with a cognizer. The difference is that the emotive predicates in question ascribe the states to another entity, who/which causes the emotions of liking, hatred, etc., in the mind of a cognizer, only by whom the emotive state is realized,

just as a mental state such as being sad and happy obtains only when someone feels so.

(9-3)   Physiological/psychological states

    a.   gussaa   aayaa.
           anger   came
           'Anger came.' (Hindi)

    a'.   use   gussaa   aayaa.
           he.DAT   anger   came
           'He became angry.'

    b.   Hanako-ga   suki da.
           -NOM   like COP
           'Hanako is likable.' (Japanese)

    b'.   Ken-ga   Hanako-ga   suki da.
           -NOM   -NOM   like COP
           'Ken likes Hanako.'

    c.   Gusta   la cerveza.
           like   the beer
           'Beer is likable.' (Spanish)

    c'.   Me   gusta   la cerveza.
           1.DAT   like   the beer
           'I like beer.'

The same explanation as the above obtains with regard to oblique subject constructions, such as the following;

(9-4)   Oblique subject constructions

    a.   mage   oluwe   kaekkumak   tiyenAwa⁴.
           1.GEN   head.LOC ache.INDEF   be-INANIMATE.PRES
           'I have a headache.' (Sinhala; Kumara, p.c.)

    b.   bacce   se   shiishaa   TuuT   gayaa.
           child   INST mirror   break   went/PASS
           'The child (inadvertently) broke the mirror.' (Hindi; Kachru 1990:60)

    c.   ma-baata   sisaa phuT-yo.
           I-ABL   glass break-PERF
           'The glass broke (and inadvertently I happened to be its cause).'
               (Nepali; Madhav, p.c.)

    d.   nuca-ta-ca   uma-ta   nana-wa-n-mi.
           1-ACC-TOP   head-ACChurt-1OBJ-3-WIT
           'My head hurts.' (WIT=witnessed) (Imbabura Quechua; Jake 1985:
               196)

    e.   Nup snl   yob alkjon   ay-a-k.
           him boil   big armpit   form-3SG-PAST
           'A large boil has formed in his armpit.' (Kalam; Pawley et al.
               forthcoming:12)

In all these constructions, whether the initial NP is marked genitive, instrumental, ablative, or accusative, it provides a domain in which a particular

state of affairs obtains. The literal interpretation of Sinhala sentence (9-4a) is: 'That a headache exists in the head obtains with respect to me, who is involved in this state of affairs as the possessor of the head in question.' Sentences (9-4b,c) state that 'the mirror's/glass's breaking took place with respect to me, who was related to the state of affairs as its cause.' Similarly, in (9-4d,e), the accusative nominal provides a domain in which a particular physiological state obtains.

Quechua sentence (9-4d) involves an impersonal predicate clause 'it hurts the head to me.' Involvement of impersonal clauses in the expression of physiological states is seen fairly widely. I assume that older German expressions such as *Mich friert* 'I am cold,' *Mich hungert* 'I am hungry' have the same structure, namely [Mich [friert]] and [Mich [hungert]], where the accusative nominal provides a domain in which impersonal states of affairs of freezing and hungering obtain.

The proposed analysis of the dative construction and its variants as double subject constructions involves positing the following structures:

(9-5) a.　**[NP-DAT**　　　　　**[(NP-NOM)**　　PRED]]
　　　　　LARGE SUBJ　　　　　SMALL SUBJ (Dative construction)

　　　e.g.　[use　　　[gussaa　　aayaa]]
　　　　　　he.DAT　anger　　came (Hindi)
　　　　　　'He became angry.'

　　　　　　[maTA　　[danAgaehuna]]
　　　　　　I.DAT　　kneel.PAST.P
　　　　　　'I kneeled/My knees gave way.' (Sinhala)

　　　b.　**[NP-NOM**　　**[NP-NOM**　　PRED]]
　　　　　LARGE SUBJ　SMALL SUBJ (Double nominative construction)

　　　e.g.　[Ken-ga　[atama-ga　　ookii]]
　　　　　　-NOM　　head-NOM　　large
　　　　　　'Ken has a large head.' (Japanese)

　　　　　　[Ken-ga　[Hanako-ga　suki da]]
　　　　　　-NOM　　-NOM　　　　like COP
　　　　　　'Ken likes Hanako.'

　　　c.　**[NP-OBL**　　**[(NP-NOM)**　　PRED]]
　　　　　LARGE SUBJ　SMALL SUBJ (Oblique subject construction)

　　　e.g.　[bacce　　se　　[shiishaa　TuuT　　　　gayaa]]
　　　　　　child　　INST mirror　　break　　went/PASS
　　　　　　'The child (inadvertently) broke the mirror.' (Hindi)

　　　　　　[nup [snl　yob　alkjon　ay-a-k]]
　　　　　　him boil big　armpit　form-3SG-PAST
　　　　　　'A large boil has formed in his armpit.' (Kalam)

　　　　　　[nuca-ta-ca　　[uma-ta　　nana-wa-n-mi]]
　　　　　　I-ACC-TOP　　head-ACChurt-1OBJ-3-WIT
　　　　　　'My head hurts.' (It hurts the head with respect to me./There is hurting of the head involving me.) (Imbabura Quechua)

One may wonder about our positing case-marked large subjects. That is, subjects are normally unmarked or in the nominative case, and one may question the plausibility of oblique/accusative case-marked large subjects. However, case-marked large subjects (in combination with a nominative case) do occur, as seen in Japanese below; e.g.,

(9-6)   [kono   heya-**kara**-ga   [huzi –san-ga   yokumieru]]
        this   room-from-NOM   Fuji-Mt-NOM   well visible
        'It is from this room that Mt. Fuji is very visible.'

(9-7)   [Hanako-**to**-ga [itiban   benkyoo-ga   si-nikui]]
        -with-NOM   most   study-NOM   do-difficult
        'It is with Hanako that studying is most difficult to do.'

(9-8)   [Tookyoo-**made**-ga [kuroo-ga   ooi]]
        -up to-NOM   trouble-NOM   many
        'It is up to Tokyo that there are many troubles.'

As the representations in (9-5) indicate, large subjects are not direct arguments of the lexical predicates; instead they are predicated over by a clausal predicate[5]. Predication of this kind requires a general constructional meaning that binds them together. The notion of dependency discussed above is a minimal meaning relationship that all the double subject constructions must satisfy. In addition, certain constructions provide a clue as to how the large subject contributes to this dependency relationship; i.e., how it is relevant to the state of affairs expressed in the predicate clause. Case markers in the large subject NP just do this. In other words, our analysis provides a framework in which the question of differential marking on the large subject can be meaningfully pursued. The answer to this question requires a better understanding of the notion of dependency, especially that of the degree of dependency. But before dealing with this problem, let us reiterate the point made earlier.

I suggested earlier that canonical transitive structure and dative constructions (and their variants) represent different conceptualization patterns. The subject in a canonical transitive construction is an argument of the verb and typically represents an agent, who is in control of the event expressed. In other words, the canonical transitive construction codes an event as a controllable situation. Whether the event is actually carried out as such is a different matter. What matters is that this coding pattern represents a situation as something controllable by the agent. Dative constructions, on the other hand, represent states of affairs that are not controllable. This is evident from the predicate types involved in this type of construction. They are an existential and a stative type, or verb forms (often in the passive or spontaneous form; see the Hindi example in (9-5)) expressing spontaneously occurring events, or else impersonal forms that express states of affairs that no one can control (see the Quechua example in (9-5)). By positing the large subject outside the domain of lexical predication, our analysis in terms of the double subject construction captures the oblique, noncontrolling involvement of the large subject in the described state of affairs. And this is why the large subject tends to be marked dative.

Earlier researchers noticed this contrast between the controllable and the noncontrollable coding pattern. Sridhar (1976), for example, illustrates the point by examining the possibility of embedding a transitive construction and a dative construction in the Kannada control construction;

(7-9) a. ShiilaLige   aapareeshan   aayitu.
          Sheela.DAT   operation   became
          'Sheela had an operation.' (Dative)

      b. *avaru   ShiilaLige₁   [Ø₁ aapareeshan   galu]   heeLidaru
          they   Sheela.DAT   operation   become   told
          'They told Sheela to have an operation.'

(7-10) a. Shiila   aapareeshan   maaDisikonDaln
           Sheela.NOM   operation   had done.REFL
           'Sheela had an operation [done to herself].' (Reflexive-transitive)

       b. avaru   ShiilaLige₁   [Ø₁ aapareeshan   maaDisikoLLalu]
           they   Sheela.DAT   operation   to have done.REFL
           heeLidaru
           told
           'They told Sheela to have an operation [done to herself].'

Thus, a transitive analysis of dative constructions fails to obtain support from the lexical consideration — the relevant predicates are typically intransitive — and it also lacks both syntactic and semantic motivations.

10. Degree of dependency and the case marking of the large subject

I claim in this paper that the differential case marking on the large subject reflects different degrees of dependency between the large subject and the predicate clause. In the case of Japanese the large subject can be marked nominative, dative, and oblique (plus nominative). I want to claim that the large subject is marked nominative when the dependency of the predicate clause upon the large subject is high. This is seen from the fact that when the large subject represents an entity inherently related to the small subject, as in the case involving a possessor and a body-part, it is the nominative case that marks the large subject. Also, highly dependent emotive states like liking and hating (recall the earlier discussion on these emotive predicates) require nominative marking on the large subject. Dative marking is not possible in these cases, and the clauses must have a large subject or else its referent must be understood; e.g.,

(10-1) a. Ken-ga/*-ni   atama-ga   ookii/itai.
           -NOM/-DAT   head-NOM   large/hurting
           'Ken has a large head/a headache.' (Japanese)

       b. Ken-ga/*-ni   Mami-ga   suki da/kirai da.
           -NOM/-DAT   -NOM   like COP/hate COP
           'Ken likes/hates Mami.'

Dative marking on the large subject, on the other hand, occurs when the dependency relationship between the large subject and the predicate clause is

lower, such that the predicate clause may even stand by itself as a possible proposition. Observe;

(10-2) a. Boku-ni(-wa)   konohon-ga   omosiroi.
           -DAT(-TOP)   this book-NOM   interesting
           'To me this book is interesting.'

           Kono   hon-wa   omosiroi.
           this   book-TOP interesting
           'This book is interesting.'

(10-3) a. Boku-ni(-wa)   ano hito-ga   kowai.
           -DAT(-TOP)   that person-NOM   frightening
           'To me that person is frightening.'

           Ano hito-wa   kowai.
           that person-TOP   frightening
           'That person is frightening.'

What complicates the matter in Japanese is that sometimes a dative-marked large subject alternates with a nominative marked large subject. Interestingly enough, however, the nominative choice is possible only when there is a high degree of dependency. The relationship between the speaker and the potential of speaking a language is differently expressed from that between the location and the possibility of using a language — the former by the dative case and the latter by the locative case. Moreover, while the dative case may alternate with the nominative, the locative must not.

(10-4) a. Ken-ni(-wa)   nihongo-ga   hanas-e-ru.
           -DAT(-TOP)   Japanese-NOM speak-POTEN-PRES
           'Ken can speak Japanese.'

     b.   Ken-ga   nihongo-ga   hanas-e-ru.
           -NOM   Japanese-NOM speak-POTEN-PRES
           'Ken can speak Japanese/It is Ken who can speak Japanese.'

(10-5) a. Hawai-de(-wa) nihongo-ga   hanas-e-ru.
           -in(-TOP)   Japanese-NOM speak-POTEN-PRES
           'In Hawai'i Japanese can be spoken.'

     b.   *Hawai-ga   nihongo-ga   hanas-e-ru.
           -NOM   Japanese-NOM speak-POTEN-PRES

A similar observation can be made in other languages in which large subjects are differentially marked, though it is not easy to determine the degree of dependency in some cases. The Sinhala pattern below appears to indicate the degree of dependency is signalized according to the following order, where dative marking indicates a higher degree of dependency than genitive marking, etc.

(10-6) Sinhala: DAT > GEN > INST

     a.   maTA/???mage   loku oluwak   tiyenAwa.
           1.DAT/1.GEN   big head-INDEF   exists
           'I have a big head.' (Kumara, p.c.)

b. maTA/mage   loku kaekkumak   tiyenAwa.
    I.DAT/I.GEN   big estate   exists
    'I have a big estate.' (Kumara, p.c.)

c. maTA eyaa   gaenA   matak unaa.
    I.DAT he   about   remember.PAST.P
    'I remembered him.' (Wijayawardhana, et al. 1995:127)

d. lamAyaTA   naeTenAyva.
    child.DAT   dance.PRES.P
    'The child is willy-nilly dancing (e.g. because, with the music, she
    cannot help it.) (Wijayawardhana, et al. 1995:123)

e. maa-atin   ballaa   maeruna.
    I-INST   dog   kill.PAST.P
    'I accidentally killed the dog.' (Wijayawardhana, et al. 1995:116)

f. ballaa   maeruna.
    dog   kill.PAST.P.
    'The dog died.' (Kumara, p.c.)

Notice that (10-6e) contains a predicate clause that can stand alone expressing a complete proposition, as in (10-6f). Hindi shares this method of signaling a low degree of dependency by instrumental marking, while some other Indic languages (e.g., Nepali) use ablative marking for the same purpose. Thus, while (10-7b) is understood to be elliptical, (10-7d) is a complete sentence by itself.

(10-7) Hindi

a. ramesh ko   kaafi   pasand   nahii.
    Ramesh DAT   coffee   liking   not
    'Ramesh doesn't like coffee.' (Kachru 1990:60)

b. kaafi   pasand   nahii.
    coffee   liking   not
    '(I) don't like coffee.' (Kachru 60)

c. se   shiishaa   TuuT   gayaa.
    child INST mirror break   went
    'The child (accidentally) broke the mirror.' (Kachru 60)

d. shiishaa   TuuT   gayaa.
    mirror   break   went
    'The mirror broke.'

11. Distribution of subject properties and the rise of constructional meanings

The degree of dependency between the large subject and its predicate clause has two grammatical consequences. One has to do with the distribution of subject properties and the other with the semantics of double subject constructions.

As we saw earlier, both dative nominal (large subject) and nominative NP (small subject) of a double subject construction exhibit subject properties, but no precise formulation of how subject properties are distributed over these two

nominal elements has been attempted in the past. Our analysis, which posits two subjects — a small subject and a large subject — provides a basis for a possible formulation in terms of the degree of dependency discussed in the preceding section.

There seems to be a general typological consideration that must be addressed in thinking about this problem. That is, a certain group of languages assign only a very small number of subject properties to the large subject. This appears to be the case with the group of the so-called Standard Average European, including German, Dutch and French. There seems to be a high typological pressure among these languages to align the distribution of subject properties with the nominative argument so that the uniformity of morphology-syntax alignment is achieved. In these languages, large subjects, which are obliquely marked due to another typological reason, namely the presence of agreement, do not seem to exhibit very clear-cut phenomena pointing to the syntactic subjecthood of the large subject (see Haspelmath [forthcoming]).

In other languages, where there does not seem be a strong requirement for uniform morphology-syntax alignment, case-marked large subjects exhibit a fair number of subject properties. In such a situation, the higher the dependency between the large subject and its predicate clause is, the greater the number of subject properties the larger subject exhibits. On the other hand, the small subject asserts its subject status more strongly when the dependency relation is low. Space limitation does not allow us to go into detail, but compare the following two sets of examples from Japanese.

(11-1) a.   [Hata-san-ga   [okusan-ga   kaisya-o   keiei-site iru]]
           -Mr-NOM   wife-NOM   company-ACC run-do   be
           'Mr. Hata, (his) wife runs a company.'

     b.   ???Okusan-ga   kaisya-o   keiei-site iru.
           wife-NOM   company ACC run-do   be
           'A wife runs a company.'

     c.   Yasuko-ga   kaisya-o   keiei-site iru.
           -NOM   company-ACC run-do   be
           'Yasuko runs a company.'

(11-2) a.   Hata-san-ga   Yasuko-ga   suki da.
           -Mr-NOM   -NOM   like COP
           'Mr. Hata likes Yasuko.'

     b.   ???Yasuko-ga suki da.
           -NOM   like COP
           '(Someone) likes Yasuko.'

Both (11-1b) and (11-2b) are elliptical, but for different reasons. (11-1b) is dependent upon a large subject because the relational noun *okusan* 'wife' is involved. But the event expressed by the predicate clause is quite autonomous and its realization is in no way dependent upon the large subject. This is shown by the fact that (11-1c) with a nonrelational small subject is a complete sentence. This is not the case with (11-2a), where the realization of the state of affairs

expressed in the predicate clause is highly dependent upon the cognizer functioning as a large subject. The rise of the emotion of liking Yasuku occurs only when there is someone who perceives the emotion. Thus, unlike (11-1c), (11-2b) is always elliptical, which means there exists a high degree of dependency between the large subject and the predicate clause.

This difference is reflected in the distribution of subject properties. In (11-3), which contains an autonomous predicate clause, the small subject, *okusan* 'wife', controls both reflexive binding and honorification. In (11-4), on the other hand, the large subject controls both phenomena; the small subject of the highly dependent predicate clause exhibits no subject property other than nominative marking.

(11-3) Hata-san-ga **okusan-ga** zibun-no   kaisya-o   keiei-nasatte iru.
       -Mr-NOM   wife-NOM   self-GEN company-ACC run-do.HON be
       Mr. Hata, (his) wife runs her own company.'

(11-4) **Hata-san-ga** Yasuko-ga   zibun-no   imooto-yori o-suki   da.
       -Mr-NOM   -NOM   self-GEN   sister-than   HON-like   COP
       'Mr. Hata$_i$ likes Hanako$_j$ (more) than self$_{i/*j}$'s sister.'

The finding above is corroborated by an earlier work on Indic languages by Kachru et al. 1976, who showed that different kinds of subjects in Hindi and some other Indic languages show a different degree of subjecthood, as summarized below:

(11-5) Degree of subjecthood among Indic languages (Kachru et al. 1976:94)
       SI ST < S DAT < S OBL < SP
       (Sl=intransitive subject, ST=transitive subject, S DAT=dative subject,
       S OBL=oblique subjects, SP=derived subject of the passive)

We have shown above that differential marking of the large subject reflects different degrees of dependency between the large subject and the predicate clause, dative marking indicating a higher degree of dependency than oblique marking. The hierarchy above correlates with this fact in such a way that a dative large subject exhibits more subject properties than an oblique large subject does.

The degree of dependency between the large subject and the clausal predicate of the double subject construction has a semantic ramification. That is, certain double subject expressions have a meaning component that is not derivable from the sum of the lexical meanings involved, while some others have no such 'extra' meaning. Compare, for example, the following two dative constructions in Croatian provided by Irena Zovko (p.c.):

(11-6) a.   Suid-a   mi   se   knjig-a.
            like-3SG   I.DAT   REFL   book-NOM.SG.FEM
            'I like the book.'

       b.   Pil-o   mi   se   piv-o.
            drink-3SG.PAST   I.DAT   REFL   beer-NOM.3SG.NEUT
            'I felt like drinking beer.'

Sentence (11-6a) contains a reflexive expression with a third person subject (lit. the book likes itself) together with a dative subject. Similarly, (11-6b) consists of a reflexive expression with a third person subject (lit. the beer drinks itself) together with a dative subject. But while the former simply means 'I like the book,' the latter means something like 'I FELT LIKE drinking beer.' That is, the latter expression has an extra meaning component 'feel like,' which is lacking in the former.

I want to claim that this extra meaning arises when the degree of dependency between the large subject and the clausal predicate is low. The clausal predicate in (11-6b) can stand alone without a dative subject, where it has a passive meaning, as in a similar use of reflexive forms in some other European languages. However, the clausal predicate in (11-6a) cannot stand alone; if uttered, it does not mean anything or, at best, is elliptical in a very specific context:

(11-7) a.   *Suid-a   se   knjig-a.
          like-3SG.PRES   REFL   book-NOM.SG.FEM

     b.   Pil-o   se   piv-o.
          drink-3SG.PAST   REFL   beer-NOM3SG.NEUT
          'Beer was drunk.'

A similar contrast is seen between the following Hindi examples:

(11-8) a.   use   gussaa   aayaa.
          he.DAT   anger   came
          'He became angry.'

          gussaa   aayaa.
          anger   came
          '(Someone) became angry.' (elliptical)

(11-9) a.   bace se   shiishaa   TuuT gayaa.
          child INST mirror   break went
          'The child accidentally broke the mirror.'

     b.   Shiishaa   TuuT   gayaa.
          mirror   break   went/PASS
          'The mirror broke.'

Sentence (11-8b) is elliptical indicating that the clause is highly dependent upon the large subject. And the meaning of (11-8a) is largely compositional; it does not have any implication like he accidentally became angry. Sentence (11-9b), on the other hand, is a highly autonomous clause, and as such its dependency upon the large subject in (11-9a) is low, and just in such a case, an additional meaning component 'accidentally' is found.

