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GENERAL SESSION
and
PARASESSION
ON
THE ROLE OF LEARNABILITY
IN GRAMMATICAL THEORY

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OF THE
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February 16-19, 1996

GENERAL SESSION
and
PARASESSION
ON
THE ROLE OF LEARNABILITY
IN GRAMMATICAL THEORY

edited by
Jan Johnson
Matthew L. Juge
Jeri L. Moxley

Berkeley Linguistics Society
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Preface

We are pleased to present the proceedings of the Twenty-Second Annual Meeting of the Berkeley Linguistics Society. We would like to thank the organizers of BLS 22: Roxane Beeler, Sara Gesuato, David Librik, Paula Radetzky, and Bill Weigel. We are especially grateful to all the volunteers who helped to make this conference such a success, particularly Ju Namkung and Paul Listen. We hope you enjoy the volume.

BLS 22 Editors
Jan Johnson
Matthew L. Juge
Jeri L. Moxley
GENERAL SESSION
BORROWING AND POLITENESS STRATEGY IN JAPANESE

Shoji Azuma
University of Utah

INTRODUCTION

Forms which have been taken from a foreign language into one's native language can be divided into two types: cultural borrowings and core borrowings (Scotton 1988, Myers-Scotton 1993). Cultural borrowing forms represent objects or concepts new to host language culture and fill lexical gaps in the host language (e.g., terebi 'television'). Core borrowing forms are items for which the host language always has viable equivalents and meet no lexical needs (e.g., raisensu 'license'). The latter type, core borrowing, has been especially attracting the attention of linguists in the field of language contact. One of the questions that has arisen is why core borrowing forms are borrowed where there is no lexical need. If there is no lexical need to borrow words from another language, then why are the words borrowed?

In the case of English core forms borrowed into Japanese, one of the popular views of this question has been that the core borrowing is due to the quasi-diglossic situation between Japanese and English, where English is the language of prestige since the post war era in Japan (e.g., Toyama 1973, Loveday 1986). According to this view, Japanese speakers' desire to identify with the culture of English speakers has been the major force of core borrowing forms. For example, through the examination of TV commercials and print advertisements, Takashi (1990) argues that the primary reason for borrowed word use in advertisements is to make the product modern and sophisticated. Along a similar line, Haarman (1986: 212) argues that "the key to understanding multilingualism in Japanese mass media and the relationship of such communication patterns to language preferences and stereotyping images popular among Japanese about Europe and North America is the prestige functions of foreign languages" (emphasis added). Haarman (1986) studied naming of various products and companies in TV commercials. The result is shown below:

TABLE 1. Naming (products, companies)
(TV commercials during April 29th - May 5th, 1984, taken from Haarmann, 1986)

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Kanji are Chinese characters which are used to describe essentially content words in Japanese. Hiragana is a Japanese syllable writing system, and katakana is another Japanese syllable writing system which is used to express borrowed words. Notice that the majority of naming is done in katakana, which is used for loan words. The Japanese writing systems (Kanji and Hiragana) comprise only 10% of the writings in TV commercials. Haarman (1986) associates the predominate use of loan words with the prestige function of foreign languages (e.g., English, French).
Indeed, it is not difficult to find an example of a borrowed form whose function is that of prestige. The following utterance was made by a professor to his students in a Japanese university classroom.

(1) Kore maeni iuta desyo, ano printed matter
    this before said TAG that
  o kubatta toki ni iuta yo na?
  ACC handed when at said TAG Q

'I said this, right. When I handed out that printed matter I said this, right?'

The professor deliberately used the borrowed form printed matter instead of its Japanese equivalent insatubutu. The instance is a core borrowing and its motivation seems to be coming from the prestige function of the borrowed form. By choosing the English form printed matter, the professor manifested his association with the language of prestige. The choice of the English form conveyed the message to his students that the professor knows English and he can use it if he wishes. Aside from individual words and phrases, sometimes a certain grammatical structure can also be borrowed. The following example is taken from an advertisement for a bank.

(2) This is natu na no da
  summer is

'This is summer."

By framing the simple message that it is summer in English sentence structure, the bank aims to establish itself as a modern international bank with prestige. The structural borrowing along with this is appears to be very successful in reaching out to customers and this specific bank has been using the hybrid phrase of English and Japanese as an eye-catching advertisement phrase for several years now.

Beside the function of prestige and its related concepts such as modernity and internationalization, is there any other function for core borrowing? In this paper, I will argue that core borrowing can function as a conversational strategy in interpersonal negotiations between a speaker and a hearer. More specifically, core borrowing may be used as a politeness strategy to save 'face' (Brown and Levinson 1978) of participants in conversation. For example, a speaker or a writer may use core borrowing as a dynamic strategy to be polite to his/her addressee.

The data for the present study are drawn from the following three sources: 6 hours of tape-recorded conversations among Japanese college students, 4 hours of tape-recorded radio programs, and various written materials such as weekly and monthly magazines, all of which were collected in Japan during the fall of 1995.

FACE AND POLITENESS STRATEGY

Brown and Levinson (1978) argue that speakers employ various politeness strategies to save 'face' in conducting so-called Face Threatening Acts (FTA). According to them, 'face' is the basic want or desire of a speaker/ addressee and face can be classified into two types: negative face and positive face. Negative face is the want of every competent adult member that his actions be unimpeded by others. Positive face is the want of every member that his wants be desirable to at least some others. This includes the desire to be understood, liked or admired by
others. The FTA is an act which intrinsically threatens face. It includes requests, orders, suggestions, warnings, offers, promises, compliments, criticism, and disagreement, among others. Brown and Levinson (1978) claims that various politeness strategies will be employed by speakers to mitigate the threat to the faces in interpersonal conversations. For example, Brown and Levinson (1978) argues that the use of 'point-of-view' operations can work to distance speaker from hearer or from the particular FTA. As an illustration for this distancing strategy, they offer the switch of tense from present to past, in which a speaker can distance him/herself from the here and now. Observe the following example.

(3) I was wondering whether you could do me a little favor.

Notice that the past tense was is used in (3). This is a way to minimize the imposition on the addressee and thus minimize the potential face threat. In a sense, the speaker is distancing him/herself from the actual speech act of request.

The present study takes this theory of politeness strategy for its theoretical background and examines various English borrowings in Japanese discourse with respect to their function as a politeness strategy.

BORROWEDED FORM AS FACE SAVING

In this section, I will first examine instances of borrowing which are used to save the addressee's positive face. Observe the following examples.

(4) a. Roon de kuruma wo katta no?
  loan by car ACC bought Q
  'Did you buy your car by getting a loan?'
b. Shakkin-site kuruma wo katta no?
  loan-did car ACC bought Q

The utterance in (4a) is more successful in being indirect/non-confrontational than the utterance in (4b), due to its borrowing form roon 'loan'. As a politeness strategy, choosing the borrowing form roon (4a) rather than its Japanese equivalent shakkin (4b) is a way to mitigate the threatened face (of addressee) involved in the conversation. The Japanese word shakkin implies that the person who gets the loan does not have control over his/her financial matters, and as such he/she has to get the loan as an undesirable consequence. In other words, shakkin is the word which possibly threatens the person's positive face (i.e., the desire to be liked or admired by others). On the other hand, the English borrowed form roon does not have such connotation. Next, observe the following example which is taken from an advertisement for a bank.

(5) a. Kyassinngu wa ansin dekiru
  cashing TOP feel secured can
cyoookai kamee no mise de.
  organization member GEN shop at
organization member GEN shop at
  'Please get a loan from the member shops of the organization.'
b. Shyakkin wa ansin dekiru
cashing TOP feel secured can
kyookai kamee no mise de.
organization member GEN shop at

The example in (5a) in which the borrowed form kyassinngu appears is the actual sentence used by a bank for advertisement. Like roon in (5a), the borrowed form kyassinngu is used as a politeness strategy to save the face of potential customers. It is highly unlikely that the sentence in (5b), which has Japanese shyakkin, is used as an advertisement. The borrowed form kyassinngu in (5a) conveys the sense of modernization and positive image to customers and even encourages them to get the loan. This is because the borrowed form can successfully function as a politeness strategy: the borrowed form can promote the positive image of the addressee. Next, observe the examples in (6).

(6) a. Kono seetaa hankyuu no baagen de katta n.
this sweater Hankyuu GEN bargain at bought Q
'Did you buy this sweater at the bargain sale at Hankyuu
department store?'

b. Kono seetaa hankyuu no yasuuri de katta n.
this sweater Hankyuu GEN bargain at bought Q

The sentence in (6a) has the borrowed form baagen, while the sentence in (6b) has the Japanese equivalent yasuuri instead. The sentence which a speaker actually uttered is (6a), but not (6b). The Japanese word yasuuri literally means 'cheap sale' and it implies that the sale is for shoppers who cannot afford to buy high quality fashionable items or that the goods sold there are not in high quality. In other words, the utterance in (6b) with yasuuri is a potential threat to the addressee's positive face. However, the utterance in (6a) with the borrowed form baagen substantially decreases the threat, instead it actually promotes the addressee's positive face: the addressee may be a smart modern shopper in an urban setting. Next, observe the following examples which are taken from the announcement in a bus.

(7) a. Sirubaa siito e doozo.
silver seat to please.
'Please have a seat at the silver seat.'

b. Roojin/tosiyori notame no seki e doozo.
aged person for GEN seat to please.

The sentence in (7a) with the borrowed English form sirubaa siito 'silver seat', which means seats for seniors, is the one actually used by a conductor in a bus. The sentence in (7b) has Japanese word roojin/tosiyori notame no seki 'seats for seniors', which is equal to sirubaa siito in reference. However, its conversational effect is very different from (7a). The word roojin or tosiyori implies that the person is very old and physically weak, and probably needs some sort of physical assistance from others. Thus, the phrase roojin/tosiyori notame no seki 'seats for seniors' is potentially a threat to the face of those senior citizens. The phrase roojin or tosiyori does not give them a positive self-image. Many seniors will not
appreciate being directed to the reserved seats by the utterance in (7b). On the other hand, the utterance in (7a) is very successful in the sense that the face threat to the addressee is avoided by the borrowed form *sirubaasiito*, which functions to distance the addressee from *roojin/tosiyori* 'old people'. Actually, the borrowed form provides listeners with the positive image of someone who is still healthy and does not require any assistance from others despite his/her age.

Next, observe the following utterance which was made by a college student to her friend in conversation.

(8) a. Mattyan no *sairensu* wa *akuseputaburu* jyanai de.  
   GEN silence TOP acceptable not TAG  
   'Mattyan's silence is not acceptable.'

b. Mattyan no *sairensu* wa *yuruse-nai* de.  
   GEN silence TOP unacceptable TAG

The speaker uttered the sentence in (8a) to her friend (Mattyan) who did not respond to the speaker and kept silent. The use of borrowed form *akuseputaburu* can be interpreted as a politeness strategy to save the addressee's face. The sentence (8b) with the Japanese equivalence *yuruse-nai* is a strong statement that the speaker cannot tolerate the addressee's silence and that the addressee has been behaving very undesirably (thus the addressee is a very undesirable person). However, the borrowed form *akuseputaburu* in (8a), due to its foreign origin, does not convey such a serious message to the addressee. Rather, the borrowed form helps obscure the assertion that the silence is undesirable. In other words, the borrowed form helps the speaker distance him/herself from the assertion.

The next example involves a politeness strategy which has been employed to save the speaker's own face. The utterance was made by a college student who was describing her emotional status during the exam period.

(9) a. *Asita* siken ya kara na, honma tomorrow test is because TAG really  
   *watasi* *buruu* haitten nen.  
   I blue enter TAG  
   'I'm blue because there will be a test tomorrow.'

b. *Asita* siken ya kara na, honma tomorrow test is because TAG really  
   *watasi* *yuuutsu* ya nen.  
   I depressed is TAG

The speaker describes her depressed emotional status due to the exam period. The actual sentence she uttered was (9a) which has borrowed form *buruu*, but not (9b) which has the Japanese equivalent of the borrowed form. By choosing the borrowed form which does not explicitly mean the state of depression, the speaker successfully avoided describing her as someone who is stressed out, and someone who is far from being admirable by others. Consequently, she saved her positive face. On the other hand, if the speaker had uttered the sentence in (9b) with *yuuutsu*, it would have given the impression that she openly admits that she is in big trouble. She would not have been able to maintain herself as someone who is desirable by others.
Next, I will examine the use of the borrowed form which functions as a way to save negative face. Recall that negative face is the want of every competent adult member that his/her actions be unimpeded by others (Brown and Levinson 1978). For example, a speech act of request is a potential threat to the addressee because the addressee may feel he/she has to accommodate the request against his/her will. In the following example, a speaker (office worker) is trying to inform his superior (department chief) that his department has recently received a complaint from a customer and that he needs advice on solving the complaint from his chief.

(10) a. Okyaku kara kureemu ga dete irun desu kedo. customer from claim NOM occurred is but 'The customer has placed a complaint, but....'
    b. Okyaku kara monku ga dete irun desu kedo. customer from claim NOM occurred is but

Ending an incomplete sentence by a conjunctive kedo 'but' is a common way to make a request to one's senior in the Japanese context. The office worker uttered (10a) with the borrowed form kureemu, but not (10b) with monku 'complaint'. The Japanese word monku implies that the matter is very serious in its nature. On the contrary, the borrowed form kureemu implies that a problem is a minor one and is likely to be easily solved. The sentence (10a) is more successful than the sentence in (10b) in the sense that (10a) makes a lesser threat to the addressee's negative face by minimizing the imposition: (10a) is effective in making the complaint a minor one. According to Brown and Levinson (1978), minimizing the imposition is a strategy to save the addressee's negative face and they offer the following example among others.

(11) I just want to ask you if I can borrow a tiny bit of/little/single sheet of paper.

The underlined expressions such as little and single help minimize the imposition. Exactly the same effect as in (11) can be obtained by using a borrowed form in the Japanese context in (10a).

Direct imperatives are clear examples of bold-on-record usage in which no face redress is involved. Thus, the form of direct imperative is a threat to addressee's negative face and speakers usually avoid such forms except in certain situations such as great urgency and desperation. The following examples suggest that one way to mitigate the face threat in direct imperatives is to use borrowed forms in the Japanese context.

(12) a. Shape up your muscles.
    b. Kinnniku wo kitaee-nasai muscle ACC shape up-IMP

(13) a. Shape up your smiles. ('Put a smile on your face.')
    b. Warai wo tukuri-nasai smile ACC make-IMP
(14) a. Shape up sense of beauty. ('Shape up your fashion sense.')
    b. Biteki kankaku wo migaki-nasai.
    beauty sense ACC brush up-IMP

The above examples in (12a), (13a), and (14a), which are written entirely in English, are taken from advertisements in magazines. The Japanese imperative sentences in (12b), (13b), and (14b) which end with the imperative morpheme -nasai set the tone that someone in a higher position than the addressee is giving an order to the addressee. This causes a threat to the addressee's negative face: a social norm is that a customer (addressee) should be given maximum freedom about what he/she will buy/do and the seller should not impose any constraint on the customer. The borrowed forms in (12a), (13a), and (14a) minimize such face threats to the addressee. It is likely that readers may not take the sentences in (12a), (13a), and (14a) as directed to themselves, but rather addressed to a non-specified general public as a simple statement or a fixed phrase which does not cause any imposition on him/herself.

Next, as an extension of borrowed form in related phenomena, I will consider the following two cases: code-switching and Japanese words written in katakana.

CODE-SWITCHING AND POLITENESS STRATEGY

It is generally assumed that borrowings occur in a monolingual speaker's speech, while code-switching requires a certain competence in both languages. In other words, code-switching is part of the speech of bilinguals, not monolinguals. Although the distinction between code-switching and borrowing may be made based on the speaker's relative fluency in two languages, it is not necessarily the case that bilinguals always code-switch and never use borrowings. It is equally not warranted to claim that monolinguals always use borrowings and never code-switch. Gingras (1974) argues that the size of the linguistic item may be used to differentiate borrowing and code-switching. According to him, single words should be classified as borrowings and others (e.g., clauses) as code-switching. If we follow this view, the next example, which involves a non idiomatic sentence from English in Japanese discourse, may be treated as code-switching. The conversation occurred among three college students who have all recently returned from their two year study program in the U.S. After listening to her friend's statement, a college student tries to assure her friend that she is a valuable friend and that she respects her.

(15) C: Atasi nanka sono koto ikko mo itte nai noni
    I TAG that thing one even say not though
    Miho ga itumo nankan sonna fuuni kaisyaku suru.
    NOM always somehow that way interpret do
    'I have never said that, but somehow Miho always interprets
    things in her own way.'

    M: (laugh)

    C: Toiu-koto wa Miho ga soo omotteiru toiu-koto.
    COMP TOP NOM that think COMP
    'That means Miho thinks that way.'
D: Sonna koto nai yo. I respect you.

that thing not TAG

'That's not true. I respect you.'

The speaker C says to M (Miho) that M always misunderstands C. M simply laughs and does not offer any explicit apology or explanation to C's comment, which in turn frustrates C. By observing what is going on between C and M, their mutual friend D makes a statement which assures C that she is liked by others and that there is no ill feeling toward C among her friends. In doing so, D code-switches and ends her utterance in English clause I respect you. Why did she use the English sentence instead of Japanese sentence? She could have easily uttered a Japanese sentence such as sonkee site iru wa yo 'I respect you'. One possible answer to this question may be related to the speaker's politeness strategy. Given the fact that all three have experienced living in the country where English is spoken, English may function as their in-group language or 'we-code' (Gumperz 1971). The choice of the English sentence I respect you can mark the speaker's personal involvement and sense of solidarity; thus it functions as a way to promote the addressee's positive face. By using the English sentence, the speaker D assures the addressee C that she is a ratified and valued member of their group.

JAPANESE WORDS IN KATAKANA

In orthography, one of the Japanese writing systems, katakana, is used to express borrowed form. For example, the borrowed word terebi 'television' is written in katakana, but neither in hiragana nor in kanji. Thus, anything written in katakana denotes a concept or item which is foreign to Japanese. In this respect, it is interesting to note that some Japanese native vocabularies are now written in katakana, but not in hiragana or kanji which are reserved for any Japanese vocabularies. Observe the following examples taken from magazines.

(16) Ore batu iti ya kara na.

I wrong mark/punishment one TAG because TAG

'I have once divorced, you know.'

In (16), there is no borrowed form involved, yet the Japanese word batu iti, which literally means 'punishment one', is written in katakana as if the word were borrowed from some foreign language. Why was the word not written in hiragana or kanji? Again, the choice may be related to a politeness strategy. In Japan, someone who gets a divorce is generally considered as someone who failed not only in his/her marriage but in his/her social life to a certain extent and the act of divorce may be viewed negatively. If this is the case, by describing the divorce in katakana, which is reserved for something foreign, the writer may claim the sense of remoteness from the actual referent of batu iti. In other words, the writer can successfully distance him/herself from the undesirable referent. This will lead to saving his/her positive face as a desirable person. Thus, using katakana in describing a non-foreign concept can function as a skillful way to mitigate a threat to one's positive face. Next, observe another example of katakana usage in terms of the distance strategy.
(17) Yanagi no babaa ga 2000 en toru kara watasi wa 1500 en na no. I TOP yen is TAG 'Because Yanagi's old female owner charges 2000 yen, I get only 1500 yen.'

The above sentence was written by a gay bar host who was describing the salary system at a gay bar called Yanagi. When a patron pays 3500 yen, the gay host will receive only 1500 yen and 2000 yen will be taken by the old female owner of the bar. The host uses the Japanese word babaa 'old woman', which is a word of contempt equivalent to English 'bitch', because he thinks the owner charges too much. He is extremely unhappy with the owner, and he wants to convey that feeling in the sentence, yet he wants to avoid commiting himself to the use of a strong word of contempt because the word choice may degrade his integrity as well as his socially prescribed behavior as a female: he is a female and any female does not use any rude slang. In other words, he wants to maintain his positive face. One way to accomplish this is to use katakana and distance himself from the negative word. By using katakana, the gay host is diminishing face threat to himself.

CONCLUSION

Functional analysis of core borrowing has been centered around the idea of prestige, modernity and internationalization. The present study approached the issue of function for core borrowing from a different view. It argued that core borrowing can be viewed as a conversational strategy in interpersonal negotiations between a speaker and a hearer (see Canagarajah 1995 for Tamil context). More specifically, it argued that core borrowing forms can be analyzed as a means of politeness strategy. In addition to passively using a borrowed form to convey the sense of prestige and other related concepts, speakers can actively use borrowed forms to mitigate possibly face threatening speech acts including request and criticism. It is this skillful usage of borrowed forms that the present study has examined. It has also shown that this use of borrowed forms can be extended to the use of katakana writing systems even when there are no apparent foreign words involved. The use of the katakana writing system can also function as a face saving strategy.

To summarize, then, the present study has shown that the use of borrowed forms (and katakana system in case of writing) in the Japanese context can be viewed as a discourse strategy by participants actively involved in interpersonal negotiations (e.g., Giles et al. 1991, Scotton 1988).

* Part of this research was supported by a University of Utah Research Grant.

REFERENCES


ADVICE AND SOVIET:
A CROSS-CULTURAL PERSPECTIVE ON SPEECH ACTS

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1. INTRODUCTION.

The paper explores cross-cultural pragmatics of the speech act of advice in two different societies. It uses a cognitive approach (Langacker 1991) to the case study of the speech act of advice in English and in Russian placing the overall analysis of the speech act in the context of a broader inquiry into the culture. It aims at establishing language- and culture-specific linguistic and pragmatic regularities of this type of discourse in American and Russian cultural environments. The paper focuses on the problems of variability, coding, interpretation, and pragmatic perception of advice by Russian and American native speakers. Its more general goal is to give an interpretation of the speech behavior from the viewpoint of cultural values.

Drawing on recent developments in cross-cultural pragmatics (Blum-Kulka et al 1989, 1993, Ervin-Tripp 1976, Kramsch 1994, R. Lakoff 1990, Mills 1992, 1993, Wierzbicka 1991, 1992). I will challenge a universalistic approach to speech acts (Frazer 1985, Brown & Levinson 1987, Searle 1983) that claims that strategies of realization of speech acts are essentially the same across cultures, with differences in implementation of these strategies. I will argue that forms and strategies preferred by Russians and Americans for expressing advice are culture-specific and are rooted in national culture. In fact, every message carries a lot of social implications about cultural presuppositions, values and feelings, and it is the task of a linguist to spell out these cultural presuppositions. As Anna Wierzbicka puts it:

Ways of speaking characteristic of a given community cannot be satisfactorily described (let alone explained) in purely behavioral terms; in fact, they constitute a behavioral manifestation of a tacit system of “cultural rules” or, as I call them, “cultural scripts”; to understand a society’s ways of speaking, we have to identify and articulate its implicit ‘cultural scripts’ (Wierzbicka 1994:2)

The paper will address the following questions:
1. What is the repertoire of the forms used by Russians and Americans to perform the speech act of advice?
2. How do Russian and American speakers evaluate the available forms in regard to their directness and politeness?
3. What strategies are favored by Russians and Americans in issuing advice?
4. How are the preferred strategies motivated by the cultural assumptions?

2. DEFINITION OF ADVICE.

The term ADVICE is used to subsume a range of directive speech acts which are defined as “attempts of the speaker to get the hearer to do something” (Searle 1975). Based on the criteria of who benefits from the envisaged action and the degree of obligation for its fulfillment, we can differentiate between three prototypical directive acts: prescriptives (commands, regulations, obligations, instructions), requestives (requests, pleads), and suggestives (advice, recommendation, suggestions, invitations). Unlike prescriptives, advice does not presuppose obligatory fulfillment of the action which is envisaged as beneficial for
the hearer, and not for the speaker, as it is in request (more about taxonomy of
directive speech acts see Belyaeva 1992). For the purpose of this paper, I define
ADVICE as an attempt of the speaker (ADVISOR) to influence the hearer (ADVISEE)
to act in the way beneficial for the advisee. Prototypical advice is based on the
following pragmatic presuppositions:

1. The advisee is faced with a problematic situation and has difficulty in
solving it;
2. The advisor knows or believes that he knows what is a better solution of the
problematic situation.

Depending on who initiates the speech act of advice, we can distinguish
between solicited and unsolicited advice. In the case of solicited advice, the
advisor’s authority is based on his socially recognized professional or social status
or, in peer relationship, the authority is waived to him by the advisee. In the case of
unsolicited advice, the advisor self-imposes the authority, assuming that he knows
a better solution of the problematic situation. Obviously, solicited and unsolicited
advice may have very different social implications in different cultures. There are
also culture-specific assumptions about the situational appropriateness of giving
and seeking advice. These assumptions act as social and cultural constraints on the
choice of advising strategies used by different speech communities in different
communicative contexts.

According to Leech’s illocutionary classification, which is based on the
social function of speech acts (1983), advice can be regarded as a collaborative act
whose illocutionary goal is indifferent to its social goal; it neither conflicts nor
competes with its social goals.

I will consider three aspects of perceiving advice speech acts by Russians
and Americans: directness and indirectness, directness and politeness, strategic
preferences in different communicative contexts.

3. METHODOLOGY AND DATA.
The data for this study were collected and analyzed in a three-tiered system
that included 1) collecting an adequate pool of examples through observation, 2)
elicitation of advice strategies through questionnaires, and 3) cultural interpretation
of the data in ethnographic interviews with native speakers of Russian and
American English. The methodological objective was to compile a complete list of
syntactic variables that are used to express advice and provide cross-cultural
pragmatic interpretation of Russian and American advisory strategies.

The primary data were drawn from speech situations heard and noted in
natural conversation in Russia and in the United States (California, Texas,
Wisconsin, Delaware and Missouri) in 1995-1996 and from modern Russian and
American prose and films. The empirical method of data collection yielded a total of
about 340 examples: about 100 tokens of oral face-to-face interactions and recorded
advisory sessions and 240 examples from literary sources.

To study the native speakers’ perception of directness and politeness of
various constructions regularly occurring in natural conversation, I designed two
types of questionnaires which were administered to 45 Russians and 65 Americans.
A special discourse completion test was conducted in order to elicit written samples
of advice in six different situations each containing variables of social and
psychological relationship between the advisor and advisee. The elicited data
comprised a total of over 500 written tokens of advice in each language.

Finally, to test the native speakers’ intuition about the cultural assumptions
of the speech act of advice, I conducted ethnographic interviews with 27 native speakers of Russian and 17 Americans.

The target groups in this research were Russian and American university students and faculty observed and tested in a college environment setting. Our informants in Russia were 25 students and 16 faculty from Voronezh State University, and 20 students and 12 faculty from Moscow State University. In the USA the study was conducted with 30 students and 10 faculty of University of California at San Diego, 20 students of University of Delaware at Newark, 20 students and 6 faculty of University of Texas at Austin, and 10 students and 5 faculty at Saint Louis University, Missouri.

The three-tiered methodology of drawing and interpreting the data provided a more accurate discussion of cross-cultural specifics of advisory strategies favored by Russian and American native speakers.

4. DATA ANALYSIS.
4.1. TAXONOMY OF FORMS
There are several basic semantic classes of forms which are used to express advice in Russian and in English which are given in Table 1.

<table>
<thead>
<tr>
<th>Types of Forms</th>
<th>English</th>
<th>Russian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performatives</td>
<td>I advise/recommend X.</td>
<td>Ja sovetuju/rekomenduju X</td>
</tr>
<tr>
<td>Imperatives</td>
<td>Do X</td>
<td>Sdelai X.</td>
</tr>
<tr>
<td>Need statements</td>
<td>You need to do X</td>
<td>(Tebe/vam) nado sdelat’ X</td>
</tr>
<tr>
<td>Obligation statements</td>
<td>You must do X</td>
<td>Ty dolzhen sdelat’ X</td>
</tr>
<tr>
<td>Suggestions</td>
<td>You should do X</td>
<td>Tebe/vam sleduet sdelat’ X</td>
</tr>
<tr>
<td>Evaluations</td>
<td>Doing X is good</td>
<td>Tebe/vam stoit sdelat’ X</td>
</tr>
<tr>
<td></td>
<td>You’d better do X</td>
<td>Xoroshko by sdelat’ X</td>
</tr>
<tr>
<td>Hypothetical statements</td>
<td>If I were you I’d do X</td>
<td>Na tvojem/vashem meste ja by sdelai X</td>
</tr>
<tr>
<td>Opinions</td>
<td>Maybe you ought to do X</td>
<td>Mozhet byt’ sdelat’ X</td>
</tr>
<tr>
<td>Questions</td>
<td>Why don’t you do X</td>
<td>Pochemu by tebe/vam ne sdelat’</td>
</tr>
<tr>
<td></td>
<td>Have you ever thought of doing X?</td>
<td>A ty ne dumal sdelat’ X</td>
</tr>
<tr>
<td></td>
<td>Do you think it might be a good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>idea to do X?</td>
<td></td>
</tr>
</tbody>
</table>

There are no language-specific forms of expressing advice, although their frequency and communicative range are different in the compared cultures, which is partly accountable by different perception of these forms from the point of view of directness and degree of imposition. However, there is a distinct pragmatic difference in designation of the agent. In Russian, most of the syntactic structures have two variants: singular and plural (Ty-forms and Vy-forms). For example, Sdelai X? Sdelайте X; Ja tebe sovetuju/ Ja vam sovetuju; Tebe nado sdelat’ X/Vam nado sdelat’ X. Contextual variability of these forms can be either semantic, which is determined by singular/multiple addressee, or pragmatic, which is restricted by social constraints of power and solidarity determined by role and status relations between the advisor and advisee.
4.2. DIRECTNESS/INDIRECTNESS

All the forms that can be used to express advice were presented to the recipients for evaluation of their directness or indirectness. The subjects were asked to mark each form either as direct or as indirect.

The data revealed that forms perceived as direct are mostly speaker-oriented with either a semantically implicit Agent (Imperative Mood) or with an explicit indication of the Agent. The most frequent among them are the following constructions:

1. Performative constructions with the verbs advise (90%) and recommend (70%); sovetuju (75%) and rekomenduju (60%);
2. Imperative constructions: Do X (100%), First do X, then do Y (100%), Do X, why don’t you (95%); sdelai X (94%);
3. Statements of necessity or obligation: You must do X (100%), You should do X (80%), I think you should do X (70%); Tebe/vam nado sdelat’ X (76%), Ty dolzhen sdelat’ X (80%);
4. Evaluation phrases indicating a better course of action: You’d better do X (90%), Tebe/vam lutshe sdelat’ X (76%), Lutshe sdelai X (56%).

Forms perceived as indirect have the following features:

1. Express supposition in declarative and interrogative constructions: Might it be an idea to do X? (100%); You might consider doing X (85%); Do you think it might be a good idea to do X? (90%); Ty mog sdelat’ X (67%);
2. Express uncertainty: Maybe you ought to do X (95%); Moghet byt’ sdelat’ X? (75%)
3. Challenge the advisee’s future action: Have you ever thought of doing X? (95%), Do you think it might be a good idea to do X? (90%), Couldn’t you do X? (95%), Why don’t you do X? (70%); A ty ne dumal o tom chtoby sdelat’ X? (77%).

Obviously, both American and Russian students and faculty perceived as direct those constructions that directly point to the doer of the action directly express Speaker’s communicative intention, or directly state the necessity or preferability of the action. Both Russians and Americans marked as indirect mitigated non-categorical expressions of opinion and indirect speech acts, such as suppositions and interrogations.

4.3. DIRECTNESS/INDIRECTNESS AND POLITENESS

The same taxonomy of forms marked already for directness/indirectness was presented to the respondents for evaluation of the degree of their politeness. The instruction was to evaluate each form as polite, less polite, or more polite. These results were subsequently compared to the evaluation of directness/indirectness. As expected, indirect forms were perceived by the majority of the respondents either as polite or more polite.

The forms presented in Table 2 were perceived as both indirect and polite by the majority of Russian respondents. The absolute majority of Russian respondents also perceive constructions with formal Vy/Vam (plural ‘you’) as polite. Cf.: Ja tebe sovetuju / Ja vam sovetuju; Tebe nado by sdelat’ X / Vam nado by sdelat’ X.
### Table 2. INDIRECTNESS AND POLITENESS: RUSSIANS

<table>
<thead>
<tr>
<th>Forms</th>
<th>Indirect %</th>
<th>Polite %</th>
<th>More Polite %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mne kazhetsa (vam) lutshe sdelat' X. (It seems to me you'd better do X)</td>
<td>90</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>Mozhet byt' (vam) sdelat' X? (Maybe you would do X?)</td>
<td>80</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>Mne kazhetsa (vam) nuzhno sdelat' X. (It seems to me that you need to do X)</td>
<td>80</td>
<td>35</td>
<td>65</td>
</tr>
<tr>
<td>A ne lutshe li sdelat' X? (Wouldn't it be better to do X?)</td>
<td>75</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

All of our American respondents considered the following five constructions previously marked as *indirect*, *polite*, or *more polite* (Table 3):

### Table 3. INDIRECTNESS AND POLITENESS: AMERICANS

<table>
<thead>
<tr>
<th>Forms</th>
<th>Indirect %</th>
<th>Polite %</th>
<th>More Polite %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Might it be an idea to do X?</td>
<td>90</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>Have you ever thought of doing X?</td>
<td>90</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Do you think it might be a good idea to do X?</td>
<td>90</td>
<td>35</td>
<td>65</td>
</tr>
<tr>
<td>You might consider doing X</td>
<td>85</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Maybe you ought to do X</td>
<td>82</td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>Could you do X?</td>
<td>90</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>Why don't you do X?</td>
<td>90</td>
<td>75</td>
<td>25</td>
</tr>
</tbody>
</table>

Constructions which were considered as *more polite* by more than half of the respondents can be classified as marked for politeness in expressing advice. Americans consider *more polite* hedged interrogative constructions. Russians mark as *more polite* mitigated expressions of opinion.

### Table 4. DIRECTNESS AND POLITENESS: RUSSIANS AND AMERICANS

<table>
<thead>
<tr>
<th>Forms</th>
<th>direct</th>
<th>polite</th>
<th>less polite</th>
</tr>
</thead>
<tbody>
<tr>
<td>You must do X.</td>
<td>95</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Tebe/vam dolzhen sdelat' X.</td>
<td>85</td>
<td>15</td>
<td>85</td>
</tr>
<tr>
<td>You'd better do X.</td>
<td>94</td>
<td>7</td>
<td>93</td>
</tr>
<tr>
<td>Tebe/vam lutshe sdelat' X.</td>
<td>78</td>
<td>65</td>
<td>35</td>
</tr>
<tr>
<td>You should X.</td>
<td>86</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>Tebe/Vam skedovalo by/stoilo by sdelat' X.</td>
<td>56</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>Do X, why don't you?</td>
<td>90</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>Do X - I would.</td>
<td>85</td>
<td>35</td>
<td>65</td>
</tr>
<tr>
<td>Sdelai X/ Sdelai X.</td>
<td>100</td>
<td>15</td>
<td>85</td>
</tr>
<tr>
<td>I advise you to do X.</td>
<td>94</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>Ja tebe/vam sovetetvuju sdelat' X.</td>
<td>85</td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>I recommend you to do X.</td>
<td>75</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Ja tebe/vam recomenduju sdelat' X.</td>
<td>70</td>
<td>85</td>
<td>15</td>
</tr>
</tbody>
</table>
Our data shows considerable difference in perception of politeness level of similar direct forms by Russian and American respondents. As we see from Table 4, direct forms that contain an explicit Agent were most strongly perceived as less polite by an absolute majority of the American respondents: You must do X (100%), You’d better do X (93%), You should do X (70%). By contrast, Russians marked as less polite only one of these constructions - an obligation statement with dolzhen (must): Ty dolzhen sdelat’ X (85%). Imperative constructions, even if they contained a mitigator, were marked as less polite by the majority of both Americans and Russians: Do it, why don’t you? (70%); Do it - I would (65%), Sdelaj/Sdelai X (85%). On the other hand, several direct forms were marked as polite or even as more polite by the majority of the respondents. For example, construction with the performative verbs recommend and advise were marked as polite by the majority of Russian and American respondents.

Some forms seemed to be ambiguous in regard to politeness: i.e., constructions with modals of obligation. You should do X was marked as polite by 40% and as less polite by 60% of American respondents. The same applies to the performative construction with advise, which was marked as direct by 95% of respondents. Only 55% of Americans perceived it as less polite while 45% marked it as polite. On the other hand, similar performative constructions were perceived as polite by the overwhelming majority of Russians. Contrary to Americans, most Russian respondents considered evaluative constructions polite: Tebe/ Vam lutshe sdelat’ X (65%), Tebe/vam slesovalo by sdelat’ X (65%).

5. DISCUSSION.

5.1 RUSSIAN AND AMERICAN ADVISING STRATEGIES.

Table 5 sums up data elicited through situational questionnaire for unsolicited advice to which the respondents were asked to provide responses. The questionnaire contained descriptions of six different situations: advice about health condition, fitness program, change of job, TV viewing, vacation plans, being considerate to other people. Each situation was designed to cover three types of communicative contexts (CC): CC1 - giving advice to familiar equals such as colleagues, friends, CC2 - giving advice to subordinates or junior people, and CC3 - giving advice to superordinates, such as social or age seniors. Statistics were calculated for each type of CC with a resulting point average for Russians and Americans, which is summed up in Table 5. Our data showed that although both languages possess the same repertoire of syntactic structures for expressing advice, there is considerable difference in perception and usage of these forms by Russians and Americans. In this section, I will focus on discussing strategic differences in expressing unsolicited advice by Russians and Americans.

The major difference between American and Russians is in the preferences of use of direct and explicit forms of expressing advice. The data reveal that Americans prefer indirect, mitigated, non-committal ways of advising while Russians favor direct, explicit expressions of advice. These differences are most noticeable in the use of performatives, evaluation statements, imperatives and obligation statements.

PERFORMATIVES explicitly express the advisor’s communicative intention and overtly indicate his commitment to the speech act.

Russians use performatives freely in all types of communicative contexts: symmetrical and asymmetrical, although they are more frequent in CC with familiar equals: when talking to friends, colleagues, or classmates. In expressing advice to
their peers. Russians use performatives five times more than Americans do (82% and 15% respectively). Compared to *Sovetuju, rekomenduju* is perceived as formal, which accounts for its higher frequency in addressing the superordinates than in communication with peers (50% vs. 20%). *Sovetuju* has a wider communicative range in Russian than does its counterpart in English. *I advise you to do X* is used three times less that in *Ja vam sovetuju* in Russian.

Unlike Russians, Americans prefer the performative verb *recommend* to *advise. Recommend* has a wide communicative range although it is more common in communication with peers than in asymmetrical CC (50% vs. 20%). American faculty avoid using *I advise you to do X* in communication with superordinates while more than half of the American students do not use it at all.

**Table 5. Forms of Expressing Advice in Different Communicative Contexts: Russians and Americans Compared**

<table>
<thead>
<tr>
<th>FORMS</th>
<th>CC 1 equals</th>
<th>CC 2 infer.</th>
<th>CC 3 super.</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rus</td>
<td>Am</td>
<td>Rus</td>
<td>Am</td>
</tr>
<tr>
<td><strong>Performatives</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Ja sovetuju; I advise X</em></td>
<td>82</td>
<td>15</td>
<td>52</td>
<td>60</td>
</tr>
<tr>
<td><em>Ja rekomenduju; I recommend X</em></td>
<td>20</td>
<td>50</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td><strong>Imperatives</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Sdelai X, Do X;</em></td>
<td>76</td>
<td>15</td>
<td>58</td>
<td>20</td>
</tr>
<tr>
<td><em>Sdelal X, tak budet lutshe;</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Do X, why don't you</em></td>
<td>52</td>
<td>20</td>
<td>36</td>
<td>15</td>
</tr>
<tr>
<td><strong>Need statements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Tebe/Nam nada; You need</em></td>
<td>53</td>
<td>15</td>
<td>41</td>
<td>10</td>
</tr>
<tr>
<td><strong>Obligation statements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Ty/Vy dolzhenny X; You must do X</em></td>
<td>67</td>
<td>-</td>
<td>52</td>
<td>20</td>
</tr>
<tr>
<td><strong>Suggestions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Tebe steduet X; You should do X</em></td>
<td>23</td>
<td>20</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td><strong>Evaluations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Korosho by X; Doing X is good;</em></td>
<td>82</td>
<td>40</td>
<td>47</td>
<td>40</td>
</tr>
<tr>
<td><em>Tebe lutshe sdelat' X;You'd better X</em></td>
<td>78</td>
<td>10</td>
<td>45</td>
<td>20</td>
</tr>
<tr>
<td><strong>Hypothetical statements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Na tvojem meste Ja by sdelal X;</em></td>
<td>60</td>
<td>60</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td><em>If I were you, I would do X</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Opinions</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td><em>Mozhet byt' sdelat' X;</em></td>
<td>30</td>
<td>70</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td><em>Maybe you ought to do X</em></td>
<td></td>
<td></td>
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<tr>
<td><strong>Questions (Imbedded suggestions)</strong></td>
<td></td>
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<tr>
<td>a) <em>Pochenu by tebe ne sdelat' X?</em></td>
<td>40</td>
<td>70</td>
<td>30</td>
<td>65</td>
</tr>
<tr>
<td>b) <em>A ty ne dumal sdelat' X?</em></td>
<td>35</td>
<td>80</td>
<td>-</td>
<td>70</td>
</tr>
<tr>
<td>c) <em>A ne lutshe li sdelat' X?</em></td>
<td>76</td>
<td>70</td>
<td>75</td>
<td>50</td>
</tr>
<tr>
<td>Do you think it might be ....?</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
IMPERATIVES directly express the advisor’s imposition upon the addressee’s course of actions. Due to this, imperative sentences are qualified by most Americans as commands which are to be avoided in polite communication: 75% of American respondents marked them as unacceptable. With Russians, this form is not uncommon although it may not be as favored as other direct forms such as evaluation sentences (50% and 72% respectively). Comparatively speaking, on the average, Russians use imperatives four times more often than Americans. With Americans, imperatives are three times less common with subordinates and five times less common with familiar equals than they are with Russians. Americans demonstrated strong reluctance to use bare infinitives not only in conversation with the superiors, but also in everyday trivial situations with peers and subordinates.

NEED STATEMENTS emphasize an objective necessity to follow a suggested course of actions and are normally perceived as a direct form of expressing advice. Although this form has a comparatively wide communicative range in both languages, its average frequency with Russian respondents is much higher than with the Americans (45% vs. 10%). Moreover, in communication with superiors, Russians use this form nine times more often than Americans (47% vs. 5%).

OBLIGATION STATEMENTS explicitly reveal the advisor’s authority over the addressee and overt imposition upon his course of actions. On the average, they are ten times less common among Americans than among Russians. Almost all American respondents (96% of students and 70% of faculty) marked it as the form to be avoided in all the CCs, while Russians have no inhibitions in using it widely in all CCs.

EVALUATION STATEMENTS explicitly convey the advisor’s judgment about what might be a more beneficial way of dealing with the problematic situation. These forms have high frequency and a wide communicative range in Russian while their use is limited to peer and subordinate CCs with Americans. In general, evaluations are used by Americans almost three times less than by Russians. Furthermore, the form You’d better do X was marked as a form to be avoided by 70% of American students and 60% of faculty. On the contrary, its counterpart form in Russian - Tebe lutshe cdelat’ X- is one of the most popular among peers.

5.2. CULTURAL ASSUMPTIONS ABOUT THE SPEECH ACT OF ADVICE.

Ethnographic interviews conducted with male and female Russian (15) and American (18) faculty and other people in a position of authority (managers, directors, advisors) helped to shed light upon cultural assumptions and pragmatic presuppositions about the speech act of advice. Here, I will discuss similarities and differences in the perception of some social aspects of advice.

PERCEPTION OF ADVICE AS A TYPE OF SOCIAL INTERACTION.

Both Russians and Americans draw a sharp demarcation line between solicited and unsolicited advice. Unsolicited advice is considered ‘imposing’, ‘presumptuous’, sometimes ‘threatening’. Furthermore, it is stigmatized as a conflicting act; that is, an act that should be avoided. Unlike Americans, Russians are much more tolerant to unsolicited advice. 75% of respondents expressed readiness to accept unsolicited advice if it a) is useful, b) is expressed in a friendly manner, or c) offers a good solution of the problem. Contrary to Americans, the majority of whom do not give (or try not to give) unsolicited advice,
80% of Russian respondents at least sometimes give unsolicited advice motivated by the desire to a) prevent wrong or incompetent actions or b) help people in perceivably difficult situations.

Most of the American respondents (75%) perceived advice rather negatively (‘it’s not good to give advice because people should know their own business’). Advice is defined as: dangerous (‘one becomes responsible for future events’), conflicting (‘people do not like to receive unsolicited or critical advice’), and condescending (‘putting one down’).

Contrary to Americans, Russians perceive advice as a cooperative, socially positive speech act (‘advice is help offered to people in need of help’), it is good to give advice (‘I share my experience and make decision making less difficult for the others’, ‘I feel good if I can help others’).

These evaluations reflect different cultural values and beliefs. Americans’ negative attitude to the speech act of advice is rooted in respect to personal autonomy and is based on the assumptions that ‘people ought to make the decisions and solve their problems themselves’, they should ‘figure out themselves what they want to do’. As one of the respondents put it, ‘Americans do not like to be told what to do, they want to make up their own mind’. Children in America are educated to think independently from early childhood: ‘they are encouraged (even often told) to make their own decisions’.

**GIVING ADVICE.** When asked to give advice, both Russian (95%) and American (65%) respondents said that they feel ‘flattered’, ‘pleased to be trusted’, and ‘recognized as authority’. However, 35% of American males reacted negatively when approached with a request for advice. They perceived giving advice as ‘threatening’, ‘personal’, as ‘unwanted responsibility’. Although most respondents admitted that giving advice is a great responsibility, men and women showed a different degree of willingness to come out with advice. 55% of American female respondents showed reluctance to give advice, ‘felt uncomfortable to interfere with the process of decision making’, and did not want ‘to deprive people of their own choice’. Women ‘do not want to give strong advice’, they prefer to act ‘as a sounding board’, ‘let the other party talk it over’. Men (85%), on the other hand, give advice ‘easily’, ‘feel good to give advice in the field of expertise’, and think their ‘ego is invested’.

The Russian target group showed more homogeneous reactions: both men and women give solicited advice ‘willingly’, ‘without hesitation’ and are ‘fully committed to the responsibility of this act’. Russians feel it is their ‘duty to give advice if asked’ and ‘feel fully responsible for it’.

**SOLICITING ADVICE** is perceived negatively by most American men. 75% of male respondents avoid asking for advice because they ‘prefer to solve problems by myself’, ‘do not want to burden other people’, ‘do not want to show my weakness’. 85% of American female respondents ask advice regularly or often when they are ‘making a major decision’, and want ‘to be reassured in the decision’.

95% of Russian respondents solicit advice in the situations of a) insufficient information, b) ‘when faced with a difficult choice’ or c) when ‘having doubts about optimal solution of the problem’. They seek advice when they ‘want to hear other people’s viewpoints’ and ‘get help in analyzing the situation’. Only two respondents confessed that although they sometimes solicit advice, they ‘feel
uncomfortable about revealing their dependence on others’.

Advising Strategies. When asked about favorite strategies of expressing advice, Russian and American respondents revealed considerable similarity in their perception of appropriate strategies for advice, but demonstrated considerable differences in communicative practices. Both Russians and Americans who are in the position of authority modify their strategies depending on the factors of power and solidarity. The majority of the respondents consider it more appropriate not to show their power and speak in favor of indirect strategies with subordinates. However, unlike Americans, Russian respondents also strongly emphasize the necessity to demonstrate respect when advising a superintendent. In the Russian language, it is achieved grammatically by changing the form of the personal pronoun and the verb into plural. Cf.: Ty (sg.) sdelai (sg.) X - Vy (pl.) X. Many Russians perceive the imperative with the verb poprobu - Poprobu sdelai’ X (Try to do X) - as a less categoric form than bare infinitive - Sdelai X. In fact, in this case it is the semantics of the verb, not the form that mitigates the utterance.

When asked for advice, Americans consider it most appropriate ‘to provide people with enough information so that they can reach their own conclusion’, ‘give an example from your own experience’, ‘outline alternatives’, ‘express opinion, provide something that might help the other to make the final decision’. Russians in general are much less aware of such sophisticated strategies. Although they stress the necessity of being tactful and polite, it does not refer to the subordinates, especially to children. In fact, 75% of respondents confessed that instead of monitoring them to make their own decision outlining the possibilities, they simply use a straightforward explicit way of telling their children what to do. Russians do not hesitate to give an absolute opinion and be judgmental. Few indicated a preference for the tactic of ‘speaking in context and outline options’, ‘discussing alternatives’ when speaking to the subordinates at work. Still fewer chose a strategy of ‘giving the other person a chance to talk about the problem’ or ‘selecting carefully information you want to give the hearer that would lead him to the decision you think is best’. Most Russian respondents (65%) prefer shortcuts by simply passing judgments and telling people what they think is best in this situation.

6. Conclusion

Observed and elicited data showed that American respondents marked as less polite most direct forms of expressing advice: Imperatives (Do X, why don’t you?), performatives (I advise you), evaluative statements (You’d better do X), and obligation sentences (You must do X). Americans showed a strong tendency to avoid direct forms of expressing advice in all types of communicative situations and gave preference to indirect strategies, using opinion sentences and mitigated or conditional suggestions (e.g. If I were you, I would do X: If you want X, you might consider doing Y). These preferences reflect a deep-rooted habit of acknowledging differences in individual points of view and recognizing an individual’s right to make his own decision.

By contrast, Russian respondents did not stigmatize direct and explicit forms and showed little hesitation to use them when issuing advice (e.g. Ja tebe sovetuju sdelat’ X - ‘I advise you to do X’; Tebe nado by delat’ X - ‘You would need to do X; Ty lutshe sdelai X - ‘You’d better do X’). This uninhibited use of
direct and explicit forms of advice can be justified by the assumption that in case of advice, the advisor is urging the advisee to perform an act that will benefit him. By comparison with Americans, who try to bias the illocutionary point of the advice utterance toward the negative outcome (give options), Russians bias their advice toward the positive outcome: their use of straightforward strategies greatly restricts the advisee’s opportunity to make the final decision independently.

Ethnographic interviews helped to spell out the cultural values and tacit cognitive ‘cultural scripts’ that determine culture-specific linguistic behavior. For example, American strategic preferences reflect Anglo-American cultural values of freedom of expression, respect for individual independence and right of choice. The implicit cultural assumptions reflected in American advisory strategies can be rephrased as cultural rules:

1. one has the right to say and do what one wants;
2. when stating an opinion, one should speak only for himself and not impose one’s opinion on others: what is good for one may not be good for others;
3. one can not tell others what to do.

Personal experiences and discussions with native informants lead me to posit a high degree of obligation on the part of Russians to give advice as compared to American counterparts. Russians have a strong sense of obligation to help a person who appears to be facing a problematic situation. This obligation seems to overrule the consideration of imposition on the advisee’s autonomy and self-reliance which is of primary concern with Americans.

Favorite Russian strategies are based on the cultural assumption that giving advice presupposes a high degree of commitment and personal involvement. Rewritten in cultural rules, it reads:

1. one has the right to express an opinion or pass judgments;
2. if one believes his judgment is true one can try to make other people believe it is true;
3. if one knows what is good for others one should tell them to do it.

In Russia giving and soliciting advice is a common practice in everyday private life and at work. It is not infrequent to get an unsolicited piece of advice from a stranger in public transpiration or in the street. In fact, advising was the salient political principle in Soviet times which was reflected in the nick-name of the country: Strana Sovetov - 'Country of Advice'.

Cultural ways of speaking acquired in early childhood affect greatly speech performance in the second language. Second language learners tend to use the same strategies as they use in their native language, which, naturally, reflect their native cultural values. For example, Russian learners of English may shock Americans by using blunt imperatives and other direct and explicit forms of advice when they want to show their genuine concern. On the other hand, Americans may make Russians feel very uncomfortable, if not unhappy, when they use mitigated indirect way of expressing advice which is interpreted by the Russians as unwillingness to help in the problematic situation. In order to prevent miscommunication and misunderstanding, both parties should familiarize themselves with values and beliefs that determine each other’s cultural ways of speaking.
REFERENCES


Frezer, B. 1985. On the universality of speech act strategies. From the linguistic to the social context, ed. by S. George, 43-49. Bologna: CLUEB.


The Covert Syntax of Wh-questions in Plains Cree
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This paper examines the proposal that there are two strategies used for relativization in Cree: i) restrictive modification via operator movement; and ii) coreference across coordinate clauses. I argue for this proposal on the basis of the structure of wh-questions in Cree. In the analysis I develop, wh-words are not operators but are licensed by predication in a nominal small clause, NP NP, in which the initial NP constitutes the predicate as shown in (1):[^3]

(1) \[ SC \]
    /   \
   NP NP
   pred subj

In this structure, the subject NP may serve as a relative clause head in an operator construction involving another clause; OR the subject may simply be construed with an argument in a following conjoined clause. I am assuming the Pronominal Argument Hypothesis (PAH) (cf. Baker 1994, Jelinek 1984) whereby verbal AGR identifies and licenses pro in argument positions with overt lexical NPs in adjoined position.

Wh-questions in Plains Cree show contrasts in two respects: i) the choice of complementizer; and ii) the [+/- AGReement] features of the wh-word. These contrasts are illustrated in the following examples. Example (2.a) shows ka: complementizer which involves an empty operator (i.e., ka: is obligatory in relative clauses and focus constructions):

(2.a) awi:nihi ka:-wa:pam-a:-t
    who (obv) REL-see s.o.-dir-3 (3 prox > 3' obv)

Who is it that she saw? (literally)

Example (b) has e:- which is the general complementizer and does not involve an operator (both complementizers are referred to in the Algonquian literature as conjunct markers):

b) awi:nihi e:-wa:pam-a:-t
    who (obv) Conj-see s.o.-dir-3 (3 > 3')

Who did she see?

The second contrast involves proximate/obviative agreement of the wh-word --awi:na 'who' (proximate/unmarked) or awi:nihi 'who' (obviative).[^4] Note that the examples in (2) both involve an obviative wh-word. Example (3) involves two
overt NPs. The obviative marker for NPs is -(w)a suffix which occurs here on the object NP:

(3) Mary e:-wa:pam-a:-t John-a
    Mary (prox) conj-see s.o.-dir-3 John-obv
    Mary (prox) saw John (obv).

The following NP pairs also illustrate the proximate/obviative contrast: Mary vs Mary-wa; mo:s vs mo:s-wa 'moose'; and na:pe:w vs na:pe:w-a 'man'. The pronominal forms in (4) belong to a different paradigm and contrast, for example, awi:na vs awi:nihi 'who' (prox/obv) and ana vs anih'i 'that (one)' (prox/obv). Consider the examples:

(4.a) awi:nihi Mary e:-wa:pam-a:-t                        [+AGR]
       who (obv) Mary conj-see s.o.-dir-3
       who did Mary see?

The obviative wh-word in (a) is [+AGR] and agrees with its obviative (object) referent as indicated in the verbal agreement. In (b), the wh-word is unmarked/proximate with the same obviative referent in the verbal morphology:

b) awi:na ana Mary ka:-wa:pam-a:-t                        [-AGR]
       who that (one) Mary REL-see s.o.-dir-3
       Who is it that Mary saw?

In example (b), the [-AGR] wh-word is accompanied by the deictic ana 'that (one)' (also in the unmarked proximate form -- a matter which will be addressed below). This deictic can occur only with a [-AGR ] wh-word as indicated in Table 1 which illustrates the possible combinations of [+/- AGR] with respect to the two complementizers:

Table 1:

<table>
<thead>
<tr>
<th></th>
<th>[+AGR]</th>
<th>[-AGR]</th>
<th>[-AGR]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-deictic</td>
<td>+deictic</td>
<td></td>
</tr>
<tr>
<td>e:-</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>ka:-</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

The [+AGR] wh-word can occur with either complementizer. The [-AGR] form with deictic is grammatical only with ka:- while its counterpart without the deictic is typically given with e:- complementizer. However, when asked, consultants also accept the ka:- complementizer in these examples (hence "ok"). It should be noted here that deictic phrases will be designated as DP> (not DP) in contrast to other NPs. Cree does not have def./indef. articles and all NPs are equally
"definite". To avoid confusion, these will all be designated simply as NP. (Note in (6) that deictic constituents are more referential than definite NPs.)

The nominal small clause analysis provides a unified account of all these phenomena (see the diagrams in (5)). Note that these structures are equational small clauses in Cree (see discussion in Section 1).

\[
\begin{array}{c}
(5.a) & \text{SC} & \text{b)} & \text{SC} \\
/ \& \ \\
\text{NP} & \text{NP} & \text{NP} & \text{NP} \\
\text{pred} & \text{subj} & \text{pred} & \text{subj} \\
| & | & | & | \\
\text{awi:na} & \text{pro} & \text{pro} & \text{awi:na/awi:nihi} \\
\text{[-AGR]} & & & [+AGR] \\
\end{array}
\]

When the wh-word is in initial (predicate) position as in (5.a), the wh-word will always be [-AGR], i.e., it occurs in the (unmarked) proximate form even if its intended referent in the wh-question is obviative. When the wh-word is in the subject NP position as in (b), then the wh-word will be [+AGR] -- i.e., it will agree with the proximate/obviative status of its intended referent.

1. NP - NP CLAUSES IN CREE:

A nominal small clause contains two NPs, one of which may be less referential than the other (cf. Heggie 1988, Moro 1990, Williams 1994). A sentence with two NPs which are equally referential is referred to as **Equational**, i.e., *The morning star is the evening star*. In an equational structure, either NP may be in predicate position without affecting the structure. On the other hand, if the two NPs are not equally referential, then the less referential NP is in predicate position, i.e., *John is the chief*. (In English, the predicate involves the second NP.) This is referred to as a **Predicational** clause (cf. the hierarchy in (6)):

\[
\begin{array}{c}
(6) & \text{Hierarchy of reference: (adapted for a predicate-initial language. cf. Heggie} \\
& 1988) \\
\text{indefinites } & \text{definite NPs } & \text{names } & \text{deictic} \\
\text{[predicate]} & \text{------------------------} & \text{[subject]} \\
\end{array}
\]

In this hierarchy, the most referential (subject-like) constituent is deictic while the least referential indefinite NP is more predicate-like.

In Cree, a predicative small clause is shown in (7.a) and illustrated in the tree structure in (b):

\[
(7.a) \text{ ni-simis ana} \\
1 - \text{younger sibling that (one)} \\
\text{That is my younger sibling.} \quad \text{C.182.a}
\]
In my analysis, the deictic constituent in subject position in (b) is the determiner of a DP$^>$ with an empty pro as NP. When the two NPs in (7.a) are reversed, the result is a DP$^>$ and the small clause reading is unavailable.$^5$

c) ana ni-simis ....Vb......
   that 1-younger sibling
   That younger sibling of mine ....Vb........... D.182.b

   ** 'My younger sibling is that one.'

In the following example, the underlined clause is a predicative small clause structure which is followed by the DP$^>$ 'that dog' in apposition.