My claim is that additional meaning components are constructional meanings that arise in order to make a large subject and an autonomous predicate clause cohere together to the extent that bringing them under the subject-predicate relation is justified. Recall that all double subject constrictions consist of a large subject and a clausal predicate. Unlike lexical predication, this type of predication requires a good reason why a nominal element and a clause are

brought together to form a predication relation. When there is a high degree of dependency between the two elements, there is a strong bond between them warranting the predication relation. When the dependency is low, on the other hand, a constructional meaning emerges in order to sanction the predication relation between the large subject and the clausal predicate. I believe that the same mechanism was at work in the development of the dative construction with a (negative) potential meaning from the spontaneous/passive construction in Japanese, Indic languages, and elsewhere (e.g., Russian (1-15), Japanese (1-21)). However, the exact mechanism by which specific constructional meanings arise remains a mystery. For example, why did the Croatian dative structure involving a passive clause give rise to the 'feel like' meaning (see (11-6b) rather than, say, the potential meaning? The problem is not easy to solve, as it may involve various culturally determined conventions. However, unless we can solve this kind of problem, we may never be able to understand how language changes through the creation of new constructions on the basis of old materials. At least our approach tells us when a new construction may emerge.

NOTES

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[1] Because Japanese allows pro-drop (even in relative clauses), the situation is more complicated, as one can form a relative expression in which the relative head can be construed as controlling the object of a relative clause; e.g., *yomu hon (-ga nai)* '(there is no) book to read.' However, out-of-blue expressions involving transitive predicates generally follow the modification pattern discussed in the text.

[2] Whether a language allows a double subject construction with two nominative subjects is largely determined typologically; agreement languages in general do not seem to allow this type of double subject structure, perhaps due to the one-to-one agreement pattern imposed.

[3] Under specific circumstances, sentence (9-1a) can make an acceptable universal statement. Thus, *Nihongo-wa hanaseru* 'Japanese can be spoken,' can mean something like 'Japanese is a speakable language.'

4 There is reason to think that in many South Asian languages a genitive NP and the following NP may not form a constituent; e.g., an adverb may intervene between these two NP's, as below:

mage   haematissema oluwe   kaekkumak   tiyenawa.
I.GEN   always   head.LOC ache.INDEF   exist.INANIMATE
'I always have a headache.' (Sinhala; Kumara, p.c.)

5 In this respect, the double subject construction is similar to the *wa*-marked topic construction in Japanese and its analog in other languages. However, the subject function is different from the topic function. For example, the latter is limited to a definite nominal, but this is not the case for the former. The large subject posited for the double subject construction thus admits an indefinite interrogative pronoun, while such a form cannot bear the topic function; e.g.,

(i)   a.   [Zoo-ga   [hana-ga   nagai]]
           elephant-NOM nose-NOM   long
           'An elephant has a long nose/trunk.' (Double subject)
      b.   [Zoo-wa   [hana-ga   nagai]]
           elephant-TOP   nose-NOM   long
           'An elephant has a long nose/trunk.' (Topic construction)
(ii) a.   [Nani-ga   [hana-ga   nagai]]?
           what-NOM   nose-NOM   long
           'What has a long nose?' (Double subject)

      b.   *[Nani-wa[hana-ga   nagai]]?
           what-TOP nose-NOM   long
           'What has a long nose.' (Topic construction)
(iii) a.   [Ken-ni   [nihongo-ga   hanas-e-ru]]
           -DAT   Japanese-NOM speak-POTEN-PRES
           'Ken can speak Japanese.' (Dative subject)
      b.   [Dare-ni   [nihongo-ga   hanas-e-ru]]?
           who-DAT Japanese-NOM speak-POTEN-PRES
           'Who can speak Japanese?'

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VIRTUAL REALITY

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Language tends to be seen primarily as a device for reporting on the nature of the world around us. This view engenders the default assumption that linguistic expressions normally refer directly to actual individuals and actual relationships in which they participate. But to what extent is this really the case? I suggest that departures from the direct description of ACTUALITY are ubiquitous and fundamental in language. Surprisingly much of our linguistic effort goes into the de- scription of VIRTUAL entities, even when our main concern is with actual ones. This is so even under a broad interpretation of what counts as actual. An attempt is made to clarify the actual/virtual dis- tinction by exploring a variety of phenomena involving the direct de- scription of virtual entities.

I would like to consider the following position, which is commonly accepted as a kind of default assumption about language and linguistic expressions:

(1)   A COMMON ASSUMPTION: As a device for reporting on the nature of the world around us, language is used primarily for the direct descrip- tion of events and situations. The principal nominal and relational ele- ments of a clause refer specifically to actual individuals and an actual re- lationship in which they participate.

As it stands, assumption (1) is probably too vague to ever be proven right or wrong. Nor is it clear that any scholar, on serious reflection, would accept it with- out extensive qualification. Still, the variety and prevalence of departures from the direct description of actual relationships and individuals tend, I believe, to be greatly underestimated. It is essential that we be fully aware of the nature and ex- tent of such departures if we desire a realistic assessment of language, cognition, and the mental construction of our world.[*]

I am thus concerned with various kinds of indirectness in the connection between linguistic expressions and the actual individuals and relationships they pertain to. Two major sources of such indirectness will be mentioned here just in passing. The first is IMPLICATURE, where information is obtained indirectly — via pragmatic inference — from what is explicitly stated. In (2a), for instance, speaker B's response allows speaker A to infer that B has not in fact finished the dissertation, although B avoids saying this directly.

(2)   a.   A: Have you finished your dissertation?
            B: Well, I've chosen a topic. [implicature]
      b.   He hung his father on the wall above the fireplace. [metonymy]

The second is METONYMY, where the explicit mention of one entity provides a conceptual REFERENCE POINT serving to evoke the conception of another (Langacker 1993). In (2b), for example, direct mention of the father serves to evoke the conception of the father's portrait, which is the intended referent despite being referred to only indirectly. Both implicature and metonymy are extremely prevalent and contribute greatly to the indirectness of the relation between linguistic expressions and the situations of concern.

The formulation in (1) makes reference to ACTUAL individuals and relationships. My claim is that departures from the direct description of ACTUALITY are ubiquitous and fundamental in language. Surprisingly much of our linguistic effort goes into the description of VIRTUAL entities, even when our main concern is with actual ones. (I will also speak of FICTIVE entities (cf. Talmy 1996). At least for present purposes, the terms virtual and fictive can be used interchangeably.) We must therefore begin with a rough characterization of how the notion of actuality will be understood.

Actuality will be distinguished from notions like 'real world', 'reality', and 'truth'. The actual/virtual contrast can be drawn for any kind of global 'world', whether it be the 'real world' (the default) or a derivative one, like the imagined world of a myth or a novel. Sentences (3a) and (3b) are therefore taken as direct descriptions of actual, albeit mythical, events and individuals. But sentence (3c) is not. As a generic statement, it makes no direct reference to any specific individual or event in actuality. Generics are just one type of expression referring to virtual (as opposed to actual) entities.

(3) a. Adam ate an apple.
       [direct description of an actual, though mythical, event]
    b. Eve eventually exited Eden.
       [direct description of an actual, though mythical, event]
    c. Serpents seldom seem sincere.
       [generic; no actual individual or event directly described]

Actual and virtual entities are thus distinguished within a particular global world, as sketched in Figure 1. I find it helpful to use the metaphor of 'planes' (equivalently, we could speak of 'tiers' or 'mental spaces' (Fauconnier 1985; 1997)). Entities that are not part of actuality are visualized as occupying a VIRTUAL PLANE, which is distinct from the ACTUAL PLANE despite certain correspondences between them. For instance, the serpents referred to in (3c), as well as their infrequent manifestations of sincerity, are located in a virtual plane describing what the world is like in general (independently of any particular individuals or events in actuality). There are numerous kinds of departures from actuality, for which distinct planes may have to be posited. I will refer to any of these as a virtual plane, as well as adopting more specific labels for some of them.
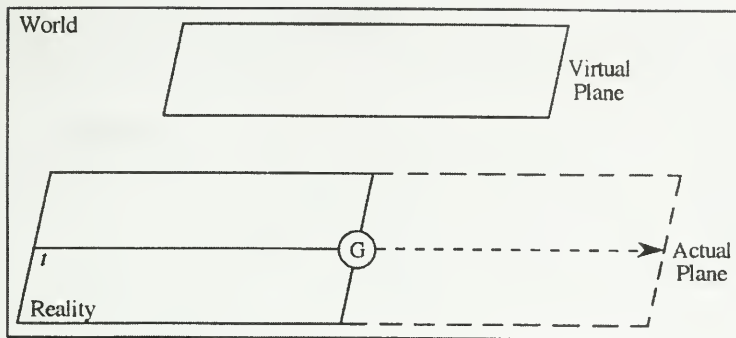
Figure 1.

In a given world, REALITY can be defined as the history of what has happened up through the present, as conceptualized by the speaker (Langacker 1991: ch. 6). Reality evolves through time (*t*), continually 'growing' toward the future as more and more occurs. The term GROUND (G) refers to the actual speech event, its participants, and its immediate circumstances. The ground defines the 'present', being located on the 'leading edge' of reality as it grows with the passage of time. Reality is one facet of actuality, which further includes the 'modal elaborations' of reality, such as the fact (as seen by the speaker) that certain events did not occur, or the likelihood of future events occurring. But even when an actual event is not accepted as real, its reality remains AT ISSUE. In negating a past event we are denying its inclusion among those constituting reality. A modal pertains to the likelihood of reality evolving to encompass the event in question. In either case, the speaker is assessing its status and position vis-à-vis reality.

All the sentences in (4) will thus be regarded as descriptions of actuality:

(4) a. Some unicorns trampled a Martian. [false description of actuality]
    b. She did not recognize him. [actual but non-occurrent event]
    c. They might cancel the soccer match. [actual but only potential]
    d. Joe believes a unicorn bit me. [direct description of belief about actuality]

Actuality is taken as being independent of truth and falsity, as well as negation, tense, and modality. Although the events described in (4a)-(c) are not portrayed as being real, their possible inclusion in reality is precisely what is at issue. I am also willing to speak of actuality in regard to the complements of verbs of propositional attitude, e.g., *believe*, as in (4d). The speaker is of course not asserting that a unicorn bit him, but is only describing a belief held by Joe. Still, that belief pertains to actuality (even if it happens to be false), and the subordinate clause offers a direct description of both the event and its participants.

The distinction between actual and virtual entities should become clearer as we proceed through examples. It is not absolute, and the line might be drawn in

other places. My strategy here is to interpret actuality rather broadly. I hope to show that departures from the direct description of actuality are legion, even with a liberal definition. Though numerous, the types of cases to be considered are anything but exhaustive.

One of the most basic findings of cognitive linguistics is the utter pervasiveness in thought and speech of METAPHOR (Lakoff & Johnson 1980; Turner 1987; Lakoff & Turner 1989), as well as CONCEPTUAL BLENDING (Fauconnier & Turner 1994; Turner & Fauconnier 1995; Coulson 1996), of which metaphor constitutes a special case. In metaphor, a SOURCE DOMAIN is evoked as a basis for conceiving or understanding a TARGET domain. The result of so doing is often a 'hybrid' (Fong 1988) or BLENDED structure that inherits certain properties from both the source and the target. Suppose I metaphorically construe a theory as a building, as in (5). In so doing, I mentally create a hybrid entity that is building-like in certain basic structural respects (Clausner & Croft 1997), yet somehow ethereal or non-substantial. If my theory collapses, I may not be very happy, but I don't have to worry about being struck by a falling beam.

(5)   A THEORY IS A BUILDING: You need to buttress that theory. His theory rests on weak foundations. The framework of the theory is sound. She demolished my theory. Our theory collapsed under the weight of counterevidence.

The relation between the planes depicted in Figure 1, on the one hand, and metaphorical expressions like those in (5), on the other, is as follows. The metaphor itself, as a general pattern of conceptual structuring, does not refer to any particular building or any particular theory, hence it is not part of actuality. It consists of various mappings, or CORRESPONDENCES (represented by dotted lines), between the source domain of buildings (or physical structures more generally — see Grady, Taub, & Morgan 1996; Grady 1997) and the target domain of theories. The primary mapping, the only one shown in Figure 2, identifies a building (B) with a theory (T); at this level, of course, the corresponding entities are types or arbitrary instances, rather than any actual building or theory. Resulting from the source-target correspondences is a blend, one element of which is a hybrid type of entity, given as B/T, combining certain properties of buildings and theories. The metaphor residing in these mappings supports an open-ended set of expressions describing the metaphorical construal of theories in general or of particular theories in actuality.

The sentences in (5) describe actual situations and events involving the soundness and fate of actual theories. The specific theory being referred to in a single example is represented in Figure 2 as t_i. It is not however t_i per se that is conceived as being buttressed, having foundations and a framework, being demolished, or collapsing — such a conception would be anomalous. Rather, these relationships are ascribed to an imagined instance of the hybrid entity type B/T, which renders the conception coherent. This imagined entity b/t_i corresponds to t_i but does not exist in actuality. It is the virtual, fanciful correspondent of a real entity, one that instantiates the metaphor and functions in lieu of the real entity

for purposes of making the metaphorical predication. This predication is thus a VIRTUAL structure evoked to describe a facet of REALITY.
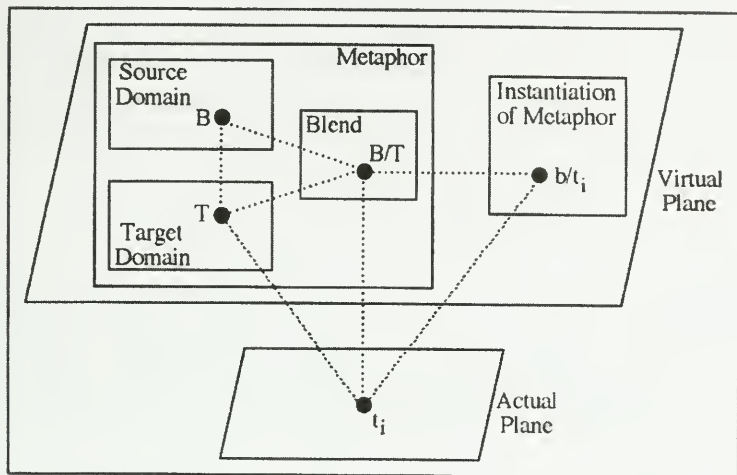

Figure 2.

The essential point here is that metaphorical expressions commonly (perhaps always?) describe the blended, virtual structure, even though an actual situation in the target domain is the one we are ultimately concerned with (Fauconnier 1997: 168-171). Collocations like *demolish...theory* and *theory...collapse* are conceptually coherent in neither the source domain nor the target domain, considered individually. Only in the blended structure where a theory assumes certain building-like properties can such expressions be assembled without semantic incompatibility. We are therefore talking about theories per se only INDIRECTLY — it is the BLEND that these metaphorical expressions refer to DIRECTLY. Only via and in relation to what is said about the blended structure do we draw the intended conclusions about the actual situation in the target domain of theories and their assessment. The blended structure is a kind of virtual representation created in order to indirectly specify something concerning the actual situation of concern.

Many of the phenomena discussed subsequently could also be characterized in terms of metaphor and blending. I will not explicitly present them in that fashion, simply because I want to focus on their virtual nature and the often unnoticed indirectness in what seem like straightforward descriptions of actuality. Still, the ubiquity of metaphor and conceptual blending is already sufficient to show the simplistic nature of the assumption in (1).

Perhaps the most obvious case of non-actuality is VIRTUAL MOTION. Under the alternative labels ABSTRACT MOTION, SUBJECTIVE MOTION, and FICTIVE MOTION, it has been studied extensively by cognitive linguists (Langacker 1986; Matsumoto 1996a; 1996b; 1997; Talmy 1996). Talmy lists quite a number of subtypes, some of which are exemplified in (6).

(6)   a.   That mountain range goes from Mexico to Canada.
       b.   The signpost points toward the town.
       c.   The sun is shining into the cave.
       d.   The pillar cast a shadow against the wall.
       e.   We can be seen by the enemy from where they're positioned.
       f.   I sat in the car and watched the scenery rush past me.
       g.   As I painted, a line of paint spots slowly progressed across the floor.
       h.   The palm trees cluster together around the oasis.
       i.   Termite mounds are scattered all over the plain.
       j.   The bakery is across the street from the bank.

Consider expressions like (6a). The motion verb *go* and prepositional phrases with *from* and *to* are of the sort that would normally be used for an object moving along an extended spatial path through time. Here, however, nothing actually moves. The mountain range is static, despite occurring as the subject of *go*, and no explicit mention is made of any potential mover. In Talmy's terms, there is FICTIVE motion but the FACTIVE situation is one of stasis.

This can be described in various ways. It might be argued that the mountain range is construed metaphorically as moving along a path. Alternatively, one might posit an imaginary mover who traverses a path along the mountain range's expanse. I myself have said that the CONCEPTUALIZER moves SUBJECTIVELY along this path by a process of MENTAL SCANNING. These descriptions are not necessarily incompatible. I believe that all of the factors mentioned are involved, probably to varying degrees in different examples. Metaphorical motion by the subject seems more evident with a different choice of verb, as in (7a). The role of an imagined mover becomes more evident with a different choice of subject, or with other adjustments, as in (7b)-(c). In cases like (7d), both the subject (metaphorically) and another mover traverse the same path. Note further that in all these circumstances the conceptualizer scans mentally along the spatial path in question. In conceiving of some entity moving along a path, the conceptualizer necessarily evokes in sequence the various locations constituting that path, and in so doing moves subjectively along it.

(7)   a. That mountain range {reaches/extends/stretches} from Mexico to Canada.
       b. This highway goes from Mexico to Canada.
       c. The freeway ran along the coast for a while, then entered the mountains.
       d. This road {leads/takes} you directly to the exit — you just have to follow it.

As seen in Figure 3, the conceptual characterization of (6a) has both an actual and a virtual component. In actuality, it PROFILES (i.e., designates) the continuation through time of a stable situation in which the TRAJECTOR (*tr*), the entity coded by the subject, has a spatial extension reaching from Mexico (M) at one extreme to Canada (C) at the other. Enclosed in a box, the profiled relation-

ship continues through a span of time (indicated by a bar along the time arrow) not conceived as being bounded. This unbounded character makes the profiled relationship IMPERFECTIVE (or 'stative'), which enables it to be expressed in the simple present tense (*goes*), even though *go* as a true motion verb is PERFECTIVE and thus requires the progressive for a present-time event (Langacker 1987).
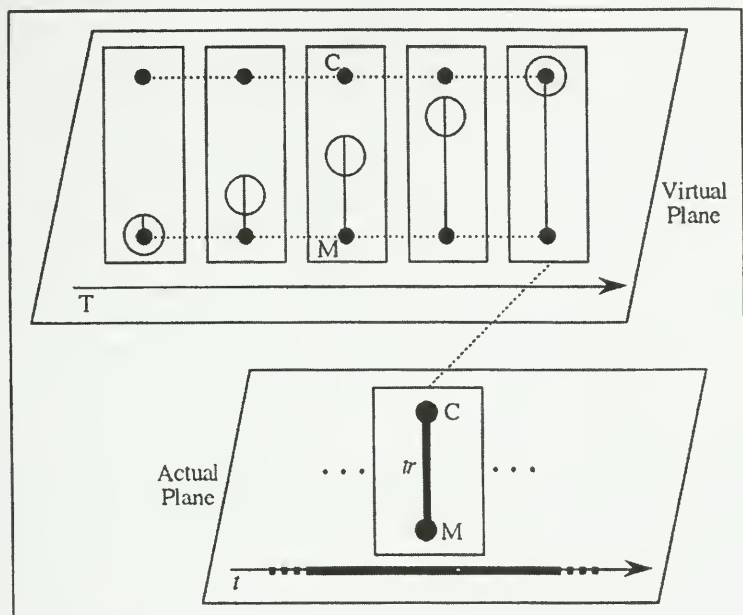

Figure 3.

Hence the situation in actuality determines the basic aspectual categorization of the profiled relationship, with predictable consequences for its tense/aspect marking. Yet virtual motion is also essential to the meaning of (6a); if nothing else, it provides the directionality coded by the prepositional phrases *from Mexico* and *to Canada*. But what is virtual motion? In Figure 3 I have shown it as subjective motion (mental scanning) on the part of the conceptualizer. The arrow labeled T stands for PROCESSING TIME, i.e., time as the MEDIUM of conceptualization (whereas CONCEIVED TIME, *t*, is time as the OBJECT of conceptualization). Through a span of processing time, the conceptualizer builds up to a full conception of the profiled relation by mentally scanning along a path and progressively superimposing all the locations scanned until the full configuration is simultaneously available as a single gestalt (I refer to this as SUMMARY SCANNING). The circles represent the conceptualizer's momentary focus of attention at a given instant, and each focused location brings an additional segment of the trajector (or its spatial extension) into awareness. Observe that the full configuration accessed via this virtual, subjective motion is identified with the single, static configuration in actuality whose continuation through time constitutes the

profiled clausal relationship. The virtual motion, with its dynamicity and inherent directionality, is used to 'build up' the conception of a stable situation. It is this virtual motion, rather than the static situation in actuality, which motivates the use of *go* as well as the path prepositions *from* and *to*.