(8) niya ana, ana atim
    mine that (one), that dog
    That's my dog. J.16

In the predicative small clause, niya 'me/mine' is in predicate position while the deictic ana 'that' is part of a DP$^>$ structure with pro. Examples in (9) show an interrogative example in which the wh-word is in predicate position and the deictic is, once again, part of a DP$^>$ structure in subject position of the SC:

(9.a) awi:na ana
    who    that (one)
    Who is he? Who is that (one)? cf D.234

b) SC
    /  \
    NP  DP$^>$
    |  /  \
    ni-simis D$^>$ NP
    |       |
    ana    pro

The structure in (b) represents a predicational structure, i.e., the subject is more referential than the predicate.
In **equational** examples, on the other hand, the two NPs must be equally referential or non-referential. Cree examples are found in focus constructions; for example:

(10.a) **John e:ko** ka:-nikamo:-t
John the very one REL-sing-3
It was John that sang. B.222

b) e:ko **Mary-wa** ka:-wa:pam-a:-t John
the very one Mary-obv REL-see s.o.-dir-3 John
It was Mary that John saw. B.343

In the above examples, the underscored constituents represent an equational small clause in which both elements are equally referential (either NP may occur in predicate position).

Given the discussion above, I propose that in wh-questions, the wh-word is in a small clause structure with *pro* (see the diagrams in (5) above); consider the sentence, *Awi:na? 'Who is s/he?'* Both NPs are equally referential, i.e., *awi:na 'who'* is non-referential by definition and *pro* requires an antecedent (it is not referential in and of itself).

There is a remaining problem. I have claimed that the wh-word in the subject position agrees with the argument to which it refers in the following clause. Cree determiners also agree with their NP; i.e., why is the determiner in (4.c) above *ana 'that' (prox)* rather than *anihi 'that' (obv)*? Consider the embedded question in (11):

(11) **ni-kakwe:cim-a:-w John [awi:na anihis Mary-wa]**
1-ask s.o.-dir-3 John who that (obv) Mary-obv
I will ask John who **Mary is**. B.293

Given the existence of third-person **John**(prox), **Mary** must be obviative. In Blain (in progress), I argue that there is a structural difference involved which accounts for the lack of agreement [-AGR] in (a) as opposed the the [+AGR] in (b): this is illustrated in (12):

(12.a) \[
\begin{array}{c}
\text{SC} \\
\text{NP} / \ D^> \\
| / \\
awi:na D^> \ NP \\
| / \\
a = \text{pro CP (rel. cl.)} [-AGR] \\
\end{array}
\] b) \[
\begin{array}{c}
\text{SC} \\
\text{NP} / \ D^> \\
| / \\
awi:na D^> \ NP \\
| / \\
anihi Mary-wa [+AGR] \\
\end{array}
\]
In other words, the determiner does not show agreement if the DP$^>$ contains an NP which is an entire relative clause (with head pro); but if the NP is a lexical noun, the determiner will agree with the proximate/obviative status of that NP.

In this section, I have discussed the two types of nominal small clauses which will be used in the analysis which follows: i) the predicative structure with DP$^>$; and ii) the equational structure as in (5).

2. ANALYSIS:

In this section, I will provide an analysis for the four types of wh-questions shown:

2.1 [+AGR] wh-word with ka:- complementizer.
2.2 [-AGR] wh-word with ka:- complementizer
2.3 [+AGR] wh-word with e:- complementizer.
2.4 [-AGR] wh-word with e:- complementizer.

In the examples involving ka:- complementizer, the second NP in the small clause is relativized as the head of the following clause. With e:- (which does not involve an empty operator), the two clauses are conjoined and the restrictive modification is achieved via coreference.

2.1 [+AGR] WH-WORD WITH ka:- COMPLEMENTIZER:

The schema in (13.a) represents the examples below. The first NP of the small clause is pro which occurs in predicate position. The second NP is the [+AGR] wh-word which is the head of the relative clause in subject position of the predicative structure.

(13.a) \[ \text{NP is [NP NP Op}_i \text{ ka: pro .....Vb'd....... t}_i \text{ ] } \]

\[ \text{pro is [NP who Op}_i \text{ ka: pro .....Vb'd....... t}_i \text{ ] [+AGR] } \]

b) awi:nih\text{-pakamahw-a-t}
who (obv) REL-hit s.o.-dir-3 \(3 > 3'\)
cf.B.360.b

\text{who (obv) did he hit?}

\(3 > 3'\)

c) awi:nih Mary ka:-pi:kiskwat-a:-t
who (obv) Mary REL-speak to-dir-3 \(3 > 3'\)

Who is Mary talking to?

\text{cf. B.294}

In each case, the wh-word is obviative in agreement with the obviative object of the relative clause. The following structure represents (13.b):
The operator in Spec CP links the variable and the wh-antecedent functioning as head of the relative clause.

2.1 [-AGR] WH-WORD WITH ka:- COMPLEMENTIZER:
These examples provide overt evidence for: i) the existence of the nominal SC; and ii) for the location of the [-AGR] wh-word in the predicate position.

(15.a) NP is ana [NP NP Opj ka: pro .....Vb'd....... t1 ]
who is that [NP proj Opj ka: pro .....Vb'd....... t1 ]
[-AGR]

Here ana 'that' is the deictic of the DP> containing the relative clause with empty head pro. As shown in (12.a), the deictic does not agree with the obviative object it refers to in the following clause. The wh-word in the following examples is the predicate; therefore, the wh-word in each case is [-AGR]:

b) awi:na ana
who that (one)
Who is he? Who is that one? cf. D.234

c) awi:na ana John ka:-wi:kim-a:-t
who that (one) John REL-marry-dir-3 (3 > 3')
Who is it that John is going to marry? cf.D.263

d) awi:na ana kahkiyaw aniki ka:-wa:pam-a:-t-ik
who that (one) all those REL-see s.o.-dir-3-pl
Who is it that they all saw? D.251.b

The structure in (16) represents (15.c) above with ka:-.
(16)  

```
SC
 / \  
NP  DP>
 | / \  
awi:na D> NP
 / / \  
ana NP CP
 / / \  
  pro_{i} John\_j CP
 / \  
  Op_{i} C'
 / \  
  ka: IP
 / \  
  pro_{j} VP
 / \  
  wi:kim t_{i}
```

The wh-word is equated in the structure to the relative clause head pro which is itself the antecedent of the object trace via operator movement. Therefore, the wh-word must be construed with the object argument of the verb.\(^6\)

2.3 [+AGR] WH-WORD WITH e:- COMPLEMENTIZER: 

The e:- complementizer never occurs with relative clauses or focussed NPs. Therefore, there is no associated empty operator and e:- serves to coordinate the clause with a preceding clause.

(17.a) [ NP is NP ]  
[ pro is who ]  
[ +AGR ]  
..........................construed..............................

Literally: 'He is who (and) she Vb'd him.'

In (a), the first NP is pro in predicate position of an equational SC while the NP subject is the wh-word [+AGR]. Examples include:

b) awi:niihi Mary e:-wa:-wa:pam-a:-t  
who (obv) Mary conj-redup-see s.o.-dir-3  
Who (obv) is Mary seeing (i.e., dating)?  
D.132

\(3 < 3'\)

(17.a) [ NP is NP ]  
[ pro is who ]  
[ +AGR ]  
..........................construed..............................

Literally: 'He is who (and) she Vb'd him.'

In (a), the first NP is pro in predicate position of an equational SC while the NP subject is the wh-word [+AGR]. Examples include:

b) awi:niihi Mary e:-wa:-wa:pam-a:-t  
who (obv) Mary conj-redup-see s.o.-dir-3  
Who (obv) is Mary seeing (i.e., dating)?  
D.132

\(3 < 3'\)

(17.a) [ NP is NP ]  
[ pro is who ]  
[ +AGR ]  
..........................construed..............................

Literally: 'He is who (and) she Vb'd him.'

In (a), the first NP is pro in predicate position of an equational SC while the NP subject is the wh-word [+AGR]. Examples include:

b) awi:niihi Mary e:-wa:-wa:pam-a:-t  
who (obv) Mary conj-redup-see s.o.-dir-3  
Who (obv) is Mary seeing (i.e., dating)?  
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\(3 < 3'\)
Example (c) is illustrated in (18):

(18) IP
    / \ /
    / \ / \ SC CP
    / \ / \ NP NP Maryj CP
    / | \ pro awi:nihi C
     / \ e: IP
     / \ proj VP
     / \oce:m pro

Even though there are two pro elements in the second clause, there is no ambiguity. The proximate Mary is coindexed with the pro in subject position (given the 'direct' morphology on the verb). The remaining pro constituent must then be coreferential with the pro in the preceding clause as shown. Note that this is true also in the English equivalent, i.e., Who is he -- she kissed him. The second clause is a restriction on the first and the two masculine pronouns are construed as coreferential. In other words, the interpretation of (17.c) is the equivalent semantically to restrictive modification, i.e., 'Who is pro that she kissed?' This constitutes S-structure evidence for the claim that some relativization strategies involve coordination.

2.4 [-AGR] WH-WORD WITH e:- COMPLEMENTIZER:

This type has a restricted distribution inasmuch as the second clause must have a topic-type structure:

(19.a) [ NP is NP ] [ NP [ e: pro .....Vb'd...... pro ] ]
[ who is pro ] [ Topic j [ e: pro j .....Vb'd...... pro ] ]
[+AGR] | .............................................................construed..................................

Literally: 'Who is he (and) X herself, she Vb'd him.'

b) awi:na wiya John e:-oce:m-a:-t
    who EMPH John conj-kiss-dir-3 (3 > 3')
In these examples, the [-AGR] wh-word is in predicate position with pro as the subject NP. The following clause contains an intervening SC structure wiya John 'John himself'. In Blain (1996), I show that wiya associates only with topic. In (c), the emphatic pronoun kiya constitutes new topic (Dahlstrom 1995).

\[
\begin{array}{ccc}
\text{SC} & \text{......and.......} & \text{CP} \\
/ \ \ \ / \ & \ \\
NP & NP & SC \ CP \ \\
| & | & / \ \ / \ \\
awi:na & pro_i & wiya \ John_j \ C' \ \\
& & / \ \ \\
e: & IP & \ \\
& / \ \ \\
proj & VP & \ \\
& / \ \ \\
oce:m & pro_i & \\
\end{array}
\]

The topic SC is adjoined to the CP structure while the wh-phrase is represented in a separate SC clause. This structure is more like two separate sentences rather than a single IP containing both.

It should be noted that all of these arguments can be generalized to proximate examples in which the [+AGR] wh-word has the same phonetic form as the [-AGR] wh-word. The analysis then depends on the other clues in the sentence, i.e., the choice of complementizer, and the existence of deictic constituents (i.e., awi:na ana) and topicalized structures.

3. CONCLUSION:

We have seen that wh-words can be [+/- AGR] with an obviative referent. If the wh-word is [+AGR], then it is in argument position, i.e., in subject position in the NP NP small clause. On the other hand, if the wh-word is [-AGR], then it is in predicate position.

The complementizer can be [+/- Operator]. If [+Op] as with ka:-, then a relative clause construction results. If it is [-Op] with e:-, the wh-clause is conjoined to the rest of the sentence. Both, I argue, involve restrictive modification and relativization -- whether structural or by interpretation and construal.

This supports the proposal that there are two types of relativization strategies needed for Cree: i) on the one hand, restitutive modification achieved via null operator movement; and ii) on the other, restrictive modification achieved by means of anaphora across coordinated sentences (as proposed by Ross (1967) and Williams (1988)).
REFERENCES:


Levels vs. Domains: The Case of Kashaya Vowel Length
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In this paper I argue that correlations between particular morphological and phonological processes, which lexical phonology captures by means of lexical levels, should be recast within Optimality Theory in terms of constraint domains, i.e. substrings of the surface representation which have different constraint rankings. I base the argument on three processes in Kashaya affect vowel length in different ways, all of them blocked from applying in a particular morphological subpart of the word. With domains, a single high-ranked constraint accounts for this pattern; with levels, however, three different accounts are necessary, and the correlation is unexplained.

Background

In the ordered-rule approach to generative phonology which has until recently characterized most work in the field, there can be many intermediate stages in a derivation. A classic case from English (cf. Kiparsky 1982) is given in (1).

(1) a. basic form
   b. $V \rightarrow N$ conversion, new stress
   c. $N \rightarrow V$ conversion

The intermediate stage (b) provides a simple account of the location of stress in the final form (c). In some cases, however, intermediate stages lead to complications in the analysis, such as requiring pseudo 'look-ahead' devices.

For example, a standard assumption in derivational prosodic phonology is that lower-level constituents are created before higher ones: e.g. syllables, then feet, then the word. In metrical phonology, this bottom-up construction means feet are created before the word layer of the grid (by the End Rule, picking out the leftmost or rightmost foot). But Hayes (1995) and others have argued that sometimes there is motivation for top-down parsing: apply the End Rule, then construct feet so that the head of a foot is under the higher grid mark (in accordance with the Continuous Column Constraint).

We can contrast the treatment of an initial light–heavy syllable sequence in two languages which both have quantity-sensitive trochees built from left to right: the difference follows from top-down versus bottom-up parsing.

(2) Malayalam: bottom-up parsing

i. Footing

```
  \( \, \, (\cdot) \, \) \\
\text{pa řa: ţi}
```

ii. End Rule

```
  \( (\cdot \, \, x \, ) \) \( (\cdot) \, \) \\
\text{pa řá: ţi} \quad \text{‘complaint’}
```
In Malayalam (Dravidian: India), as seen in (2), stress falls on the second syllable in this case (cf. Mohanan 1989). A foot cannot be constructed on the first syllable because the two options — degenerate (\(\cdot\)) and trimoraic (\(\cdot\)\(\cdot\)) — both violate restrictions on the form of a quantity-sensitive trochee. Thus the first foot is simply skipped, which is crosslinguistically the normal outcome in such cases.

In Cahuilla (Uto-Aztecan: southern California), on the other hand, we find a degenerate foot on the first syllable, which takes the main stress. (A \(\forall\) rime is heavy here.) This result can be analyzed by reversing the standard assumption of bottom-up construction and applying the End Rule first.

(3) **Cahuilla**: top-down parsing

\[
\begin{align*}
\text{i. End Rule} & & (x) \\
\text{su ka} & & \text{ti} \\
\text{ii. Footing} & & (x) \\
\text{sú ká} & & \text{ti} \quad \text{('the deer (obj)')}
\end{align*}
\]

The need to have a foot underneath the \(x\) placed by the End Rule forces creation of a degenerate (\(\cdot\)) foot so that the initial syllable is stressed.

While the contrast in (2) and (3) can generate the correct forms, it captures only weakly the intuition that what matters in Cahuilla is that the stress fall on the first syllable, and not that prosodic structure be created in a particular order. A constraint-based approach such as Optimality Theory (Prince and Smolensky 1993) makes it possible to capture this idea directly, and that is one of its primary advantages. For example, the contrast between Malayalam and Cahuilla can be analyzed with surface constraints only, such as the following, given in slightly simplified form.

(4) a. **FTBIN** A quantitative trochee must contain two moras.

b. **ALIGNL** The main stress must be at the left edge of the word.

The two logical rankings of these constraints give us the two languages.

(5) a. **FTBIN** \(\gg\) **ALIGNL** *Do not stress the initial syllable if that would require a degenerate foot.* (= Malayalam)

b. **ALIGNL** \(\gg\) **FTBIN** *Create a degenerate foot in order to achieve initial-syllable stress.* (= Cahuilla)

Thus the basic tool of Optimality Theory — constraint ranking — is all that is necessary to capture the difference between the two stress patterns.

An important example of an intermediate stage is the level of lexical phonology, which captures a relationship between sets of phonological and morphological rules. I illustrate with data from Manam (Oceanic Austronesian: Papua
New Guinea; cf. Lichtenberk 1983), in which stress clash is prohibited within a root but not elsewhere. This leads to the stress pattern CVC.CV.CV internal to a root (6) but CVC.CV.CV elsewhere (7).

(6) a. émbepi 'sacred flute'
   b. ógau 'Onkau' (name)

(7) a. arón-tú'a (*aróntu?a) 'right in front of you'
   b. sågodè-n-tína (*sågodéntina) 'you are really well-mannered'

In a lexical phonology model (e.g. Kiparsky 1982), the root pattern suggests application of footing to the root alone, which avoids clash. Later footing, after suffixation and in a different level, permits clash.

(8) a. **Root stress** (émbe)?i (ará)
   b. **Suffixation** — (ará)-n-tú?a
   c. **Refooting** — a(rón)(tú?a)

While it is possible to incorporate levels directly into an OT approach (e.g. McCarthy and Prince 1993a), such a move undermines the essential surface orientation of the theory. The lack of levels in a strictly parallel version of OT might then be seen as a disadvantage of this approach, since is cannot reproduce the analysis in (8). Buckley (1995a,b) proposes ‘constraint domains’ which capture the generalizations that motivate levels not with intermediate stages, but by delimiting substrings of the surface representation which are subject to different constraint rankings. In Manam, the crucial domains are the root and the suffixes.

(9) { root } { suffixes }

If stress is assigned only once, the otiose first stage of footing in (8) can be eliminated entirely. The root pattern is expressed as a constraint on stress which holds only within the root domain. A bit schematically (see Buckley 1995b for details):

(10) **Clash** 

<table>
<thead>
<tr>
<th><em>Clash</em></th>
<th>Adjacent stressed syllables are not permitted.</th>
<th><em>Clash</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Align</strong></td>
<td>Align the right edge of the word with a foot.</td>
<td><strong>Align</strong></td>
</tr>
</tbody>
</table>

(11) 

<table>
<thead>
<tr>
<th>(émbe)?i</th>
<th><em>Clash</em></th>
<th>Align</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. témbe?i</td>
<td><em>Clash</em></td>
<td>*</td>
</tr>
<tr>
<td>b. (ém)(bé?i)</td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

(12) 

<table>
<thead>
<tr>
<th>arón-túa</th>
<th><em>Clash</em></th>
<th>Align</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. a(róntu)?a</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b. a(rón)(tú?a)</td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>
The clashing feet in (12b) are ignored because the clash \( r\dot{o}n \) \( t\ddot{u} \?a \) is not fully located within the root \{aro\}.

I argue in the following sections that domains are not only a viable reinter-pretation of levels, but in fact are superior because they are able to capture general-izations which elude stepwise derivations. Specifically, the blocking of three processes in Kashaya (Pomoan: northern California) which would alter vowel length in a particular set of suffixes can be captured in the domains account by a single constraint, but in lexical phonology the similarity must remain a coinci-dence.

The three processes in question are those termed by Buckley (1994) Iambic Lengthening, Foot Flipping, and Final Shortening; I discuss them in that order.

**Iambic Lengthening**

Kashaya builds iambs from left to right. The main (only) stress is normally on the first foot. Iambic Lengthening (=IL) yields' a long vowel in the strong branch of an iamb.

\[(13) \begin{align*}
a. \text{kel-aloq"-iċ-} & \rightarrow \text{(kel\dot{a}:)(loqo:)ċi} \\
& \text{‘look back up!’} \\
b. \text{kel-ad-uced-} & \rightarrow \text{(kel\dot{a}:)(duce:)du} \\
& \text{‘keep peering’} \\
c. \text{kel-mul-ad-uced-} & \rightarrow \text{(kël)(mula:)(duce:)du} \\
& \text{‘keep peering around’} \\
d. \text{mo-mul-ad-uced-} & \rightarrow \text{(momā:)(ladu:)c(edu)} \\
& \text{‘keep running around’}
\end{align*}\]

Buckley (1994) proposes five levels in a lexical phonology framework. There is no lengthening when the vowel heading the syllable belongs to a level 4 or 5 suffix (even if that is the main stress); the root is shown in bold, and all suffixes following the double hyphen belong to level 4 or 5.

\[(14) \begin{align*}
a. \text{si--pʰila} & \rightarrow \text{(si\ddot{p}ʰǐ)la} \\
& \text{‘if [it] happens’} \\
b. \text{mo-mac-ed--ela} & \rightarrow \text{(momā:)c(ede)la} \\
& \text{‘I keep running in there’} \\
c. \text{hoṭʰ-ala--śuw-em} & \rightarrow \text{(hoṭʰā:)laśu)(wem)} \\
& \text{‘it would warm [us] up’}
\end{align*}\]

In this approach, the derivation requires several stages: first the lengthening suf-fixes are added to the root; then IL applies; and then the non-lengthening suffixes are added. After the second round of morphology, IL does not reapply. Specifi-cally, Lengthening applies to the output of level 3 morphology, but then turns off and does not apply in levels 4 and 5.

The derivation in (15) demonstrates that intermediate extrametricality of a stem-final consonant is necessary to permit lengthening of the vowel in the final syllable.
(15) a. **MORPHOLOGY, level 3**
   b. Phonology (with Lengthening)  
   c. **MORPHOLOGY, level 5**
   d. Phonology (no Lengthening)

The next derivation illustrates how this analysis captures the difference between level 3 and level 5 suffixes.

(16) a. **MORPHOLOGY, level 3**
   b. Phonology (with Lengthening)  
   c. **MORPHOLOGY, level 5**
   d. Phonology (no Lengthening)

Crucially, the suffix - ela must not be present at the stage where IL applies.

In a domains analysis, the double hyphen delimits two constraint domains, call them 1 and 2. (A complete account of the phonology may require more subtle division into domains.) Non-lengthening suffixes uniformly occur to the right of those which permit IL, so the domain of IL is a substring at the left side of the word. Schematically, this can be thought of in either of the following two ways: more descriptively (17a) or as a translation of the levels approach (b).

(17) a. \{ root + lengthening suffixes \}_1 \{ nonlengthening suffixes \}_2
   b. \{ root + level 2 + level 3 \}_1 \{ level 4 + level 5 \}_2

More specifically, if we do not appeal to momaced as an intermediate representation, we must refer to it as a substring of the surface representation within which IL occurs (cf. also Inkelas 1989, Inkelas and Orgun 1995). Below, within (...)_1 IL occurs, within (...)_2 it does not.

(18) a. **Input with domains shown**
   b. **Output with feet**

The basic effect of IL is to achieve a perfect or canonical iamb, which consists of a light (and unstressed) syllable followed by a heavy (and possibly stressed) syllable (cf. Hayes 1985, 1995). Using constraints in a domains analysis, I posit the following constraint on Asymmetry within the foot.

(19) **ASYM**

In a branching iamb, the strong branch must be heavy.

Here I simply assume that the right foot structure is generated by proper ranking of constraints such as ALIGN, PARSESYL, and FTBIN; see Buckley (1995c) for complete analysis, including motivation for the presence of degenerate feet as shown below. ASYM determines the internal composition of those feet.
\[(20) \begin{array}{|c|c|} \hline \text{\{(keladuced\}_1\{u\}_2} & \text{ASYM} \\ \hline \text{a. (kelá) (duce) (du)} & *! * \\ \text{b. (kelá:) (duce) (du)} & *! \\ \text{c. (kelá:) (duce:) (du)} & *! \\ \hline \end{array} \]

IL must be prevented in the non-lengthening domain, for which purpose I give the following constraint (cf. Urbanczyk 1995: 512, McCarthy 1995: 43).

(21) Q-IDENT The quantity of each input segment must be identical to its output quantity.

The difference between lengthening and non-lengthening suffixes is quite simply a matter of which constraint wins: ASYM or Q-IDENT. Since the winning output differs across the two domains, there must be a different constraint ranking in the respective domains. Q-IDENT\(^{(1)}\), which evaluates only segments in domain 1, is ranked below ASYM, resulting in lengthening; while Q-IDENT\(^{(2)}\), for domain 2, dominates ASYM and thereby prevents IL.

(22) Q-IDENT\(^{(2)}\) » ASYM » Q-IDENT\(^{(1)}\)

The UR, with domains labeled, is shown in the upper left corner of the tableau. For clarity, domain labels are omitted from the output candidates.\(^2\)

\[(23) \begin{array}{|c|c|c|c|} \hline \text{\{(momaced\}_1\{ela\}_2} & \text{Q-IDENT\(^{(2)}\)} & \text{ASYM} & \text{Q-IDENT\(^{(1)}\)} \\ \hline \text{a. (moma) (cede) la} & & **! & \\ \text{b. (moma:) (cede) la} & & * & * \\ \text{c. (moma:) (cede:) la} & & *! & * \\ \hline \end{array} \]

In sum, domains provide a rather straightforward reinterpretation of levels in a surface-oriented framework, avoiding complications of intermediate stages such as otiose footing and ad hoc extrasyllabicity (as in (15); see Buckley 1995a).

**Foot Flipping**

A remarkable indication of the pressure in Kashaya for iambic rhythm is found in Foot Flipping. Putting aside its formulation (which is, in fact, much more principled using constraints: see Buckley 1995c), it has the effect of changing an underlying ‘anti-iamb’ C\textsubscript{v}vC\textsubscript{v}, flipping the vowel lengths in the two syllables to create the perfect iamb C\textsubscript{v}C\textsubscript{v}\textsubscript{v}.

\[(24) \begin{align*}
a. \text{dič-æq*-ič--i} & \rightarrow (\text{diča:})(\text{qoči}) & \text{‘take a message out!’} \\ b. \text{qai-cid--u} & \rightarrow (\text{qaci:})(\text{dû}) & \text{‘keep leaving’} \\ \end{align*} \]

In addition to the flipping of vowel lengths, in these forms the stress falls on the second foot, rather than on the first one as is normally the case in Kashaya. See Buckley (1995c) for an account of this pattern in Correspondence Theory.
Foot Flipping, like Lengthening, fails to apply if it would result in a long vowel within domain 2, a fact which in OT can be attributed directly to the same constraint Q-IDENT.

(25) a. \text{diːč--eti} \rightarrow (\text{diː})(\text{četí}) \quad \text{‘although (he) tells’}
   \hspace{1cm} *(\text{diː})(\text{tí})

   b. \text{qāː--mela} \rightarrow (\text{qāː})(\text{melá}) \quad \text{‘I left’}
   \hspace{1cm} *(\text{qameː})(\text{lá})

In the OT analysis, the high-ranking status of Q-IDENT\textsuperscript{2} accounts for both facts: IL and Foot Flipping both introduce a long vowel, and Q-IDENT\textsuperscript{2} ensures that this not occur in domain 2.

\begin{array}{|c|c|c|}
\hline
| (\text{qāː})\textsubscript{1}(\text{mela})\textsubscript{2} | Q-IDENT\textsuperscript{2} | ASYM |
\hline
| (\text{qāː}) (\text{melá}) | * | |
\hline
| (\text{qameː})(\text{lá}) | *! | |
\hline
\end{array}

The explanation of the correlation is transparent in the constraint-based analysis: in both cases, creation of a long vowel in domain 2 is blocked by Q-IDENT. The special status of domain 2 is stipulated for a single constraint, which by itself accounts for the lack of both processes. Such an explanation is not possible in the ordered-rule approach, and this fact constitutes a powerful argument against it.

With levels the best we might do is to turn off Foot Flipping at the same point, i.e. after level 3 (cf. (16)), though even then the similarity would be a coincidence.

(27) a. \textit{MORPHOLOGY, level 3} \hspace{1cm} \text{qāː} + \text{cid} \hspace{1cm} \text{qāː}
   \hspace{1cm} \text{b. Phonology (with Flipping)} \hspace{1cm} (\text{qaciː}) <\text{d}> \hspace{1cm} (\text{qāː})
   \hspace{1cm} \text{c. MORPHOLOGY, level 5} \hspace{1cm} (\text{qaciː}) \text{ d + u} \hspace{1cm} (\text{qāː}) + \text{mela}
   \hspace{1cm} \text{d. Phonology (no Flipping)} \hspace{1cm} (\text{qaciː}) \text{ (du)} \hspace{1cm} (\text{qāː}) \text{ (mela)}

That is, this move provides no explanation as to why this correlation should obtain, and it is predicted that a similar language might have the same rules in different levels. This prediction is dubious, since both processes result in the same canonical iamb.\textsuperscript{3}

\textbf{Final Shortening}

The third process is Final Shortening. When a long vowel belonging to a verb root ends up in word-final position, as when a vocalic suffix is elided, the root vowel becomes short.

(28) a. \text{du-kiː--i} \rightarrow \text{duːki} \quad \text{‘scratch it with your fingernail!’}
   \hspace{1cm} \text{b. hi-ːsaː--i} \rightarrow \text{hiːsa} \quad \text{‘break!’}
   \hspace{1cm} \text{c. qāː--i} \rightarrow \text{qā} \quad \text{‘leave!’}

There is a late verbal suffix \textit{eː}, however, which surfaces with its length intact.
(29) a. mikuːt-ad--e: → mikuːtaːdeː 'keep humming'
b. nohpʰo--tʰi-mi-mi-ya-e: → nohpʰotʰimiːmíyei 'did not live long ago'
c. do-hṭ-ibic--tʰ-e: → dohtibítʰeːi 'didn’t raise hand'

In a lexical phonology approach, Buckley (1994) proposed that this level 5 suffix has a special prosodic status such that it is outside the prosodic word, and thus does not undergo word-final shortening.⁴

(30) [ [ mikuːtaːd ]w eː ]φ

In the domains approach, however, nothing special needs to be said. The suffix -eː is independently known to be located in domain 2 — it occurs to the right of all other domain 2 suffixes — so its underlying length is automatically protected by Q-IDENT[²]. The constraint which forces shortening is * Vː ]w, which prohibits a word-final long vowel.

(31) \[
\begin{array}{|c|c|c|}
\hline
&mikuːtaːd\rangle_{1}(eː)_{2} & \text{Q-IDENT}^{[2]} & * Vː ]w \\
\hline
a. ꦱ mikuːtaːdeː & & * \\
b. mikuːtaːde & & ! \\
\hline
\end{array}
\]

Elision is effected by a set of constraints, most importantly ONSET. Of course, since the long root vowel is located in domain 1, it is unprotected by Q-IDENT[²], and is shortened.

(32) \[
\begin{array}{|c|c|c|c|}
\hline
& (qaː)_{1}(i)_{2} & \text{ONSET} & \text{Q-IDENT}^{[2]} & * Vː ]w & \text{Q-IDENT}^{[1]} \\
\hline
a. qaːi & & * & & ! \\
b. qaː & & * & & ! \\
c. ꦱ qa & & & & * \\
\hline
\end{array}
\]

Note that the deletion of the final /i/ is not a violation of Q-IDENT[²], since identity constraints hold only when the relevant segment is actually present in both the input and output (McCarthy and Prince 1995). What (32b,c) do violate is MAX, which normally prevents deletion of segments but in Kashaya is ranked below ONSET (as well as below DEP, which prevents insertion of a default onset consonant).