As noted earlier, the subjective movement just described is compatible with the other ways of interpreting virtual motion, and in fact is immanent in both of them, representing their abstract commonality. Suppose, on the one hand, that (6a) — or another example, like (7b) — is construed in terms of some imagined individual moving objectively (though fictively) along the spatial path in question. Under this interpretation, the circles in Figure 3 can be taken as representing the mover, who successively occupies all the points along the trajector's expanse. (This motion would of course occur through a span of conceived time, but a fictive span of time, not the actual time span through which the profiled relationship is tracked in the actual plane.) Yet, in conceiving of this motion the conceptualizer is inherently directing attention to successive portions of the spatial path, which can thus be summarized to yield the gestalt conception of the full configuration, as before. The notion of an individual moving along the path can be present with varying degrees of cognitive salience. 'Pure' subjective motion as previously described can be regarded as the limiting case in which this notion fades away entirely, leaving the conceptualizer's mental scanning as its only vestige.

On the other hand, suppose (6a) — or perhaps (7a) — is construed in terms of metaphorical motion on the part of the subject. In this case, the virtual plane in Figure 3 can be interpreted as instantiating the blend resulting from the metaphorical mapping (cf. Figure 2). The source domain of the metaphor is the conception of something moving along a spatial path, and its target domain is the conception of a spatially extended object (like a mountain range or a road). Correspondences link the mover, at each instant in its motion along the path, with successive portions of the extended object. The blend that results involves that object moving — or in a summary view, 'growing' — along the spatial path, just as shown in Figure 3.

The different kinds of fictive motion illustrated in (6) all deserve comparable scrutiny, but we need to move on. Virtual motion turns out to be just a special case of the much broader phenomenon of VIRTUAL CHANGE. One kind of virtual change, apparently quite prevalent in Japanese, has been described by Matsumoto 1996c. In contrast to (8), which describes the room's shape directly, (9) does so indirectly, by portraying it as the result of a change.

(8)   Sono   heya   wa   marui.
      the   room   T   round
      'The room is round.'

(9)   Sono   heya   wa   maruku   na-tte   iru.
      the   room   T   round   become-STAT   be.
      'The room is [in the state of having become] round.'

No change has actually occurred in (9). Instead, this resultant state construction describes the departure of the actual situation, where the room is round, from the

ideal or canonical situation, in which a room is rectangular. A fictive event is invoked for purposes of characterizing a static situation in actuality.

Of course, a sentence like (9) is really ambiguous. It could in principle describe the stable situation resulting from the room actually changing shape, from being rectangular to being round. More likely it simply means that the room is round, without implying any change, but in contrast to (8) it nonetheless portrays that situation as a departure from the normal or expected one. The ambiguity can be explicated as a matter of whether the change-of-state process (that of becoming round, in this case) is construed as being actual or virtual.
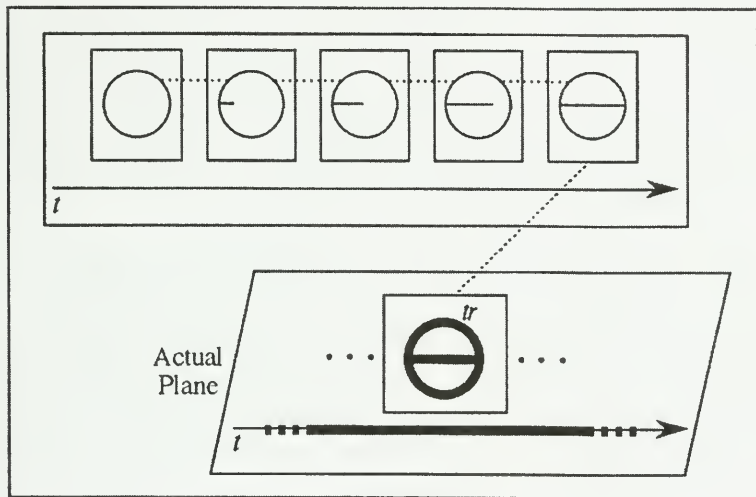
Figure 4.

A change-of-state process is depicted abstractly in the top portion of Figure 4. A circle represents the thing that undergoes the change of state (e.g., a room). The change in state, which can be thought of as a property progressively manifesting itself through time, is represented by a line increasing in length until it fully traverses the circle. The final state of this process — the resultant state in which the property is fully manifest — is identified as the situation in actuality that sentence (9) designates. More precisely, the sentence as a whole profiles the imperfective process wherein this stable situation is followed sequentially in its continuation through time. But if this static situation obtains in actuality, what about the change-of-state process that produces it? No indication is made in the diagram as to whether this process is construed as being actual or virtual. That is where the ambiguity lies. On the one hand, this change can be situated in the actual plane, occupying a span of time prior to that of the profiled imperfective process. This implies that the room really did undergo a change in shape. On the other hand, the change can be a virtual one, invoked to contrast the profiled configuration with the canonical one.

Another kind of virtual change, described by Talmy 1996 and Sweetser 1997, is exemplified in (10).

(10) a.   His newspaper column grew longer every week.
     b.   The trees got shorter at higher altitudes.
     c.   The water got deeper as he swam away from the shore.

Sweetser has noted that the interpretation of expressions like these hinges on whether a nominal expression is construed as referring to a general ROLE or a specific VALUE of that role (in the sense of Fauconnier 1985). At least in this context, values can be identified with actual individuals (or sets of individuals). The individual interpretations are possible in (10) but highly implausible in view of general world knowledge. On the individual reading, *his newspaper column* in (10a) refers to a specific piece of prose that took a long time to finish and was augmented on a weekly basis. In (10b), we can imagine a particular set of trees being transported up the side of a mountain, each one shrinking as it went (for some unexplained reason). If (10c) is taken as describing an actual change (rather than a virtual one), the entire body of water increased in depth (perhaps floodwaters were rushing into a small lake).

More likely, of course, is the role interpretation, where the change described is fictive, or virtual, rather than actual. On this construal, *his newspaper column* does not refer to any actual piece of prose, but rather to an abstract entity — a role — which particular pieces of prose instantiated on particular occasions. No actual column is portrayed as changing in length. Instead, the appearance of change comes about when successive instantiations of the column are compared and observed to differ in length in a way analogous to that of a single piece of prose sampled at different times while being revised and expanded. The change is thus virtual in the sense of emerging from the comparison of different individuals AS IF they were a single individual observed at different times. Similarly, *the trees* in (10b) does not refer to any specific set of woody plants. It is a role description, referring to an aspect of the landscape observable at any given altitude. The virtual change in height is obtained by comparing different values or instantiations of this role. And in (10c), there need be no change at all in the overall body of water or its depth at any one location. Rather, *the water* is a role description referring to the local expanse of water surrounding the swimmer at any given moment. As the swimmer moves, this role is successively instantiated by distinct expanses of water, whose different depths can be perceived as virtual change.

This kind of virtual change is sketched in Figure 5. R stands for a role conception, which of course is a virtual entity rather than an actual individual. The individuals that fill this role at different points in time are given as v_1, v_2, and v_3. In the actual situation being described, each such individual, at the time in question, participates in a certain relationship (shown abstractly as a line connecting it to another entity), e.g., it falls at a certain point on a scale of length, height, or depth. These individual relationships in the actual plain fail to constitute a coherent process of the sort profiled by a clause — where a single relationship, with the same set of participants, is tracked in its evolution through time. Instead there are

different participants at each moment, and it is not the case that one relationship evolves into the next. A coherent process conception emerges only in the virtual plane. It emerges when the actual individuals (v_1, v_2, and v_3), observed at different points in time, are fictively viewed as if they were the same individual, v_i. Because they involve the 'same' participant, one relationship is then seen as evolving into the next, so that the participant is conceived as changing through time. The clause profiles this virtual change.
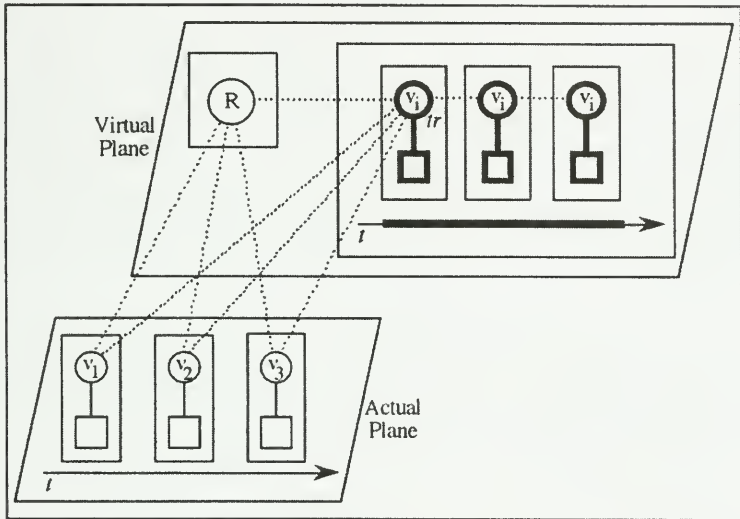
Figure 5.

Note that Figure 5 differs from Figures 3 and 4 in regard to the locus of the PROFILED process, i.e., the relationship that is 'put on stage' and specifically designated by the clause. In these previous diagrams, the status of profile was conferred on an imperfective process in the actual plane. By contrast, in Figure 5 profiling falls on a fictive event in the virtual plane. It is only in the virtual plane that a coherent process emerges at all to be profiled. We will see that the profiling of virtual entities is in fact quite common.

The type of virtual change depicted in Figure 5 tends to be closely associated with actual or virtual motion and the sensory impressions induced in the moving viewer. In (10c), an actual mover is explicitly mentioned. What counts as *the water* is the expanse of water around the mover at a given moment, and since different patches of water can vary in depth, the viewer's actual motion induces the impression that its depth is changing. In (10b) no actual mover is mentioned, but on a non-generic interpretation one is strongly implied. *The trees* refers to a local feature of the landscape observable at any given point in a tacit journey from lower to higher altitudes. An imagined moving viewer seems to be as important in such examples of virtual change as it is in cases of virtual motion like (7b)-(c).

I would go further and say that the conceptualizations evoked as the meanings of linguistic expressions always presuppose a VIEWER (i.e., a conceptualizer) and a VIEWING ARRANGEMENT (Langacker 1995). The viewing arrangement comprises such factors as a VANTAGE POINT, the DOMAIN being viewed (e.g., a 'world' or mental space), and how that domain is MENTALLY ACCESSED. Although the viewing arrangement is only implicit, it provides the foundation for apprehending a given situation. It thereby exerts a strong shaping influence on both the conceptualization and the form of the expression that encodes it.

In the default viewing arrangement, the viewer is the actual speaker (and secondarily, the addressee), the domain is the real world, and the viewer — from a fixed vantage point — describes events and situations in actuality. This canonical arrangement is presupposed in assumption (1). There are, however, many kinds of departure from this canon. Expressions do not necessarily pertain to the real world, nor to actuality within a given world. A vantage point can be adopted other than the speaker's actual one, and domains can be accessed in varied and complex ways.

It should be evident that some of the cases already discussed can be characterized as involving a FICTIVE (or VIRTUAL) VIEWING ARRANGEMENT. A frequent pattern, grounded in our experience as travelers, is for a moving viewer to describe what he sees AS IF he were static (as in the canonical arrangement). This produces the type of fictive motion exemplified in (11):

(11) The telephone poles are rushing by at 80 miles per hour.

Here the speaker is reporting on his actual viewing experience at the moment of speaking. However, he does so with respect to a virtual viewing arrangement in which the speaker is static and the telephone poles are moving, when presumably just the opposite is really the case. In other words, the sentence directly encodes (and reflects in its form) the actual experience engendered by a fictive construal of the speaker's viewing circumstances.

Slightly different is another classic example cited by Talmy 1988:

(12) a.   There was a house every now and then through the valley.
     b.   There is a house every now and then through the valley.

I have varied the tense to bring out two subtly different construals. But with either tense, the sentence looks like it ought to be semantically and grammatically incoherent. It uses the adverbial phrase *every now and then* with respect to the existence of a house, but a house is not something whose existence flashes on and off like a light bulb. The adverb *through the valley* is even more problematic, since it describes a spatial path, but nothing overtly specified in the sentence is conceived or portrayed as moving.

Yet the expressions are immediately and unproblematically understood. They merely presuppose a non-standard viewing arrangement involving a moving viewer, and describe the viewing experience thereby engendered. At a given

moment a person's field of view subtends only a circumscribed portion of the surrounding world, and as a person travels along a spatial path, the field of view moves along with him, subtending a different portion of the world at each moment. From the vantage point of a moving viewer, the existence of a house within the portion of the world currently being viewed is something that happens *every now and then*. Likewise, the adverb *through the valley* describes the path of the viewer (and the field of view), rather than anything explicitly mentioned. The semantic and grammatical coherence of these expressions is critically dependent on a viewer and viewing arrangement that are not directly mentioned.

Sentence (12a), with past tense, favors the construal in which the viewing experience was that of the actual speaker, on a prior journey. Its virtuality is limited to the fact that it describes the speaker's visual impressions (what appeared in the field of view, at what intervals) rather than describing the valley directly and objectively, in its own terms. By contrast, (12b), with present tense, favors a quasi-generic construal not based on any particular journey or any specific viewer. In generalized terms it describes what the valley is like, but it nevertheless does so from the perspective of a viewer traversing it. That viewer is simply not identified with any specific or actual individual. The viewer, the viewing experience, and the journey are virtual rather than actual.

Previous examples of fictive motion and fictive change were also seen as evoking an actual or virtual moving viewer. In (10), for instance, the past tense favored an interpretation involving an actual viewer. Once again, shifting to present tense induces a quasi-generic construal involving a generalized, virtual viewer, coded by *you* in (13a) but implicit in (13b):

(13) a.   The water gets deeper as you swim away from the shore.
     b.   The trees get shorter at higher altitudes.

These sentences describe an actual situation as it would present itself to any moving viewer at any time. The motion, the viewing, and the change they engender are all virtual, yet they provide a way of mentally accessing a facet of reality.

Once we depart from actual motion by an actual viewer, we are no longer tied to the spatial domain and the perception of physical entities. Many kinds of expressions appear to invoke a tacit virtual viewer whose movement through time or some other abstract domain provides a way of mentally accessing it. Although we cannot examine them here, the examples in (14) may hint at their range and variety. (For *still* and *already*, see Michaelis 1991; 1993; 1996.)

(14) a.   The years are going by awfully fast. [cf. (11)]
     b.   From moment to moment the crowd became more restless.
     c.   His condition progressively worsened from one day to the next.
     d.   Prices vary greatly from one restaurant to the next.
     e.   Quality improves in the higher price ranges.
     f.   As body size increases, the typical gestation period gets longer.
     g.   Through the ages there have been many great leaders.
     h.   Going down the list, every conceivable option seems worse than the last.

  i. Don't mention calculus — elementary algebra is already too advanced for him.

  j. He's not as bad as Gingrich, but Helms is still way too liberal for me.

  We have so far observed fictivity with respect to both the situation described and the implicit way of viewing it. In a more speculative vein, I suggest that we might also posit VIRTUAL SPEECH ACTS, i.e., fictivity at the level of illocutionary force. I characterize a conventional speech-act value as residing in a SCHEMATIZED INTERACTIVE FRAME, abstracted from specific speech events in the same way as any other kind of linguistic unit. These frames make schematic reference to the speaker and hearer, to an utterance, to relevant facets of the context, and to such factors as the intent of the interlocutors and the assessment of each interlocutor concerning the intent and previous knowledge of the other. For example, the frame for assertion embraces such notions as the speaker's intent to establish a proposition in a certain mental space (in particular, some conception of reality), canonically for the purpose of inducing the hearer to accept it as part of that space. A substantial inventory of conventional frames are presumably available for speakers to use in actual discourse. When such a frame is used, an appropriate clause is plugged into it and the whole complex is activated in the context of the actual speech situation. Aspects of the situation thus instantiate the frame's schematic specifications (e.g., the actual speaker and hearer instantiate the schematic roles of speaker and hearer).

  In a fictive speech act, the speaker in some sense pretends to employ the interactive frame but does not fully identify its elements with those of the actual interaction constituting the ground. Instead, the entire complex (frame plus clause) is embedded in another interactive frame that IS identified with the ground and specifies the actual nature of the intended interaction. We often do this for irony, as in (15):

  (15) a. That was a brilliant move. [in response to something obviously stupid]

     b. He will finish his dissertation on time. And I will be elected pope.

Here the speaker only pretends to make an assertion. By making its content the opposite of what is manifestly true, or coordinating it with another apparent assertion that is blatantly false, he signals that his actual intent is not to induce the hearer to accept the proposition as true, but merely to put it on stage for examination. The supposition, of course, is that its patent falsity will make it evident how silly it would be to even consider asserting it in actuality. The examples in (16) illustrate another familiar pattern:

  (16) a. Who needs that car? [= 'Nobody needs that car.']

     b. Why should he tell the truth? [= 'He has no reason to tell the truth.']

Here the speaker only pretends to ask a question. The actual interactive intent is not to elicit an answer from the hearer, but to render evident the impossibility of providing a truthful answer that satisfies the question's existential presupposi-

tion. A virtual act of questioning is incorporated as part of a higher-level interactive frame with a different projected outcome. The relation between the expression and the actual interaction envisaged is only indirect.

A basic point emerging from the discussion thus far is that an expression's overt content — what it directly and explicitly mentions — is only one facet of the elaborate conceptualization that constitutes its meaning. The overtly mentioned elements are apprehended in terms of an implicit viewing arrangement, and this entire conceptual complex is embedded in a tacit interactive frame. These implicit layers of conceptualization are essential ingredients of an expression's semantic value and play a major role in shaping its form. Moreover, structures at any level — content, viewing arrangement, interaction — can be virtual rather than actual.

I would next like to consider the English present tense. Elsewhere (1987: 82) I have argued for the following, 'naive' characterization of the English present:

(17) PRESENT TENSE: A full instantiation of the profiled process occurs
      and precisely coincides with the time of speaking.

I still believe that characterization to be valid. However, it does require a certain amount of clarification and reinterpretation (which various discussions with Mariko Higuchi Goto have helped me arrive at). It turns out that virtual entities are crucial to understanding the English present tense.

It is a truism of modern linguistics that the English 'present' is not a real present tense marker in the sense of indicating that an event occurs right now, at the time of speaking. Two considerations make this seem quite evident. First, the simple present cannot be used for perfective verbs; to indicate the occurrence right now of a perfective process, the progressive has to be employed:

(18) a.   *She does her homework right now.
      b.   She is doing her homework right now.

Second, the present is commonly used for events that do not occur at the moment of speaking. Some representative cases are the 'scheduled future', 'stage directions', and 'timeless' statements of general validity:

(19) a.   Our plane leaves at noon.
      b.   Hamlet moves to center stage. He pulls out his dagger. He ex-
            amines it.
      c.   A wombat is a marsupial.

I suggest, however, that this truism is in fact false, and that the naive characterization — properly understood — is the correct one.

It should first be noted that the naive characterization provides an explanation for why present tense perfectives are normally bad. A perfective process is bounded, and a full instantiation of such a process includes its endpoints, i.e., the profiled relationship is tracked from beginning to end in its evolution through time. Thus, for a perfective process to precisely coincide with the time of speak-

ing, its initiation has to coincide with the onset of the speech event, and their completion must also be coincident. This poses both a DURATIONAL problem and an EPISTEMIC one. The durational problem is that there is no inherent connection between the length of the event described and the length of the speech event describing it, e.g., it takes longer to do one's homework than to utter (18)(a). The epistemic problem is that one has to observe an event in order to identify it as a prerequisite to describing it. But by the time an event is observed and identified, it is already too late to initiate a speech event that precisely coincides with it. These problems do not arise with present-tense imperfectives, since imperfectives (including progressives) are 'mass-like', so that any portion of the overall process counts as a full instantiation of the process type. So given an ongoing, already identified imperfective process, that portion of it which coincides with the time of speaking counts as valid instance, as required by (17).

These characterizations are sketched in Figure 6(a)-(b). Observe that the present-tense perfective configuration is conceptually coherent. The problem with present-tense perfectives is simply that, owing to the durational and epistemic problems, this configuration normally cannot arise.
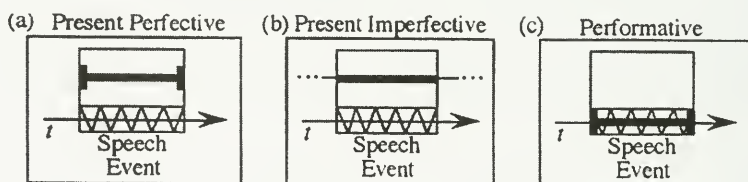
Figure 6.

A systematic exception to the non-occurrence of present-time perfectives is PERFORMATIVE sentences:

(20) a.   I order you to destroy those files!
      b.   I promise to give up smoking.
      c.   I hereby pronounce you husband and wife.

This exception is predicted by (17): since a performative sentence is one that designates the very speech act effected by its utterance, the profiled process and the speech event temporally coincide as a matter of definition. This configuration is shown in Figure 6(c). Moreover, the epistemic problem fails to arise because the actor is none other than the speaker, who acts with prior intention.

We see, then, that the naive characterization in (17) explains a lot, even as it stands. In particular, it explains the acceptability of present-time imperfectives, the general non-acceptability of present-time perfectives, and the exceptionality of performatives in this regard. But what about all the cases, like (19), where the event does not occur at the moment of speaking? The answer, in brief, is that the occurrence of the event in question may be a VIRTUAL OCCURRENCE involving a special VIEWING ARRANGEMENT. In the context of the presupposed viewing

arrangement, the event's virtual occurrence DOES coincide with the time of speaking.

Consider first the use of the present in play-by-play descriptions of sporting events and the like, as in (21):

(21) Jordan passes to Pippin. He pulls up and shoots. The ball rims out. Rodman grabs the rebound.

The clauses are perfective and are employed for the description of actual events, as they occur. In using the present tense, the announcer purports to be describing each event coincident with its occurrence. Now we know that, in the strictest sense, the events and their description cannot coincide exactly, owing to the durational and epistemic problems already discussed. I suggest, however, that the conventions of the play-by-play mode of speech include the FICTION of simultaneous description. We construe the descriptive statements in terms of a virtual viewing arrangement such that the announcer can indeed make them coincide with the profiled events. It just happens that the kinds of events reported have approximately the right duration for the fiction of exact coincidence to seem plausible. Moreover, owing to anticipation as well as the stereotyped nature of sporting events, the time-lag in reporting them may in fact be quite short. The events are actual, but the viewing reflected in their linguistic encoding contains an element of fictivity.

When we turn to other kinds of examples, involving other virtual viewing arrangements, the events themselves have a fictive character. My basic proposal is that the expressions in question relate only indirectly to actuality, even in cases like (19a), *Our plane leaves at noon*, describing the specific departure of a specific plane. I suggest that what the sentence directly describes is not the actual event per se, but rather a REPRESENTATION of that event on some kind of VIRTUAL SCHEDULE, some kind of plan or projection concerning the anticipated occurrence and timing of events in future actuality. To support the notion that something like a schedule is involved, we can observe that the 'scheduled future' strongly favors the inclusion of a time expression, and is infelicitous for events not amenable to scheduling or planning:

(22) a.   My sister arrives next week.
      b.   ??My sister arrives.
      c.   ??An earthquake strikes in a month.

Moreover, in some instances the speaker may be alluding to an actual schedule, perhaps embodied physically:

(23) See, there it is on the screen — our plane leaves at noon from gate 74.

It is nonetheless the virtual schedule, a mental representation of anticipated events and their timing, that is crucial for the scheduled future.

Although a virtual schedule pertains to future actuality, its own status and temporal location are another matter. If a plan is in effect, the schedule itself is stable and mentally accessible through an indefinite span of time that includes the

present. The schedule contains VIRTUAL EVENTS, which are representations of anticipated actual events. Moreover, the span of time through which each virtual event is conceived as unfolding is identified with a particular time in future actuality, as shown in Figure 7. But the events CONSTITUTING the schedule are only virtual.
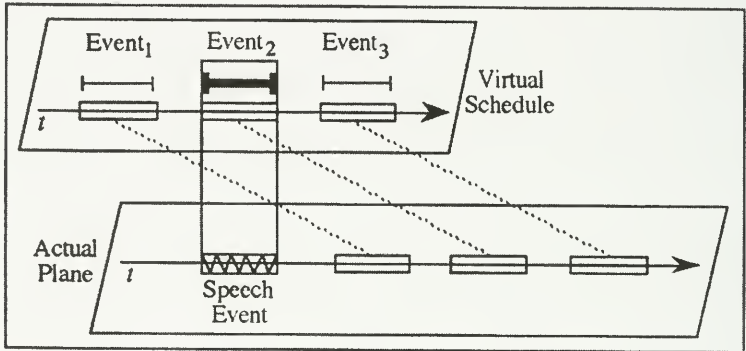

Figure 7.

The virtual schedule can be thought of metaphorically as a 'document' available to be 'read' at any time. In producing a sentence like (22a), the speaker is essentially reading off one of its entries. Reading an entry amounts to the VIRTUAL OCCURRENCE of the event it comprises, and since that event is profiled by the sentence produced, a (virtual) occurrence of the profiled process precisely coincides with the time of speaking. Use of the present tense thus conforms to the characterization in (17), provided that one takes into account the special viewing arrangement in which the speaker is 'reading' aloud from a virtual schedule. In that context, where all the events are virtual, they occur in the sense of being read, and the reading is necessarily coincident with the speech event.

Note that the durational and epistemic problems do not arise in this context. The event's occurrence is only virtual, a matter of the conceptualizer mentally running through it in reading the schedule, so its mental duration can always be made to coincide with the time of speaking. The speaker can also scan the schedule and examine an entry before reading it aloud, thus avoiding the epistemic problem. In fact, the durational and epistemic problems are not intrinsic to present tense or perfectives per se, but can rather be seen as inhering in the default-case viewing arrangement. They arise in the canonical arrangement where the speaker is reporting on real events as they actually occur. In this situation, an event's duration is the duration of its actual occurrence; it is thus determined by its inherent nature and is usually not subject to speaker control. Likewise, since the speaker is merely reporting, not running the show, he has to observe an event in order to identify and then describe it, hence the epistemic problem. In other viewing arrangements, especially involving the virtual plane, the duration and unpredictability of real-world events may be irrelevant.

A performative does describe a real event with a specific duration, but due to its special properties — identification with the speech event, and the speaker's intentionality — it inherently avoids the durational and epistemic problems. We can also imagine other viewing arrangements where actual events are being reported as they occur but the problems fail to come up because the speaker controls their choice and duration. Suppose two children are playing with toy cars in a model village. One child enacts certain events and describes them as she does so. Thus, even though she is pretending, the enactments themselves are actual physical occurrences. In this context the following is perfectly acceptable:

(24) I drive to work. Now I drive to the store. Now I drive home.

With each sentence, the girl pushes her car along the path indicated. Each actual event temporally coincides with the speech event describing it. The present tense is applicable because, in this special situation, the speaker knows what event she intends to make happen and controls the duration of its actual occurrence.

I believe that numerous 'special' uses of the present tense in English presuppose non-standard viewing arrangements involving the virtual occurrence of events. This is perhaps most obvious in the case of stage directions, as in (19b) [*Hamlet moves to center stage. He pulls out his dagger. He examines it.*]. Here there is very likely to be a physical document, the play's script, that is literally being read. It is nonetheless the virtual document, comprising a sequence of virtual events, that is crucial. This virtual document is available for reading at any time, and when it is read, each event in turn enjoys a virtual occurrence residing in the reader's apprehension of the sentence describing it. We can even go one step further by observing that an author, in writing a play, is drafting the stage directions for a VIRTUAL READER (as opposed to any actual one).

What about 'timeless' statements, like (19c) [*A wombat is a marsupial*]? Akin to generics, such expressions are not direct descriptions of actual events or situations. No particular wombat, nor any particular marsupial, is being referred to. Perhaps we can think metaphorically in terms of a document listing supposed eternal truths or scientific findings about the world's general nature (as opposed to specific events occurring within that framework). In any case, we can plausibly regard the profiled relationships as being inscribed on some kind of virtual document describing what the world is like in general. The present tense reflects the virtual reading of inscriptions, hence the virtual occurrence of the designated processes coincident with the time of speaking.

The relationships profiled by such expressions inhabit what I will call the STRUCTURAL PLANE. This term is inspired by Goldsmith & Woisetschlaeger 1982, who distinguish between 'structural' and 'phenomenal' knowledge: '... The "structural/phenomenal" distinction...corresponds to two rather different types of knowledge about the world...One may describe the world in either of two ways: by describing what things happen in the world, or by describing how the world is made that such things may happen in it' (80). Structural knowledge is general knowledge about how the world 'works', whereas phenomenal knowledge pertains to the specifics of what actually happens within that stable

framework. Their structural/phenomenal distinction corresponds to the one made here between the structural and actual planes.

That brings us to generic expressions, our initial brush with virtuality (recall (3c)). There are various kinds of generic expressions, whose properties are quite significantly different — I am not at all sure they constitute a coherent natural class. Since I have discussed them at some length elsewere (1996b; 1997), I will briefly consider just a single type, namely a singular generic, such as (25):

(25) A cat plays with a mouse it has caught.

Obviously, no actual cat is being referred to, nor any actual mouse. The nominals in (25) designate VIRTUAL INSTANCES of the cat and mouse categories, i.e., instances 'conjured up' just for the purpose of making a general statement about the world's structure. (In other works I have used the term AR-BITRARY INSTANCE for what may be the same notion.) The act of playing with a mouse profiled in (25) is also a virtual instance of that process type. Since the structural plane is a representation of general and stable aspects of the world's structure, a process represented there projects to indefinitely many actual occurrences that instantiate it, involving particular times, places, and participants. This is sketched in Figure 8 (the LANDMARK, labeled *lm*, is the participant coded by the object in a relational expression). But what a generic sentence profiles (and thus directly describes) is a virtual event in the structural plane. The profiled process is an entry in a virtual document available to be read at any time. It does pertain to actuality, but only indirectly, via the relationship that the structural plane bears to the actual one.
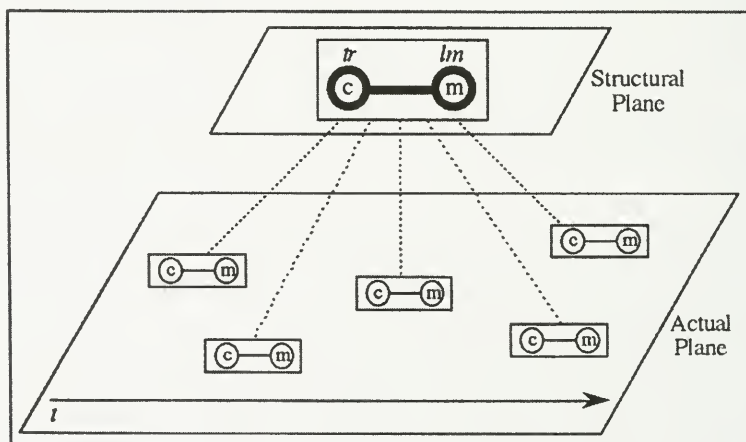
Figure 8.

In effect, the virtual event profiled in Figure 8 functions as a TYPE SPECIFICATION capturing what is common to an open-ended set of instantiations in actuality. More generally, a TYPE (as opposed to an INSTANCE of a type) is a kind of virtual entity, whether it occupies the structural plane — and thus describes a stable aspect of the world — or is instead created to make a local gener-

alization about what happens within that framework. Although the type/instance distinction is not absolute, and involves numerous subtleties that we cannot explore here (see Langacker 1991: 2.2), it should be evident that a type per se does not belong to actuality. We can think of a type specification as the abstracted commonality of its instances. As such it lies outside the actual plane, where multiple instances may occur that are distinguished from one another by their spatiotemporal location. Any number of such instances can project to the same type specification, which I will characterize as belonging to a TYPE PLANE, as shown in Figure 9.
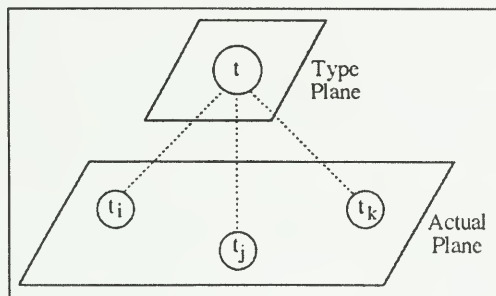
Figure 9.

When used by itself, without any kind of determiner, a noun stem merely specifies a type. An example is a noun like *cat*, used alone as the first element of a compound such as *cat-lover*. Thus no specific cat is singled out in (26a), nor is there any indication of how many cats might be involved. In such cases the noun profiles the virtual entity represented in the type plane.

(26) a.   Jenny is a CAT-lover.
     b.   Jenny loves THIS CAT.

On the other hand, a full noun phrase with a determiner profiles an instance of the type specified by the head noun. In (26b), *this cat* profiles a particular instantiation of *cat* in the actual plane (e.g., t_j in Figure 9). We have seen previously that either actual or virtual entities can be profiled.

Importantly, however, not all instances of a type are actual instances — we also have to posit virtual (or arbitrary) instances. For example, a singular generic like (25), *A cat plays with a mouse it has caught*, designates virtual instances of the *cat* and *mouse* types. As shown in Figure 8, these instances are 'conjured up' as part of an entry in a virtual document describing a facet of the world's structure. Given the purpose of this virtual document, these instances in the structural plane project to an indefinite number of instances in the actual plane. Furthermore, an actual instance of a type can be incorporated as part of some other type description. For example, habitual sentences like (27) are structural statements indirectly describing the multiple instantiation of a process type characterized in terms of specific individuals (*my cat* and *that bird*). Since events in the structural plane are generalizations pertaining to actuality, when appropriate they can incorporate reference to actual individuals.

(27) My cat stalks that bird every morning.

It is not generally realized how frequently we refer to types rather than individuals, even in expressions clearly intended as pertaining to actuality. We can see this in the contrast between (28a) and (b), which can perfectly well be used to describe precisely same sequence of actual events.

(28) a.   Three times, students asked dumb questions.
      b.   Three times, a student asked a dumb question.

They can both be used, for example, if there were exactly three actual events of questioning, each involving a single student (a different one each time) and a single question (also different each time).

The first sentence is a fairly direct description of actuality. It profiles a complex process comprising three actual instances of the process type STUDENT ASK DUMB QUESTION. Since multiple students and multiple questions are involved, the subject and object are plural. By contrast, (28b) is used to describe actuality but refers to it only indirectly. Observe that the clausal portion, *a student asked a dumb question*, occurs with a singular subject and object, even though three students and three questions are assumed to be involved. It therefore does not directly refer to the actual event sequence. Rather, as shown in Figure 10, it profiles the process type A STUDENT ASKED A DUMB QUESTION, which all three actual events instantiate. The student and question are instances of their respective thing types (since they are expressed by full noun phrases, with determiners), but only virtual instances that are conjured up for purposes of specifying a type of process. In effect, therefore, a two-step strategy is employed to convey information about what transpired in the actual plane: the clause itself describes a virtual process, functioning as a type description, and the adverb *three times* specifies its mapping into actuality (how often it was actually instantiated).
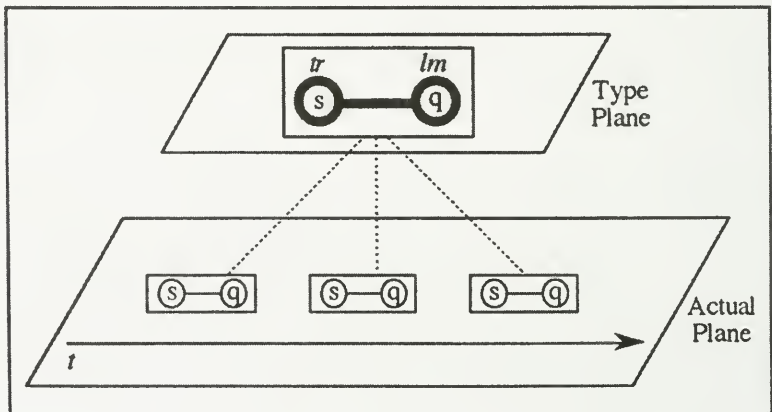

Figure 10.

A similar constrast is observed in (29):

(29) a.   The witnesses all raised their right hands.
     b.   The witnesses all raised their right hand.

Both sentences can be interpreted as describing a complex event in which each witness raised his own right hand. Sentence (29a) directly describes this complex event in actuality, in the manner of (28a). Hence the subject, possessor, and direct object all occur in the plural. The subject and the (coreferential) possessor are also plural in (29b), but the object is singular (*right hand*), even though multiple hands are involved. I take this as illustrating a little noted but very common situation: it frequently happens that portions of a clause directly describe the actual plane while other portions describe it only indirectly, by naming a type specification instantiated in actuality (these portions can even be intermingled — see Langacker 1996a). In (29b), most of the clause lexicalizes the complex event in the actual plane, but *right hand* ascends to the type level and codes something common to the component events.

This phenomenon is important for the understanding of quantifiers and quantifier scope. For example, (30a) is ambiguous. It may be the simple, direct description of an actual event in which the three boys collectively lifted a single chair, so that only one instance of lifting occurred. But it could also describe a complex occurrence in which each boy individually lifted a different chair. On this latter interpretation, the predicate encodes the type specification X LIFTED A CHAIR, whereas the subject refers directly to three actual boys, each of whom carries out an instance of that process type. Observe that no specific chair is mentioned — the object nominal *a chair* designates a virtual instance of the category, conjured up just to make a type specification. Though it corresponds to several chairs in actuality, this virtual chair itself is only found in the type plane.

(30) a.   The three boys lifted a chair.
     b.   Three boys lifted two chairs.

The characterization of QUANTIFIER SCOPE is now straightforward. Consider (30b), on the usual interpretation where *three* has WIDE SCOPE and *two* has NARROW SCOPE. That is, *three* has *two* IN ITS SCOPE. In terms of our analysis, a quantifier Q_1 has another quantifier Q_2 in its scope when Q_2 is part of a type description ascribed to the set quantified by Q_1 (Langacker 1991:3.3). In (30b), the quantifier *two* is incorporated as part of the type description BOY LIFTED TWO CHAIRS, and an instance of this process type is ascribed to each member of the set *three boys*.

This analysis is diagrammed in Figure 11. The type plane makes reference to the process type BOY LIFTED TWO CHAIRS. At this level, the boy and the chairs are only virtual — no particular boy is singled out, nor any particular chairs. Three instances of this process type are however found in actuality, as well as three boys, each of whom carries out an instance of the process. Looking at (30b), we find that different portions of this sentence refer directly to entities found in different planes. The subject *three boys* pertains to actuality: it is only at this level that multiple boys are found. By contrast, the predicate *lifted two chairs* pertains

to the type level. It is only at this level that the number of chairs involved is two — in the actual plane, it can be as many as six. Although the sentence does pertain to actual events affecting up to six actual chairs, those events and those chairs are not mentioned directly. They are introduced only indirectly, via a type description and the ascription of an instance of that type to each member of a set of three actual boys.
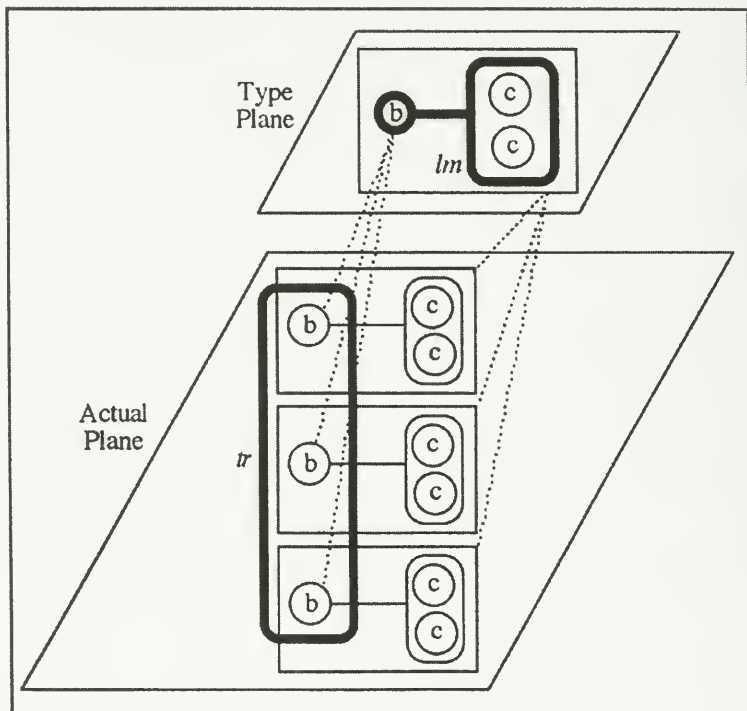

Figure 11.

This has only been a sample of the many kinds of virtual entities encountered in natural language. Once you start looking for fictivity in language, you find it everywhere. BOUNDARIES are often virtual, for example, including those that delimit the bounded entities profiled by count nouns (Langacker 1987). There need be nothing at all that objectively delimits the spatial expanse designated by a noun like *region*, *place*, *area*, *location*, *center*, *middle*, or *proximity*. We nonetheless IMPOSE a boundary to create a VIRTUALLY BOUNDED entity. It might also be suggested that any kind of norm, ideal, or expectation is a virtual entity, and that any departure from it constitutes a VIRTUAL CHANGE. In saying that something is *rough*, *crooked*, *sloping*, *limp*, or *dirty* we implicitly compare it to an imagined counterpart that is *smooth*, *straight*, *level*, *stiff*, or *clean*. Can we reasonably claim that the conception of something *sloping*, for instance, derives by mental rotation from a fictive situation in which it is level?

At this point I have no definite idea of how far it is useful to push the notion of fictivity. In any case I do not expect to find any clear-cut delimitation. It is more important to work on characterizing each phenomenon in its own terms, with as much precision and detail as possible. We can then hope to isolate an optimal set of descriptive notions, which will make it evident to what extent and in what specific ways the various phenomena are related to one another.