**Conclusion**

The constraint-domains approach offers a completely unified account for these three cases of blocking — a single high-ranking constraint, Q-IDENT, that holds strongly only within domain 2. A levels-based approach, on the other hand, must give quite distinct analyses of the three cases. There has already been consider-
able evidence adduced in favor of a phonology organized around constraints rather than rules. The contrast presented here shows that even though constraints can be fit into a level-ordered framework, a better framework is one which takes seriously the surface orientation of Optimality Theory and replaces levels with constraint domains.

Notes

1 Cyclic effects like the conversion in (1) are the subject of considerable current work in Correspondence Theory and similar frameworks (e.g. Benua 1995; Burzio 1994; Kenstowicz 1995; McCarthy 1995; McCarthy and Prince 1994, 1995; Orgun 1994, 1996). Essentially, prótęsty has the stress it does because it is morphologically related to prótęstN, not because it is immediately derived from it.

2 Not only is Q-IDENT(1) low-ranked relative to ASYM, in fact it never plays any role in choosing candidates. Any form that Q-IDENT(1) might favor is ruled out by an alignment constraint, which dominates ASYM and therefore necessarily Q-IDENT(1). (Every long vowel leads to a new foot and adds violations of ALIGN.) As noted by Buckley (1995a), an alternative to the view that a constraint such as Q-IDENT exists in two domain-specific forms is that there is only one constraint, but (in this case) it is ignored in domain 1. The important point is that violations within domain 1 never matter, whether this is treated as low ranking of a domain-particularized constraint, or by completely ignoring the violations. Thus I generally omit Q-IDENT(1) from tableaux, as potential *CLASH[suf] was omitted for Manam.

3 The similarity is further obscured by the fact that the rule of Foot Flipping cannot turn off after level 3. Rather, it has to be active throughout the lexical phonology, to avoid a true look-ahead device: this is necessary because whether or not Foot Flipping actually occurs depends on the overall syllable structure of the word, and this depends on suffixes added in levels 4 and 5. Therefore it is only the rule of “CV Adjunction”, which feeds Foot Flipping by creating an antim-amb (C\(\nu\)\(\nu\)C\(v\)) from nonbranching (C\(\nu\)\(\nu\)), that is inactive after level 3. See Buckley (1994, 1995c) for discussion.

4 The prosodic structure in (30) is also intended to account for the fact that a final /a/ in a small set of suffixes is deleted before -e: just as in word-final position. It seems likely, however, that this pattern, which is phonologically unnatural, is best treated by appeal to morphological structure.

References


Inkelas, Sharon, and Orhan Orgun. 1995. Level ordering and economy in the lexical phonology of Turkish. Language 71, 763-793.


By me bein’ pregnant I would stay sick all the time:
Causal *by* and *from* in African American Vernacular English*

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1.0 Introduction

Very little research in African American vernacular English (AAVE) has focused on preposition usage, some notable exceptions being Sommer (1986, 1991), Nichols (1986) and Orr (1987). The present paper attempts to fill this gap by examining AAVE usage of *by* and *from* to express notions within the domains of means, cause and agency. The first part of the paper examines standard Present Day English (PDE) causal uses of *by* and *from*, in particular, considering how particular semantic constraints on their usage result from the spatial metaphors on which they are based. The second part describes AAVE *from* and *by* usage, focusing on the features that distinguish it from standard usage. The final section of the paper attempts to determine whether the AAVE features represent old or innovative features of AAVE, and for the innovative ones, proposes paths of semantic extension that will account for them.

The primary data for this paper come from tape-recorded speech of four generations of AAVE speakers in the rural east-central Texas community of Springville (Cukor-Avila 1995). In order to determine whether a particular feature is old or innovative we have also consulted data from interviews with former slaves, transcribed in Bailey, Maynor, and Cukor-Avila (1991), data from the Linguistic Atlas of the Gulf States (LAGS), which includes recorded speech from respondents born between the 1880s and the 1960s, (Pederson et al. 1981), as well as historical data from the O.E.D. We have supplemented these data with evidence from two computerized sources: the Brown Corpus of written American English and the London-Lund Corpus of spoken British English.

2.0 Causal *by* and *from* in standard PDE

2.1 Properties of *from* in standard PDE

Within the framework of cognitive functional linguistics, there has been considerable research demonstrating the semantic links between spatial and non-spatial uses of prepositions, most notably Brugman (1981), Sweetser (1988), Genetti (1986) and Rice (1992). In particular, causal uses such as (2) have been claimed to be metaphoric extensions of spatial uses, such as (1).

(1) Fred traveled from Spain to France.  
(2) John got sick from eating the oysters.

Both Vamparys (1984) and Radden (1985) note that the causal uses of *from* are 'non-volitional.' Vamparys cites examples such as (3) and (4) below as demonstrating that causal *from* uses involve a non-volitional event or entity causing a state or process over which the subject has no control:
(3) My guns were a bit rusty, from the wet weather.
(4) She died recently, from what cause? (Vamparys 1984: 401)

Both of these examples demonstrate that the cause referred to in the *from*-clause is non-volitional and is typically an inanimate NP. A survey of the Brown Corpus confirms the claim that *from* causal uses are non-volitional. Some examples from the Corpus are listed in (5) and (6) below. (In example (6), the object of *from* is a gerund-phrase rather than a noun phrase):

(5) Boyer is suffering from a stiff neck.
(6) Our necks are stiff from gazing at the wonders of outerspace.

Since causal *from* is non-volitional, it follows that this construction cannot be used to mark the agent in passive clauses because agents are prototypical volitional causers. The ungrammaticality of *from* as a marker of agentivity is shown in (7):

(7) * Fred was killed from the gangsters.

It is interesting to note that none of the examples in (3) - (6) included an agent in the main clause. This fact is not accidental since causal *from* in standard PDE does not permit main clause agents, as is shown by the ungrammaticality of (8) and (9). These examples also demonstrate that *from* cannot be used to express the reason for the main clause situation.

(8) * Mary went to the doctor from a stiff neck.
(9) * John fixed the clock from its being broken.

Another property associated with causal *from* is that the event referred to in the *from*-phrase must temporally precede the event specified in the main clause. When the two events are simultaneous, as in (10), the sentence is ungrammatical or at least questionable. If the main clause situation expresses the resultant state of the causal action rather than a temporally coincident event, the construction is grammatical, as is seen in (11):

(10) *?I got burned from putting my hand on the hot stove.
(11) I have a scar from putting my hand on the stove.

Based on the preceding evidence, we can now summarize the properties of causal *from* in standard PDE:

i. *from* marks non-volitional causers (→ *from*-phrase cannot mark agents in passive constructions)
ii. subjects of the main clause are non-agentive (→ *from*-phrase cannot express reasons)
iii. event referred to in *from*-clause temporally precedes event/state referred to in the main clause
2.1.1 Accounting for the properties of causal from

Both Radden (1985) and Vamparys (1984) argue that the properties of causal *from* can be traced back to the spatial metaphor on which the construction is based. Their metaphorical explanation of the origin of causal *from* is as follows: through a space \(\rightarrow\) time metaphor, events specified in a *from*-clause are perceived as temporally preceding events specified in the main clause. In our folk-theoretical view of causation, if one event temporally precedes another, then the first event is perceived as the cause and the second the effect, a classical fallacy known as "post hoc, ergo propter hoc." Consequently, situations specified in the *from*-phrase are perceived as the cause of the situation in the main clause. The claim that these constructions are based on a space \(\rightarrow\) time metaphor explains the temporal separation between the causing event and the situation in the main clause in *from* constructions.

Vamparys (1984: 402) proposes that the non-volitional property of causal *from* can also be traced to its original locative meaning: "From expresses a functional relationship between an entity and its source. The functional relationship explains the use of *from* to refer to non-intentional causation. The relationship between the cause and the person affected by it is a mere functional one: the person is not involved in it, but merely affected by it." This statement seems to suggest that the spatial metaphor underlying causal *from* restricts it to non-volitional causation. However, Clark and Carpenter (1989: 7) demonstrate that children use *from* to mark both volitional and non-volitional causation. In fact, children typically use *from* to mark the agents in passive constructions, as in examples (12) and (13) below, only later acquiring the use of *by* in these constructions. They also use *from* to mark volitional causers in non-passive contexts, as in (14), and non-volitional causers, such as in (15) (in accordance with standard PDE usage).

(12) Some women were arrested from the soldiers.
(13) No, he isn't going to get hurt from those bad guys.
(14) This fall down from me. (knocking pieces of sandwich off his plate).
(15) I not tired from my games.

Clark and Carpenter's study shows that children first acquire locative uses of *from* and then later press *from* into service as a marker of agency or cause. The fact that children do this without ever hearing examples of this type suggests that the notion of 'source' provides a conceptual link between these domains. Clark and Carpenter claim that the notion of source itself is really an abstract temporal relation between two entities A and B, where A temporally precedes B. A and B can be places, people or events: "Source, then, is property that initial locations bear to final locations, that agents bear to patients or themes, and that causes bear to effects ..." (Clark and Carpenter 1989: 24). In this account, the shift from space \(\rightarrow\) cause does not involve the intermediate step of a space \(\rightarrow\) time metaphor: temporality is inherent in the original locative sense of *from*, since movement in space necessarily also involves "movement" through time. Most importantly, Clark and Carpenter's study indicates that agency and non-volitional causation can be conceptually linked by the notion of source. Interestingly, the only causal situation in which the children do not use *from* is to express reasons: in those cases, *because* was used instead, as in example (16).
Could I have another gingersnap 'cos I want to put in my mouth and
drink at the same time? (Clark and Carpenter 1989: 21)

The avoidance of *from to express reasons can perhaps be accounted for as
follows: the existence of a reason specified in the *from phrase entails that there is a
volitional (reasoning) agent in the main clause. Consequently, the primary source
of the event/situation in the main clause is not the reason in the *from-phrase but
rather the reasoning main clause subject. In this way, the conceptual notion of
source can explain the exclusion of main clause agents in *from constructions, since,
as sources of energy/volition, main-clause agents compete with the source specified
in the *from-phrase.

2.2 Properties of *by in PDE

In standard PDE, the *by + NP construction differs significantly from the *from +
NP construction in that it is used to express the means by which an event occurs
rather than the cause of the event. Some examples of this from the Brown Corpus
are listed in (17) and (18). These examples show that the *by + NP construction in
standard PDE indicates direct means only -- the NP specified in the *by-clause must
participate directly in the situation in the main clause, as is seen in the
ungrammaticality of (19). Note that the preposition *through would be grammatical
in this context because it is the preposition used to express indirect means in
standard PDE.

(17) Heating is by individual, gas-fired warm-air systems.
(18) It is connected by teletype with the state library in Albany.
(19) * He got a raise by hard work.

The *by + NP construction in standard PDE is also used to mark agents in passive
constructions, as in example (20):

(20) Fred was eaten by a tiger.

Additionally, the Brown and London-Lund corpora rendered numerous
examples of the *by + gerund construction. Significantly, none of the 35 examples
extracted from these data had a stative situation in the main clause; all of the main
clauses involved dynamic situations. The prototypical *by + gerund construction, as
is exemplified by (21) - (24), involves a volitional agent attempting to realize the
goal specified in the main clause by means of an action specified in the *by-clause.
However, the cause-effect relationship need not be intentional, as is clearly shown
by (24), in which the golfer presumably was not trying to bogey the 15th hole:

(21) They are preoccupied with ending labor abuses by extending the
anti-monopoly laws to the unions.
(22) . . . suspend him from the light fixture by tying the strings to the
lamp base.
(23) Any needy family living in San Francisco can obtain toys by writing
to Christmas toys . . .
(24) He bogeyed the 15th by missing a short putt.
The absence of stative situations in the main clauses of the corpora data is not a statistical accident; they are ungrammatical in this construction, as is demonstrated by the ungrammaticality of example (25):

(25) * I am sick by eating too many oysters.

Unlike causal from, constructions with by + gerund do not permit the event specified in the by-phrase to be temporally separated from the event specified in the main clause, as is seen in (26) below:

(26) I got really tired this afternoon from/* by not sleeping much last night.

The properties of the by + NP and by + gerund (means) constructions in standard PDE can be summarized as follows:

by + NP
i. direct (not indirect) means
ii. agent in passive constructions

by + gerund (means)

i. does not permit stative situations in the main clause
ii. permits agents in the main clause
iii. does not permit temporal separation of the situation referred to in the main clause and the situation referred to in the by-phrase.

2.2.1 Accounting for the properties of by

Radden (1985) provides a metaphoric account of the origins of the means uses of by. He proposes that the means use of by, illustrated in examples (27) - (29), arose via metaphoric extension from spatial path uses of by, such as in example (30). A path is the means to a spatial goal in the same way that a telephone or train is a means by which travel or communication may occur.

(27) We talked by telephone.
(28) They arrived by train.
(29) I knew it was you by your voice.
(30) We arrived at the crossroads by that path.

This metaphoric explanation can perhaps help explain some of the properties of the by + gerund construction listed above. In spatial uses such as (30), the path is a means to attaining a spatial goal. Abstract by + gerund uses do not allow stative situations in the main clause because stative situations do not have an inherent goal or endpoint. Similarly, these constructions permit agents in the main clause because verbal actions that involve a goal or endpoint frequently have an agent. Finally, since a path is an integral part of movement towards a spatial goal, the means specified in the by-phrase of a by + gerund construction cannot be temporally separated from the main clause event that it is helping to bring about.
3.0 *by* and *from* in AAVE

The previous section has attempted to identify the special properties associated with cause and means uses of *by* and *from* standard PDE. It has also explored the extent to which these properties can be accounted for in terms of the spatial metaphors from which the causal/means uses were derived. However, one remaining question is whether the underlying spatial metaphor permanently constrains the types of uses that may emerge or whether these constraints may be overridden at a later stage in the development of the morpheme. A second question is whether abstract uses based on spatial metaphors of source (*from*) and path (*by*) must necessarily divide up the semantic territory of means, cause, and agency in the way that standard PDE does. For example, is it always the case, as in standard PDE, that a path preposition (such as *by*) marks agency whereas a source preposition (such as *from*) marks non-volitional cause? Recall that the Clark and Carpenter (1989) study demonstrates that children use one marker (*from*) to mark both agency and non-volitional causation. One way to explore these questions would be through a cross-linguistic investigation of marking patterns in source and path prepositions. The present paper will take an alternative approach and demonstrate that variation data can also be highly useful in answering these types of questions. In particular, the next section will demonstrate that abstract uses of *by* and *from* in African American Vernacular English (AAVE) differ in significant ways from the standard PDE usage described above, providing important information about semantic extension and conceptual categorization.

3.1 Causal *from* in AAVE

The AAVE usage of *from* differs from standard usage described above in respect to the semantic role of the main clause subject. Examples (31) - (33) demonstrate that the main-clause subject in a *from* construction can have the semantic role of agent. Example (33) is particularly interesting because the object of the main clause (the teacher) is controlling the subject of the *from*-clause. These types of constructions did not appear in either the LAGS data, the ex-slave data, or the O.E.D. suggesting that these uses may be innovative rather than old, (although their absence from these sources may simply result from the rarity of the construction). Examples (31) and (32) from the Springfield data provide an indication of how agency may have crept into the main clause of *from*-phrases. Although the verbs in (31) and (32) typically have main-clause agents, it is clear from the contexts in these two examples that the events were non-volitional, that is, the subject in (31) probably did not intend to run off her husband. Pseudo-agentive examples like (31) and (32) may have served as a stepping stone to examples such as (33), which undoubtedly involves a main-clause agent.

(31) She ran him off from talkin’ too much.
(32) FW: How did she meet all those people?  
   B: From runnin’ the streets.
(33) I hit a teacher from pushing around my sister. (Sommer 1991)
3.2 Causal by in AAVE

There are also several ways in which the means/cause uses of by in AAVE differ from the standard PDE usage described above. Whereas standard PDE usage only permits the by-construction to encode direct means, examples from the Springville data, (34) and (35), demonstrate that it can also be used to encode indirect means in rural AAVE:

(34) Uh, but, you know it's grants an' stuff - jus' like I tol' you they'll show you how they can help you, get into some an' how you can get grants and stuff from the government by your income and stuff like that.
(35) An that's how I buy all my school clothes by me workin' in the fields an' stuff.

In (35), working in the fields is not the direct means for buying clothes but rather the means for making money which is in turn used to buy clothes.

Another way in which Springville usage differs from standard PDE usage is the ability to have stative situations in the main clause, as is seen in examples (36) and (37):

(36) I been sick by this hot sun.
(37) V: Ohhh, Anyway we live, Huntsville. We lived in Huntsville for two months. An' I would stay sick all the time.
FW: From bein' pregnant?
V: By me bein' pregnant.

Note that in (37) above, the by-phrase is not a gerund with a deleted co-referential subject but is instead a small clause. This by + small clause construction is also used when the subject of the by-clause and the subject of the main clause are not co-referential, as is shown in (38) - (41) below:

(38) You know, they was goin' crazy by me bein' young and not carin' about stuff.
(39) You see, by her bein' too strict on me, I made the mistake anyway.
(40) I guess by me workin' and sometime I come in tired an' stuff, they was gettin' where they wouldn' listen to me and stuff.
(41) By my blood pressure being high that's why they rushed me to the hospital.

Since the subjects of the two clauses are not co-referential, this construction is clearly different from the prototypical by + gerund construction in standard PDE in which a volitional agent intentionally brings about the situation in the main clause by means of participating in the action specified in the by-clause. In examples (38) - (41), the cause-effect relationship is unintentional and is therefore closer to the standard PDE from prototype in that respect. However, unlike standard PDE causal from, this construction permits agents in the main clause and can be used to express reasons, as in (41).

The most strikingly distinct uses of by were not found in the rural
Springville data, but in data from Sommer and Sánchez on urban dialects of AAVE. Previous research on grammatical innovation and change in AAVE has shown that these innovations typically begin in urban areas and subsequently spread to rural communities as rural residents develop strong ties to the city (Cukor-Avila 1995; Cukor-Avila and Bailey 1996). It is therefore not surprising that the most innovative uses of by are found in the data from urban speakers. In examples (42) and (43) we can see the use of by in a context involving a participant that is both a source and an agent.

(42) I got a black eye by this boy. (Sánchez 1981 cited in Orr 1987: 131)
(43) She had a telephone call by one of her friends. (Sommer 1980 cited in Orr 1987: 131)

3.3 Summary of causal by in AAVE

The properties of AAVE constructions that use by to mark cause, means or agency are summarized below:

*by* + NP
i. direct means
ii. indirect means
iii. non-volitional causation
iv. agent in passive constructions
v. agent/source in non-passive constructions

*by* + small clause
i. subject of the main clause need not be co-referential with subject of by-clause
ii. permits stative situations in the main clause
iii. permits agents in the main clause
iv. non-volitional causation
v. reasons

*by* + gerund
i. seems to have the same properties as standard PDE usage but very few examples were found in the data

4.0 AAVE preposition features: old or innovative?

4.1 Retentions of old uses

The O.E.D. revealed that the by + NP construction covered a wider semantic territory in Middle English and early Modern English than it does in PDE, leaving open the possibility that some of the AAVE uses are old rather than innovative. Two examples in which by + NP is used to encode indirect means are shown in (44) and (45):

(44) Hath he more benefit by his horse than by his Minister? (1622 T. Stroughton *Chr. Sacrif.* xvii.239)
Christe... draweth soules unto hym by his blody sacrifice. (1548 Latimer *Serm. Ploughers* (Arb.) 34)

Additional evidence that the AAVE indirect means uses may be old rather than innovative comes from one example found in the ex-slave data:

(46) Oh, to be [unintelligible] trying to do what I can, by the help of the Lord.

The O.E.D. also provides examples in which the sense of means approaches ‘cause’ as is seen in (47) - (49):

(47) Soone after by this synne he felle. (1483 Caxton *G. de la Tour H iii*)
(48) Though flewme of hymself be thicke and vnsavory by strengthe of heete. (1495 Thevisa *Barth. De P.R.* iv.ix.)
(49) A Hill almost unascendable, by the roughness of a craggy way. (1627 Feltham *Resolves* i.xxxix. Wks. (1677) 49)

Note that examples (47) -(48) are similar to the AAVE uses cited in (36) and (37) above in that they involve non-volitional causation, and in the case of (48) and (49), a stative situation in the main clause.

4.2 Innovative uses

The AAVE data contain two constructions which do not appear in either the O.E.D., LAGS or ex-slave recordings, suggesting that these uses are innovations rather than retentions of older forms. One of these constructions is the use of *by* + small clause as is shown in example (41) repeated as (50) below:

(50) By my blood pressure bein’ high that’s why they rushed me to the hospital.

This construction is unique in that it links the following three features: (1) the ability to have non-coreference between the subjects of the two clauses; (2) the ability to express non-volitional causation; (3) the ability to have agents in the main-clause. Consequently, this construction can be used to express reasons, as in the example above: reasons cannot be expressed with either *from* or *by* in PDE. While we will not attempt to propose a definite path of semantic extension for this innovation, it is worthwhile to note that it shares some features with AAVE *by* + NP, namely that it can express non-volitional causation and permits stative situations in the main clause. Since the *by* + NP uses appear to be retentions of old uses, they may have served as a starting-off point for the *by* + small clause construction.

Other examples which do not appear in the O.E.D., LAGS or the ex-slave data are ones in which the *by*-phrase marks an animate participant in a context in which it is both a source and an agent. This evidence suggests that examples such as (42) and (43) are representative of innovative features. Examples of this type are questionable or ungrammatical in standard PDE because a *by*-phrase can mark
agency only if a passive participle is present. While no examples of this type appeared in the Springville data, the Springville data do provide an indication of how these uses originated. First, in the entire Springville data set there were only four passives with by-phrases -- each of these four passives was a get-passive, as in (51) and (52), and all were uttered by younger speakers:

(51)  She got beaten up by her boyfrien’ once.
(52)  We gave, no we gave Scrubby away and most of em’ got killed by trains.

Example (53), which is not a true passive though a passive participle is present, is even more telling:

(53)  I got my teeth knocked out by a girl once.

This example is semantically very similar to (42) which is repeated below in (54a). (54a) can be paraphrased as (54b), and in this form it is grammatically and semantically analogous to (53) above. The difference between (54a) and (54b) is that in (a) the situation is specified by an NP, whereas in (b), it is specified as a small clause:

(54a)  I got [a black eye] by this boy.
(54b)  I got [an eye blackened] by this boy.

Based on the evidence from rural and urban AAVE we can now propose a series of steps accounting for the emergence of uses such as I got a black eye by this boy and She had a telephone call by one of her friends:

i.  The prevalence of the get-passive with by-phrases strengthens the association of the verb get with an agentive by-phrase.

ii.  Passive-like structures such as I got my teeth knocked out by a girl once provide a stepping stone to the new construction I got a black eye by this boy because, while they are grammatically different, they are semantically very similar.

iii.  Uses such as I got a black eye by this boy conventionalize the construction “get + NP + by-phrase”, where by marks agency in a context in which the agent is also a source.

iv.  By analogy, the construction extends to other verb + NP uses, such as the one in She had a telephone call by one of her friends in which the NP marked by the by-phrase is both source and agent.

4.3 Summary

This section has demonstrated that some of the AAVE uses of by appear to retentions of old uses, namely, use of by + NP to express indirect means and non-volitional cause. Other uses of by appear to be innovative: (1) the use of by + NP
to mark NP’s that are both agents and sources in non-passive contexts and (2) the use of *by* + small clause as a causal connector, similar to PDE *because*.

### 5.0 Conclusions

This paper has shown the AAVE uses of *from* and *by* within the domains of means, cause, and agency differ in significant ways from corresponding PDE usage. We have attempted to explicitly characterize these features, and have shown that some of these uses are retentions of old uses while others are innovative. In this way, we have hoped to contribute to the body of descriptive research on African American Vernacular English. We have also hoped to demonstrate that variation data can provide insight into the nature of semantic extension and conceptual categorization. Recall that some of the semantic constraints on PDE usage were proposed to have stemmed from the spatial metaphors of source and path on which the cause and means constructions were based: the AAVE data demonstrate that these metaphor-derived constraints may only be operating early on in the development of the cause/means uses. For example, the AAVE *by* + NP construction and *by* + small clause construction both permit stative situations in the main clause, that is situations without an inherent goal or endpoint, even though the underlying spatial metaphor involves the attainment of a spatial goal. AAVE usage of *by* demonstrates that a path preposition is not limited to marking direct means but can also come to mark indirect means, non-volitional cause and even reasons.

The AAVE data have also shown that PDE is just one example of how source and path prepositions can divide up the semantic territory of means, cause, and agency. Unlike PDE, AAVE uses the same preposition (*by*) to mark both non-volitional cause and agency. Interestingly, the children in the Clark and Carpenter (1989) study are also using a single preposition to mark both agency and non-volitional cause, although they do it with the source preposition *from*. This connection is not surprising because the AAVE use of *by* is source-like in other ways as well in that agentive *by* can mark NP’s that are both source and agent, as in examples such as *She had a telephone call by one of her friends*. In this way, the AAVE data demonstrate that path prepositions can come to mark source-like notions. In examining AAVE usage of *from* we find the reverse pattern: the source preposition *from* is becoming slightly more means-like by permitting main-clause agents. The additional loss of the feature of temporal separation (such examples were not found in the data) would result in a means use of *from*, as in *I killed the fly from swatting it*. Clearly, the AAVE data have provided a completely different model of how source and path prepositions can divide up the territory of means, cause, and agency, and in so doing, have revealed much about the potential for semantic extension within these domains.

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'Easy'-Class Adjectives in Old English: A Constructional Approach*

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1. Introduction

Beginning with a treatment by Lees some 35 years ago, the status of sentences such as (1) and (2) has been a matter of considerable dispute in the transformational-generative tradition.

(1) It is easy to please John
(2) John is easy to please

A point of particular contention has been whether such sentences are to be viewed as semantically equivalent and transformationally related.

It has been observed that Old English (OE) has constructions parallel to those in (1) and (2); these are shown in (3) and (4).1

(3) IC:

us is earfoðe to secgenne ḷa selteuðan mærða...
us-DAT is difficult to tell the little-known wonders
'(It) is difficult for us to relate the little-known wonders...

(ÆHom M 14 (Ass8) 15)2

(4) TCC:

ḥas þing synt earfoðe on Englisce to secganne
these things are difficult in English to say
'These things are difficult to say in English'

(ByrM 1 (Crawford) 76.9)

Note that in (3), the predicative adjective earfoð 'difficult' has no nominative NP in its valence; the sentence-initial NP us 'us' is dative, and codes the experiencer of the difficulty predicated by earfoð; the clause to secgenne ḷa selteuðan mærða 'to relate the little-known wonders' is straightforwardly interpreted as the notional subject of the predicate earfoð. In (4), meanwhile, ḷas þing 'these things' is nominative, and triggers agreement with the verb synt 'are'; this matrix subject corresponds notionally to the object of the embedded verb to secganne 'to tell'.

In this paper, we will refer to data such as (3) as examples of the impersonal construction (IC), and to data such as (4) as examples of the 'tough' cointitiation construction (TCC); when we want to refer to both types collectively, we will refer to 'tough' constructions (TCs). We will refer to adjectives which figure in the TCC as 'tough' predicates.

In a series of analyses of TCs in OE, van der Wurff (1987, 1990a, 1990b, 1992a, 1992b) has argued that, given their apparent truth-conditional equivalence, TCC and IC examples share a common derivational source to the extent that neither assigns a theta-role to the matrix subject position. In other words, (4) is proposed to derive from a source resembling (3) by a process of NP-movement, much like passive.

We would like to suggest that a more satisfying and unified analysis may be achieved by giving a central role to data elsewhere marginalized or even dismissed
as irrelevant to an understanding of the TCC. The kind of data we have in mind is illustrated in (5):

(5) seo burg wæs ... swiðe fæger an to locianne
    the fort was ... very fair on to look
    'The fortress was very pretty to look upon' (Or 2 4.74.11)

Van der Wurff (vdW) considers examples like (5) to bear nothing more than a superficial resemblance to examples like (4). He justifies this view by pointing out that the embedded gap may correspond to a prepositional object with fæger and several other adjectives, resulting in preposition-stranding as in (5). With earfoð and certain other adjectives, on the other hand, any gap apparently must correspond to an accusative argument, as in (4).

In our analysis, by contrast, (5) transparently encodes the canonical semantics by which examples such as (4) are to be interpreted. Instead of viewing (4) and (5) in terms of fundamentally different predicate-types and essentially unrelated abstract structures, we view predicates such as fæger and earfoð as most naturally selecting stimulus arguments at different positions on the semantic continuum illustrated in (6), which in turn corresponds to different degrees of preference for participation in the TCC or IC.

(6) Stimulus types selected by 'tough' predicates

<table>
<thead>
<tr>
<th>NP-type</th>
<th>Sentential-type</th>
</tr>
</thead>
<tbody>
<tr>
<td>fæger 'pretty'</td>
<td>wynsum 'charming'</td>
</tr>
<tr>
<td>hlutter 'clear'</td>
<td>egleslic 'dreadful'</td>
</tr>
<tr>
<td>glad 'bright'</td>
<td>wundorlic 'wondrous'</td>
</tr>
<tr>
<td>lustber 'delightful'</td>
<td></td>
</tr>
<tr>
<td>myrig 'pleasant'</td>
<td></td>
</tr>
</tbody>
</table>

We will further argue that examples like (4) display a restriction on what may function as subject which is interpretable as the very sort of restriction associated with the assignment of a theta-role to the subject position.

We also disagree with vdW's interpretation of the facts of preposition-stranding in terms of a fundamental structural distinction between examples such as (4) and (5). Rather, the facts of preposition-stranding follow from different coinstantiation constraints imposed by different matrix predicates appearing in one and the same construction.