Should we go all the way and say that everything is fictive? Since our entire conceptual world is in some sense a mental construction, should we not just admit that the only kind of reality we have access to is VIRTUAL REALITY? I will leave that to philosophers. From the linguistic standpoint, however, the question is not very interesting. Even if we answer in the affirmative, and say that our entire mental world is fictive at some level, it remains true that various aspects of it are fictive in different ways and to different degrees. We still face the problem of sorting all this out, of characterizing the full spectrum of situations: those we naively accept as being real, those we explicitly acknowledge as being imaginary, those involving virtual entities not necessarily recognized as such, and so on.

I want to conclude by emphasizing that cognitive linguists firmly believe in reality, however much they talk about mental constructs and fictive entities. Its basic philosophical stance is EXPERIENTIAL REALISM (Lakoff & Johnson 1980; Lakoff 1987), and one of its central notions is EMBODIMENT (Johnson 1987). There IS a real world. Unavoidably, we inhabit it. As a species, we have EVOLVED to cope with it successfully. As individuals, we DEVELOP to cope with it successfully. Our existence and interaction with the world is grounded in our bodies. Our brains are physical organs embedded in our bodies, and our minds reside in the activity of our brains. All facets of the mental worlds we construct derive ultimately from our embodied experience as physical creatures in the real world. A primary goal of cognitive linguistics is to spell out the details of how this happens.

I therefore have no intention of denying the existence of reality or the foundational nature of real world experience. It makes no sense to speak of virtual entities except in relation to the actual entities of which they are fictive counterparts. It is nevertheless essential to arrive at an accurate evaluation of the role played by virtual entities in thought and language. I have argued that their role is far more extensive and important than is usually recognized. The view of language stated in (1) is to some extent fictitious and needs to be replaced by a more balanced and realistic assessment.

NOTES

[*]This paper first appeared in Shin Ja Hwang and Arle Lommel (eds.), *LACUS Forum XXV*. It is reprinted with permission.

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SAME BUT DIFFERENT

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Six ways are surveyed in which a single phonological stem can correspond to material with different syntactic distributions, meanings, or uses: synchronically unsystematic identities of stems for different lexemes; three types of systematic grammatical relationships (zero derivation, alternative subcategories, and systematic subsenses); and two types of systematic extragrammatical relationships (extragrammatical conventions of use and nonconventional pure coercion).

The impetus for this brief note[1] was the claim, by Charles Fillmore and Paul Kay, in a manuscript draft,[2] that various uses of the same stem in different syntactic contexts result from zero derivations, 'phonologically vacuous constructions of derivational morphology' (a.k.a. conversions). The relationships in question include those between the a and b examples below.

- (1) a. She threw a rock.
  b. She threw me a rock.

- (2) a. Ann opened a can of peas.
  b. Ann opened Bob a can of peas.

- (3) a. The top spun.
  b. Nell spun the top.

- (4) a. Nell spun the top.
  b. Nell spun the top off the table.

My goal in this note is not to decide whether such claims are true, or even to muse about them.[3] I have the much more modest aim of trying to enumerate the ways in which 'same phonology, different synsem'[4] can come about: material which corresponds to stems with the same phonological makeup (P), but which has different syntactic distributions, meanings, or uses (S1, S2). There are at least six different cases, Types 0 through 5 below.[5]

An Exclusion

Type 0. PHENOMENA TO EXCLUDE. I put aside relationships between S1 and S2 that are not systematic. The unsystematic examples include those where the morphology indicates no special relationship (permission ALLOW in *Sandy allowed them to go* and speech-report ALLOW in *Sandy grudgingly allowed that they had gone*) and those where it does (activity DO in *Yes, I did it* and supportive DO in *I DID think that was odd*, which share their extraordinary morphology).

These pairs involve clearly different lexemes, but the lexemes share phonology (and sometimes morphology as well). I would imagine that some speakers treat them as quite unrelated, while other speakers perceive some sort of relationship. But, in any case, there are not parallel relationships running across many different examples. In all of the remaining types there are; these are the types I'm really concerned with.

Grammatical Relationships

At least three types of systematic relationships are, it seems to me, pretty clearly matters of grammar.

Type 1. ZERO DERIVATION. In this type, the relationship between S1 and S2 is a relationship between the syntax/semantics of distinct lexemes – just as in everyday (non-zero) derivation, except that the corresponding phonological properties, P1 and P2, are identical.

As an example, consider the relationship between manner-of-speaking verbs (WHINE, SCREAM, WHISPER, etc.) and the corresponding nouns (Zwicky 1971): *Kim whined mournfully*; *Kim gave a mournful whine*. This example is clearly 'category changing', but nothing I know of would require that zero derivation involve distinct major categories. So the relationships between the a and b verbs in (1) through (4) are candidates for classification as zero derivation – as a matter of rules of grammar (of morphology, in particular) relating pairs of lexemes (that is, relating their phonological, morphological, morphosyntactic, syntactic, and semantic properties).

Type 2. ALTERNATIVE SUBCATEGORIES. An intuition many linguists have had – an intuition I tend to share – is that the lexeme GIVE in *I gave a book to Terry* is the same as the one in *I gave Terry a book*: same phonology, morphology, major syntactic category, and semantics. Nevertheless, the two are instances of somewhat different syntactic subcategories (each corresponding to a syntactic construction in which the lexeme can serve as head). That is, among the syntactic properties of this lexeme are the two: (1) eligible to be head in construction 51 (TO-dative) and (2) eligible to be head in construction 52 (double NP object).

(I'm not proposing a system of representation here. All I care about is that properties (1) and (2) can somehow be associated with the lexeme GIVE. This can be achieved by brute force – listing subcat(head, 51) and subcat(head, 52) among the properties of GIVE – or by predicting (1) and (2), by general principles, from the semantics of GIVE, or by something in between.)

If the GIVE example seems unconvincing to you, there are plenty of uncontroversial examples. The English auxiliaries, for example, are all verbs that are eligible to be head in a number of distinct constructions: clausal negation realized as an inflectional property of the head V (*I won't do it*), clausal negation realized by *not* located after the head V (*I will not do it*), ellipsis of a complement after the head V (*I said I'd do it, and I will*), etc. We don't want to say that *must* in *You*

mustn't touch that, You must not touch that, I don't have to touch that, but you must, etc. are instances of different lexemes.

The a and b examples in (1) through (4) above are excellent candidates for analysis as the same verb lexeme (THROW, OPEN, SPIN, and SPIN, respectively) with two different subcategorizations. The intuition behind this analysis is that the verbs have the same meanings in the a and b sentences, with any semantic differences contributed by the constructions themselves.

Type 3. SYSTEMATIC SUBSENSES. Type 1 above is homonymy. This case is polysemy, in which more specific senses exist alongside a general sense, or extended senses alongside a more specific one. So, alongside the general 'transfer' sense of GIVE and SEND, there is a more specific 'donation' sense in *We gave/sent $100 to the church* (in which the recipient is some sort of institution or cause); and alongside the general 'travel' sense of SAIL and FLY (*Tied up by the kidnapers, I sailed/flew across the lake*), there is a more specific agentive sense in *I skillfully sailed/flew across the lake*.

There are two problems here. One is the notorious difficulty of distinguishing homonymy from polysemy. The other is the question of to what extent these general/specific relationships are systematic. On the latter point: it is typical for there to be some number of items exhibiting both senses, but for there to be otherwise parallel items that occur only in the general sense (HAND; TRAVEL) and still others that occur only in the specific sense (DONATE; DRIVE). So there is some question as to whether there are systematic relationships here at all. If there are, the existence of lexical exceptions of various kinds would seem to demonstrate that the relationships are to be described by rules of grammar, of some sort (and of some sort different from derivational rules – though possibly they could express relationships between alternative subcategorizations).

It's possible that the a and b examples in (1) through (4) are to be analyzed as involving a more general subsense in the a examples and a more specific one in the b examples (where their meanings would be compatible with the more complex semantics of the surrounding constructions).

Extragrammatical Relationships

Type 4. (EXTRAGRAMMATICAL) CONVENTIONS OF USE. This much is grammar. But not everything that's conventional within a speech community is a matter of grammar. There can be systematic, but extragrammatical, conventions of use. The point was made clearly by Morgan 1978 with respect to indirect speech acts, by Nunberg 1978 with respect to metonymies, by Ferguson 1982, 1983 and Culy 1996 with respect to specialized registers, by Zwicky 1986 with respect to poetic forms, and by Zwicky & Pullum 1987 with respect to various sorts of playful, expressive, and concealing forms of language. The extensive literature on systematic metaphors can be read as making the same point, and a study of conventions of quotation, naming, numeral systems, and many other phenomena would supply still more examples.

One candidate for this status is a metonymy discussed by Nunberg, whereby a phrase referring to some salient accompaniment of an individual can be used to refer to that individual, as in the waiter's comment *Now the fries wants a Coke too*. I don't think we want to say that there is some derivational rule of English that converts inflected nouns to base nouns. My guess is that it's conventional – Sadock tells me that parallel metonymies in Greenlandic Eskimo are just impossible – but it seems pretty clear to me that it's not derivation or alternative subcategorization, if for no other reason than that the conversion is of entire NPs to constituents with the syntax and semantics of proper names.

Distinguishing extragrammatical conventions from derivational rules can be quite tricky. The literature on transfers between count and mass (for nouns) and the various aspectual categories (for verbs) is quite unclear on just this point, and Michaelis 1999, at least, has worried about just these cases. Just where do we classify the conversions of mass nouns to count nouns of type or measure (*one beer* 'one type of beer' or 'one serving of beer')? These seem conventional – the possible interpretations of the resulting expressions are very much constrained – but are they matters of grammar (zero derivation, or possibly alternative subcategorization), or extragrammatical conventions?

The opposite conversions, of count nouns to mass nouns of material (*There was a lot of dog on the road, ugh*), seem to many English speakers to be truly creative uses of the existing material of the language – that is, instances of the next type.

Type 5. PURE COERCION. Here, speakers slot material of one type into contexts where it has to be understood in a (literally) unconventional way, if it's to be understood at all. This is where the verb *weird* of *Verbing weirds language* (from a Calvin and Hobbes cartoon) goes. And, possibly, my verb *Chinese* in *I Chinesed a lot of vegetables for dinner*. English has (as yet) no productive rule of zero derivation that would convert these adjectives into verbs. But if you do it on the fly, and the context supports it, you'll be understood as conveying 'make weird' and 'cook in the Chinese fashion', respectively. The adjectives *weird* and *Chinese* are (adapting Pustejovsky's 1995 term) 'coerced' into verbhood or (using Talmy's 1988 vocabulary) 'implicity converted' into verbs.[6]

These purely coercive uses of words do occur, with some frequency; they're one of the types of 'poetic' language in everyday behavior.

Such uses are creative, from the point of view of the speakers, and noticeable, from the point of view of those who hear them. Closely related are coinages that creatively violate rules of derivational morphology (the famous *uncola*), the use of mentioned bound morphemes (or even just word-parts) as free-standing words (*ism* has managed to make it into the American Heritage Dictionary by this route), and nonsense-word creation. Rather more distantly related are novel metaphors and nonconventionalized indirect speech acts (remarking *It's cold* in an attempt to get someone to close the window, for instance). The domain of resourceful language use is a huge and varied territory.

Again, drawing the analytic line is difficult. What starts out as pure coercion can become extragrammatical convention, if enough people do it. And an extragrammatical convention can be reinterpreted as a rule of grammar, if enough people do it often enough; that would be an instance of *grammaticalization* in the sense of 'becoming grammatical (rather than extragrammatical)', not in its usual sense of 'becoming grammatical/functional (rather than concrete/lexical)'.

I assume that the actual status of particular phenomena at any given time in any given speech community can roam all over this map. Different speakers might have different systems; the systems of individual speakers might change over time; particular speakers might allow both creative and conventionalized formations with similar surface forms; and so on. There's absolutely no reason to think that everyone has to have the same system. All they have to do is mostly understand one another most of the time, which leaves a lot of room for many different coexisting systems, so long as the pronunciation/use pairings are roughly comparable.

NOTES

[1] Not the text of my Forum Lecture at the 1999 Linguistic Institute, but an exploratory note on a few issues raised in that lecture. The dedication of the lecture remains: to my colleague and friend Charles Ferguson.

[2] Fillmore & Kay themselves attribute this approach to unpublished work by Orhan Orgun and Jean-Pierre Koenig. The relevant data are some of them staples of the syntactic literature; others are more recent, from Jackendoff 1990 and Goldberg 1995, in particular.

[3] Don't tax Fillmore & Kay with anything you see here; they might well have changed their minds about how to analyze these phenomena.

[4] Where 'synsem' is adopted from HPSG (Pollard & Sag 1994).

[5] I want to make it clear that this is not just logic-splitting. I really believe that a good account of language structure and use should have a place for all of these, and that they should be treated as distinct – even if particular instances might be hard to place.

[6] I'm not suggesting that either Pustejovsky or Talmy uses these terms for exactly the phenomena I'm discussing here.

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WHAT PEOPLE KNOW ABOUT SOUNDS OF LANGUAGE

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Generative phonology has the goal of developing a comprehensive and predictive model of implicit knowledge of sound structure. In this paper, I review the nature and import of the discoveries about implicit knowledge which were made possible by modern methods for gathering experimental data and for analyzing large data sets. First, it is known that languages differ in extremely fine phonetic detail. These systematic differences are learned by speakers and represent part of their implicit knowledge. Second, knowledge of phonological grammar gradiently reflects the frequencies of patterns in the lexicon. Third, knowledge of morphophonological alternations reflects the frequencies of word relations in the lexicon. These findings point to a model of phonology in which gradient phonetic resources are organized and exploited by languages in their lexical inventories, and the phonological grammar arises as generalizations over the lexicon.

0. Introduction

A central goal of generative linguistics is to describe and explain the implicit knowledge of language. Implicit knowledge is implicit because it is not generally accessible to conscious introspection. It is a form of knowledge because it encapsulates in some form the general principles of language which are evidenced by a speaker's ability to produce and understand language fluently and productively.

Implicit knowledge of language sound structure (that is, of phonology and phonetics) is reflected in the speaker's ability to understand novel utterances in real time, to produce novel phrases with native allophonic details, to evaluate the well-formedness of neologisms, to assimilate loan words to native sound patterns, and to extend the vocabulary through new morphological collocations. In the early days of generative linguistics, limited data sets on all of these fronts led to theoretical proposals which all shared two key assumptions, though they differed in many other respects. First, implicit knowledge of sound structure is viewed as a grammar (in the sense of formal language theory) consisting of a reasonably small number of categories and a logic for combining these categories into well-formed wholes. In a highly simplified model, the categories of a language are phonemes. A grammar specifies how the phonemes may be combined into well-formed syllables, and a word is viewed as a sequence of one or more syllables. In more sophisticated views, distinctive features rather than phonemes are the most elementary building blocks of sound structure; regularities at other prosodic levels such as the foot and the intonation phrase also

contribute to well-formedness; and morphophonological alternations are also described in grammatical terms.

A second key assumption is that the relationship between outputs of the phonological grammar to physical properties of the speech signal lies outside of implicit phonological knowledge proper, being instead describable as a universal — language-independent — interface. A particularly clear statement of this assumption is found in Chomsky & Lasnik's 1995 synopsis of the Minimalist Program. In the Minimalist framework , the level of representation PF ('Phonetic Form') is characterized as symbolic, universal, and supporting a uniform interface to the sensorimotor system (Chomsky 1995:21). Discussion in Chomsky 1993 reiterates that characterizing PF means discovering what objects have a uniform language-independent interpretation. He states 'We must spell out explicitly what are the legitimate objects at PF and LF. At PF, this is the problem of universal phonetics'. (Chomsky 1993: 26-7). In taking this stand, Chomsky reiterates the position of Chomsky & Halle 1968.

In this talk, I will show how these two key assumptions must yield in face of the large- scale data sets which can now be analyzed using modern technology and experimental methods. These data sets — which differ more in scale than in kind from the data sets traditionally analyzed — display general patterns which any model of implicit knowledge of language must account for. Specifically, they demonstrate the existence of language-specific phonetic patterns down to extremely fine levels of detail, most naturally described using continuous mathematics rather than an inventory of phonetic categories such as the IPA. Second, they demonstrate that implicit knowledge of both phonotactics and morphophonological alternations is stochastic rather than purely grammatical. Both of these findings come together in a picture in which language patterns are learned through statistical generalizations over numerous examples.

1.   Phonetic detail

As speech workstations have become more and more widespread, more and more comparative studies of phonetic implementation have been published. A very large literature now permits a definitive assessment of the claim that universal phonetics is a critical characteristic of the human capability for language. In this section, I present only a few highlights of this literature.

Bradlow 1995 describes a comparative study of English and Spanish vowels. Target vowels were located in the the most comparable consonantal and prosodic contexts possible. Formant measures of even point vowels differed systematically, with English /i/ being more high and front than Spanish /i/ while Spanish /u/ is more close to cardinal /u/ than English /u/ is. Bradlow provides clear arguments that these differences cannot be explained by overall differences in vocal tract size between her English subjects and her Spanish subjects, so they must instead reflect learned details of pronunciation.

VOT (voice onset time) of stops provides one of the stronger candidates for a universal system of phonetic categories. As described in Keating's 1984 cross-linguistic survey of stops, three qualitatively different outcomes are provided by prevoiced stops (stops with negative VOT values), short-lag stops (voiceless unaspirated stops) and long-lag stops (voiceless aspirated stops). In a language such as French, the phonologically critical

boundary is that between prevoiced stops and short-lag stops. For word-initial stops of English, the critical boundary is between long-lag stops and short-lag stops. So-called voiced stops of English can surface phonetically as either voiceless unaspirated or as prevoiced stops.

The existence of these qualitative patterns is not enough, however, to support the kind of universal uniform phonetic interface that Chomsky & Lasnik specify. If a uniform phonetic interface really existed, the outcomes would be identical not just qualitatively, but even quantitatively. In fact, the exact extent of prevoicing and aspiration differs across languages. Differences are found both in the distribution of values in analogous prosodic positions and in the way that values are affected by prosodic and segmental context. All of these details have been learned by anyone who is perceived to have a native accent in a language. An example is provided by Caramazza & Yeni-Komshian's 1974 study of voice onset time in European French, Canadian French, and Canadian English. Their data on European French and Canadian English correspond to the patterns generally reported. The distribution of values for Canadian French, however, matched neither the European French pattern nor the Canadian English pattern. For /p/, the VOT values of Canadian French speakers fell into the voiceless unaspirated range of European French, but for /b/, the Canadian French speakers had more tokens with zero to small positive VOT values, and fewer examples of large negative VOT values than did the European French speakers. This means that the combined distribution of VOT values for /b/ and /p/ is more concentrated towards the middle of the total available range in Canadian French than in European French or Canadian English.

A comparison of French and English also shows that the exact extent of contextually induced allophony is language-specific, even when the allophonic effect in question is broadly analogous across languages. Flege & Hillenbrand 1986 collected production and perception data on durational reflexes of the post-vocalic /s/-/z/ distinction. In the English word *peas*, the vowel is longer and the fricative is shorter than in the word *peace*. These durational differences are sometimes reported to be universal, and provide effective cues in speech perception to the phonological category of the final fricative. Flege & Hillenbrand showed that French speakers have the same kind of durational differences as English speakers but that the exact quantitative character of these differences is not the same. In English, the extent of vowel lengthening before voiced obstruents is greater than in French. In French, the length of the fricative itself carries more of the information about voicing status than in English. The results of a perception test on a *peace/peas* stimulus set mirrors these differences. For the same stimulus set, English speakers rely more on the vowel duration and French speakers rely more on the duration of frication in categorizing the stimulus.

Turning to the domain of tone and intonation, a comparison of results on English from Liberman & Pierrehumbert 1984 with results on Japanese in Pierrehumbert & Beckman 1988 also reveals language-specific principles of phonetic implementation. Both English and Japanese have phrase final L% boundary tones in the default declarative phrasal intonation. This L% is temporally aligned at the very edge of the phrase after the last accent. When Liberman & Pierrehumbert asked subjects to produce declarative patterns in many different overall voice levels, they found that the L% achieved a fixed value for each speaker regardless of the (considerable) effect of voice level on any preceding H tone. They

hypothesized that the floor of the speaker's voice is a physiologically determined parameter of the phonetic system (the baseline) and that implementation rule for L% realizes the tone on the baseline. A comparable experimental paradigm for Tokyo Japanese yielded contrasting results, according to Pierrehumbert & Beckman. The L% did not exhibit a fixed realization for each speaker. Instead, its f0 value was a cumulative function of the overall pitch range and the occurrence of downstep-inducing accents earlier in the same phrase. Thus, the L% in Tokyo Japanese appears to be realized in relation to the preceding H level rather than in an invariant position. Pierrehumbert & Beckman also discuss differences between Tokyo and Osaka Japanese, by which the same underlying phonological tonal sequences turn out differently because of systematic differences in L tone scaling.

I would like to take a strong stand on phonetic implementation at this point. The studies I have mentioned are not isolated examples. On the contrary, I believe that every thorough study which has looked for a difference between two languages in details of phonetic implementation has found one. These differences concern both detailed outcomes for analogous phonemes in the most analogous available positions, and — to an even greater extent — principles of allophonic variation in context. As a result of these findings, the level of representation posited in Chomsky & Lasnik is not a scientific possibility at this point. Not only do some phonological entities fail to meet the conditions they lay out, there is no known case of a phonological entity which does meet these conditions. To explain the extremely detailed but extremely systematic patterns which characterize the native phonetics of any language, it is necessary to posit learning mechanisms which can aquire quantitative distributions of phonetic outcomes. These mechanisms form part of the human endowment for language. A key feature of such mechanisms is that they acquire patterns by generalizing statistically over many examples. As we will see in the next sections, this same feature is also found at more abstract levels of description.

2.   Phonotactics

A central concept in generative phonology is that of the 'possible word'. In an introductory phonology course, the instructor may introduce the entire subject matter by pointing out that any native speaker of English can judge a form such as *blick* to be a possible word of English — even though it does not happen to exist in the current English lexicon — whereas *bnick* is not judged to be a possible word. In the theoretical treatment, *blick* is possible because it is a wellformed combination of well-formed subparts, but *bnick* is not possible because it contains an onset cluster which does not exist in English. In constructing the specifics of such a theory, two lines of evidence are brought into convergence. One is the intuitive well-formedness judgments of native speakers. The other is the existence of systematic gaps in the lexicon. The fact that no words at all begin in /bn/, although many other sequences of obstruents and sonorants are found, provides evidence that /bn/ is a systematic gap to which the phonological theory is accountable.

The idea of a systematic gap already brings us to the realization that phonotactic constraints are generalizations over what exists (and what doesn't exist) in the lexicon. In this section, I first discuss evidence that such generalizations are stochastic rather than purely categorical. Then, I will draw a connection between well-formedness judgments and these lexical statistics, showing that they are highly related.

The calculations presented in Pierrehumbert 1994 provide an inventory of phonological patterns which differs only in scale, and not in kind, from the data in a traditional phonology problem set. The study concerns the inventory of long medial clusters (containing three or more consonants) within monomorphemic words. Examples of words containing such clusters include *velcro* and *doldrums*. The number of attested clusters is remarkably small and it is easy to make up nonsense forms involving long medial clusters which anyone would judge to be impossible except as a compound. A particular theoretical challenge is posed by the fact that many of the missing long clusters contain only subsequences which are well-formed under any reasonable syllabic parse. For example, the hypothetical word *pelskra* contains a medial sequence whose well-formedness is supported by words such as *else, ascii, screw,* and *crow*. A standard model — in which words are made up of syllables — would predict that any medial cluster containing an allowable coda followed by an allowable onset would be possible, modulo word-level constraints on the syllable contact.

The analysis in Pierrehumbert 1994 is based on a complete inventory of medial clusters of three or more consonants contained in the on-line Collins dictionary distributed by the Linguistics Data Consortium; this dictionary is a very large one, containing about 70,000 words. Words with long clusters were extracted automatically and the monomorphemic words were identified by individual scrutiny. A rather generous definition of monomorphemicity was used, including words such as *constrain* and *abstract* which are probably not synchronically decomposed by average speakers. This list of occurring clusters was compared to the list of clusters which would be generated as the crossproduct of allowable codas and allowable onsets. The expected likelihood of each complex cluster was estimated as the likelihood of the random combination of the coda and onset, given their rates of occurrence as word onsets or codas of final syllables (with appendices stripped off). This extremely crude method of estimating the likelihoods nonetheless led to a surprising conclusion.

More than 8700 medial clusters arise from the crossproduct. Only about 40 are found, and these are almost all in the most likely 200. Within the most likely 200, the percentage of candidate clusters that actually occur peaks at 47% (for the top 40 candidates) and dwindles steadily thereafter. Overall, probability was the single most successful predictor by far of whether a complex cluster will occur or not, eliminating more than 8500 candidates. A standard nonstochastic model would need to rule out these numerous and diverse cases through a battery of constraints which would miss the main generalization, which is so straightforward it is almost tautological. If a cluster is too unlikely to occur in the 70,000 item sample which represents an adult vocabulary, then it probably will not occur. This overarching generalization provides a straightforward argument that probabilities are inside the grammar.

Turning now to well-formedness judgments, a experiment described in Treiman et al. 2000 demonstrates a connection between these judgments and the statistics of the lexicon. Through computations over an on-line dictionary, Treiman et al. identified pairs of VC combinations (V1 C1 versus V2 C2) which could be transformed into less frequent, but still attested, combinations by switching the consonants (e.g. V1 C2 and V2 C1). By constructing monosyllabic nonsense words involving these combinations, they were able to control strictly for phoneme frequency and determine whether subjects had implicit knowl-

edge of the collocational frequencies. Results of both well-formedness judgments and performance on a blending task revealed that subjects did indeed treat the higher frequency combinations as better than lower frequency combinations.

Since the experimental design in Treiman et al. involves only a two way comparison, the nature of the function relating lexical statistics to wellformedness is not mapped out. A systematic exploration of nasal-obstruent clusters (NO clusters) is presented in Hay et al. (forthcoming). These clusters were selected both because they span the range rather evenly from impossible to extremely frequent. Although linguistic texts may undertake to describe the patterns using a nasal homorganic rule which requires the nasal to agree with a following obstruent in place of articulation, the situation is actually far more complicated. Lexical statistics show that this requirement is stronger for stops than for fricatives. Among nasal-fricative combinations, the inhomorganic /nf/ is actually more likely than the homorganic /mf/. Three series of nonsense words were constructed which varied only in the medial NO cluster. (e.g. *strinty, strinsy, strimpy*, etc.; *zanter, zanser, zamper*, etc; *krenter, krenser, kremper*, etc.). The same large range of NO clusters was used in all series. None of these words had a real word imbedded at the beginning, though it is impossible to avoid medially embedded words (e.g. *imp, ant*). Recordings of the words were generated by cross-splicing syllables recorded in homorganic environments.

Subjects transcribed and rated each nonsense word. Both the transcription data and the rating data showed gradient effects of lexical frequency. In the transcription data, subjects showed a tendency to misperceive infrequent clusters as acoustically similar but more frequent ones. For example, /np/ is often misheard as /mp/. However, infrequent clusters were often transcribed correctly. The wellformedness judgments then proved to be a linear function of the statistically best morphological parse. For example, for *strinpy*, the best morphological parse is one which imputes a word boundary between the /n/ and /p/; the rating of such a (compound) form depends on the likelihood of /n/ as a word-final coda and /p/ as a word beginning. For *strinty*, the best morphological parse is as a monomorphemic word, and the perceived wellformedness reflects the frequency of /nt/ as a medial cluster in a monomorpheme. The relationship of likelihood to perceived well-formedness appeared to be linear.

In summary, then, including pattern statistics inside the grammar allows us to capture generalizations about systematic gaps in the lexicon, and to make predictions about possible and impossible words. Experiments indicate that well-formedness judgments are gradiently related to lexical statistics. Implicit knowledge of lexical statistics is also demonstrated by its impact on morphological parsing, speech perception, and performance on creative tasks such as word blending.

3. Morphophonological alternations

Phonotactic and prosodic constraints represent generalizations over words which describe the relative well-formedness of potential word shapes. As such, they do not cover one of the main areas of phonological investigation, namely the morphophonological alternations which arise in words related to each other through affixation or other morphological processes. For example, *serenity* and *seronity* are both perfectly well-formed as potential English words; prosodic and phonotactic theory does not in any way specify that *serenity* is

a complex form related to *serene*, whereas *seronity* is not. Relations such as these are the centerpiece of classical generative phonology, going back to Chomsky a Halle 1968.

A basic point to note about such phenomenona is that they are relations amongst words. Insofar as they are general and productive, we have evidence for implicit knowledge of relationships amongst things, a higher level of abstraction than mere implicit knowledge of things. Having moved one level up, however, we find that experimental results support exactly the same sort of observations that we just made about lower levels of description.

A pioneering paper in this area is Cena 1978, who explored the psychological reality of the vowel shift rule proposed in Chomsky & Halle 1968 using a concept generalization paradigm. He found that vowel shifting is most readily extended for the more frequent vowel pairings than for the least frequent pairing (the *profound/profundity* pairing, for which only 6 examples exist). The possible intrusion of orthographic factors make this result difficult to interpret, however. A more clearcut finding resulted from Bybee & Pardo's 1981 experimental study of verb paradigms in Spanish. They found that Spanish subjects extend to novel verbs the inflectional patterns which are attested for numerous real verbs, but not ones attested only for a few high-frequency verbs. Thus, what matters is the number of different examples of the alternation in the lexicon, and not the token frequency of the actual forms. This supports the idea that morphophonological processes are generalizations over entries in the lexicon. Further support for this viewpoint may be adduced from Marchman & Bates 1994 finding that English speaking children begin to use overregularized past tense forms (such as *teached*) at the time at which they have acquired a critical number of different regular past tense forms.

A clever experimental study described in Ohala & Ohala 1987 brings together results on a number of different morphophonological alternations. The stimuli in this experiment were 20 word pairs exemplifying fairly commmon alternations (such as *particle/particular*, *substance/substantial*) and 20 words pairs representing isolated patterns (such as *thumb/thimble*, *strong/stringent*, and *slay/slaughter*). 16 subjects provided three ratings for each pair on a five-point scale. They rated phonetic similarity, semantic relatedness, and derivational relatedness, where the concept of derivational relatedness was operationalized by asking how likely the words were to have a common historical ancestor. Phonetic similarity did not prove to be a predictor of derivational relatedness in this study, possibly because the range of variation in this parameter was not sufficiently great or because it was not possible to control it well enough given the many other constraints on the stimulus set. Derivational relatedness was strongly predicted by semantic relatedness. But the derivational relatedness scores differed depending on whether the alternation in question was common or isolated; for the same degree of semantic relatedness, derivational relatedness was about one point higher for common pairings than for isolated ones. Thus, we see that the number of different examples of a word relationship influences the extent to which it is cognitively real.

If morphophonological alternations are relationships amongst words, and if their cognitive status critical depends on the number of examples of the relationship in the lexicon, it follows that there should be considerable individual differences in this area of phonology. Different people have different vocabularies, due to differences in upbringing,

work environment, and verbal ability. Many morphophonological alternations that have occupied linguists are attested mainly in low frequency words, which a given speaker may or may not have learned. This prediction, though possibly unwelcome to some phonologists, is borne out in two important studies.

A careful and ingenious experiment described in McCawley 1986 explores the status of the English Vowel Shift. The stimuli in this study were pairs of morphological related words, such as *serene/serenity*, *explode/explosion* and *rot/rotten*, and a control set of unrelated words of comparable phonological similarity, such as *bone/bonnet*, *lie/light*, and *mouse/mustard*. The morphologically related words included word pairs exemplifying Chomsky & Halle's 1968 vowel shift rule, word pairs exhibiting an anti-vowel-shift relationship (such as *peace/pacify*), and baseline pairs in which the vowel was identical in the two words, such as *rot/rotten*. Subjects judged the semantic relatedness of the words in each pair and also whether the putative base was 'contained in' the longer form. The data analysis concentrates on words with reasonably high semantic relatedness, because in the absence of such relatedness speakers do not judge the shorter form to be contained in the longer one. The morphological relatedness is measured by the 'contained in' judgments.

McCawley takes the Vowel Shift rule to be psychologically real if the pairs exhibiting this relationship had morphological relatedness scores comparable to pairs with identical vowels. In this case, he argues, the difference in vowel quality is fully transparent and therefore the pairing of the vowels is fully active. This was the case for the majority group of his subjects. For a minority group, the morphological relatedness was significantly less for vowel shift pairs than for pairs with identical vowels. The combined data set is strongly bimodal, indicative of a situation in which some people have the rule and others do not. Since McCawley's subjects were University of Chicago undergraduates, who generally display a high level of verbal ability, we would not necessarily expect the proportion of vowel-shifters in the general population to be as large. The existence of two modes in the distribution, however, strongly confirms the prediction of individual variation in the morphophonological part of grammar.

Lastly, I'd like to present an experimental study by Steriade 2000 which both furthers the point of this section and connects it to the starting point of this paper. Steriade investigated the alternation between aspirated /t/ and tap in English. This alternation is regular in word pairs such as *platonic/Plato*. In *platonic*, the /t/ begins a stressed syllable and is aspirated. In *Plato*, the /t/ is in post-stress position (intervocalic between a stressed vowel and an unstressed one), and it is tapped in fluent speech. (It may of course be aspirated in the most hyperarticulated or corrective possible pronunciations in which the second syllable is not fully unstressed). In post-post-stress position, however, tapping is variable. In a word such as *positive*, the /t/ may or may not be tapped in fluent speech.

Steriade assessed patterns of tapping for twelve subjects. The experimental word pairs in the study were morphologically related pairs in which /t/ occurred in post-post-stress position in both words. An example is *positive/positivistic*. Control pairs had the /t/ in the obligatory tapping environment, e.g., *rotary/rotaristic*. Steriade found that subjects varied considerably in which experimental words they produced with taps. However, 11 out of twelve subjects had identical tapping within every word pair.

This result brings us back to the beginning of the paper, in that it shows systematicity in a area of fine phonetic detail. The nature of this systematicity — allophonic effects specific to members of a morphological family — cannot be captured by a model with uniform, universal phonetic implementation rules. Indeed, the result goes beyond those previously presented by demonstrating a pattern specific not just to a language, but to words within language. It also ties in with the present section by illustrating again individual variation in relations amongst words. Even an apparently low-level alternation — namely tapping — appears to be organized cognitively in terms of relations amongst words, and in consequence it exhibits individual variation.

4. Conclusion

In conclusion, then, languages can differ systematically in arbitrarily fine phonetic detail. This means we do not want to think about universal phonetic categories, but rather about universal phonetic resources which are organized and harnessed by the cognitive system. Water is a physical resource. It is used in different ways in different cultures. A desert culture may transport water in jars and develop a custom of using water to wash feet in a ritual of welcome or deference. Americans move water in pipes and hoses and have developed a ritual of using it to wash cars. The vowel space — a continuous physical space rendered useful by the connection it establishes between articulation and perception — is also a physical resource. Cultures differ in the way they divide up and use this physical resource.

Learning of fine phonetic detail requires the ability to form statistical generalizations over large classes of speech tokens. The ability to form statistical generalizations is recapitulated at higher levels. Phonotactic constraints arise as statistical generalizations over the lexicon, and lexical statistics are gradiently reflected in well-formedness judgments. The knowledge of morphophonological alternations similarly reflects the frequency of word relations in the lexicon.

These findings all point towards a theory in which gradient phonetic resources are organized and exploited by languages in their lexical inventories, and the phonological grammar arises as generalizations over the lexicon.

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REVIEW ARTICLE

Christina Y. Bethin. *Slavic Prosody: Language Change and Phonological Theory.* (Cambridge Studies in Linguistics, 86.) New York: Cambridge University Press, 1998. Pp. xvi + 349. Price: $69.95. ISBN 0521591481.

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Professor Bethin's ambitious and challenging book has a chapter titled 'The syllable in Slavic: form and function' (12-111), one titled 'Beyond the syllable: prominence relations' (112-87), and a miscellany titled 'Theoretical considerations' (188-265). They are preceded by a preface and introduction (xii-11) and followed by end notes (266-301) and an imposing list of references (302-46). The Slavic of her title includes Proto-Slavic (up to the middle of our first millennium), Common Slavic (6th-8th centuries), and Late Common Slavic (9th-12th centuries).

Chapter 1 is concerned with the development of diphthongal syllable rhymes. Displaying an encyclopedic knowledge of the Slavistic literature, Bethin reviews the history of how oral, nasal, and liquid diphthongs were monophthongized, recasting it in the framework of autosegmental phonology. These syllable rhymes, she argues, were shaped by the interplay of various constraints on syllable structure.

'Proto-Slavic had a front/back, a high/nonhigh, and a long/short opposition in vowels', quite traditionally begins the section titled 'Monophthongization' (39). These features defined a square system with four vowels: [+high, -back] *i*, [+high, +back] *u*, [-high, -back] ε, and [-high, +back] $\mathfrak{o}$. Bethin and many other Slavists use the more familiar symbols *e*, *o*, and *a* for the nonhigh vowels, but I find ε and $\mathfrak{o}$ useful as a reminder that Proto-Slavic fused PIE *o and *a into a single nonhigh back vowel and so converted the inherited triangular system with three degrees of opening to a square system with two. The vowels being also long, they included [+high, -back] *ii*, [+high, +back] *uu*, [-high, -back] $\varepsilon\varepsilon$, and [-high, +back] $\mathfrak{o}\mathfrak{o}$. Bethin uses a feature representation for long vowels (*ī, ū,* etc.), but for discussing monophthongization I find a geminate representation more convenient.[1]

Still in traditional terms, Bethin continues: 'There were oral diphthongs (*ɛi, ɛu, ɔi, ɔu*), nasal diphthongs (*in, im, ɛn, ɛm, un, um, ɔn, ɔm*), and eight liquid diphthongs (*il, ir, ul, ur, ɛl, ɛr, ɔl, ɔr*)'. (I have substituted my vowel symbols for hers.) But as we read on we become aware of the author's ambivalence on the subject of diphthongs. A diphthong is commonly understood to be two sonorants in the same syllable nucleus; for example, monosyllabic E *proud* consists of an

onset *pr*, a diphthongal nucleus *ou*, and a coda *d*. A Proto-Slavic example would be the last syllable of **kɔ.zi.lɛnt* 'kid' (nom. sg.; I mark syllable boundaries with '.'), which comes down to us as OCS *kozĭlę*. The derivation of the nasal vowel *ę* from *ɛnt* is traditionally related to the Law of Open Syllables and the Law of Rising Sonority, two laws that Bethin would supercede with her contraints-based approach. The former may be said to account for the loss of the syllable-final obstruent, *lɛnt > lɛn*, the latter for the monophthongization of *lɛn* to *-lę*. Bethin would relate the loss of the syllable-final obstruent to what she calls the Moraic Constraint ('Syllables must end in a moraic segment', 28) and the monophthongization of *lɛn* to *-lę* to a No Coda Constraint ('Syllables do not have codas', 39). But the reason intermediate *lɛn* ended in a moraic segment, i.e., a sonorant, is that the nonmoraic segment, i.e., the obstruent, had been lost. As for the monophthongization of *lɛn*, this syllable being already codaless, it shouldn't have been affected by a No Coda Constraint.

But my equating moraicity with sonority may be wrong. Bethin writes that nasal sonorants when they occurred in syllable codas could be nonmoraic. Her example is the infinitive form **uu.zim.tɛi* 'to take up', which yields OCS *vŭzęti*. She explains: '[W]hen nonmoraic nasals occurred in the syllable coda, they constituted violations of the emerging Moraic Constraint in Proto-Slavic. So the nasal acquired a mora, creating a diphthong' (44). In the preceding section dealing with oral diphthongs, Bethin claims that even *i* and *u* could constitute the coda of a syllable,[2] e.g., in **snɔi.gɔs* 'snow' and **tɔu.rɔs* 'bull' (OCS *snĕgŭ, turŭ*), and that subsequently there was a 'mov[e of] the sonorant coda into a mora-bearing position in accordance with the Moraic Constraint'. Even after we correct the obvious keyboarding error and read '... in accordance with the No Coda Constraint' (43), we are left with an unclear picture of how Bethin understands syllable structure. It seems the final sonorant in *zim*, initially nonmoraic, forms a diphthong with *i* when it becomes moraic, even while remaining in the coda, while on the other hand the final sonorant in *snɔi*, presumably already moraic because it is a vowel, shifted from the coda to 'a mora-bearing position' (the nucleus?).

A constraint-based approach shifts attention from what sound changes occurred to why certain sound changes were favored over others. But Bethin does not neglect what she believes actually took place on the segmental and moraic tiers when **snɔi.gɔs, *tɔu.rɔs, *kɔ.zi.lɛnt,* etc. monophthongized (39).

> [T]he features associated with the second part of the diphthong, whether [high] in /i/ and /u/ or [nasal] in the case of vowel plus nasal sequences, were no longer represented in a separate position in the syllable, yet total syllable quantity remained the same: two-mora nuclei were retained. The retention of a mora in such cases may be seen as the reassociation of that mora to a tautosyllabic segment by *mora conservation* or a faithfulness constraint on total syllable weight. Mora conservation within the domain of the syllable was a critical feature of Common Slavic since total syllable weight tended to be preserved regardless of changes in the segment sequences.

In case this was not clear enough, a few pages later she adds (43):

> Monopththongization did not eliminate moras (for the resulting vowels were long), but it did have an effect on the sequencing of segments within the syllable nucleus [*sic*]. In other words, changes in the diphthongs were independent of the moraic tier: the No Coda Constraint does not affect the mora count of the syllable in Slavic. Monophthongization was not simply the loss of a coda [*sic*] or the loss of a mora on the glide with compensatory lengthening of the preceding vowel; the vowel resulting from this process was often qualitatively (though not quantitatively) different from the original diphthong. The features of the high segment merged with those of the preceding vowel and the original sequence of decreasing sonority was thereby eliminated. When coalescence is interpreted as involving two components of syllable structure, the mora and the segments or features, then vowel lengthening and the loss of the glide may be seen as being concomitant.