2. Analyses of van der Wurff and Demske-Neumann

We first present two formally-oriented analyses of OE TCs, those of vdW and Demske-Neumann (1994).

In the context of a GB-oriented analysis, vdW attempts to provide a structural motivation for the fact that one and the same predicate, e.g. earfoð 'difficult', may occur in either of the TCs. The first fact of relevance here is that, if we restrict our attention to a subset of predicates consisting of 'easy', 'difficult', and a handful of other semantically similar adjectives, TCC shares certain features with passive. For example, the nominative NP is invariably co-construed with a 'gap' corresponding to an accusative argument, never to an oblique of any kind,
including prepositional objects. In OE passive, too, only accusatives may be 'promoted' to subject position. Thus, preposition-stranding is never attested with the OE passive. Unattested examples illustrating a violation of these constraints are presented in (7) and (8).

(7) *seo worulde is eaðe on to wunigenne  
    the world is easy in to live  
    'The world is easy to live in'
(8) *seo worulde wæs on gewunode  
    the world was in lived  
    'The world was lived in'

This parallelism, to vdW, implies a deeper structural parallelism between the passively-inflected verb and the so-called inflected to-infinitive embedded under the 'tough' predicate.

Recall the GB treatment of passive: the structural motivation for the movement of the embedded object NP to subject position is that the passive form of the verb, while assigning a theta-role to its internal argument, lacks the ability to assign structural case. This motivates movement of the internal argument to the thematically empty subject position, where it receives structural case from INFL.

For the TCC, vdW proposes that 'tough' predicates such as eaðe 'easy' may embed either of two types of clausal complement: a full S' complement, as in (9), or a reduced S complement lacking an INFL node, as in (10).

(9) nis me earfode [s to geðolianne þeodnes willan]  
    not-is me-DAT difficult to endure lord-GEN will  
    '(It) is not difficult for me to endure the Lord's will.'  
    (Guth A,B 1065)

(10) þes traht is langsum eow [s to gehyrenne]  
    this exposition is long you-DAT to hear  
    'This exposition is long for you to hear'  
    (ÆCHom II, 41 308.138)

If the complement is S', the embedded verb case-marks its internal argument and no movement results. If the complement is S, the absence of an INFL node is claimed to prevent the verb from assigning case; the internal argument must therefore move to the thematically empty matrix subject position.

The most obvious problem with this analysis is the absence of any evidence for the structural distinction at issue, that is, between S' and S embedded complement clauses, apart from the single overt contrast which that distinction is meant to motivate.

In addition, vdW's approach to TCC examples, requiring as it does that the matrix subject position be thematically empty, necessitates a completely different analysis for any adjective-plus-infinitive collocation that shows any evidence for a thematically contentful subject position.

Demske-Neumann (DN), in a recent detailed historical study of English and German, offers an account by which the TCC arises diachronically out of the IC by a process of reanalysis of a topicalized embedded object as formal subject of the matrix predicate. This coincides with the reanalysis of the embedded infinitive from a verbal to an adjectival constituent; since adjectives can't assign structural case, movement to the thematically empty subject position satisfies the case-marking
requirement of the embedded internal argument, much as in vdW's account.

The problem, however, is that the facts fail to support DN's account in any way. Given her scenario, we would expect to find in OE examples of unambiguously non-nominative topicalized NPs corresponding to embedded objects. However, we do not, and she fails to provide any. Rather, any fronted dative nominal invariably corresponds to the matrix experiencer, not the embedded object, as in (3).

Another problem is that her analysis, like vdW's, implies the irrelevance of examples such as (5) in which the subject position seems transparently semantically contentful. In this respect, DN's analysis is similar to vdW's, although the details differ considerably. DN argues that, since we have nothing but negative evidence that a predicate such as fæger could not appear in the IC, even predicates which, like fæger, are unattested in that construction are to be assumed to have developed a TCC use out of an IC use.

3. Our analysis
3.1 'Pretty'-type predicates
The canonical examples of the TCC feature those matrix predicates which exclusively appear in this construction-type as opposed to the IC type, and are as in (11-15):

(11) fæger 'pretty' (see (5))
(12) þa sæ þe ær wæs ... glæshlur̂tru on to seonne the sea that earlier was clear.as.glass on to see 'The sea which earlier was...clear as glass to look upon' (Bo 6.14.11)
(13) ...þeah heo ær gladu wære on to locienne though she before bright was on to look '...though it [the sea] had just before been bright to look at' (Bo 6.14.12)
(14) þæs word sind lustbære to gehyrenne these words are delightful to hear 'These words are delightful to hear' (ÆCHom I, 8 130.15)
(15) hwiltidon heo is gesundful and myrige on to wunienne at times she is prosperous and pleasant on to live 'At times it [the world] is prosperous, and pleasant to live in' (ÆCHom I, 12 182.33)

In these examples, the matrix nominative subject instantiates a stimulus, while the implicit experiencer is unexpressed. This subject coinstantiates the object of the embedded infinitive, which in (11-14) represents a stimulus. In (15), with myrige 'pleasant', the matrix subject coinstantiates an embedded prepositional object bearing a locative role.

3.2 'Good'-type predicates
Other examples, given in (16-18), display other roles in the embedded clause, such as content, source, or even temporal setting.

(16) seo menniscnes is wundorlic ymbe to smeagenne the incarnation is wondrous about to think 'The incarnation is wondrous to think about' (WHom 6 140)
(17) þa stanas sint ealle swiðe gode of to drincanne
the stones are all very good from to drink
'The stones are all very good to drink from' (Lch II(2) 64.3.2.)

(18) he is eac god circan on to timbrane & eac scipes timber an to anginnanne
he is also good churches on to build & also ship-GEN timber on to begin
'It [the sixth night's moon] is also good to build churches on and also
to begin ship's timber on' (Prog 6.9 (Foerst) 6)

The predicates are semantically similar to those in (11-15) but nevertheless not fully canonical in a way we will explain in a moment. The only role-related restriction appears to be that the argument corresponding to the 'gap' be coherently conceptualizable as a stimulus with respect to the matrix clause. The adjunct-like status of the embedded infinitive is demonstrated by the fact that all these predicates are routinely used as predicative or attributive adjectives with no embedded infinitive:

(19) þæs bec syondon swiðe rihtlice & fægre mid us
these books are very righteous & beautiful with us
'These books are very righteous and beautiful to us' (GDPred & 4(C) 42.329.8)

(20) ...ac þe sæde swiðe lang spell & wundorlic
...but you told very long tale & wondrous
'...but told you a very long and wonderful tale' (Bo 35.100.26)

What we are dealing with here, then, is a use marginally distinct from the regular predicative adjectival use but which features something extra—an elaborative adjunct clause which specifies the domain in which the predication holds. In some cases, e.g. (11-13), the predicate is already so specific in activating a visual domain that we can only imagine the elaborative adjunct clause to be largely redundant. With other predicates, such as 'good' or 'pleasant', the underspecification of the relevant domain results in a less redundant and, in this sense, less adjunct-like status for the embedded infinitival clause. Even with these predicates, however, use without an embedded infinitive is routine.

Some of these predicates differ from fæger and the other predicates in (11-15) in one important respect: they show some evidence of being predicable of a sentential subject. For example, (21-22) illustrate wundorlic 'wondrous', egeslic 'dreadful', god 'good', and wynsum 'charming' with a tensed that-clause or a pro-form referring to such a clause:

(21) þuhte him þæt wundorlic and egeslic, þæt..
seemed him-DAT that wondrous and dreadful that...
'That seemed to him wonderful and dreadful, that...' (HomS 22 (CenDom 1 132)

(22) eala þæt hit is god & wynsum þæt mon micelne welan hæbbe
O that it is good & winsome that one many riches have
'O! it is good and charming that one have many riches' (Bo 14.33.14)

One of these predicates, god 'good', also appears with an embedded infinitive, illustrated in (23):
(23) hwilum bið god wærlice to miðanne his hieremonna scyllda
sometimes is good cautiously to hide his subjects' sins
'Sometimes (it) is good cautiously to hide one's subjects' sins'

(CP 21.151.8)

This, then, is the IC. We may understand the possibility of appearance in the IC in terms of less strict constraints imposed by the predicate on the nature of the required stimulus. While a specifically visual, physical stimulus-experiencer predicate like fæger is incompatible with the sort of abstract stimulus represented by a sentential subject, such a subject represents an acceptable stimulus with respect to a predicate such as 'good' or 'wondrous'.

3.3 'Easy'-type predicates
Numerous examples of the IC are found when we move on to the predicates lang and langsurn, both featuring a fair semantic range but provisionally translatable as 'long' or 'lengthy':

(24) þeos race is swiðe langsurn fullice to gereccenne
this exposition is very long fully to tell
'This exposition is very lengthy to tell in full'

(ÆLS (Julian & Basilissa) 139)

(24) illustrates the use of langsurn in the TCC. In such examples, being 'long' or 'lengthy' is predicated of an NP coconstituting a theme- or incremental theme-like object of an embedded predicate such as 'tell', 'number', or 'recount'. Given the inherent meaning of lang as 'long' with respect to space or time, we most frequently find lang predicated of or modifying such NPs as gebæd 'prayer', spell 'story', or race 'narrative', i.e. temporally or spatially extended, frequently effected referents, as in (25):

(25) ...sæde swiðe lang spell
said very long story
'...told a very long story'

(Bo 35.100.26)

(26) ...ac us is lang þæt eall to gereccanne
but us-DAT is long that all to tell
'...but (it) is lengthy for us to tell all that'

(HomS 34 (PetersonVercHom 19)79)

(26) shows lang in the IC, with 'being long' or 'lengthy' selecting a sentential complement. The most satisfying translation into ModE seems to be one which straightforwardly conveys both the agentive and the bounded semantics of an accomplishment-type predication, e.g., for (26), 'It would take us a long time to tell all that.' We have no examples in which the sentential complement of lang(sum) is unbounded, e.g. intransitive with nothing but a locative-setting prepositional object, as in, say, 'is long to live in this world.'

Given that the embedded infinitive represents a bounded accomplishment-type predication, the subject NP in the TCC corresponds to the direct object of this predication, which would independently have lang(sum) felicitously predicated of it. Thus, 'is long to tell this story' entails the felicity of both 'this story is long' and
'this story is long to tell', and 'this story is long to tell' entails 'to tell this story is long'. It is, we think, significant that of all the adjectives in our collection and in the collection cited in vdW (1992a), none is distributed more evenly across the two constructions than lang(sum).

Thus far, our examples have included predicates such as feær which vdW would exclude from his class of 'tough' predicates, as well as ones such as lang and langsum which he would include at least by virtue of their apparent restriction to coinstantiating a direct object. Fischer (1989:156), endorsing the view of such a bipartite division, points out that the 'pretty' group contains descriptive adjectives closely tied to the subject of the predicate. OE 'easy'-type adjectives, on the other hand, have what she calls 'a comment function... describing' not just the subject but the combined activity of subject and infinitive'. We hope to have shown that such a clear segregation cannot be defended for the 'pretty'-type predicates.

What about the claim for the distinctness of an 'easy' class of predicates describing 'the combined activity of subject and infinitive'? Fischer offers (27) as an example of such a predicate, for which she claims that 'the selectional restrictions operating on the noun and adjective clash':

(27) þa stanas ... biðað earfoðe to tedælennne
the stones are difficult to divide
'The stones ... are difficult to divide' (Bo. 34.92.22)

It is for adjectives semantically similar to earfoð that a 'movement' analysis has most often been proposed, and it is to this class that we now turn.

As a group, the predicates of the 'easy' semantic type display good distribution across both TCs; (28) and (29) illustrate uses with both the TCC and the IC:

(28) þær is swyðe god eard, ac he is earfoðe us to begyntenne
there is very good earth but he is difficult us-DAT to get
'The land is very good there, but it is difficult for us to obtain' (ÆHom 21 153)

(29) nis eaðe to asecgenne þises landes earmða
not-is easy to relate this-GEN land-GEN poverty
'(It) is not easy to relate this land's poverty' (ChronE (Plummer) 1104.21)

There is one semantic feature which most clearly serves to group this class with lang as opposed to the 'pretty' class: all of the examples demand an intentional reading. In addition, a formal feature which serves to set off the 'easy' class of predicates from the 'pretty' class when occurring in the TCC is that the NP always coinstantiates what would be an accusative argument in the embedded clause.

Our explanation for these facts is as follows. First, the apparently invariable intentional semantics of the 'easy' examples is to be attributed to the matrix predicates themselves (eað, earfoð, etc.) rather than to either of the TCs, since, as we have seen, both the TCC and the IC are well attested with other predicates and with no semantics of intentionality. Consider the pair shown in (30) and (31), in which two forms of a verb meaning 'to see' are embedded under 'easy'-type and 'pretty'-type predicates respectively:
(30) earðe is & wæter sint swiðe earfoðe to gesonne
    'Earth and waters are very difficult to see
(31) þa syndon swyðe fægere & lustsumlice on to seonne
    'Those are very beautiful and joyful to look upon'

Only with embedding under earfoð in example (30) do we get an intentional reading.

Next, we have to motivate the fact that only direct objects may be coinstantiated. Our explanation for this makes reference to three factors: one, the semantics independently associated with the TCC; two, the semantic feature of intentionality imposed by the 'easy'-type predicates; and three, the semantically-oriented conception of transitivity formulated in Hopper and Thompson (1980). We also presuppose the validity of those analyses, such as Plank (1981) and Fischer (1989), which attribute a transitivity-related semantic grounding to the OE case categories.

Recall that the TCC features a semantics whereby the adjective predicates a quality of the subject NP, with the embedded infinitive restricting the domain of that predicate. The adjunct-like status of this embedded infinitive is directly correlated, holding contextual factors constant, with the degree to which the matrix predicate, or that predicate together with its nominative subject, already somehow activates the relevant domain. In the case of 'easy'-type predicates, the adjective is relatively underspecified with respect to that domain; all that it does specify is that the subject is 'easy' etc. with respect to some intentional act.

The insight which we feel to be relevant here is that direct objects, but not more peripherally-related arguments, are most appropriately conceptualized as the locus of the 'cost' of effort (in Nanni's (1978) terms) associated with an intentional act. If we interpret the 'cost' being 'logically' associated with the intentional act as a whole, then the direct object is most felicitously conceptualized as the metonymic representor of that intentional act. It is no coincidence, we contend, that a predicate which imposes high transitivity in one respect, that of intentionality, also imposes the requirement that the coinstantiated object argument be that which is prototypically associated with patient-like semantics. This, then, is expressed in the conventional restriction of coinstantiation to the direct object.

Another way of looking at this is to say that the more directly involved the non-subject participant is in the intentional act, the more the ease or difficulty of performing that act is perceived to be due to the nature of that participant. If an intentional act is experienced as exacting a high cost of effort, then the accusative argument is perceived as bearing responsibility for this cost to a greater degree than less directly involved arguments such as locative settings.

The restrictions placed on the coinstantiation relationship with 'easy'-type examples challenges the point of view that the subject position is semantically empty. Even if such examples are interpreted in terms of some kind of discrepancy between form and logic, there are principled restrictions on the kind of apparent logical discrepancy countenanced in the TCC with the 'easy' class of predicates—just as there are restrictions with the other predicates discussed here.

3.4. Construction Grammar representation
In (32-36), we summarize our analysis in the notation of unification-based Construction Grammar (CG)⁴, which we consider to be an advantageous model in its restraint from imposing an overly restrictive set of structures on Universal Grammar and in its rejection of the isolation of syntactic facts from semantics.

(32) Tough Coinstantiation Construction (bound)

\[
\begin{align*}
\text{syn} & \quad \begin{array}{c}
\text{cat} \quad \text{a} \\
\text{lex} \quad + 
\end{array} \\
\text{sem} & \quad \begin{array}{c}
\ldots \\
\text{ss} \\
\text{role} \quad \begin{array}{c}
\text{gf} \\
\text{subj} \\
\theta \\
\text{stim} 
\end{array} \\
\text{role} \quad \begin{array}{c}
\text{gf} \\
\text{obl} \\
\theta \\
\text{exp} 
\end{array} \\
\text{val} \quad \begin{array}{c}
\text{vp} \quad \text{to} \\
\text{role} \quad \begin{array}{c}
\text{gf} \\
\text{comp} \\
\theta \\
\text{domain limitation} 
\end{array} \\
\text{val} \quad \begin{array}{c}
\text{[((cat p) ɔ)} \\
\text{role} \quad \begin{array}{c}
\text{ss} \\
\theta \\
\text{np} \\
\text{subject} \\
\text{ex} \\
\text{val} \quad \begin{array}{c}
\text{val} \quad \begin{array}{c}
\text{role} \quad \begin{array}{c}
\text{gf} \\
\text{obj} 
\end{array} \\
\theta 
\end{array} \\
\text{val} \quad \begin{array}{c}
\text{val} \quad \begin{array}{c}
\text{role} \quad \begin{array}{c}
\text{gf} \\
\text{subj} 
\end{array} \\
\theta 
\end{array} \\
\text{ex} 
\end{array} \\
\text{ex} 
\end{array} 
\end{array} 
\end{array} 
\end{array} 
\end{array} 
\end{array}
\end{align*}
\]

(33)

a.

\[
\begin{align*}
\text{inherit} & \quad \text{TCC} \\
\text{sem} & \quad \begin{array}{c}
\text{int} \quad + 
\end{array} \\
\text{val} & \quad \begin{array}{c}
\text{val} \quad \begin{array}{c}
\text{role} \quad \begin{array}{c}
\text{gf} \\
\text{obj} 
\end{array} \\
\theta 
\end{array} \\
\text{ex} 
\end{array} 
\end{array} 
\end{align*}
\]

b.

\[
\begin{align*}
\text{inherit} & \quad \text{TCC} \\
\text{sem} & \quad \begin{array}{c}
\text{int} \quad - 
\end{array} 
\end{align*}
\]

(32) represents the TCC. The upper left-hand corner represents that the adjective semantically heads the construction. The adjective takes three arguments in its valence, as represented in the curly brackets: the stimulus-subject, experiencer-oblique, and infinitival complement with a role of delimiting the domain of the predicational relationship between the adjective and the matrix subject. The unification variable ' # l [ ] ' guarantees the constantiation of the matrix subject with a non-subject argument of the embedded verb, with the optionality of a prepositional governor of that non-subject indicated by parentheses. The fact that the oblique-experiencer induces a generic reading when omitted is captured by the 'f(ree) n(ull) i(nstantiation)' notation.⁵ The fact that the infinitival complement may be omitted under contextually-licensed construal is indicated by 'd(efinite) n(ull) i(nstantiation)'.

Note that this abstract construction, which accommodates any 'tough' predicate, is 'bound' in the sense that it cannot license sentence tokens. It is inherited by two more specific constructions, (33a & b). In (33a), the [intentional+] semantic feature permits only those adjectives which impose a reading of intentionality on the embedded clause. This construction also restricts cointantiation to a direct object in the embedded clause. (33b) accepts only those adjectives which fail to impose an intentional reading, and contributes no further cointantiation restrictions than what is already indicated in the mother construction (32). In this way, the cointantiation restriction exhibited by OE adjectives in the TCC is linked to the predicate's intentional semantics.

The IC is represented in (34), in which the subject of the adjective is specified as null, and the infinitival complement bears a stimulus role and is obligatorily expressed.

(34) Impersonal Construction

\[
\text{syn} \quad \begin{bmatrix} \text{cat} & a \\ \text{lex} & + \end{bmatrix}
\]

\[
\text{sem} \quad [...] 
\]

\[
\text{val} \quad \begin{cases} 
\text{ss} & \begin{bmatrix} \text{null} \end{bmatrix}, \\
\text{role} & \begin{bmatrix} \text{gf subj} \end{bmatrix}, \\
\text{role} & \begin{bmatrix} \theta \text{ exp} \end{bmatrix}, \\
\text{fni} & \begin{bmatrix} \text{vp} [to] \end{bmatrix}, \\
\text{role} & \begin{bmatrix} \text{gf comp} \end{bmatrix}, \\
\text{role} & \begin{bmatrix} \theta \text{ stim} \end{bmatrix} 
\end{cases}
\]

(35) represents the 'tough' predicate valence construction, which specifies that all 'tough' predicates have two arguments, with experiencer and stimulus roles respectively. Nothing so far would prevent any predicate matching this valence from appearing in either the TCC or IC.

(35) TOUGH Valence Construction

\[
\text{syn} \quad \begin{bmatrix} \text{cat} & a \\ \text{lex} & + \end{bmatrix}
\]

\[
\text{sem} \quad [...] 
\]

\[
\text{val} \quad \begin{cases} 
[\text{role} \begin{bmatrix} \theta \text{ exp} \end{bmatrix}], \\
[\text{role} \begin{bmatrix} \theta \text{ stim} \end{bmatrix}] 
\end{cases}
\]

\[
\text{lxm} \quad \text{TOUGH}
\]

For example, [int -] 'good'-class predicates can appear in (33b) and (34), and [int +] 'easy'-class predicates can appear in (33a) and (34). However, recall that we need to prevent the unification of 'pretty'-class predicates with the IC. We handle this in construction (36).
(36) PRETTY Linking Construction

\[
\begin{array}{c}
\text{val} \left\{ \left( \text{ss} \left[ \begin{array}{c}
\text{cat} \\
\text{max} \\
\text{role}
\end{array} \right] \begin{array}{c}
+ \\
\text{subj} \\
\theta
\end{array} \right] \right\} \right. \\
\left. \right\}
\end{array}
\]

Given the specification that the predicate's subject bears a stimulus role, unification with the IC (which specifies a null subject) is blocked. No such linking construction is required for predicates of the 'easy' or 'good' class since the latter unify with both TCs.

4. Implications for Modern English

Finally, we would like to consider some of the implications of our analysis for ModE TCs. It is a well-known fact that, even with ModE examples of the TCC featuring a semantics of intentionality, there is no restriction of the coinstantiated argument to the direct object of the embedded verb.

(37) a. He is difficult to get in touch with
    b. This bridge is difficult to walk on

The formal restrictions argued in the context of OE to be motivated by semantics must, therefore, be considered within the context of the language involved. Recall that with respect to passive, too, ModE differs from OE in permitting a wider array of arguments to serve as input to promotion--despite the fact, as demonstrated by Rice (1987), that ModE passive remains sensitive to semantic transitivity. In the terms of our analysis, even though OE passive and the TCC are not coextensive in that the range of coinstantiated argument-types in the TCC is greater than the range of 'promotable' objects in passive, OE passive nevertheless featured a certain formal parallelism with the TCC with 'easy'-type predicates, and both constructions have changed in a somewhat parallel manner in that English has loosened its requirements on what counts as a 'transitive enough' predication to figure in both.

As a final comment, we would like to mention that we consider it gratifying to find in an early article of Bolinger's a kind of confirmation in a synchronic context of the insight into the TCs presented in a diachronic context here. In response to Lees' (1960) claim that 'He is hard to convince' is equivalent to, and shares a common derivational source with, 'It is hard to convince him', Bolinger comments:

For what we have here is, I think, another syntactic blend. The impersonal It is hard to convince him has wormed its way into the personal construction He is homely to look at, but not securely enough to permit a completely impersonal adjective to stand there as in *He is imperative to convince. It is no coincidence that the adjectives that do work in this position are ones that can as readily modify the subject as the action: He is nice to send = He is nice. Sending him is nice; He is all right to employ = He is all right. Employing him is all right.... (Bolinger 1961:373)

Bolinger's synchronic insight, that examples of the TCC with impersonal
countercal seconds are in fact interpreted in terms of the canonical semantics of a
countercal construction which is 'personal' in both its form and meaning, is, we hope to have
shown, also a valid insight into the historical facts.

Endnotes
* The authors would like to extend their sincere thanks to Chuck Fillmore and Eve Sweetser for
their insights into the subject matter investigated here, to Paul Kay for the preceding plus help in
avoiding errors of logic and notation, and to Gary Holland for all of the preceding plus assistance
beyond the call of duty in reducing a vast amount of material to a manageable size.
1 OE also has a structure more closely parallel to (1), with hit 'it' appearing as formal subject.
However, this 'it'-type construction has a marginal role in OE relative to its ModE formal analog:
van der Wurff (1992a) counts 64 examples of the 'it'-type, as opposed to 465 examples of the IC,
and 357 examples of the TCC.
2 All citations feature the abbreviations used in Healey and Venezky (1980).
3 Intuitively, the non-visual-specific predicates lustiger 'delightful' and myrig 'pleasant' seem
compatible with a sentientally-coded stimulus. Lack of evidence for the participation of these
predicates in the IC may be due to their infrequent overall attestation.
4 Due to space considerations, only the most crucial points of the notation are explained here; see
Fillmore and Kay (to appear) for a more complete treatment.
5 The fact that the oblique experiencer constantiates the subject of the embedded clause would be
handled by an independent abstract construction which licenses the object 'control' pattern in
general.

REFERENCES

Tübingen: Niemeyer.
CSLI.
Fischer, Olga. 1989. The origin and spread of the accusative and infinitive
construction in English. Folia Linguistica Historica 8.143-217.
English. Toronto: Center for Medieval Studies, University of Toronto.
Hopper, Paul and Sandra Thompson. 1980. Transitivity in grammar and
discourse. Language 56.251-99.
Kay, Paul and Charles Fillmore. 1994. Grammatical constructions and linguistic
generalizations: the What's X doing Y? construction. Berkeley: University of
California, MS.
Lees, Robert B. 1960. Multiply ambiguous adjectival construction in English.
Language 36.207-21.
Nanni., D.L. 1978. The 'easy' class of adjectives in English. Amherst: University
of Massachusets dissertation.
Technische Universität, MS.
Rice, Sally. 1987. Towards a transitive prototype: evidence from some atypical
Wurff, W. van der. 1987. Adjective plus infinitive in Old English. Linguistics in


Processing factors of pre- and postposed adverbial clauses
Holger Diessel
State University of New York at Buffalo

Adverbial clauses occur either before or after the main clause with which they are associated.* This paper seeks to determine the factors that motivate pre- and postposing of adverbial clauses in complex sentences. The analysis that I will present is based on frequency counts of initial and final adverbial clauses in English and German. For each language I have chosen four sources of spoken and written discourses: a novel, a linguistic textbook, newspaper articles, and doctor-patient conversations. TABLE 1 to 3 show the results of my text-counts from English. Four semantic types of adverbial clauses have been distinguished: (i) conditional clauses introduced by the conjunction 'if', (ii) concessive clauses introduced by 'although', (iii) temporal clauses that are realized by a variety of conjunctions, and (iv) causal clause subsuming 'because', 'since', 'as' and 'so that' clauses.

<table>
<thead>
<tr>
<th>conditional</th>
<th>concessive</th>
<th>temporal</th>
<th>causal</th>
</tr>
</thead>
<tbody>
<tr>
<td>pre. post.</td>
<td>pre. post.</td>
<td>pre. post.</td>
<td>pre. post.</td>
</tr>
<tr>
<td>if 129 52</td>
<td>although 29 14</td>
<td>when 52 65</td>
<td>because 8 59</td>
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<td></td>
<td></td>
<td>while 4 6</td>
<td>since 8 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>as 22 10</td>
<td>as 1 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>until 3 10</td>
<td>so that 18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>before 6 10</td>
<td></td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>since 3 2</td>
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<tr>
<td></td>
<td></td>
<td>once 5</td>
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</table>

Total: 129 52 Total: 29 14 Total: 104 111 Total: 17 85

TABLE 1 English

<table>
<thead>
<tr>
<th>conditionals</th>
<th>concessives</th>
<th>temporals</th>
<th>causals</th>
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</thead>
<tbody>
<tr>
<td>preposed</td>
<td>129</td>
<td>29</td>
<td>104</td>
</tr>
<tr>
<td>postposed</td>
<td>52</td>
<td>14</td>
<td>111</td>
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</table>

Total 181 43 215 102

TABLE 2 English total numbers

<table>
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<th>concessives</th>
<th>temporals</th>
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<td>preposed</td>
<td>71.3%</td>
<td>67%</td>
<td>48.3%</td>
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<tr>
<td>postposed</td>
<td>28.7%</td>
<td>33%</td>
<td>51.6%</td>
</tr>
</tbody>
</table>

Total 100% 100% 100% 100%

TABLE 3 English percentage
The figures in TABLE 3 show that the percentage of pre- and postposed adverbial clauses varies tremendously with the semantic type of adverbial clause. Conditionals and concessives mostly precede the main clause: 71% of all conditional and 67% of all concessive clauses occur sentence-initially. Temporal clauses are equally common in both positions. And causal clauses are predominantly used after the main clause.1

TABLE 4 to 6 show my text-counts from German. The distributional patterns are basically the same, except that the percentage of initial concessive clauses is somewhat lower in my German data. I assume that in a larger corpus this difference would disappear. Given that conditional, temporal, and causal clauses basically show the same distributional pattern in English and German it seems to be unlikely that concessive clauses behave in a radically different way in these two languages.

<table>
<thead>
<tr>
<th></th>
<th>conditional</th>
<th></th>
<th>concessive</th>
<th></th>
<th>temporal</th>
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<tr>
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</tr>
<tr>
<td>wenn</td>
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<td>11</td>
<td>21</td>
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<tr>
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<td>falls</td>
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<td>--</td>
<td>bevor</td>
<td>9</td>
<td>4</td>
<td>nachdem</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total:</td>
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<td>Total:</td>
<td>14</td>
<td>12</td>
<td>Total:</td>
<td>82</td>
<td>85</td>
</tr>
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TABLE 4  German

<table>
<thead>
<tr>
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<th></th>
<th>temporals</th>
<th></th>
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<td></td>
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<td>141</td>
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<tr>
<td></td>
<td>postposed</td>
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<td>12</td>
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<td>167</td>
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</tbody>
</table>

TABLE 5  German total numbers

<table>
<thead>
<tr>
<th></th>
<th>conditionals</th>
<th></th>
<th>concessives</th>
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<tbody>
<tr>
<td></td>
<td>preposed</td>
<td>70%</td>
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<td>49%</td>
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</tr>
<tr>
<td></td>
<td>postposed</td>
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<tr>
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<td>100%</td>
<td></td>
<td>100%</td>
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<td></td>
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</tr>
</tbody>
</table>

TABLE 6  German percentage

Previous studies on adverbial clauses suggest that the order of main and subordinate clauses is mainly determined by discourse factors. One of the first studies of adverbial clauses in discourse pragmatic terms is Haiman's analysis of conditional clauses (Haiman 1978). Haiman's analysis shows that initial conditional
clauses provide a thematic ground for the interpretation of the following discourse. Later studies by Chafe (1984), Thompson (1985), Thompson & Longacre (1985), Ramsay (1987), Givón (1990) and others seem to suggest that Haiman's central hypothesis does not only hold for conditionals, but characterizes all different types of adverbial clauses when they precede the main clause.

I would agree that initial adverbial clauses fulfill an important task with respect to topic continuity and discourse coherence; but this does not explain why certain semantic types of adverbial clauses are more often preposed than others. Even if preposing of the adverbial clause were exclusively determined by the topic-comment structure of complex sentences, one would still have to explain why conditional clauses, for instance, are more often topical (and thus preposed) than concessive, temporal, and causal clauses. That is, in order to account for the distributional variation shown in TABLE 1 to 3 one has appeal to factors that are unique to each individual type of adverbial clause.

In this paper, I concentrate on adverbial clauses that predominantly precede the main clause: conditionals and concessives. I show that preposing of conditional and concessive clauses is largely determined by processing factors. I argue that conditional and concessive clauses in final position can cause a process of reinterpretation, and that preposing of the adverbial clause is used as a strategy to forestall this procedure.

The processing factors that I will describe in this paper differ from those that John Hawkins suggests in his recent work on sentence processing and constituent order (Hawkins 1994). Hawkins' "performance theory" is concerned with processing principles that govern syntactic parsing, whereas the present investigation concentrates on processing factors that are essential to a semantic interpretation. Although the approach in this paper is rather distinct from Hawkins' perspective, this study does not intend to question Hawkins' important findings. On the contrary, Hawkins' parsing principles are highly compatible with the current approach and seem to supplement the results of this study. I will come back to Hawkins' theory at the end of this paper; I begin my analysis now with conditional clauses.

1. Conditional clauses

Conditional clauses express a contrast between two contradictory possibilities; one is directly verbalized in the propositional content, the other is merely implicit.² Consider the example in (1):

(1) Dann wird man in ein paar Wochen den Wert kontrollieren. Und wenn der then will one in a few weeks the value check. and if it dann gut ist, dann kann man es dabei lassen, und sonst wird man über then good is, then can one it with-it leave, and otherwise will one about ein Medikament nachdenken müssen.

a medication consider must

'The level will be checked in a few weeks. If it is okay, nothing else has to be done; otherwise medication must be considered.'

The sentence in (1) is taken from a doctor-patient conversation. The patient is consulting the doctor because of a high cholesterol level. The doctor has suggested decreasing the cholesterol level by a particular diet. He knows that this treatment is not always successful, and therefore he has to consider two contradictory
possibilities for future therapy. One of these possibilities is expressed in the proposition of the conditional clause: 'Und wenn der dann gut ist,...' The contradictory possibility ('Und wenn der dann nicht gut ist,...') is implicit. The implicit case is part of the conventional meaning of a conditional sentence that one might characterize as a conventional implicature.\(^3\)

The opposition between the propositional content and its implicature provides a particular frame for the associated main clause that gives rise to a non-factual (i.e. hypothetical) interpretation. The main clause of example (1) comprises two propositions combined by 'und sonst' ('and otherwise'). The first part of the main clause is semantically linked to the preceding proposition of the adverbial clause. The second part of the main clause takes the implicated alternative as its starting point. FIGURE 1 shows the relation between the different parts of this sentence.

![Diagram](image)

FIGURE 1

In this example, the conditional frame, that is, the disjunction between the propositional content and the conventional implicature, is established before the speaker verbalizes the information expressed in the main clause. With this arrangement the addressee is directly guided to a non-factual interpretation of the main clause that follows. Compare this example with the sentence in (2) where the conditional clause follows the main clause.

\[2\] *Dann wird man in ein paar Wochen den Wert kontrollieren. Man kann es then will one in a few weeks the value check. one can it dabei lassen, wenn der gut ist, und sonst wird man über ein Medikament with-it leave, if it good is, and otherwise will one about a medication nachdenken müssen. consider must.

'The level will be checked in a few weeks. Nothing has to be done, if it is okay, and otherwise medication must be considered.'

In example (2) the conditional frame is verbalized after the apodosis. Thus, the main clause is first interpreted as being factual; but the following 'wenn' clause
forces the addressee to revise his or her initial interpretation. A reinterpretation is a risky, inefficient and confusing procedure, and therefore it is mostly avoided. So, my hypothesis is that preposing of the conditional clause is used as a strategy to forestall a reinterpretation procedure.

![Diagram of conditional clause structure]

In order to test my hypothesis, I have designed an experiment in which the effect of final conditional clauses is compared with the effect of final causal and temporal clauses on the preceding main clause. 35 undergraduate students of the University at Buffalo participated in this experiment. Each subject was shown a sentence like the one in (a):

(a) *Bill called and said he will come and visit us.*

All subjects had to answer the question in (b):

(b) *What will Bill do?*

This question was asked in order to determine how the subjects interpreted the sentence in (a). All 35 subjects basically gave the same answer: "Bill will come and visit us", "Come and visit", or something like that. In the next step a temporal, a causal, and a conditional clause were added in turn, and the subjects were asked if they could maintain the answer that they had given in response to question (b).

(c') *Bill called and said he will come and visit us, when he gets a week off.*

(c'') *Bill called and said he will come and visit us, because he gets a week off.*

(c'') *Bill called and said he will come and visit us, if he gets a week off.*

In the case of final temporal and causal clauses, all subjects thought they could maintain their previous interpretation. In the case of final conditional clauses the response was very different: all 35 subjects indicated that they had to revise their previous answer. Two subjects even suggested replacing the auxiliary 'will' by 'would' in the main clause in order to avoid any confusion when the 'if' clause was added. This experiment seems to confirm my hypothesis: final conditional clauses have a major effect on the interpretation of a preceding main clause, while final
temporal and causal clauses just add further information to the preceding proposition.

Given that processing factors motivate the use of conditional clauses in sentence-initial position, how do we account for the conditional clauses that follow the main clause? About 30% of all conditional clauses in my data occur sentence-finally. My analysis shows that postponing of conditional clauses is motivated by particular discourse factors. Two types of final conditional clauses must be distinguished. First, conditional clauses that are announced in the preceding main clause. Announced conditional clauses express new information, for which the preceding main clause provides a thematic ground. In written discourse, final conditional clauses can be announced by a correlative, as in example (3), or by a scalar particle, as in example (4). In spoken discourse, the intonation of the main clause is used as an indication for a following 'if' clause.

(3) *Es macht dann Beschwerden, wenn man sich dessen selbst gar nicht* it causes then discomfort, if one oneself of-this self at all not *bewußt ist.* aware is 'It causes (then) discomfort, if you are not aware of it.'

(4) *The sentence can only be assigned the right truth conditions, or alternatively be given the correct semantic representation, if the grammatical significance of 'and' in this sentential context... is taken into account before the semantics.*

Example (5) shows a final conditional clause that is not announced in the preceding main clause. Unannounced conditional clauses do not provide new information; rather they function as a reminder. Consider the example in (5) which is taken from another doctor-patient conversation. Earlier in the discourse the patient argued that he is no longer able to work at his job because of a heart disease from which he suffered a few years ago. He therefore asked the doctor for his medical records so as to apply for a job-retraining program offered by his health insurance company. After examining the patient the doctor concluded that the heart disease is no longer a threat and that the patient is able to do his current job. In this connection he says:

(5) *Fragen Sie mich nicht nach einer Bescheinigung. Denn sonst müßte ich Ihnen* ask you me not for a medical documentation. because otherwise must I you *jetzt bescheinigen, daß kein Herzklappenfehler mehr besteht, daß Sie* now certify, that no valvular heart disease any longer exists, that you *körperlich in guter Verfassung sind, und so weiter, und das hilft Ihnen nix,* physically in good shape are, and so on, and that helps you not, *wenn Sie ne Bescheinigung erreichen wollen.* if you a medical documentation achieve want 'Don't ask me for medical documentation, because I would have to certify that there is no longer a valvular disease, that you are in good physical shape, and so on, and that doesn't help you, if you want medical documentation.'

The doctor uses the final 'wenn' clause in order to remind the patient of information that was previously introduced into the discourse: the patient told the doctor that he wanted medical documentation of his cardiac disease. The final 'wenn' clause
reactivates this information in order to confirm the intended conditional interpretation of the preceding main clause.

Example (6) and (7) show complex sentences with final temporal and causal clauses. In both examples the adverbial clause is neither announced nor does it function as a reminder.

(6) Mr. Milosevic imposed the trade embargo on his former protégés in Bosnia last month, after the Bosnian Serbs rejected the contact group’s peace plan.

(7) And... I’m gettin’ a little nuts a’ready. I’s... I haven’ been doin’ too much school work, because -- here this has to be done, here that has to be done, and... I really -- I’m getting tired.

The temporal clause in (6) is taken from a newspaper article that is concerned with the war in Bosnia. The temporal clause follows the main clause without any announcement, and it does not just reactivate a background assumption; rather it adds information to the central line of this article. The causal clause in (7) is taken from a spoken discourse. A comma indicates that main and adverbial clause belong to separate intonation units. The ‘because’ clause is unbound and resembles a coordinate main clause that expands on the central topic of this conversation. So, the examples in (6) and (7) show that temporal and causal clauses in final position are used with other discourse functions than final conditional clauses.

2. Concessive clauses

Like conditional clauses, concessive clauses predominantly precede the main clause. Furthermore, like conditional clauses, the interpretation of concessive clauses involves a conventional implicature, and preposing of the subordinate clause is motivated by processing factors. Consider, for instance, the example in (8). The sentence is taken from a chapter of a historical book about the city of Buffalo. The chapter describes the assassination of President McKinley at the Pan American Exposition in Buffalo in 1901. Immediately after the president was shot the police arrested several people, among them Emma Goldman, an alleged anarchist:

(8) Although they were convinced of her innocence and refused to comply with the district attorney's request, the Chicago police detained Goldman for fifteen days...

The situation expressed in this sentence contrasts with the situation that is normally expected: normally we would expect that the police dismiss a detainee if they considered this person to be innocent. The normal situation is conventionally implicated. If we represent the proposition of the concessive clause by x and the main clause proposition by y, we can state the relationship between the propositional content and the implicature as in FIGURE 3.

although x, y (conventionally) implicates: normally if x, ~y (or: normally if y, ~x)

FIGURE 3
The abnormal character of the situation expressed in a concessive sentence is indicated by the concessive conjunction at the beginning of the adverbal clause. If the concessive clause is preposed, as in example (8), the addressee recognizes that the information of the following proposition deviates from the standard case before he or she interprets the sentence. If the concessive clause is postposed, as in example (9), the addressee does not realize that the main clause is part of a deviant situation before the concessive clause follows. Thus the addressee will assume the standard situation, and based on this assumption he or she will make certain inferences.

(9) *The Chicago police detained Goldman for fifteen days, although they were convinced of her innocence and refused to comply with the district attorney's request.*

In example (9), the sentence-initial main clause *invites the inference* that the police had good reason to detain Goldman for so many days. The addressee is led to this inference because it is part of our cultural belief that the police act fairly and responsibly. The following concessive clause indicates, however, that this inference does not hold in this instance. The situation stated in sentence (9) deviates from the standard case: the police were convinced of Goldman's innocence, but they still kept her in prison. The final concessive clause induces the addressee to abandon the previous inference which is part of his or her initial interpretation of the preceding main clause. Like final conditional clauses, final concessive clauses may cause a reinterpretation, and therefore postposing of concessive clauses is mostly avoided.

Thus far I have basically given the same arguments for conditionals and concessives in order to account for their distributional behavior. There is, however, a significant difference between final conditionals and final concessives. A final conditional clause affects the propositional meaning of the preceding main clause: it turns a factual proposition into hypothetical information. Final concessive clauses do not affect the propositional meaning; rather they change an invited inference of the preceding main clause. The effect of final concessive clauses is less significant than the effect of final conditional clauses, and that might explain why conditional clauses are more often preposed than concessives. In FIGURE 4 I have stated the particular reinterpretation effect that arises from final conditionals and final concessives:

\[
\begin{align*}
\text{Conditionals:} & \quad p (p \text{ is factual), if } q. \\
\text{Effect of 'if q':} & \quad p \text{ is reinterpreted as being non-factual}
\end{align*}
\]

\[
\begin{align*}
\text{Concessives:} & \quad p (\text{invites the inference 'if } p \rightarrow q), \text{ although } q. \\
\text{Effect of 'although q':} & \quad p \text{ remains intact, but } \neg q \text{ must be abandoned}
\end{align*}
\]

FIGURE 4

3. Temporal and causal clauses

Temporal and causal clauses mostly follow the main clause. In this section I argue that the dominant use of temporal and causal clauses after the main clause follows from a certain parsing principle that Hawkins postulates in his recent work that I have mentioned in the introduction. According to Hawkins, syntactic parsing is guided by a principle (*Early Immediate Constituent EIC*) that prefers those orders
of words and phrasal constituents that allow for a rapid access to all immediate constituents (IC's) of a mother node (M), once the first IC has been recognized as a daughter of M. This principle predicts that complex sentences with final adverbial clauses are easier to parse (and thus preferred) than complex sentences in which the adverbial clause precedes the main clause. In complex sentences with initial adverbial clauses the parser recognizes the S-node that dominates both the main (IC2) and the subordinate clause (IC1) when it encounters the sentence-initial conjunction, but the entire adverbial clause has to be parsed until the main clause (i.e. IC2) is accessed. That is, the parser creates both the mother node of the adverbial clause (S') and the mother node of the complex sentence (S) once it encounters the sentence-initial conjunction; but the entire adverbial clause (IC1) must be parsed until the first constituent of the main clause (IC2) is accessed:

![Diagram](image_url)

**FIGURE 5**

In complex sentences with final adverbial clauses the parser does not recognize that the main clause pertains to a complex sentence until it encounters the following adverbial clause, and once the adverbial clause has been encountered the mother node of the adverbial clause (S') is immediately attached to the simultaneously created S-node that dominates the entire sentence.

![Diagram](image_url)

**FIGURE 6**

In other words: complex sentences with initial adverbial clauses require keeping the entire subordinate clause in the short term memory until the main clause is accessed, while complex sentences with final adverbial clauses simply add the subordinate clause to the structure that has been created by parsing the preceding main clause.

Hawkins' parsing principle (i.e. the EIC) accounts for the prevalent use of temporal and causal clauses after the main clause. It conflicts, however, with the
distributional behavior of conditionals and concessives that tend to precede the main clause. Conditional and concessive clauses violate the EIC so frequently because preposing of conditional and concessive clauses is motivated by particular processing factors that have to do with their semantic interpretation. Semantic and syntactic processing principles are obviously in conflict in these clauses, and in this situation of competing motivation it is the semantic factor that usually overrides the order that is preferred for syntactic parsing.

We still have to account for those temporal and causal clauses that precede the main clause. A closer look at complex sentences with preposed temporal and causal clauses suggests that initial occurrence is motivated by discourse factors. Temporal clauses are used to organize the temporal structure of narratives and other genres with a temporal contour. Initial temporal clauses frequently resume information from the preceding discourse; they establish a temporal reference point for the information that is expressed in the following main clause. Example (10) shows a typical case: the initial 'when' clause resumes information that has been mentioned in previous sentences; the temporal clause is used to provide a thematic ground for the proposition that follows.

(10)  The presidential train was greeted by a twenty-one gun salute. In his eagerness to honor this most popular president the cannoneer, a Coast Guard officer and veteran of McKinley's Civil War regiment, had placed the cannon so close to the railroad tracks that when the salvo began the presidential car shook violently.

Unlike temporal clauses, causal clauses are not typical background clauses. Only 20% of all causal clauses in my data precede the main clause (while almost 50% of all temporal clauses occur sentence-initially). The dominant use of causal clauses after the main clause is due to their communicative function: causal clauses are frequently used with their own illocution (Lakoff 1987); they tend to be less integrated into a complex sentence than other adverbial clauses. Consider, for instance, the 'because' clause in (11):

(11)  And... I'm gettin' a little nuts already. I's...I haven't been doin' too much school work, because -- here this has to be done, here that has to be done, and...I really -- I'm getting tired.

Context and propositional content of this sentence suggest that the 'because' clause was planned after or while the speaker performed the preceding speech act. That is, the causal clause is "asserted post dictum" (Altenberg 1980, 57), it adds new information in reaction to the preceding proposition. Causal clauses often resemble a coordinate main clause, and like a coordinate main clause they tend to follow the clause to which they are semantically related.

It is interesting to note in this connection, that in colloquial German 'weil' clauses (i.e. causal adverbial clauses) are frequently realized with main clause constituent order. In German subordinate clauses the finite verb occurs sentence-finally; but when a causal 'weil' clause follows the main clause the finite verb is frequently second as in a main clause. Main clause constituent order is restricted to 'weil' clauses in final position; it does not occur in initial 'weil' clauses or in other pre- or postposed adverbial clauses. The use of main clause order in final 'weil' clauses indicates their independence of the related main clause (Gaumann 1983).
Processing factors like those that I have described for conditional and concessive clauses are completely irrelevant to the position of temporal and causal clauses. Unlike the latter, the conventional meaning of temporal and causal clauses does not involve a conventional implicature. That does not mean that complex sentences with temporal and causal clauses could not involve a reinterpretation. Consider, for instance, the sentence in (12):

(12) *The Pope will come to the US next year, because he wants to see Disney World.*

Given our knowledge about the Pope and the Catholic church we would assume that the Pope will come to America in order to support the Catholic community in this country. This is an invited inference of the main clause in (12). The following 'because' clause indicates, however, that this inference is not valid: the Pope will not come to the US in order to support the Catholic church, but rather because he wants to see Disney World. The causal clause forces the addressee to revise an invited inference of the previous main clause; but this revision is due to the propositional content of the adverbial clause; it is not caused by the conventional meaning of causal clauses. In final conditional and concessive clauses the reinterpretation of the preceding main clause is triggered by the conditional or concessive marker. Conditionals and concessives are associated with a conventional implicature, and this implicature is relevant to the interpretation of the associated main clause. In other words, causal and temporal clauses cause a reinterpretation just in the case where the propositional content contradicts a previous inference. Conditional and concessive clauses, in contrast, give rise to a reinterpretation because they are associated with a conventional implicature that is crucial for the interpretation of the entire sentence.

4. Conclusion

In this paper, I have argued that preposing of conditional and concessive clauses is motivated by semantic processing factors. Final conditional and final concessive clauses may cause a reinterpretation of the preceding main clause. One way to avoid such a reinterpretation is to place the adverbial clause before the main clause. Preposing of conditional and concessive clauses is, thus, a strategy to forestall a reinterpretation procedure. Postposing of conditional and concessive clauses is motivated by particular discourse factors: final conditionals and final concessives are either announced in the preceding main clause and provide new information or they function as a reminder.

The distributional behavior of temporal and causal clauses is due to other factors. I have argued that the prevalent use of temporal and causal clauses in final position is motivated by a certain parsing principle (Hawkins' EIC), and that causal and concessive clauses precede the main clause when a preposed adverbial clause enhances discourse coherence. Final occurrence is especially common with causal clauses, because causal clauses often resemble a coordinate main clause that generally follows the clause to which it is related.

NOTES

*I would like to thank Jean Pierre Koenig for his comments on an earlier draft of this paper. All remaining errors are, of course, mine.
1Previous studies show similar text-counts; see Altenberg (1980), Quirk et. al. (1985), Thompson (1985), Ramsay (1987).

2My understanding of conditional clauses is based on the analysis of conditionals in Lehmann (1974). Following Lehmann, I assume that conditional clauses generally express a disjunction and that they convey hypothetical (or counterfactual) information. It is important to note that the notion of conditional clause is independent of the presence or absence of a particular marker. The English conjunction 'if', which is normally used in conditional clauses, may occur in clauses that convey factual information (as some people have argued). If this is correct, one has to re-consider the common categorization of 'if' as a conditional marker, but this does not require to re-define the notion of conditional clause.

3The implicit alternative is triggered by the conditional conjunction; it does not simply arise from the context, so that it cannot be a conversational implicature.

4There is one exception: final concessive clauses can also occur with main clause order.

REFERENCES


Causativization in Hupa*

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1. Introduction

In this paper I analyze the morphosyntactic alternations involving the causative morpheme ɬ- in Hupa, an Athapaskan language. The distribution of this morpheme is of interest because it is intermediate between that of what might be called a 'lexical' causative, and that of a syntactic causative which takes a clausal complement. I will argue that a uniform treatment may be given for ɬ- in structural terms; that is, that its distribution is determined by syntactic considerations, such that it always appears as a causative (light) verbal head with the same type of complement.

The analysis I propose provides an identical syntactic treatment for two sets of environments, one of which exhibits idiosyncrasies associated with Lexical processes, and one of which does not; this raises questions concerning the applicability of a syntactic account for all of the cases in question. I thus devote the concluding sections of the paper to a discussion of the resolution to this question, and its implications for the relationship between syntax and argument structure. In addition, I discuss the implications of the discussion for analyses of the Transitivity Alternation, focusing on questions surrounding the morphology found in intransitive/transitive pairs.

2. Hupa

Hupa is a Pacific Coast Athapaskan language of Northern California. The data discussed in this paper stem from the work of Golla (1970, 1976) (a further collection of Hupa material is Sapir (1927)). Golla (1970) contains a detailed discussion of the types of morphosyntactic operations which take place in the Hupa verbal system, and it is on his discussion that mine will be based.

The Hupa verb often shows a number of obligatory prefixes in addition to the verb stem; the basic representation of the verb will be of what is called the verb theme, which consists of the verb stem and any obligatory prefixes. In presenting abstract representations of Hupa verb themes, I will follow conventions derived from Golla (1970) and Golla (1976). This involves presenting the verb with the obligatory prefixes, with schematized object and adverbial markers (O and A respectively, when different adverbials may appear), a series of three dots ('...') showing where subject inflection would be, and the classifier that appears with the relevant form of the verb. Thus the representation for a theme like the (derived) verb that is translated as 'cause to extend in a line somewhere) is as follows:

(1)  
A O ... ɬ iɪk r
ADV OBJ ... CL (a line)-extends
'cause O to extend in a line somewhere'

Here the element 'O' will be instantiated in an occurring form with one of the object markers, while that given as 'A' will be instantiated as an adverbial prefix
indicating the relevant sort of motion. The underlined portion of the verb is the stem.\(^1\) The morpheme to be examined in this paper, \(\frac{1}{2}\), is one of the elements referred to as ‘classifiers’ in Athapaskan grammar. These elements are associated with functions of voice and transitivity, with changes in these being accompanied by classifier alternations. All Athapaskan languages show effects of this type, in reflexes of four classifiers, \(\frac{1}{2}\), \(d\frac{a}{\raise0.6ex\hbox{\}}}{\raise0.1ex\hbox{`}}\), \(l\frac{1}{2}\), and \(\emptyset\).

3. The Transitivity Alternation

The initial environment in which \(\frac{1}{2}\) will be examined is the ‘Transitivity Alternation’ (henceforth TA): pairs of verbs in which the surface subject of the intransitive corresponds to the logical object of the transitive, as with English ‘break’. Before I begin, it is important to emphasize that what I am looking at in this and the following sections are sets of alternations in which the changes in the classifiers accompany changes in voice or transitivity. In some cases, the presence of a classifier with a verb theme is not the result of productive morphosyntactic processes, but is instead simply a property of the verb in question; this point is made clear in the discussion of Golla (1970), where these ‘lexical’ functions of the classifiers are sharply distinguished from the productive systems of alternations.

Hupa has a class of TA verbs in which the intransitive form has no classifier (i.e. the \(\emptyset\)-classifier), while the transitive shows \(\frac{1}{2}\):

(2) Transitivity Alternation with \(\frac{1}{2}\)

<table>
<thead>
<tr>
<th>Intransitive</th>
<th>Transitive</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ti ... (\frac{1}{2}) (\emptyset)id</td>
<td>O ti ... (\frac{1}{2}) (\emptyset)id</td>
<td>‘tire-INTR/TRANS’</td>
</tr>
<tr>
<td>... daw</td>
<td>O ... (\frac{1}{2}) daw</td>
<td>‘melt-INTR/TRANS’</td>
</tr>
<tr>
<td>(\frac{1}{2})(\emptyset)i (\frac{1}{2})</td>
<td>O ... (\frac{1}{2}) (\frac{1}{2}) (\emptyset)i</td>
<td>‘split/tear’</td>
</tr>
<tr>
<td>(\frac{1}{2})(\emptyset)i ni ... cis</td>
<td>(\frac{1}{2})ni ... (\frac{1}{2}) cis</td>
<td>‘go out/put out (fire)’</td>
</tr>
<tr>
<td>... g(\emptyset)as</td>
<td>O ... (\frac{1}{2}) g(\emptyset)as</td>
<td>‘break,snap’</td>
</tr>
<tr>
<td>... mas</td>
<td>O ... (\frac{1}{2}) mas</td>
<td>‘roll-INTR/TRANS’</td>
</tr>
<tr>
<td>...xis</td>
<td>O ... (\frac{1}{2}) xi(\emptyset)</td>
<td>drop, fall/send dropping, falling’</td>
</tr>
<tr>
<td>...xad</td>
<td>O ... (\frac{1}{2}) xad</td>
<td>‘(several) drop/knock (them) down’</td>
</tr>
</tbody>
</table>

The most direct way of analyzing the intransitive forms here would be to treat them as unaccusative; this would be essentially the same treatment given to such forms in related Athapaskan languages by Rice (1991) and Hale and Platero (1995) (the phrase-structure here is that of Chomsky (1995)):\(^2\)

(3) Intransitive Structure:

\[ [\text{VP} \text{DP} [\text{v} \text{Verb}]] \]

The VP-internal DP here is interpreted as the Theme of the predicate, and induces subject agreement on the verb following raising.

The next question naturally concerns the transitive forms, and the role played by \(\frac{1}{2}\). This question is addressed explicitly in McDonough’s (1989) analysis of
the Athapaskan language Navajo, where it is argued that the classifiers provide
the information specifying how the verb is associated with its arguments. More
specifically, the verb itself is not specified for the manner in which it interacts with
its syntactic arguments; this information must be specified by the classifiers. In
particular, she holds that the presence of the $\emptyset$-classifier specifies that the argument
of the verb stem is a subject, while the presence of $?$ has two effects: first, an
external argument is added, and, second, the argument of the verb stem is specified
as internal. While this account is certainly correct in correlating the presence of
$?$ with the creation of a transitive predicate, it does not make clear how precisely
$?$ carries about this transitivization. It does not elaborate on how the presence or
absence of a classifier specifies how the restrictions imposed by the stem on its
argument will apply. On the account presented here, I will take the role of $?$ to be
structural in nature, as in the following (again, see Hale and Platero (1995)):³

(4) Transitive Structure: The role of $?$

\[ \text{VP} [v \, ]; \, \text{DP} [v \, \text{Verb}]] \]

In this structure $?$ plays the role of a (light) verbal head, taking the VP as its
complement. In the resulting transitive predicate, the DP generated VP-internally
remains there, as the logical object of the action denoted by the verb, due to the
presence of an external argument of which the entire structure in (4) is predicated.⁴
The inner DP is then interpreted as the Theme of the entire predicate, which has
compositional semantics paraphrasable roughly as ‘Cause-V OBJ’.

The compositional properties of this aspect of the verbal system may be seen
when we consider a second group of verbs closely related to those in (2) above.
The relevant verb themes are essentially adjectival in nature, and may be grouped
in intransitive/transitive pairs much like the verbs in (2) above:

(5) Adjectival forms and Transitives

<table>
<thead>
<tr>
<th>Intransitive</th>
<th>Transitive</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ni ... Won</td>
<td>O ni ... $?$ Won?</td>
<td>‘be good/cause to be good’</td>
</tr>
<tr>
<td>$?$ ... Gu?</td>
<td>O ... $?$ Gu?</td>
<td>‘be lacking/cause O to disappear’</td>
</tr>
<tr>
<td>ni ... $?$-cay</td>
<td>O ... $?$ cay?</td>
<td>‘be dry/dry’</td>
</tr>
</tbody>
</table>

The factor differentiating the themes in this group from those in (2) is that the
transitive form is not based simply on the intransitive form; instead, it is based on
an inchoative form referred to by Golla as the ‘Transitional’. This verbal form,
which indicates a change of state, is identifiable morphologically in certain verb
themes: CV stems become CV?, while CVN stems become CVN?. An example of
the intransitive, Transitional, and transitive may be seen in the following:

(6) a. ni ... Won ‘be good’
    b. ni ... Won? ‘come to be good’
    c. OBJ ni ... $?$ Won? ‘cause to be good’

With the light verbal head $?$ having a causative meaning, the transitive forms
based on adjectival themes are compositionally constructed in the same way as the
‘verbal’ unaccusatives above. The fact that the complement of $?$- in these adjectival
forms is Transitional could be reduced to the fact that an event or change of state variable is required in the meaning ‘Cause-V OBJ.’ That is, with the ‘verbal’ TA-verbs above, the unaccusative VP contains an event as part of its meaning; with the ‘adjectival’ unaccusatives, the transitive forms must be similarly eventive, and for this the Transitional is required.

In conclusion, in addition to being able to account for the appearance of ı- in the TA, the structural approach is motivated by the fact that ı- appears as a light verb outside of the TA, as will be discussed in the following sections.