I have no objection to autosegmental phonology, but I think Bethin's commitment to it sometimes has her breaking down unlocked doors. What gives monophthongization this appearance of multitiered complexity is the feature representation of long vowels. Otherwise, *ɔu > uu* and *ɛi > ii* is simply regressive assimilation for the feature +high and *ɔi > ɛɛ* is mutual assimilation for the features -back and -high.[3] As for the nasal vowels, Bethin writes that in **uu.zim.tɛi > vŭzęti* 'the place of articulation [of *m*] became nondistinctive, and nasality was transferred to the preceding vowel' (44). I would say *m* LOST its (labial) articulation, becoming -consonantal, and nasality was SPREAD to the preceding vowel, *im > ĩũ.* Then both segments lowered, *> ɛ̃ɔ̃* (conditioned by nasality), and the second segment assimilated for [-back], *> ɛ̃ɛ̃.*

Oral and nasal diphthongs monophthongized relatively early in Common Slavic, and the results were uniform throughout the Slavic speaking area. They present less of a challenge to our understanding because the monophthongization of diphthongs and diphthongization of long vowels are common occurrences in the languages of the world, as are changes like CVN → CV̄. Liquid diphthongs are another matter. They developed later and owing to the geographic expansion of Slavic speakers in the first millennium show a wide range of reflexes. For example, **gɔr.dɔs* 'enclosed place' is reflected as *gradŭ* in Old Church Slavonic and elsewhere in what Bethin calls South Central Slavic, as *gorod* in Russian (her (North) East Slavic), and as *gród,* gen. sg. *grodu,* in Polish (her (North) West Slavic). As for tautosyllabic VR being a diphthong, the non-Slavist may wonder how the first syllable rhyme in **gɔr.dɔs* merits this analysis any more than, say, the first syllable rhyme of E *Gor.don.* On this issue Bethin sounds an uncertain trumpet. Speaking of 'tautosyllabic sequences of vowels followed by liquids, also known as "liquid diphthongs"', she states: 'Although I take these sequences to be syllable nuclei followed by a coda, I will refer to them as liquid diphthongs both for historical reasons and because the absence of any

other codas in Slavic at this time does not specifically require a distinction be-
tween complex nuclei and nuclei plus coda structures' (47).

But we MUST distinguish between complex nuclei and nucleus-plus-coda
syllable rhymes if we wish to understand what Jakobson called 'Slavic diph-
thongs ending in a liquid'. The criteria for making the distinction are chiefly ac-
centual, and Ābele (1924:20–21) lays them out clearly in her discussion of rising
and falling accent in Latvian:

> In Latv. *zãrks* 'coffin' and *dãrgs* 'along the way' *ã* and *ã̀* fully de-
> termine the character of the intonation, rising in *zãrks,* falling in
> *dãrgs*. The remaining phonemes *rks* join the vowel only after the na-
> ture of the intonation is fully defined, which is why they can be freely
> omitted without destroying the clarity and definition of the intona-
> tion type. But other cases are possible where the most sonorous pho-
> neme by itself does not determine the syllabic type and the following
> phoneme is drawn into the syllabic function. [...] Let us compare
> such monosyllabic words as Latv. *bar̃kš* 'thunders' and *kàrš*
> [accented *r*] 'war', where the character of the intonation is deter-
> mined only by the sequence *ar* (*ar̃* or *àr*). Comparing the contours
> (No. 1 and No. 2 in Fig. 9), we see here that the vowel phoneme by it-
> self does not fully express the difference between the rising and fall-
> ing type of intonation; the main differentiation normally begins at the
> transition to the *r,* where under rising intonation (No. 1) the voice
> continues to rise and strengthen, while under the falling intonation
> there is a noticeable lowering and weakening.

Jakobson (1962:444) cites Ābele 1924 (presumably with this passage in mind)
when he describes Proto-Slavic VR syllable rhymes as 'diphthongal syllable cen-
ter[s]' which 'as one whole carried the syllabic length and intonation'.

Bethin's discussion of VR syllable rhymes seeks to show that 'the interac-
tion of a No Coda Constraint, a Syllable Weight Constraint, and a Sonorant Con-
straint produced three major dialectal divisions [...]' (48), i.e., the three mentioned
above. To follow the development of **gor.dɔs* to south-central *gradŭ,* north-
eastern *gorodŭ,* and northwestern *grodŭ* (as they were before the *ŭ* (jer)
dropped), it is important to remember that +open -rounded *a* reflects bimoraic **ɔɔ*
and -open +rounded *o* monomoraic **ɔ*. According to Bethin, in the south-central
area the liquid lost its moraic status and its mora was transferred to the preceding
vowel. Representing moraicity in consonantal sonorants with ' ' this would be
gɔr̥ > gɔɔr. The resulting syllable ran afoul of the No Coda Constraint and so
metathesis ensued, *gɔɔr > grɔɔ* (= *gra-*). In the northeast, *gɔr̥* was tolerated be-
cause the No Coda Constraint was weaker (assuming we go along with the
author on *ɔr̥* being nucleus plus coda rather than a diphthong). But a constraint
against bimoraic syllable rhymes was developing there, so *gɔr̥* was reanalyzed as
two syllables, *gɔr̥ > gɔ.r̥*. The northeast also had a Sonorant Constraint
(Consonantal sonorants are not moraic), and so *r̥,* to preserve its syllabicity, de-

veloped a svarabhakti vowel, thus *gɔ.r̥* > *gɔ.rə*, and it developed into *o*, thus *gɔ.rə* > *goro-*.

On the northwestern development of *gɔr̥* (to *gro-*) new light was shed in the early 1900's when it was observed that in Old Polish a prepositional jer (*ŭ*) before a *gɔr̥*-type noun form was consistently 'strong', e.g., *we proch* 'into dust'. This pointed to the likelihood that between *gɔr̥* and attested *gro-* there was an intermediate *gərɔ* stage, where a jer-like *ə* placed the jer in the preposition in strong position and conditioned its lowering to *e*. Where did this *ə* come from? Bethin follows Jakobson in proposing that *gɔr̥* metathesized to *gr̥ɔ*.[4] She suggests that moraic *r̥* may have accounted for *we* even without Jakobson's subsequent intermediate step *gr̥ɔ* > *gərɔ*.

It is also possible, it seems to me, that this *ə* was the original *ɔ*, which was reduced to a svarabhakti vowel when the following liquid became syllabic, thus *gɔr̥* > *gə.r̥*. All three branches of Slavic could have shared this intermediate stage, and also the stage *gə.rɔ*.[5] South-central Slavic then eliminated the svarabhakti vowels by grouping them both as full nonhigh vowels after the liquid, *gə.rɔ* > *grɔɔ;* northeastern Slavic realized them as full nonhigh vowels in situ, *gə.rɔ* > *gɔ.rɔ;* and northwestern Slavic realized only the second, reducing the first, *gə.rɔ* > *grɔ*. The reduction of *gər.* to *gr.* in Polish and Sorbian is consistent with the treatment of *gɔr* to the west and north, in Polabian and Kashubian, where as Jakobson (1962:445) notes the vowel of *gɔr̥* was also reduced, to a lower-sonority *u*. I make this counterproposal because I am not satisfied with Bethin's *gɔr̥* > *gɔɔr* for south-central Slavic. It amounts to a reversal of the Proto-Slavic development that resulted in liquid diphthongs, i.e., the restructuring of syllable-final liquids from the coda, where they may have been nonmoraic, to the nucleus, where they were surely moraic, in the process shortening any bimoraic vowels so as to keep syllable rhymes within the two-mora limit. Bethin's rule lengthens the nuclear vowel and recreates a coda, in conflict with the No Coda Constraint.

Common Slavic also had diphthongal syllable rhymes where the nonconsonantal element was a high vowel, e.g., in **mir.tuɔs* 'dead', **tur̥.gɔs* 'market', **uil̥.kɔs* 'wolf', **gul̥.kɔs* 'noise'. In south-central Slavic the vowel was lost, thus Cz. *mrtvý, trh, vlk, hluk* (-*lu-* is a reflex of **l̥*). This may have been a case of the liquid coming to form its own syllable, *mir̥* > *mi.r̥*, which was parallel to *gɔr̥* > *gə.r̥* except that the +high vowel with its lower sonority was lost. Northern Slavic realized these syllable rhymes with a vowel accompanying the liquid. In the east it is in its original position, thus Ru. *mërtvyj, torg, volk,* dial. *golk.* For reasons I do not understand, Bethin states that *mir̥, tur̥,* etc. were monomoraic. The occurrence (duly noted by her, 77) of dialect forms with 'second pleophony' like *verëx* 'peak' (lit. Ru. *verx*) supports a bimoraic **uir̥.x-* or even a transitional bisyllabic **ui.r̥.x-*. In the west the reflexes vary according to the environment. Thus, while Russian shows a uniform *volk, polnyj* 'full', *dolgij* 'long', Polish has *wilk, pełny, długi* Bethin believes Polish passed through a stage with 'liquid syllable peaks (as in the south) either alone or with a [ɑr], [əl] variant' (74) and that it 'in effect reconstruct[ed] (from syllabic liquids) the original jer (vowel) plus liquid sequence' (75). But in the case of *wilk* 'wolf' and *zgiełk* 'hubbub', the original

vowel-plus-liquid sequence that is indicated by Lith. *vilkas* and Latv. *gulkstêt* 'cackle, yell' is **uil̥kɔs* and **gul̥kɔs,* and there is no way Polish speakers could have reconstructed these contrasting syllable rhymes from a single transitional *l̥* or *əl.* See also Diels (1932:§15, n. 6).

Other issues addressed in Chapter 1 include the so-called tense jers (89–91). A tense jer, as the phrase suggests, is a jer, a [+high -long] vowel, that was or became [tense], or [+long] ('was' if we view it diachronically, 'became' if we view it synchronically). This happened when it was followed by [j̯], e.g., an *i* in the onset of the next syllable. For example, if we compare the OCS definite adjective form *novyi* 'new' with the indefinite form *novŭ,* we see that the the masc. nom. sg. ending -*ŭ* (= *u*) of the latter has lengthened to -*y*- (= *uu*)[6] in position before the enclitic pronoun -*i* (= [i̯i] < **iɔs*). Bethin introduces the topic thus: 'In a majority of Late Common Slavic dialects (the exception being northeasternmost LCS [i.e., Russian]) the short high vowels or jers were often neutralized with the high front vowel /i/ [my *ii*] and the high back vowel /y/ [my *uu*] in position before the front glide [...]' (89).

We should ask what kind of neutralization this was. Was it a phonological neutralization of the form $A \to B\,/\,\_\_\_\,C$, such as occurs when voiced obstruents become voiceless in word-final position? Or was it a phonetic neutralization, where a distinction between AC and BC is phonetically impossible, like the neutralization of [+/-continuant] in position after [-continuant] that makes *prince* homophonous with *prints* and makes Ru. *borot'sja* 'to fight' rhyme with *vorotca* 'little gate', or the neutralization of [+/-delayed release] in position before [-continuant] in the second syllable of Ru. *kabatčik* 'tavern keeper'?[7] It is not clear which Bethin opts for. She writes (89–90):

> Within the framework of a syllable structure analysis, the phenomenon of 'tense jers' receives another reading: tense jers are found only in those areas that permitted bimoraic or bipartite syllable rimes. If we allow that quantity distinctions persisted in Late Common Slavic, with the exception of the northeastern territories, then the neutralization of /ĭi̯/ or /ьі/ with /ii/ (and /ŭi̯/ or /ъі/ with /yi/) could be interpreted as in (24). This means that a distinction between /ĭi̯/ and /ii/ would have been difficult to perceive, in other words, the syllable as a whole was bimoraic.

Diagram (24), if I read it correctly, shows /ĭ/ and /ŭ/ acquiring the mora of length of the following tautosyllabic /i/, which points to /ĭ/ → /i/ / ___ /i/, i.e., phonological neutralization. But 'difficult to perceive' suggests phonetic neutralization.

I see two problems with this. First, as an earlier reviewer (Feldstein 1998:142) has already noted, in a form like OCS *novyi* the Onset Constraint (Syllables must have onsets, 32) would assign the initial *i* of the enclitic to the onset of the third syllable, not to the rhyme of the second. More broadly however, what evidence is there that jer tensing was not Common Slavic and occurred also in Russian ('northeasternmost LCS')? The fact that Russian shows a jer reflex in its counterpart of *novyi,* i.e., *nov*[ə]*j* in the traditional pronunciation, is not evi-

dence of this, because Russian shows a jer reflex also of a [+long, +high] vowel where [j] follows, e.g., a weak jer in *b'ët* [b'jɔt] 'beats' (cf. *bit'* 'to beat') and a strong jer in *moet* 'washes' (cf. *myt'* 'to wash'). So Russian would show a jer reflex in 'new' also if it inherited it from Common Slavic with the same [+long] vowel as in OCS *novyi* and elsewhere. But I do not claim to have a full understanding of tense jers. To believe in phonological neutralization, i.e., [+high] → [+long] / _____ [+high, -back], one must dismiss as mere facts of spelling very many occurrences of the *ĭ* and *ŭ* letters occurring in OCS manuscripts where *i* and *y* would be indicated.[8] Also hard to explain are forms like *svętoi* 'holy' (masc. nom. sg.), where *svętŭ* plus enclitic *i* (= [jĭ]) shows a strong rather than tense jer.

Compensatory lengthening is also discussed, a generally western development that affected Serbo-Croatian[9] and Polish, but not Bulgarian or Russian. Thus, S-Cr. *n`òsa* in this gen. sg. form shows a short vowel while nom. sg. *nôs,* which derives from bisyllabic *nɔ.sŭ,* shows a long vowel, lengthened by compensation for the loss of the final jer. 'Compensatory lengthening involving two syllables may be expressed as dissociation and reassociation on the moraic tier in a bisyllabic domain', Bethin writes (99). To save space we could write this linearly as $[_\sigma \mu] [_\sigma \mu] > [_\sigma \mu\mu] [_\sigma \varnothing]$. This is surely true, but it is overly schematic, as is clear from Bethin's thorough discussion of the wide variation in patterns of compensatory lengthening and its various conditioning factors, such as the original accentuation of the root vowel and the category of the syllable-final consonant. The special relevance of the latter factor is brought out by her statement, 'If compensatory lengthening is interpreted as the transfer of a mora to the immediately preceding segment before transfer onto the preceding vowel, then the sonority (mora-bearing ability) of that segment would be relevant to CL' (103).

Chapter 1 includes fact- and reference-rich discussions of other issues in Common Slavic phonology, such as the contraction of two syllables separated by [j] into one and the jer shift.

In Chapter 2, Bethin discusses the development of Common Slavic accentuation from a broader perspective than one often finds in the Slavistic literature. As her chapter title indicates, she looks 'beyond the syllable' and is concerned with 'prominence relations' among syllables. The prominence of a syllable, she observes, is necessarily relative to that of another syllable in the same metrical unit or foot, and so we find either iambic feet (a weak syllable followed by a strong) or trochaic feet (strong followed by weak). She cites recent research claiming that 'prominence contrasts based on duration lend themselves to iambic grouping, while prominence contrasts based on intensity lend themselves to trochaic grouping' (119). It had not occurred to me that in, say, Cz. *od.chá.ze.jí·* 'they leave', we have two iambic feet where the long second and fourth syllables are more prominent than the first, which bears the word stress, and the third. Nevertheless, utilizing metrical theory Bethin develops a comprehensive teleology of Slavic prosody which seeks to explain such phenomena as the accent shifts of Polabian, Belarusian and Russian jakan'e and akan'e, the Slovak Rhythmic Law

(long vowel, as in *nový* 'new', shortens after long vowel, as in *múdry* 'wise'), and more. I simply call attention to this ambitious research program without attempting to evaluate its promise.

In a more traditional vein, Bethin lists the three accentual paradigms for Common Slavic roots (122): the acute, which has an accented root that receives the stress throughout the paradigm; the oxytone, the accent of which assigns stress the first post-root syllable; and the circumflex, which has no accent, so that the stress falls either on an accented ending or, in the absence of such, gets word-initial stress. The three paradigms are exemplified in Russian respectively by *gor'ox, gor'oxa, gor'oxu*, etc. 'peas', which stresses the accented syllable; *stol, stol'a, stol'u, stol'om*, etc. 'table', where the stress falls on the ending;[10] and *g'orod, gorod'a, z'a gorod, za gorod'ami* 'city', where the stress falls either on an accented ending or word-initially. In Czech, which has vowel quantity rather than distinctive stress, stress is initial (*'hrad, 'za hradem*) and an accented syllable is often long (*hrách* 'peas' and nom. sg. *stůl* 'table' with its retracted accent).

Bethin emphasizes the difference between accent, which she calls tone, and stress. Tone is 'an autosegment on a level different from that of sounds, but connected to them by association lines', whereas stress, not an autosegment, is 'a rhythmic property of language [which] [r]ecent metrical theory views […] as marking the head of a metrical constituent, i.e., the strong element in a strong–weak grouping' (116). She represents tone with an H associated with the mora that bears it and stress with an * over the syllable. The question arises whether we need both H and *. Stress in Russian is described by Zaliznjak (1985:8) as 'a certain way of singling out one of the syllables of a word form […] the physical nature [of which] will not concern us in the present work'. And although Halle (1971:4) identifies his [+H] feature as 'the equivalent of the phonetic feature *high pitch*', it seems to function the same as the [+Stress] feature in Halle 1973. It is often noted (also by Bethin, 115) that with a geminate representation of long syllable nuclei, rising pitch, i.e., accute accent, can be represented as stress on the second mora of a long syllabic nucleus, thus μ'μ, while falling pitch, i.e., circumflex accent, is greater prominence on the first mora, thus 'μ μ. So, allowing for the fact that μ'μ occurs as a lexical feature of individual Slavic morphemes whereas 'μμ is assigned to the initial mora of certain sentence constituents, what would be lost if both H and * were represented as '?

Bethin writes: 'The retraction of ictus in the north and in the south had different effects: In the north the neo-acute was the retraction of stress (*); in the south it entailed a retraction of high tone (H)' (131). (Ictus for her is 'prominence of either tone or stress', p. 121.) One of her examples is the Common Slavic noun 'hair', which in the genitive plural form took the accented ending *-'u*, thus **uɔḷ.s'u*. When jers weakened to the point of no longer bearing accent, it was retracted one mora toward the beginning of the word, > **uɔ'ḷ.su*. This retracted accent is reflected in Russian as *vol'os* and in the Čakavian dialect of Serbo-Croatian as *vlás* (= *vla'as*). Compare the nom. sg. form with its default initial accent, **u'ɔḷ.su*, reflected as Ru. *v'olos* and Čak. *vlâs* (= *vl'aas*). I don't see much difference between the effect of the retraction of * in the north and of H in the south.

Discussing dialectal Common Slavic contraction (two syllables separated by a glide losing the glide and becoming one), reflected in the fact that contracted *pâs* 'belt' with long falling accent in Serbo-Croatian and *stát* 'to stand' with long rising accent in 'Proto-Serbo-Croatian' correspond to uncontracted *pójas* and *stoját'* in Russian, Bethin writes: 'The fact that contracted vowels preserved the pitch contour of the original bisyllabic group [...] is an argument for representing tone as an autosegment and for representing tone as associated with the mora.'[11] But with a geminate representation for long vowels, contracted southern *p'aas* (= *pâs*) and *sta'at* (= *stát*) turn out not to differ accentually from uncontracted northern *p'o.ias* and *sto.i'at'*, but only by the loss of the glide and by vowel assimilation .

I am suggesting that the H of CmSl. **gɔ'r̥.xu* and Ru. *gor'ox* and the * of CmSl. **g'ɔr̥.du* and Ru. *g'orod* are in complementary distribution and so could both be represented as '. This works also in cases, just noted, where a retracted accent, as in gen. pl. *vol'os* and *vlás,* contrasts with the default initial accent in nom. sg. *v'olos* and *vlâs.* But how does it work where accent is retracted to an initial vowel that is monomoraic and therefore incapable of showing a μ'μ ~ 'μμ contrast? It was here that H and * could be contrastive. Garde (1976:270) calls this development 'le réaccentuation des formes inaccentuables' and represents it as the change, e.g., of *(')zimu* to *z'imu*. He says it is 'le dernier en date des changements phonétiques qui affectent le système accentuel. Désormais le russe, ne connaiss[e]nt plus qu'un seul trait prosodique, l'accent [...]'. And Zaliznjak (1985:178) calls it 'the chief strictly phonetic development in the history of East Slavic accentuation'. We see the resulting state in Ru. *'osen'* 'autumn', CmSl. **ɔ.sɛ.ni,* the default initial stress of which is now identical to the retracted accent of Ru. *v'osem'* 'eight', CmSl. **ɔ.sm'i.* The difference between these two initial syllables, now phonemic, reflects a difference that prior to the change in question must have been only phonetic. Prior to that change, the initial syllables of these two forms, before the assignment of default initial stress, were phonemically /o/ vs. /'o/ and phonetically [ɔ] vs. [u̯ɔ]. With the falling together of H and * these initial syllables became phonemically /'o/ vs. /v'o/. The proposed phonetic [u̯'ɔ], which may or may not have been bimoraic,[12] is somewhat problematic. Bethin writes: 'If the northeastern LCS dialects indeed generalized syllables of one mora, one would not expect these dialects to show either length or tone distinctions' (156). She concludes by suggesting that [u̯'ɔ] 'could simply be the asynchronic pronunciation of labialization (phonetically, but not phonologically, long)' (156). Still, labialization in the case of *vosem',* even if conditioned by length that was nonphonemic, nevertheless resulted in a phonemic contrast with *osen'*.