4. Causativization of Medio-Reflexives

The next cases to be examined are based on a verbal form called the Medio-Reflexive. Golla (1970) describes this as being derived from transitive themes, with a meaning which is either reflexive or similar to the classical middle in nature. The Medio-Reflexive is signaled by a change in classifier from the transitive theme: transitives with no classifier show the classifier -di- in the Medio-Reflexive, while those with ı- show either -di- or -l-. Below are sample transitives with their corresponding Medio-Reflexive forms:

(7) a. O ... ı k’oc, ‘stretch O’
   b. ... di k’oc, ‘stretch’

(8) a. A O ... ı Wuč, ‘slide O somewhere’
   b. A ... ı Wuč, ‘slide oneself somewhere; skid’

(9) a. O ... ı Guč, ‘bend O’
   b. ... di Guč, ‘wiggle’ (i.e. ~ ‘bend oneself’)

The (b) forms here may be further causativized; thus for a verb like ‘bend’ we have the following set of forms:7

(10) Full Paradigm for ‘bend’

| na si ... Guč | be humped over, bent, crooked’ | Intransitive |
| O ... ı Guč | ‘bend’ | Transitive |
| di Guč | ‘wiggle, tumble, squirm’ | Medio-Reflexive |
| O ı di Guč | ‘make O squirm’ | Causative of M-R |

Turning to the question of what sort of structures are the complements of ı- in this case, we may extend the considerations advanced in the discussion of intransitives in the last section to gain insight into the structure of the Medio-Reflexive. As the following examples show, the Medio-Reflexives behave like the unaccusatives seen above in applying the semantic restriction of the stem to the surface subject:

(11) a. A O ... ı Ged ‘shove (a stick) somewhere’
   b. A ... di Ged ‘(A stick) shoves itself somewhere’

(12) a. A-O ... miň ‘throw (several objects in a bunch)’
    b. A ... di miň ‘(several objects in a bunch) move precipitously, fly’
The question of how the VPs in the unaccusatives and the Medio-Reflexives stand in relation to one another depends on a structural analysis of the Medio-Reflexive, which I am not attempting to provide here. Abstracting away from this issue, however, the diagnostic concerning the semantic restrictions provides the necessary information about the Medio-Reflexive. It may thus be concluded that the more abstract structures involved in the Medio-Reflexive and the unaccusatives in §3 are similar in the sense that they are both without external arguments.

5. The Possessive

The final case to be discussed is the ‘Possessive’, a verbal form with \( \bar{\text{r}} \)- which is related to both statives and passives; the relationship of the Possessive to these other forms is illustrated in the following:

(13) Stative \( \rightarrow \) Possessive
    a. si ... \( \bar{\text{r}} \)an ‘One object lies’
    b. O si ... \( \bar{\text{r}} \)an ‘have (one object) lying; own (one object)’

(14) Passive \( \rightarrow \) Possessive
    a. O-o ... \( \emptyset \) xed ‘buy O’
    b. O-o wi ... di xed ‘O has been bought.’
    c. O-o wi ... \( \bar{\text{r}} \)-di xed ‘have O bought.’

The meaning of the Possessive depends to some extent on the meaning of the theme to which it is related; according to Golla, the interpretations are: 

(1) From Statives: “...have (an object normally in motion) lying motionless”; often ‘keep’ (Golla 1970:191). (2) From non-statives: “...causation (by the subject) of the passive state, or the ownership (by the subject) of the object in this state.” (Golla 1970:182). The statives referred to here form a morphologically (and to some extent semantically) coherent class of themes which are roughly adjectival in nature; this class will be discussed in detail in §5.2. The more pressing question raised by the Possessive concerns the cases related to the passives in (14). The properties of the verbal form referred to as ‘Passive’ are as follows. First, it is always a ‘neuter’, meaning that it is incapable of variation for mode/aspect. In addition, it shows agreement with the object of the verb, in the same way that transitive verbs show agreement with their objects, and exhibits classifier alternations in the pattern \( \emptyset :\text{di::}+\text{ti} \). Finally, the verb stem is in the perfective form. The most telling of these is the second property, namely that the verb continues to show object agreement with the logical object of the verb. The conclusion I will draw from this is that such passives are in fact transitives with an impersonal subject. This is at odds with the hypothesis which has been developed to this point- if the passives are actually transitives, and if the Possessive is actually the transitivization of a passive, then the characterization of \( \bar{\text{r}} \)- as a verb taking only a VP complement cannot be correct. However, treating the Possessive formed from a passive as simply a different use of \( \bar{\text{r}} \)- is also undesirable; in particular, it does not account for the fact that simple transitives cannot be causativized with \( \bar{\text{r}} \)-, and actually predicts that this should be the case. The solution to this problem is, I will argue, to be found in treating the Possessives apparently formed from Passives as actually being formed from something like the Static. I will first provide an analysis of the Statives from which the Possessive may be formed, and following this argue that all Possessives may be analyzed similarly.
The type of statives relevant to the study of the Possessive are designated ‘Stative Neuter Motion Themes’ in Golla (1970); these statives are si-neuters, meaning that they always show the stative aspect morpheme si-. Two of these themes, with their Possessives, are the following:

(15) a. si ... ?an ‘One object lies’
    b. O si ... Ɂʔan ‘have (one object) lying; own (one object)’

(16) a. si ... l Ɂʔas ‘(stones) lie thrown’
    b. O si ... Ɂ di Ɂʔas ‘have (stones) lying; own (stones)’

There are two points to be made here, one concerning the syntax/semantics of the stative, and one concerning its morphology. Golla (1970:167) describes the themes in this class as being primarily stative, describing an entity typically in motion as being at rest. In this group there are two subtypes. The first simply refers to the stasis of a particular object, without reference to how it arrived in that position. In the second class, reference is also made to an object being in a particular state, but with the implication that it had been handled or manipulated. On this basis, I would like to suggest that the complements of Ɂ- in the latter cases are effectively resultative: states implying prior events. Structurally, these may be treated as VPs without external arguments. This amounts to treating the Resultative as a type of unaccusative, a stance which is supported by the fact that the semantic restrictions found with the statives behave exactly like those noted for the unaccusatives earlier (cf. e.g. (16) above). The Possessives formed from this statives are thus compositionally ‘Cause O to be V-ed’.

There are two distinct classes of si-neuters identified by Golla, with the classes being partitioned on the basis of (1) classifiers and (2) relation to other verb themes. The first class, exemplified by (15), comprises themes which show Ɂ- in the Possessive; while some of these verbs are unrelated to other themes, the majority are identical in classifier to transitive verbs relating to directional motion. The following illustrates some themes of this class:

(17) Class 1 Stative Motion Neuters

    si... yen ‘(one) stands’
    si... ?an ‘(one) lies motionless’
    si... la ‘(several) lie motionless’
    si... da ‘(one) sits, dwells’
    si... ten ‘(one person) is lying down’

The themes in the second class are all related to transitive directional themes, and show classifier differences based on the passive correlation. This latter fact leads Golla to hypothesize that the class in question represents ‘...a fossilized type of passive formation’ (p.190). The themes are as follows:

(18) Class 2 Stative Neuters

    si... l ?eχ ‘(several) lie extended’
    si... di ?ad ‘(a fabric) lies flapped’
    si... l ci̞ ‘(rope) lies knotted’
    si... l waχ ‘lie thrown, flung’
    si... l Ged ‘(a stick) lies shoved’
Golla notes that for each of the Possessives of the verbs in Class 1 with \( \dag \)-, there is an alternate form with the same meaning; thus O si-\( \dag \) da ‘have (one) sitting’ \( \sim \) O si-\( \dag \) di-da. These alternants, Golla suggests, are derived analogically on the basis of Class 2, in which the Possessive is invariably di-d. This situation points to a generalization of the role of the di-classifier, such that it always appears in resultatives/statives. Based on this generalization, I would like to suggest that what is found in the Possessive of the Passive is the causativization not of a transitive, but of a resultative of the type found in the si-neuters. That is, the facts discussed in §5.2 show that di- may always appear with statives;
Morphologically, in terms of the classifiers shown, the passives are identical to the statives; all of these appear with di-di. Golla notes that passives are identified as Class 2 Statives for the purposes of further formations.

(19) a. A O ... \( \dag \) tiW ‘move (one person) somewhere’
   b. A O wi ... l ten ‘(one person) has been moved somewhere’
   c. A O wi ... \( \dag \) di ten ‘have (one person) moved somewhere’

The position I would therefore like to take is that the form in (19c) has as the complement of \( \dag \)- a resultative VP of the type found with the stative themes discussed in §5.2. This accounts for the interpretation of the relevant forms, and in addition allows for the generalization concerning \( \dag \)- and complements with external arguments to be maintained. To sum up §§3-5, the distribution of \( \dag \)- in morphosyntactic alternations results from structural considerations: \( \dag \)- is a causative head which only appears with complements which do no have an external argument.

6. Implications

The analysis developed in the previous sections assigns the same structural role to \( \dag \)-, and shows that its distribution in the verbal system may be stated in syntactic terms. A question raised by this treatment concerns the fact that the pattern \( \varnothing \)-Intransitive and \( \dag \)-Transitive is not the only one seen in the Transitivity Alternation in Hupa. In addition to this pattern, it is also the case that some verbs show no classifier at all in either form, while others show \( \dag \)- in the transitive and di- or l- in the intransitive, as the the following examples illustrate:

(20) Different Alternations

<table>
<thead>
<tr>
<th>Intransitive</th>
<th>Transitive</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ni ... yiw</td>
<td>O ni ... yiw</td>
<td>‘grow to maturity/raise’</td>
</tr>
<tr>
<td>ni ... Gić</td>
<td>O ... Gić</td>
<td>‘be twisted/twist’</td>
</tr>
<tr>
<td>... di wan</td>
<td>O ... wan</td>
<td>‘break (a complex thing)’</td>
</tr>
<tr>
<td>na xu ... l Wen</td>
<td>na O ... ( \dag ) Wen</td>
<td>‘melt’</td>
</tr>
<tr>
<td>di ... di mid</td>
<td>O di ... ( \dag ) mid</td>
<td>‘tip over’</td>
</tr>
</tbody>
</table>

This type of variability in the Transitivity Alternation is quite common, to judge from typological studies such as Haspelmath (1993). Focussing for the moment on the first three forms in (20), the relevant point is that \( \dag \)- does not appear in the transitive forms. This raises the question of whether this lack of full productivity, which is often taken to be the hallmark of Lexical as opposed to syntactic processes, argues
against the structural treatment of 1- given above. On a Lexicalist approach to the TA, the variation in TA morphology would presumably be a non-question. Various verbs would be identified as fundamentally transitive or fundamentally intransitive, with the morphological marking seen in 'detransitivized' or 'causativized' members being the result of lexical operations on argument structure.

There are two major objections to simply dismissing the variation in TA morphology as a Lexical idiosyncrasy. The first is that on such an account, one cannot pose the question of why the morphological marking found within the TA is often exactly the same as the morphology found with processes such as passivization and causativization which require syntactic analyses. On a Lexical account, there is no reason why the morphology associated with causativization should appear in the TA, as one appearance of the morpheme would be as a functor on argument structures applying in the Lexicon, and the other being a syntactic verbal head. In the analysis above this is the question of why 1- appears systematically both inside and outside of the TA, but more generally it is the question of why the morphology in the TA should, if Lexical, be identical with the morphology associated with processes which are syntactic in nature.

Furthermore, the Lexicalist approach to the TA fails to capture properties which characterize TA verbs cross-linguistically, as argued originally in Chomsky (1970) and developed more recently in Marantz (1995). One conceivable approach to the different patterns in the TA would be to say that some of the verbs in question are basically intransitive, while others are basically causative; the morphological differences would then stem from the difference in the types of change required to make a particular verb intransitive or transitive. However, this type of approach fails to account for a number of properties of TA verbs, and I will therefore not adopt it. Based these considerations, I will assume a view of the Transitivity Alternation discussed in Marantz (1995) and originating in Chomsky (1970). On this approach, the Transitivity Alternation involves the same abstract root, e.g. GROW, in two syntactic environments. According to this view, the roots of TA verbs are inherently non-agentive, and may receive agents only within a sentential environment; this may in turn be due to the presence of a causative verbal head, as on the approach to 1- taken here. Because the difference in the transitive and intransitive versions of the TA verbs is reduced to a distinction between two syntactic environments in which a single root appears, the question of variation in morphology becomes directly relevant, given the assumption that identical syntactic representations are involved whether the causative head appears overtly or not.

Thus to summarize the discussion to this point, there are good reasons for rejecting a Lexical treatment of the TA, both from the perspective of the analysis of 1- presented here and more generally. The different morphological patterns in the TA may not be seen as stemming from the fact that different semantic roots appear in the TA, and must be accounted for otherwise.

The question I will discuss in the remainder of this paper is whether the variation seen in TA-morphology should be regarded as allomorphy. The treatment of 1- developed in this paper identifies it as the head of a verbal projection, and we may therefore ask whether the variation seen with the causative element of the TA verbs is the same as that seen between e.g. the affixes -Ø, -d, and -t of the English past tense. On any account assuming uniformity in the class of TA verbs, one must specify as a property of certain verb roots whether or not the causative head should be realized as 1- or as Ø- in the transitive form. The question then is whether a treatment of TA-transitives as involving 1- and Ø- allomorphs of the causative head is adequate. On the face of it this approach seems promising, but something remains
to be said. In particular, this approach says nothing about the fact that the only cases in which the allomorphy appears are in the Transitivity Alternation; in other cases with -t-, there is no Ø- allomorph. That is, there are no cases in which a si-neuter meaning 'be or lie V-ed' is paired with a Possessive with Ø-classifier meaning 'have O V-ed'. Although a seemingly trivial observation, this points to the fact that if the variation in the TA is to be reduced to allomorphy, this allomorphy is constrained so as not to apply to the causative head in all instances.

One possible approach would be to capture this difference through an appeal to considerations of morphological locality. As noted earlier, it is quite possible that the VPs involved in medio-reflexives and resultatives should be taken to be a more complex syntactic structure than the simple VPs posited for the unaccusatives examined in §3. One could then appeal to the fact that the potential allomorphy of the light verb does not occur because it is not in a sufficiently local relationship with the root that conditions it. This approach might find further motivation in the fact that in the cases in which -t- always appears the classifier di- appears between the -t- and the verbal stem. It could perhaps be argued that di- blocks the relevant morphological relationship required for allomorphy, so that -t- always appears.

A second approach would also involve an appeal to locality, but of a syntactic rather than morphological sort. Marantz (1995) discusses the idea that the projection of an agent delimits syntactically a domain with which 'special' non-compositional meanings may be associated, and is thus in some sense privileged. The generalization about allomorphy with -t- might therefore be stated in terms of the syntactic structures in which the causative head appears. Somewhat loosely, the generalization would be that there is only potential allomorphy when the causative head appears within the simple domain associated with the structure [VP [v t- ] [VP DP [v Verb ]]]. The allomorphy in question could thus be termed Inner Allomorphy, to emphasize the fact that it only occurs within the non-agentive domain associated with special meanings.

In the present case, it is difficult to distinguish between these two treatments. For one, detailed syntactic analyses of the complements of -t- are not available, especially in the case of the Medio-Reflexive. Moreover, as noted above, in all of the cases in which allomorphy does not occur, there is additional morphology; combined with the previous point, this makes it difficult to determine what sort of cases would differentiate the two accounts. In spite of the fact that some matters must be left undetermined at this point, the discussion of this section makes a number of points, which I will summarize here. (1) Theories of the TA must address the question of why morphology in the TA is often identical with the morphology associated with syntactic processes; at least with causative or light-verbs appearing in the TA, this question may be answered directly on a structural approach to argument structure. (2) On a unified or 'single-root' treatment of the TA like that of Marantz (1995), the question of morphological variation within the class of TA verbs requires an explanation. (3) As an answer to the question raised in (2), it was shown that some variation in the realization of morphemes in the TA may be treated as allomorphy, but only if locality conditions on this allomorphy are recognized. This final point establishes a question for further research. Further research on Hupa syntax, as well as research on other languages with causative morphology in the TA, will determine whether the locality conditions on allomorphy are to be stated morphologically or syntactically.
Notes

*My foremost debt in writing this paper is to Victor Golla, on whose work I am relying both for insights on Hupa grammar and for data; I would also like to thank him for providing comments and suggestions on aspects of the material presented here. For helpful comments and discussion I would also like to thank Mark Baker, Rajesh Bhatt, Robin Clark, Ken Hale, Tony Kroch, Alec Marantz, Keren Rice, Don Ringe, Laura Siegel, Arnim von Stechow, and Laura Wagner. All errors belong to me.

1 In citing verb themes throughout the discussion, I will not cite both imperfective and perfective stem variants, but will instead give only the imperfective form. In terms of the transcriptions used, I follow Golla (1970) except that I use ‘i’ in place Golla’s ‘v’.

2Rice (1991) presents a comparative analysis of several Athapaskan languages in which she argues that Hupa differs from e.g. Slave in allowing the causativization of verbs with external arguments. Although I will not discuss particular cases here, I believe that the causativized forms in Hupa which she analyzes as having external arguments may be analyzed otherwise.

3Some comments are in order at this point concerning approaches similar to that taken here. In Hale and Platero’s (1995) analysis of Navajo, the structure assigned to the transitive member in the Transitivitiy alternation is effectively that in (4), with the difference that the classifier ɨ - is not the causative verb itself. Rather, Hale and Platero argue that the upper (causative) verbal head in such structures is empty, and is (typically) supplied with the ɨ - classifier. I will make the assumption here that ɨ - in both cases is actually the realization of the causative grounds, as this accounts for the causative role played by ɨ - in the alternations in which it appears.

4The question of where the external argument originates will be answered in different ways depending upon one’s theoretical assumptions.

5In many cases the forms listed as Medio-Reflexive by Golla could be interpreted as the intransitive members of verbs in the Transitivitiy Alternation. In other cases, this is less clear (see for instance the examples in (11) and (12)), and sets such as A win...ɨhɨ ‘(a line) extends somewhere’, A - O ... ɨ hɨ ‘cause O to extend in a line somewhere’ and A ... ɨ hɨ ‘(a group) extends itself in a line somewhere’.

6For the purposes of this section, the difference between the ɨ - and ɨ-dɨ- forms of ‘bend’ suffice to make the relevant point, which is that the simple transitive and the causative of the Medio-Reflexive are distinct.

7It is not clear what determines whether a ɨ-transitive will show -dɨ- or -i- in the Medio-Reflexive.

8The causative of the Medio-Reflexive shows the ‘compound classifier’ ɨ-dɨ adjacent to the verb. This type of classifier stacking within a productive system of morphosyntactic alternations is restricted to the Pacific Coast subgroup of Athapaskan; see Krauss (1969) for discussion.

9As is evident from the following descriptions, semantic possession is only sometimes associated with the verbal form denoted by the term ‘Possessive’; nevertheless, I will continue to use ‘Possessive’ to designate the forms in question.

10See Krauss (1969) for similar observations concerning this verbal form.

11In other cases, verbal themes which appear to be ‘adjectival’ like those discussed in §3 appear on closer inspection to be resultative si-neuters. Thus we find pairs such as na si ... GodiO ... ɨ God ‘be bent/bend’ and de si ... min/di(?) ... ɨ min ‘be full/fill’. There is morphological evidence that verbs of this class differ from the ‘adjectival’ unaccusatives. If the last form here were based on an intransitive, we would expect to find CVN? in the transitive form (cf. the Transitional in §3.)

12Although this is not the place for detailed discussion, the interpretation of semantic possession associated with this verbal form seems to be derived from the causative semantics (cf. Kibrik (1993) for some relevant remarks.)

12This generalization could in turn be seen as being an extension of the non-active or middle-voice system of Hupa. For instance, the discussion of the Muskogean language Creek in Hardy (1994) exhibits a situation in which the middle voice appears with resultatives in addition to anticausatives, suggesting that similar forces are at work in each of these cases.
One question which must be asked at this point is why there are not wi-neuters with subject agreement, effectively like the si-neuters discussed above. This type of verbal form would be similar similar to forms found elsewhere in Athapaskan; in Sarcee, for instance, this type of ‘Passive’ is found: compare yis’t’ (< yi-s-O-ʔfn) ‘I saw it’ with yis’t’ (< yi-s-d-ʔfn) ‘I was seen.’, both with 1S subject agreement (data from Cook (1984).) However, this does not seem to occur in Hupa.

Golla classifies the intransitive of the third form here as the Medio-Reflexive of the transitive. As noted earlier, in many cases verbs classified as Medio-Reflexive simply appear to be the intransitive members of TA verbs.

Thus for instance in Modern Greek some verbs in the Transitivity Alternation are non-active in the intransitive and active in the transitive, while others appear in the same (voice) form in both the intransitive and the transitive:

1. ‘Anticausative’ Alternations

<table>
<thead>
<tr>
<th>Intransitive</th>
<th>Transitive</th>
<th>Translation</th>
<th>Verb</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>tsakízome</td>
<td>tsakízo</td>
<td>‘break’</td>
<td>ksipné</td>
<td>‘wake up’</td>
</tr>
<tr>
<td>kéome</td>
<td>kéo</td>
<td>‘burn’</td>
<td>spázo</td>
<td>‘break’</td>
</tr>
<tr>
<td>singendrónome</td>
<td>singendróno</td>
<td>‘gather’</td>
<td>anígó</td>
<td>‘open’</td>
</tr>
</tbody>
</table>

It is also the case that with simple transitive verbs (i.e. outside of the Transitivity Alternation) one finds variation in the classifiers shown. The majority show ֱ- or Ø, as in the following sample:

1. Transitive Verbs with ֱ-

O-ni...ì ye ‘eat O, devour O’
O ... ֱ yeč ‘tie, fasten O with a knot’
O ... ֱ nad ‘lick O’
O ... ֱ tig ‘pinch, squeeze it’
O ... ֱ õW ‘pound O with wedge/chisel’

2. Transitive Verbs with Ø,

O ... ʔig ‘hit O in shooting’
O ... ʔač ‘chew O’
O ... tas ‘cut O’
O ... suw ‘scratch/scrape O ...’
O ... cid ‘pound, crush O’

The question of whether these verbs should be analyzed into structures like those found in the transitive versions of Transitivity Alternation verbs is more contentious, although it has been assumed to be the case in recent syntactic work (see Chomsky (1995) for one such approach) and in decompositionally-oriented semantic studies.

For instance, the fact that nominalized versions of TA-verbs fail to take Agents would be completely unexpected on such an account; see Marantz (1995) for discussion. Another option would be to treat all TA verbs as fundamentally causative, the position of Levin and Rappaport-Hovav (1995). Again, I refer the reader to Marantz (1995) for arguments against this position.

The assumption that the structures of all transitive TA verbs within a given language are identical is crucial to the discussion to come. For reasons of space I will not discuss any alternatives to this position here.

A parallel may be made here once again with languages in which the non-active voice is used in the intransitives of TA verbs; in Modern Greek there are no passives with active morphology, yet the intransitive members of TA pairs show either active or non-active morphology. ‘Minimal pairs’ may also be found for the same verb; for instance, the verbs which appear in the active voice in the TA-intransitive appear in the non-active when passive: compare anígó ‘open-ACT (INTR)’ with aníxtiké ‘open-Non/Act (PASS)’. The difference in this case is that it is not as clear whether passive morphology should be assumed to be a syntactic head like the light-verbal head in Hupa (although see Baker (1988) and related work for recent attempts to treat passive morphology along such lines). Nevertheless, the pattern exhibited seems to be the same.

One remaining point worth noting concerns the other patterns exhibited in (20). In the cases with
the classifiers di- and l-, which are at the center of the middle voice system of Hupa, the precise analysis will depend on what structural role (if any) is assigned to these morphemes. In any case, the appearance or non-appearance of di- or l- in the intransitive member of a TA verb could similarly be reduced to a type of allomorphy; it would be simply be specified for particular roots which prefix (if any) they appeared with in the intransitive syntactic environment.

References


Marantz, A. (1995) “‘Cat’ as a Phrasal Idiom: Consequences of Late Insertion in Distributed Morphology,” ms., MIT.


Weightless Epenthesis in Malagasy
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University of California San Diego

1. INTRODUCTION. In recent phonological theory, the mora is assumed to play a dual role. First, moras represent weight. A syllable node dominating one mora is light (1a), while a syllable dominating two moras is heavy (1b).

\[
\begin{array}{ll}
\text{a.} & \text{b.} \\
\sigma & \sigma \\
\mu & \mu \mu \\
\end{array}
\]

Moras also represent quantity: Following Hayes (1989), a vowel dominated by one mora is short (2a), a vowel dominated by two moras is long (2b), a consonant dominated by no moras (unless assigned by rule) is short (2c), and a consonant dominated by one mora is long (2d).

\[
\begin{array}{cccc}
\text{a.} & \text{b.} & \text{c.} & \text{d.} \\
\sigma & \sigma & \sigma & \sigma \\
\mu & \mu \mu & \mu \\
\end{array}
\]

\[
\begin{array}{cccc}
\text{a.} & \text{b.} & \text{c.} & \text{d.} \\
\sigma & \sigma & \sigma & \sigma \\
\mu & \mu \mu & \mu \\
\end{array}
\]

I propose that epenthetic vowels in Malagasy are undominated by moras, yet still are of the same quantity as other vowels. That is, a contrast in the number of moras dominating a vowel in Malagasy is realized as a contrast in weight, but not as a contrast in quantity.

2. STRESS PATTERNS IN MALAGASY. The predominant stress patterns are shown in (3) and (4). Stress is penultimate, as in (3), or final if there is a word-final diphthong, as in (4).

3. Penultimate stress in Malagasy

- mandéha: to go
- miándri: to wait, watch
- miháhi: to sun-dry
- misútru: to drink
- mamángi: to visit
- mahíta: to see
- miása: to work

4. Final Stress on Diphthongs

- manáu: to do
- indrái: sometimes
- bemírái: patched together from many different pieces
- hatrízáí: since the time that
- mandrái: to take
This is not an unusual pattern crosslinguistically, and is accounted for, following Hayes 1995, by the metric principles and parameters in (5).

(5) **Metric Principle**  
    (Hayes 1995) **Parameter value**  
    Foot type       Binary  
    Foot unit       Mora  
    Parsing directionality Right to Left  
    End Rule       Right  
    Iambic/Trochaic Law Trochaic

(5) states that feet are binary, built on moras, diphthongs are bimoraic, footing proceeds from right to left, and feet are Trochaic, or left-prominent. Examples of complete metrical structure are given in (6).

(6) **Metrical Structure of Malagasy:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>Λ</td>
<td>Λ</td>
</tr>
<tr>
<td>σ σ σ</td>
<td>σ σ</td>
</tr>
<tr>
<td></td>
<td>Λ</td>
</tr>
<tr>
<td>μ μ μ</td>
<td>μ μ μ</td>
</tr>
<tr>
<td>misūtru</td>
<td>manāu</td>
</tr>
</tbody>
</table>

Malagasy allows no codas: No word may end in a consonant, and all “clusters” are prenasalized stops or affricates (Erwin 1996a, Keenan and Razafimamonjy 1996a, Keenan and Razafimamonjy 1996b). Among vowels, there is no length contrast in Malagasy.

The data in (7) exemplify a less robust stress pattern in Malagasy, antepenultimate stress, which is incompatible with the analysis in (5). These words always end in the sequences -na, -ka, and -tra, which I will refer to as Weak Final Syllables.

(7) **Antepenultimate stress** in -na, -ka, & -tra

- manándraana: to try
- mĩndrana: to borrow
- mitándrina: to take care of
- mangátaka: to ask for
- manãráaka: to follow
- miánatra: to study
- mihfnana: to eat
- mitsángana: to stand
- misáutra: to thank
- maháirtra: to bear, endure
- manándratra: to promote, lift up
- mahàfináritra: to please
- tágaka: cut
- lávitra: far
- vúlana: month
2.1. **Extrametricality and Stem-Formatives.** Since forms with Weak Final Syllables exhibit an aberrant stress pattern, namely, antepenultimate rather than penultimate, it seems reasonable to postulate that Weak Final Syllables are extrametrical, thereby exempting them from stress computation. However, extrametricality does not account for the data in (8), where it is shown that not all instances of the sequences */-na/, */-ka/, or */-tra/* are Weak Final Syllables.

(8) Not all final */-na/, */-ka/, */-tra/* are Weak Final Syllables

<table>
<thead>
<tr>
<th>Active Verb</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>mandrátra</td>
<td>to wound, injure</td>
</tr>
<tr>
<td>manética</td>
<td>to face, oppose</td>
</tr>
<tr>
<td>mamána</td>
<td>to heat</td>
</tr>
<tr>
<td>mananténa</td>
<td>to hope, expect</td>
</tr>
<tr>
<td>mamikavika</td>
<td>to tack with large stitches</td>
</tr>
<tr>
<td>manambáka</td>
<td>to defraud, deceive</td>
</tr>
<tr>
<td>manadóka</td>
<td>to mislead</td>
</tr>
</tbody>
</table>

An Extrametricality analysis reduces to stipulation of which lexemes end in extrametrical sequences and which do not. The level of abstraction in this analysis is such that it should be avoided where an alternative is possible. Pearson (1994) presents further arguments against an Extrametricality analysis for the Malagasy data. Instead, Pearson (1994) proposes that Weak Final Syllables are stem-formative morphemes.