The Neoštokavian accent retraction of Serbo-Croatian shifted accent one mora toward the beginning of the word. So in contrast to *xvaal'a* 'praise' and *vod'a* 'water' in Čakavian (in my notation), which did not experience accent retraction, Neoštokavian dialects have what is spelled *hvála,* i.e., *xva'ala,* and *vòda,* with a 'short rising accent' on the *o.* This short rising accent entails stress on the *o* followed by high pitch on the following syllable, and so Bethin's distinction

between * and H is ultimately justified, at least for modern standard Serbo-Croatian.

In her chapter on 'Theoretical considerations', Bethin touches on 'certain problems of Slavic linguistics [which] have a bearing on issues of phonological representation' (188). For example, Bulgarian has alternations like *grəm* 'thunder' /*gərmət* 'the thunder': Bethin examines them and finds (correctly, it seems to me) 'no convincing argument for metathesis' (199). Regarding Common Slavic glides, Bethin proposes that for the short high vowels /i/ and /u/ the vowel-glide distinction was a matter of syllable structure. In syllable onsets they were nonmoraic ([i̯], [u̯]) and, following an obstruent, consonantal ([ɣ] and [v] if voiced, [ç] and [f] if voiceless); in syllable nuclei they were moraic, although of lesser sonority when accompanied by a nonhigh vowel; if they occurred in syllable codas they are nonmoraic and consonantal.[13] Bethin writes: '[A]fter a consonant and before a more sonorous vowel, the /i/ lost its association to the mora and coalesced with the preceding consonant in a process known as iotation' (201–02). This may account for forms like *pii.tiɔɔ* 'food', where suffixal *i,* was syllabified with root-final *t* into a syllable onset, coalesced with it, and yielded *št* (OCS *pišta*). But it does not account for verbal alternations like OCS *pustiti / puštǫ* 'let go' (inf./ 1sg.), where Bethin sees a common post-root /i/ causing iotation in the latter form but not in the former. As Birnbaum (1997:90) reminds us, the theme vowel in the former was *ii,* and had it occurred in the 1sg. form the result would have been OCS *pustĭjǫ*.

The section titled 'Vowel-zero alternations' (205–14) offers a comprehensive survey of what has been written about the morphophonemic complications caused by the fact that the short high vowels of Common Slavic in some environments disappeared (*pi.sɔɔ* 'dog' (gen. sg.) > Polish *psa*), in others fell together with other vowels (*pi.su* (nom. sg.) > S-Cr. *pas*), as well as by the fact that vowels sometimes crop up before consonantal sonorants where there was no vowel earlier (*krɛɛ.slu* 'chair' (gen. pl.) > Slovak *kresiel*). Other sections deal with the Rhythmic Law of Slovak, the reflexes of *ɛɛ in Serbo-Croatian (monosyllabic in ekavian *réka* and ikavian *ríka,* but bisyllabic in ijekavian *rijèka*), consonant gemination in Ukrainian (*brɔɔ.ti.iɔɔ* 'brethren' yielded *brattja*), stress and length in Slovene, and accent and stress in Serbo-Croatian.

In sum, although I have chosen in this review to focus on individual points where I disagree with some of Professor Bethin's formulations (or simply fail to understand them), I hope I have managed to give the reader some idea of the broad scope and intellectual power of *Slavic Prosody*.

NOTES

[1] Kenstowicz (1970:97) observes that geminate representation works better for prosodic rules, while feature representation works better for handling vowel quality. Indeed, the Late Common Slavic rule which makes [-high, +long] vowels [+low], would be better stated as $\bar{\varepsilon} > \ae$ and $\bar{ɔ} > \bar{a}$ than as ε and $ɔ > $ [+low] both before and after ε and $ɔ$.

[2] To be exact, she writes: 'these diphthongs may be represented as vowels followed by sonorants equivalent to /i/ and /u/, whose glide-like pronunciation is a consequence of syllable structure. In other words, an /i/ in the coda position of a syllable would be pronounced as [i̯], but is basically an /i/' (40–41). The 'glide-like pronunciation' of /i/ and /u/ occurs only in syllable onsets, for example, when verb roots like *pɔi* 'sing' and *plɔu* 'sail' are realized heterosyllabically before a vowel, thus in 3rd sg. pres. *pɔ.iɛ.tu, plɔ.uɛ.tu*. Here notations like *i̯* and *u̯* are appropriate, although redundant. They are redundant also when such diphthongs surface tautosyllabically, e.g., in Ru. *daj* 'give', Po. *dał* [dau] 'gave', E *boy, cow,* since here the non-peak role of /i/ and /u/ is predictable from their lesser sonority vis-à-vis their nucleus mates (compare the redundant *y, w* spellings of the English forms in standard orthography with the phonetic transcriptions found in dictionaries, [boɪ], [kæʋ]). But when /i/ and /u/ occur underlyingly in syllable nuclei that are monophthongized, e.g., **pɔi.tɛi* 'to sing', **plɔu.tɛi* 'to sail' (OCS *pěti, pluti*), there is no basis for marking *i* and *u* as non-nuclear because they surface as the second mora of $\varepsilon\varepsilon$ and *uu*.

But can a vowel (nonconsonantal sonorant) be a syllable coda? Surely E *boy* and *cow* consist of an onset and a diphthongal nucleus, not of onset, nucleus, and coda. In Russian, as long as *moj* 'my' is pronunced [mɔɪ] with a [-consonantal] final segment, that segment must be the less sonorous component of a nuclear falling diphthong. The more emphatic pronunciation [mɔç] also occurs (Panov 1967:36), where the obstruent [ç] surely pertains to the coda. The same holds for the labial counterpart. The second syllable of *stolov* 'table' (gen. pl.), which is [lɔf], is surely structured onset-nucleus-coda. But some Russian speakers have a [-consonantal] final segment here, and their [stʌ.l'ɔu] must end in a diphthong.

[3] The monophthongization of εu to *(i)uu* is more complicated, as much for autosegmental analyses as for more traditional ones.

[4] I find it easier to imagine a falling diphthong in a *Cɔr̥* syllable than a rising diphthong in a *Cr̥ɔ* syllable, which supposedly contrasts with a *Crɔ* syllable by whether the *r* belongs to the nucleus (*Cr̥ɔ*) or to the onset (*Crɔ*). But Bethin claims that the liquid belonged to the syllable nucleus and refers us to Ābele (1924:30), where just such a contrast is described.

[5] This more or less what Mareš (1956:456-60) proposes, i.e., a stage where a syllabic liquid was both preceded and followed by a svarabhakti vowel.

[6] While *ŭ* and *y* are transliterations of Old Church Slavonic spellings, *u* and *uu* respectively represent my phonemic analysis of these vowels, based on the my be-

lief (not widely shared by Slavists) that the vowel with the OCS spelling *u* is phonemically the diphthong *ɔu*. For example, *pustynĭnikŭ* 'hermit' in my phonemic analysis would be /pɔu.stuu.ni.nii.ku/.

7 Some Slavists believe that it is neither, that the change in question resulted in a B' distinct from B and that B also changed to B' in the same environment. For example, Flier (1988:91) introduces his discussion of tense jers as follows: 'In Late Common Slavic the environment before [j] was, with few exceptions, a position of neutralization for tense diffuse vowels /ĭ, y/ and lax diffuse vowels /ь, ъ/. The nongrave vowels /i, ь/ were realized as [ĭ]; the grave vowels /y, ъ/ were realized as [y̌], the háček here denoting a degee of intensity lower than that for /ĭ, y/ and higher than that for /ь, ъ/'.

8 The fact that the *ĭ* letter occurs in imperfective verb forms like *ubĭěete* 'you kill' (= *ubĭjaete*), where it represents a root vowel that we know was +long (cf. Cz. *ubíjet*) supports the view that the use of *ĭ* was a mere spelling convention.

9 Bethin's 'Serbian and Croatian' is probably more correct.

10 When we represent accent linearly rather than with tiers, our lexical representation of 'table' is /stol'/. But I am not satisfied with this representation, in which the last element, an unassociated accent, defies description in phonetic features. Halle and Kiparsky (1981:175) describe oxytone stems with a LH rising melody associated with their syllable nuclei. They write: 'Unlike the B[alto]Sl[avic] protolanguage, Slavic allowed only a single tone to be linked to a single phoneme in the lexicon. Monosyllabic stems with LH melody were therefore represented in the lexicon with a linked L and a "floating" H', so that the H in a form like **stɔ.l'u* may be assigned to the ending. This explains the post-stem accent of monomoraic stems like **stɔl-*, but with bimoraic stems like **siil-* 'strength' and **piil-* 'saw' it is not clear why in the former the LH rising melody remains associated with the root (Ru. *s'ila*) but in the latter the H 'floats' (Ru. *pil'a*).

11 P. 134. Also earlier (95) with regard to the same examples: 'The preservation of accentual characteristics during contraction strongly suggests that they are designated on a separate tier from that of segmental features'.

12 When [u̯] occupies the onset of the syllable it is of course nonmoraic. But the same accentual development occurs also in postconsonantal position in dialectal Russian, e.g., in *stôl* 'table', which is also attested as *stu̯ol* with a rising diphthong.

13 I do not claim this is an accurate summary of what the author says about /i/ and /u/. See note 2 and also Gladney 1997.

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REVIEW

Roland J.-L. Breton. *Atlas of the Languages and Ethnic Communities of South Asia.* **Second edition. Walnut Creek/London/New Delhi: Altamira Press, 1997. Pp. 230. ISBN: 0-8039-9367-6.**

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As is well known, South Asia is home both to a vast number of different languages and dialects (belonging to at least four different language families[1]) and to extensive regional and cross-regional bi- and multilingual interactions between various combinations of these languages. This highly diverse and complex linguistic picture is paralleled by a similarly diverse and complex ethnic panorama. The relationship between the linguistic and ethnic scenes, in turn, rather than being one-to-one, is likewise of a highly complex nature.

Breton's Atlas attempts to map the resulting complex panorama, with focus on the linguistic side, and drawing mainly on data provided by the censuses which have been conducted every ten years since 1881. Among these censuses, the 1961 census furnishes the foundation for most of Breton's presentation.

Part I is devoted to a 'General presentation of the languages and ethnic communities of South Asia'. Chapter 1 (16-20) deals with 'India as an exemplary laboratory for the coexistence of languages and ethnic communities'; Chapter 2 (21-39) is concerned with 'Language compared to other ethnic traits', including 'race', tribe, and caste. Chapter 3 (40-42), bearing the somewhat mysterious title 'From language dynamics to linguism', is especially concerned with the politics of language and the creation in India of 'linguistic states', i.e. of states defined not in terms of the political situation in colonial and precolonial South Asia, but on the basis of majority languages. (This is the development that the term 'linguism' apparently refers to.)

Part II (43-189) is entitled 'The sixty plates with commentaries'. Different geographical plates (or more accurately, maps) and accompanying mini-chapters are devoted to 'The languages of India' (Plate 1), 'Indian languages and scripts in the world' (Plate 2), 'Official languages' (Plate 3), different geographical regions (Plates 4-36), 'Non-regional languages', including Sanskrit (Plate 37), English (Plate 38), and (other) non-Indian languages (Plate 39), 'The linguistic states, the media, and the metropolitan situations' (Plates 40-44), 'Ethno-linguistic issues throughout the subcontinent and around', including plurilingual states elsewhere in the world (Plates 45-50), and 'The linguistic situation up to the 1991 census' (Plates 51-60).

The volume concludes with 'Annexures' (190-204), including a language classification chart; a 'Select bibliography' (205-208), a 'Language classification and plate index' (209-219), and a 'Subject and author index' (220-230).

Breton's detailed maps will be of interest to specialists and non-specialists alike, as helpful summaries of the census data, especially those of 1961. Part I of his monograph will be useful for non-specialists, as an introduction to the complexities of South Asian linguistic relationships.[2] Even the specialist will find much to agree with, including sound observations on the lack of correspondence between language and 'race' (21-22), useful information on language shift and maintenance among the so-called scheduled tribes (22-31), and the claim that the creation of linguistic states may have preserved India 'from the explosion seen in other regimes and states, such as the USSR, Yugoslavia, or Czechoslavakia, which failed to cope in time with the aspirations of their regional populations' (41).[3]

Specialists will also notice a fair number of problems. The greatest of these is the question of the reliability of census data. This is an issue that Breton, too, is aware of and which he addresses several times, e.g. on p. 40, when he states that 'Mother tongue designations are, therefore, a mere symbolic manifestation of allegiance and not of any real cultural practices.' Unfortunately, Breton fails to acknowledge similar conclusions by earlier authors. Especially significant is Bhatnagar's evaluation of the 1961 census (1967), which includes the finding that there is nothing in the data to indicate the extent to which people claiming Sanskrit as their mother tongue or as an auxiliary language can actually speak it. See also Kloss & McConnell 1974:3-42 (listed in the bibliography but not referred to in the text), Shapiro & Schiffman 1981:178, Steever 1998:3-4, and many others.

At the same time, for all their flaws, census data are the only comprehensive source for speaker statistics; and all publications that I am familiar with and that are concerned with such statistics are based on the census data. This is true even for the recent volume on 'tribal and indigenous people' edited by Abbi (1997).

More specifically, Breton notes the anomaly that the 1961 census lists only two men and one woman as mother-tongue speakers of Sanskrit in Varanasi (a major center of pilgrimage and traditional Sanskrit learning) vs. 52 women in the small town of Kheri (Uttar Pradesh) and 89 in Ahmedabad (Gujarat) — with no male mother-tongue speakers listed for either of these two locations (127-129). His conclusion, as regards Sanskrit, is as follows (129):

> ... in linguistic identity as in other fields, the Hindu world deliberately ignores standard situations and watchwords: individuals freely state their wants and preferences ... and thus remain free to state any speech, mother tongue or heritage language, whichever they decide to honour most.

It is certainly true that speakers' mother-tongue declarations do not conform to what linguists would consider to be mother tongue, namely native language, and it is also true that speakers' responses are determined by factors such as which language 'they decide to honour most'. However, I am not convinced

by Breton's claim that this is something inherent in the 'Hindu world'. To substantiate this claim, Breton would have had to show that all of those who declare Arabic or Persian their mother tongue are in fact native speakers and none of them did so for emotional or political reasons. Moreover, my own reading of the Sanskrit situation is that non-native speakers may declare Sanskrit their mother tongue, not by deliberately ignoring the technical connotations of the expression 'mother tongue', but by misunderstanding the term as referring to a language to which one is attached as if to one's own mother. Conversations during the 1999 Linguistic Institute with colleagues working on Meso-America suggest a similar reinterpretation of the term in that area (far removed from the 'Hindu world'). Moreover, those Indians who have acquired an early native-like ability to speak Sanskrit at home, in traditional settings, did not even learn the language from their mothers, but from their fathers — speaking Sanskrit by and large was restricted to men. (For further details see Hock 1988, 1992.)

In several cases, problems with Breton's presentation arise from the fact that he is a geographer by training, and not a linguist. This is probably the reason for several statements that are linguistically dubious or misinformed. Two examples may suffice.

On p. 30, we find the odd statement that the 'Kota-Toda language is strongly individualized between Kannada and old Tamil.' All classifications of Dravidian agree that Kota and Toda are two distinct languages, that the two languages, however, are relatively closely related, and that as a group they are related to Tamil/Malayalam (whether old or modern); most classifications further consider Kota/Toda most closely related to Tamil/Malayalam (± Irula) and more distantly to Kannada and other members of South Dravidian. (See Shapiro & Schiffman 1981:88-99 with ample references.)

While Breton recognizes the existence of language isolates, beside the four major South Asian language families, he recognizes only two — Burushaski (in the extreme northwest) and Andamanese (on the eastern periphery of the Bay of Bengal). In so doing, he ignores the convincing arguments by Kuiper (1962, 1966) that Nahali likewise is an isolate in origin, although overlain by a large amount of borrowings from various Dravidian and Munda languages.[4] The fact that Nahali is found in central India is significant, for it suggests a much wider presence throughout South Asia of languages not relatable to the standardly recognized four language families and therefore raises interesting questions about prehistoric bilingual interactions.[5]

While problems of this sort diminish the value of Breton's work, they do not do so fatally. As noted earlier, especially for the non-specialist the book offers a useful introduction to the multilingual, multiethnic area that is South Asia. Moreover, his bibliography contains a number of references that provide access to more detailed or specialized information.

NOTES

[1] Indo-Iranian (mainly Indo-Aryan), Dravidian, Austro-Asiatic (mainly Munda), and Tibeto-Burman.

[2] Specialists will find more comprehensive and detailed discussions in other, more specialized publications, such as the comprehensive and sympathetic contributions on "tribal and indigenous" languages in Abbi 1997.

[3] Compare the similar findings of King 1997 in his much more detailed investigation of the language politics of India.
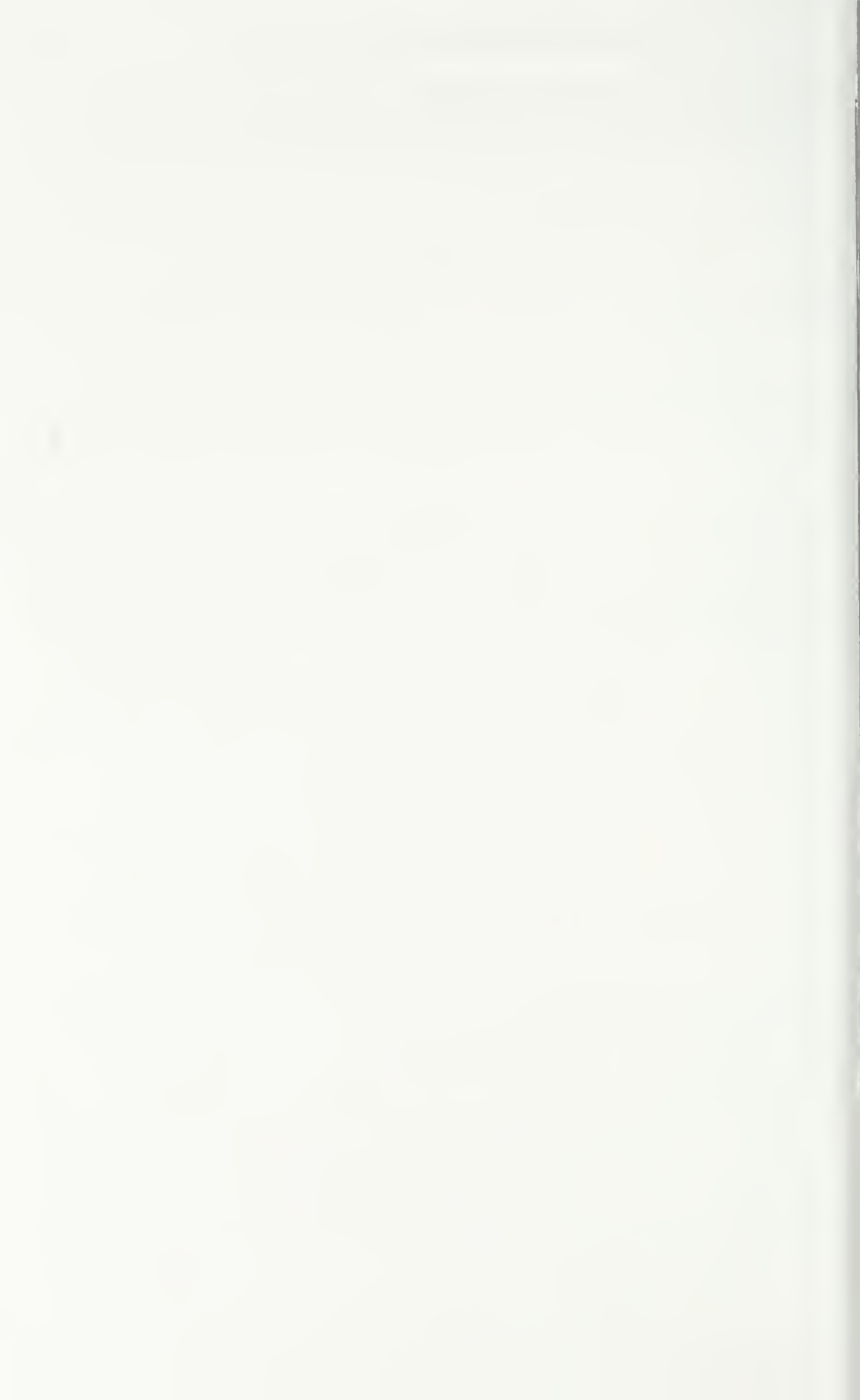
[4] B instead considers Nahali a "mixed" language. (19)

[5] Witzel adds Kusunda in Nepal and speculates on the existence of several other possible isolates (1995:100 with references). Note also Manchat in Himachal Pradesh, listed as unclassified by Singh (1997: 69).

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