Again, it is unpredictable whether a given root will take a stem-formative Weak Final Syllable or not. For example, the analysis of *vólana* ("month"), is *vola+na*, where *vola* is taken as the root. But there is another word, *vola*, which means "silver." The Stem-Formative analysis does not explain why the root meaning "month" takes the stem-formative morpheme, while the root meaning "silver" does not. There are a number of such pairs, some of which are shown in (9):

(9) **Unpredictability of Weak Final Syllables: Homophonous roots.**

<table>
<thead>
<tr>
<th>Surface form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>hála₁</td>
<td>hate</td>
</tr>
<tr>
<td>hála₂</td>
<td>spider</td>
</tr>
<tr>
<td>hálatra</td>
<td>steal, rob</td>
</tr>
<tr>
<td>láva</td>
<td>long</td>
</tr>
<tr>
<td>lávakaka</td>
<td>pit, hole</td>
</tr>
<tr>
<td>váva</td>
<td>mouth</td>
</tr>
<tr>
<td>vávaka</td>
<td>prayer</td>
</tr>
<tr>
<td>váta</td>
<td>box</td>
</tr>
<tr>
<td>vátana</td>
<td>body, torso</td>
</tr>
</tbody>
</table>

Under the Stem-Formative analysis, it is stipulated in the lexicon which roots take stem formatives, (and which particular realization of the stem formative) and which do not.
2. MALAGASY ROOTS. The analysis of antepenultimate stress in words which end in Weak Final Syllables given here is not based on a standard account of Malagasy roots (Keenan and Razafimamonjy 1996a, Keenan and Razafimamonjy 1996b).

There are root-final consonantal alternations between suffixed and unsuffixed forms, shown in the first and second columns (10), and summarized in (12). Traditionally, the unsuffixed form (minus any prefixation) is considered basic. In contrast, I analyze the suffixed alternant (minus prefixes and suffixes) as basic.

<table>
<thead>
<tr>
<th>Proposed Malagasy Verb Morphology.</th>
<th>Active verb (unsuffixed)</th>
<th>Passive verb (suffixed)</th>
<th>Proposed Root</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a. V-final roots</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m+i+sútru</td>
<td>sutrú+ina</td>
<td>sutru</td>
<td>to drink</td>
<td></td>
</tr>
<tr>
<td>m+a+mángi</td>
<td>vangí+ina</td>
<td>vangi</td>
<td>to visit</td>
<td></td>
</tr>
<tr>
<td>m+i+tadídi</td>
<td>tadidi+ina</td>
<td>tadi</td>
<td>to remember</td>
<td></td>
</tr>
<tr>
<td>m+a+htíta</td>
<td>hitá+ina</td>
<td>hita</td>
<td>to see</td>
<td></td>
</tr>
<tr>
<td>m+i+ása</td>
<td>asá+ina</td>
<td>asa</td>
<td>to work</td>
<td></td>
</tr>
<tr>
<td>m+i+dzíndza</td>
<td>dzíndzá+ina</td>
<td>jinja</td>
<td>to reap, cut down</td>
<td></td>
</tr>
<tr>
<td>m+i+dzéri</td>
<td>dzeré+ina</td>
<td>jere</td>
<td>to look at</td>
<td></td>
</tr>
<tr>
<td>m+a+hándru</td>
<td>handrú+ina</td>
<td>handru</td>
<td>to cook</td>
<td></td>
</tr>
<tr>
<td><strong>b. -z, -v, -s, -n final roots</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m+i+vúí</td>
<td>vuíz+ina</td>
<td>vuiz</td>
<td>to row, paddle</td>
<td></td>
</tr>
<tr>
<td>m+a+ha+véri</td>
<td>veréz+ina</td>
<td>vez</td>
<td>to lose something</td>
<td></td>
</tr>
<tr>
<td>m+a+múnu</td>
<td>funús+ina</td>
<td>funus</td>
<td>to wrap, bind a book</td>
<td></td>
</tr>
<tr>
<td>m+a+n+drái</td>
<td>ráis+ina</td>
<td>rais</td>
<td>to take</td>
<td></td>
</tr>
<tr>
<td>m+i+tándru</td>
<td>tandrúv+ina</td>
<td>tandruv</td>
<td>to be careful</td>
<td></td>
</tr>
<tr>
<td>m+amp+irái</td>
<td>amp+irá+ina</td>
<td>irai</td>
<td>to unite</td>
<td></td>
</tr>
<tr>
<td>m+a+ha+sáihi</td>
<td>tsahiv+ina</td>
<td>tsahiv</td>
<td>to remember</td>
<td></td>
</tr>
<tr>
<td>m+a+méhi</td>
<td>fehéz+ina</td>
<td>fehéz</td>
<td>to tie</td>
<td></td>
</tr>
<tr>
<td><strong>c. -m, -f, -r, -h, -t, -n final roots</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m+amp+írina</td>
<td>amp+írím+ina</td>
<td>irím</td>
<td>to tie up, arrange</td>
<td></td>
</tr>
<tr>
<td>m+i+indrana</td>
<td>indrám+ina</td>
<td>indram</td>
<td>to borrow</td>
<td></td>
</tr>
<tr>
<td>m+i+táona</td>
<td>taom+ina</td>
<td>taom</td>
<td>to gather, attract</td>
<td></td>
</tr>
<tr>
<td>m+a+gátaka</td>
<td>an+gatáh+ina</td>
<td>hatah</td>
<td>to ask for</td>
<td></td>
</tr>
<tr>
<td>m+a+áraka</td>
<td>aráh+ina</td>
<td>arah</td>
<td>to follow</td>
<td></td>
</tr>
<tr>
<td>m+a+mísaka</td>
<td>fisáh+ina</td>
<td>fisah</td>
<td>to flatten</td>
<td></td>
</tr>
<tr>
<td>m+a+ambúatra</td>
<td>ambúar+ina</td>
<td>amboar</td>
<td>to arrange, prepare</td>
<td></td>
</tr>
<tr>
<td>m+a+mánkuna</td>
<td>vankún+ina</td>
<td>vankun</td>
<td>to plane wood</td>
<td></td>
</tr>
<tr>
<td>m+i+ádana</td>
<td>adán+ina</td>
<td>adan</td>
<td>to go slow, be at peace</td>
<td></td>
</tr>
<tr>
<td>m+amp+íditra</td>
<td>amp+ídír+ina</td>
<td>idir</td>
<td>to bring in</td>
<td></td>
</tr>
<tr>
<td>m+a+ľétatra</td>
<td>fantár+ina</td>
<td>fantar</td>
<td>to know</td>
<td></td>
</tr>
<tr>
<td>m+a+múritra</td>
<td>puréť+ina</td>
<td>puret</td>
<td>to squeeze, crush</td>
<td></td>
</tr>
<tr>
<td>m+i+eritréitra</td>
<td>eritréret+ina</td>
<td>eritret</td>
<td>to meditate</td>
<td></td>
</tr>
<tr>
<td>m+a+áhaka</td>
<td>taháf+ina</td>
<td>tahaf</td>
<td>to imitate</td>
<td></td>
</tr>
<tr>
<td>m+i+lélaka</td>
<td>leláf+ina</td>
<td>lelaf</td>
<td>to lick</td>
<td></td>
</tr>
</tbody>
</table>

* ‘+’ represents a morpheme boundary
(11) **Table of affixes:**

- m- \quad \text{present tense prefix}
- i-, an- \quad \text{active verb prefix}
- a- \quad \text{passive verb prefix}
- aha- \quad \text{causative/potential verb prefix}
- -ina \quad \text{passive suffix}

Note the consonant alternations between the unsuffixed and suffixed forms. In (10b) and (10c) above, there are consonants which appear in the suffixed forms which do not appear, or are different, in the unsuffixed forms. A summary of the alternations is in (12):

(12) **Alternations in (10)**

<table>
<thead>
<tr>
<th>Active verb variant</th>
<th>Passive verb variant</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $\emptyset \sim C$ alternations from data in (10b)</td>
<td>$-z$, $-v$, $-s$</td>
</tr>
<tr>
<td>$\emptyset$</td>
<td></td>
</tr>
<tr>
<td>b. $C \sim C$ alternations from data in (10c)</td>
<td>$-n$, $-m$</td>
</tr>
<tr>
<td>-n</td>
<td></td>
</tr>
<tr>
<td>-k</td>
<td>$-h$, $-f$</td>
</tr>
<tr>
<td>-tr</td>
<td>$-r$, $-t$, ($-f$, two instances in corpus [out of several hundred total])</td>
</tr>
</tbody>
</table>

Traditionally, the consonants in the second column of (12) are analyzed as part of the suffix (Hollanger 1973, Dziwirk 1989, Keenan and Razafimamonjy 1996a, Keenan and Razafimamonjy 1996b). Under this analysis, all suffixes have numerous allomorphs (-zina, -nina, -fina; -za, -na, -fa, etc.), and every root ends in a vowel. This analysis suffers from two failings; first, it is impossible to predict which allomorph surfaces with which root, and second, there is no explanation why a given root selects suffix allomorphs beginning with the same consonant, no matter what the particular suffix is. Each root is lexically marked as to which allomorph it takes: For roots in (10a), the passive suffix is -ina. For roots in (10b), the passive suffix has the allomorphs -zina, -vina, and -sina. Other suffixes always begin with the same consonant after the same root. For roots in (10c), the final syllable deletes, and is replaced by allomorphs -nina, -mina, -fina, -kina, etc.

An alternative analysis is that the roots in (10b) and (10c) end in consonants. The roots posited under this analysis are presented in the “Proposed Root” column of (10). There is no massive allomorphy of the suffixes under this analysis, and no lexical marking of what root takes what allomorph.

Following Itô (1989), epenthesis and deletion sites are predictable from syllabification. In Malagasy, segmental material is mapped to a CV syllable template (recall that no codas are allowed). In unsuffixed forms such as in (10b) and (10c), the root final consonant can not be syllabified as a coda, so the consonant is either deleted (13), or vowel epenthesis occurs after the consonant (14), such that syllabification can proceed according to language-particular well-formedness constraints. For roots in (10b), the final consonant deletes word-finally (13).
(13) **Syllabification of root from (10b)**

a. UR

\[ \mu \mu \mu \]

mandrais

b. Syllabification

\[
\sigma \quad \sigma \\
/ \quad / \quad / \quad / \quad / \\
/ \mu \quad / \mu \quad / \mu \quad / \mu \\
man\_drai
\]

For roots in (10c), the final consonant mutates and vowel epenthesis occurs (14). What remains unexplained, is which consonants delete and which mutate. However, this analysis results in no massive allomorphy, and a unified explanation of forms in (10b) and (10c).

(14) **Syllabification of root from (10c)**

a. UR

\[ \mu \mu \mu \]

milelaf

b. Syllabification

\[
\sigma \quad \sigma \quad \sigma \quad \sigma \\
/ \quad / \quad / \quad / \\
/ \mu \quad / \mu \quad / \mu \quad / \mu \\
milelaka
\]

3. **ANTEPENULTIMATE STRESS.** A problem for the proposed analysis is that for forms with Weak Final Syllables (14), stress is incorrectly predicted (15):

(15) **Footing of (14).**

a. Output of Syllabification Algorithm

\[
\sigma \quad \sigma \quad \sigma \quad \sigma \\
/ \quad / \quad / \quad / \\
/ \mu \quad / \mu \quad / \mu \quad / \mu \\
milelaka
\]

b. Footing

\[
F \\
/ \quad / \\
/ \mu \quad / \mu \quad / \mu \quad / \mu \\
milelaka
\]
Table 1. Strict Layering highly ranked.

<table>
<thead>
<tr>
<th>INPUT</th>
<th>NO CODA</th>
<th>ALIGNR (Ft,μ)</th>
<th>ALL-Ft-R</th>
<th>STRICTL (μ,V)</th>
<th>CORR (O₁,μ)</th>
<th>CORR (O₁,V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>μ μ μ milelaf</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. F</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ \</td>
<td>σ σ σ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ \</td>
<td>/ μ / μ / μ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>milelaf</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. F</td>
<td></td>
<td></td>
<td>!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>/ \</td>
<td>σ σ σ σ σ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ μ / μ / μ / μ milelaka</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. F</td>
<td></td>
<td></td>
<td>!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>/ \</td>
<td>σ σ σ σ σ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ μ / μ / μ / μ milelaka</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. F</td>
<td></td>
<td></td>
<td>!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>/ \</td>
<td>σ σ σ σ σ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ μ / μ / μ / μ milelaka</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. F</td>
<td></td>
<td></td>
<td>!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ \</td>
<td>σ σ σ σ σ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ μ / μ / μ / μ milelaka</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Optimal form: *manalūka. Surface form: manáluka

Key: solid vertical lines indicate constraint ranking, dashed vertical line indicates constraint rank undetermined (& irrelevant for this data set). * indicates a constraint violation. ** indicates fatal violation. Shading indicates that violations (or lack thereof) are irrelevant in determining optimal candidate. * indicates optimal candidate.
This section presents, in terms of Optimality Theory, an analysis of antepenultimate stress in Malagasy. The analysis proposes that epenthetic vowels in Malagasy are non-moraic, and therefore do not affect stress. The relevant constraints are introduced in (17).

(17) **Constraints from (16):**

- **NOCODA**: Codas are disallowed.
- **ALIGNR \((Ft, \mu)\)**: Feet are “aligned” with moras (in Hayes 1995 terms, moras are parsed by feet).
- **ALL-Ft-R**: All feet are “aligned” with the right edge of the word (= direction of foot parsing: right to left).
- **CORR(OUTPUT, INPUT, \mu)**: Every output mora corresponds to an input mora.
- **CORR(OUTPUT, INPUT, V)**: Every output vowel corresponds to an input vowel\(^2\).
- **STRICTL(\mu, V)**: Moras must immediately dominate all vowels\(^3\).

If **ALIGNR \((Ft, \mu)\)** is ranked highest, as in the case in (16), this insures that the unit of foot parsing is the mora. If **ALL-Ft-R** is ranked highest, this insures that the direction of foot parsing is right to left, and that feet have no intervening syllables. **CORR** constraints here (Orgun 1995) are equivalent to **DEP** (McCarthy and Prince 1995). **STRICTL** is a translation of the Strict Layer Hypothesis into OT:

(18) **Strict Layer Hypothesis** (Selkirk 1984).
A prosodic category at level \(i\) of the prosodic hierarchy must immediately dominate at least one instance of the prosodic category \(i-1\).

The Prosodic Hierarchy is presented in (19):

(19) **Prosodic Hierarchy:**
Phonological Phrase >> Phonological Word >> Foot >> Syllable (\(\sigma\)) >> Mora (\(\mu\)) >> Segment

In (16), **STRICTL** is highly ranked, such that any candidate that violates it will fail. This captures the spirit of Strict Layering as posited by Selkirk.
(20) Deriving Weak Layering by lower ranking of \textsc{strictl}(\(\mu, V\)):

<table>
<thead>
<tr>
<th>INPUT (\mu \mu \mu) mileaf</th>
<th>NO CODA</th>
<th>ALIGNR ((Ft, \mu))</th>
<th>ALL-FT-R</th>
<th>CORR ((O,1,\mu))</th>
<th>\textsc{strictl} ((\mu, V))</th>
<th>CORR ((O,1,V))</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (F) (\sigma \sigma \sigma \mu / / / / / / \mu / \mu / \mu ) mileaf</td>
<td></td>
<td></td>
<td></td>
<td>(*!)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. (F) (\sigma \sigma \sigma \sigma \mu / / / / / / \mu / \mu / \mu / \mu ) milelaka</td>
<td></td>
<td></td>
<td></td>
<td>(*!)</td>
<td></td>
<td>(*)</td>
</tr>
<tr>
<td>c. (F) (\sigma \sigma \sigma \sigma \mu / / / / / / \mu / \mu / \mu / \mu ) milelaka</td>
<td></td>
<td></td>
<td></td>
<td>(*!)</td>
<td></td>
<td>(*)</td>
</tr>
<tr>
<td>d. (F) (\sigma \sigma \sigma \sigma \mu / / / / / / \mu / \mu / \mu / \mu \mu) milelaka</td>
<td></td>
<td></td>
<td></td>
<td>(*!)</td>
<td></td>
<td>(*)</td>
</tr>
<tr>
<td>e. (F) (\sigma \sigma \sigma \sigma \mu / / / / / / \mu / \mu / \mu / \mu \mu) milelaka</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(*)</td>
</tr>
</tbody>
</table>

Optimal form and surface form: manáluka.

Key: solid line indicates ranking, dashed vertical line indicates constraint rank undetermined (\& irrelevant for this data set). * indicates a constraint violation. *! indicates fatal violation. Shading indicates that violations (or lack thereof) are irrelevant in determining optimal candidate. \(\forall\) indicates optimal candidate.
In (16), Candidate (a) fails because it includes a coda consonant. (16b) fails because the foot does not dominate the rightmost mora. (16c) and (16e) violate StrictL because the final syllable does not dominate a mora. The optimal candidate, (16d), incorrectly places stress on the penultimate syllable. The two candidates with antepenultimate stress, (16b) and (16e), are ruled out by All-Ft-R and StrictL, respectively.

A lower ranking for the constraint All-Ft-R can quickly be dismissed. If All-Ft-R were violable in Malagasy, that is, if feet did not necessarily dominate the rightmost mora, then explanation of the predominant stress pattern in Malagasy (penultimate) is lost.

Violation of StrictL, however, does not produce such serious consequences in Malagasy. Violation of Strict Layering, known as Weak Layering, was proposed by Itô and Mester (1992). Weak Layering allows certain prosodic representations to be well formed despite violating Strict Layering.

(21) **Weak Layering.** Recently, Itô and Mester (1992) argue that prosodic organization must allow a syllable to be licensed directly by the word bypassing the foot, the Weak Layering hypothesis. By extension, it should be possible for a vowel to be licensed directly by a syllable bypassing the mora... (Piggott 1995:323).

Tableau 2 in (20) differs from Tableau 1 (16) only in that StrictL is now ranked below Corr(O,I,μ), thereby deriving Weak Layering. The evaluation of candidates in (20) differs from (16) in that candidate (e), with a final nonmoraic epenthetic o, no longer fatally violates StrictL, and thus is the winning candidate.

4. CONCLUSION. I have shown that in Malagasy, epenthetic vowels are not dominated by moras. Instead, they are directly licensed by the syllable node. In a quantity insensitive language such as Malagasy, since all segments are of a single phonological length, length is predictable from the segmental tier, and therefore need not be redundantly predictable from the moraic tier. The notion of moras representing weight only, and not quantity, is not new. For instance, when a coda consonant is dominated by a mora via Weight by Position (Hayes 1989), this mora signifies weight only, not quantity. Thus, there is no principled reason why a contrast in the number of moras dominating a segment must always represent both a contrast in weight and a contrast in quantity.

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1 A comparison of Malagasy and Maori verb root analyses is given in Erwin (1996b). A different version of this analysis is given in Erwin (1996a).
2 The two Corr constraints are formulated as they are for clarity. They could be replaced with a single Corr(O,I) constraint (exactly the equivalent of Dep (McCarthy and Prince 1995)), for which every element (segmental or prosodic) present in the output, but not in the input, would incur a violation. The single Corr(O,I) constraint, if ranked where Corr(O,I,μ) is in (16) and (20), would incur many violations, but would result in the same optimal candidates being selected.
3 This particular formulation is given for clarity. A constraint, StrictL, for which any violation of Strict Layering throughout the prosodic hierarchy counts against the candidate, could replace StrictL(μ,V) in (16) and (20) with the same results: the candidates would incur more violations of StrictL, but the same candidates would be selected as optimal. Alternatively, one can envision a family of StrictL constraints, (StrictL(PrPH,PrWD), StrictL(PrWD,PrF), StrictL(Ft,C), StrictL(μ,V), StrictL(μ,C), etc).
REFERENCES


The Emphatic Origin of Reflexives
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Arizona State University

The reflexive relationship such as that between I and myself in (1) is expressed through different strategies in different languages. In Old and Middle English, a non-reflexive pronoun such as be in (2) is used. Throughout Old and Middle English, there is, however, an emphatic self that refers to the subject as in (3) but that, unlike the reflexive in (1), is not an independent argument:

1. I saw myself.
2. Layamon, Brut, Caligula 7219
   3if þu wult þe awreken
   if you-NOM want you-ACC revenge
   ‘if you want to revenge yourself’.
3. Idem, 5466
   he seolf him wolden specken wið
   he-NOM self-NOM him wanted speak with
   ‘he himself wanted to speak with him’.

This paper is concerned with the connection between the occurrence of (3) and the introduction of (1) in Middle English. I examine the stage where self is in the process of changing its category from adjective as in (3) to (pro)noun as in (1). I show that the adjectival inflection on self is lost; that the old adjectival endings are used to indicate Case; and that self becomes morphologically dependent (which is a sign of grammaticalization). In 1, I first briefly outline the situation before the changes in early Middle English. In 2, the two thirteenth century versions of Layamon’s Brut are examined and in 3, some subsequent repercussions for the theory of reflexivity are discussed.

1 Before Middle English
In Indo-European, a reflexive *s(w) is used for all persons (cf. Hermodsson 1952; Ogura 1989). In Germanic, this becomes *sik and its use is reduced to third person (reflected in German third person reflexive sich). In Scandinavian, the reflexive pronoun becomes a verbal inflection, indicating intransitivity. In other Germanic languages, it disappears (cf. Faltz 1985: 210ff). This is the situation in Old and early Middle English, where a pronoun as in (2) above is used reflexively1. Subsequently, in Middle English, the pronoun is ‘reinforced’ with self, which is already present in the form of the emphatic pronoun of (3). In this section, I examine the syntactic character of the emphatic pronoun and argue that it is an adjective at least until the beginning of the thirteenth century. I also show that there is no special reflexive pronoun.

In Old and Early Middle English, the use of an emphatic adjective seolf,
sulf or self as in (3) above, (4) and (5) is very common:

4. Ælfric’s Homilies, ii, 250, 15
Judas hine selfne aheng
Judas him-ACC self-ACC hanged
‘Judas hanged his own self’. (Visser 1963: 423)

5. Layamon, Brut, Caligula 6290
for heo seolf ne cunne
because they-NOM self-NOM not can
‘because they themselves cannot’.

In this stage of English, self is an adjective because it is inflected as other adjectives, e.g. seolfum, selfne. In many Germanic languages, Old English included, strong or indefinite inflection is used when the noun the adjective modifies is not accompanied by a definite article. Weak or definite inflection is used when the noun is accompanied by a definite article. I will use the terms definite and indefinite in this paper. Self is morphologically independent as is obvious in (4) and (5) and generally has indefinite marking. For instance, in (4), the -ne ending is accusative masculine indefinite. Thus, self usually has a strong or indefinite inflection (cf. Farr 1905). Mitchell (1985: I: 188) agrees: "self is used as an adjective and as a pronoun ... As an adjective, it is declined strong or weak according to the usual rules. As a pronoun, it is usually declined strong". The examples of the latter use he provides are ÆCHom i, 430, 7 me sylfne and ÆCHom i, 244, 13 us sylfum. The -ne ending is masculine nominative indefinite; the -um ending is dative singular or plural indefinite (cf. Quirk & Wrenn 1957: 31, 33). This situation changes and, as Mustanoja (1960: 276) writes, indefinite and definite are often confused and by the beginning of the thirteenth century, the endings are much reduced. In Old English, however, there is no such confusion and the ending is indefinite.

Even though the ending on self is adjectival, it might be the case that some selfs are used reflexively. There is no evidence for this, however. For instance, Ogura (1989: 66) finds that there are no Old English verbs that are always reflexive, thus implying that reflexive pronouns are never obligatory. Mitchell agrees with Visser (1963), among others, that self is used for emphasis and not reflexively. Visser (1963: 420) lists instances of self added to pronouns in the nominative in the earliest texts as in (6) where self refers to the subject, otherwise the form would have had an ending. After prepositions, the use is also early, as (7) shows, where the -um ending indicates that self is modifying the dative him:

6. Beowulf, 953
þu þe self hafest ... gefremed
you-NOM you-ACC self-NOM have-2S furthered
‘You have furthered yourself’.
7. *Genesis*, 2628
bringan to him selfum
bring to him-DAT self-DAT
'bring to himself'.
(both from Visser 1963: 420)

The use of *self* modifying objects is less common. "They do not occur in
Beowulf, Cædmon’s Hymn, Genesis, Exodus, Crist & Satan, Deor, Juliana"
(Visser 1963: 420) and start around the time of King Alfred (late 9th Century).
This observation is important because object emphatics are potentially ambiguous
and could be reflexive pronouns.

Penning (1875: 8) argues there are three ways to express the reflexive
relation (simple pronoun, pronoun with *self*, and *self*), thus implying that there
is a special reflexive in Old English. The instances he provides (pp. 15-7) of the
pronoun with *self* are similar to (6) and (7) and can be seen as reinforcing either
the subject or the object. Penning argues that the inflection on reflexively used
forms of *self* is different, namely, indefinite, whereas for the forms used
emphatically, "the definite inflection is prevailing" (p. 14). However, later on (p.
21), he writes with respect to emphatic use that "we find the definite inflection
only in the nominative case of the singular number, and here it prevails; in all
other cases the indefinite inflection alone is used". The definite inflection as in
(8) has an -a ending in the nominative whereas the indefinite inflection has no
ending as in (9):

8. *Genesis*, 553
Sva ic him þisne bodscipe selfa sege
so I him-DAT this message self-NOM say
‘In that way I tell him the message myself’.

Ic silf hit eom
I self-NOM it am
‘It is me myself’.

Since indefinite inflections are used in the non-nominative for both reflexive and
emphatic use, it is hard to argue that there is a difference and that (7) is in fact
reflexive as Penning (p. 16) does. I therefore follow Mitchell and Visser in
assuming there is no reflexively used *self* yet. Faltz (1985: 19), surveying the
reflexivization strategies in the world’s languages, feels that a truly optional
reflexive strategy is rare. If this is the case, (2) is the most likely reflexive in
earlier English.

Thus, I assume that *self* is an adjective in Old English, inflected
indefinitely when used emphatically.
2. Middle English: from adjectival inflection to Case

In Middle English, adjectives cease to be inflected (cf. e.g. Mustanoja 1960: 375ff). The morphological form of the emphatic also regularizes and *seolf* becomes morphologically dependent on a pronoun as in mid thirteenth century (10). This is the counterpart of the earlier (5) above:

10. Layamon, Otho 6290
for heom-seolf noht ne conne,
because themself nothing not can
‘because they theselves cannot’.

Thus, emphatic *self* grammaticalizes from a morphologically independent adjective as in (5) to a morphologically dependent pronoun as in (10). The two versions of Layamon’s Brut clearly show the change: the Caligula version is from the beginning of the thirteenth century and the Otho one is from the later half of the thirteenth century.

The changes that occur in these two versions are: (a) adjectival inflection is reduced from definite and indefinite to definite and then lost, (b) the inflection is reanalyzed as Case marking, and (c) *self* becomes dependent on a pronoun the form of which changes from oblique to genitive. I discuss each of these separately.

(a) With morphologically independent *self* in Caligula, there are 6 accusative indefinite -ne endings as in (11) and (12). With hyphenated *self*, there are no indefinite endings. All other endings (to hyphenated and independent *self*) are definite or remnants thereof. There are 9 oblique definite -an endings as in (13) and (14). The majority (over 180), however, is zero, -e or -en. The zero ending is used when *self* refers to a nominative as in (15). The -e(n) ending is used when *self* refers to non-nominative nouns as in (16). It is likely that the -e(n) ending is the remnant of the definite adjectival ending -an:

11. Caligula, 3821
    hæfð hine seolfne bi-poht
    had him-ACC self-ACC thought
    ‘had taken his own counsel’.
12. Idem, 4156
    ah hit wes þurh me seolfne
    but it was through me-ACC self-ACC.
13. Idem, 416
    7 ich wle þesne king. læden mid me seolfan
    and I want this king lead me self
    ‘and I want to bring this king myself’.
14. Idem, 977
    ah scupéte him nome. æfter him-seluan
but created him name after him-self
'but gave it a name after himself'.

15. Idem, 1594
7 þu seolf wurð al hisund
and you self become all healthy.

16. Idem, 349
ah 3if þu wlt þu miht wel. helpen inc seluen
but if you want you may wel help you-DUAL self.

17. Otho, 349
ac 3if þou wolt þou miht. wel helpe 3ou-seolue.
(see gloss of (16)).

The later Otho version only has zero and -e endings and the latter are mostly used to refer to non-nominatives as in (17). Thus, one might say that the indefinite inflection has disappeared and that little remains of the definite inflection. Even though the endings ultimately disappear, they linger on and are perhaps still seen as definite markers in e.g. late fourteenth century Chaucer. (Definite endings occur on adjectives after definite articles and determiners in Chaucer 18 times whereas the zero form never co-occurs with definite NPs).

(b) Rather than seeing the ending as adjectival, a user or learner might take it to indicate nominative versus non-nominative as shown above. For instance, in Caligula, all forms of seolf and sulf refer to the subject as in (15); all others refer to objects as in (11), (12), (13), (14) and (16). Diehn (1901: 60) corroborates this: "im allgemeinen die flexionslose Form im Nom. ..., die flektierte Form im Obliquus". It is not clear to me when -e or when -en occurs, however. The -en endings are not related to plural marking as (18) and (19) show where singular objects have endings and plural subjects as in (20) do not²:

18. Caligula, 14503
we wulde ouer-al. atlien to þe seluen
we will everywhere incline to you self
'Ve shall in all points incline to you yourself'.

19. Idem, 12939
a uolden he me laiden. and lai mid me seoluen
but wanted he me lay and laid with me self.

20. Caligula, 6762
we seolf hired haben
we self court have
'Ve ourselves will have a court'.

Mustanoja (1960: 147), on the other hand, says that "[i]n early ME forms like him selven, þe selven, etc., are used side by side with him self, þe self, etc., without any functional difference. In Ancrene Riwle, for example, him sulf and
him sulven are used without distinction for the nominative and the oblique case. This indiscriminate use continues in later ME". Mustanoja does not comment on Layamon's Brut but his observations do not hold for Layamon. In Layamon, as I have shown above, endings mark objects.

(c) In Caligula, there are 10 forms of self morphologically dependent on the first person singular pronoun, 2 dependent on the second person singular, and 94 dependent on the third person masculine pronoun (2 on the feminine). In Otho, the numbers are 21, 12, and 85. So, the number of dependent first and second person pronouns increases but those of the third person remains more or less stable (the Otho version is more damaged). The form of the pronoun changes from nominative or oblique to genitive in the first and second persons but to accusative in the third. This can be seen in Caligula and Otho. When self is morphologically independent on the pronoun, the nominative, i.e. he, we etc., are used; when it is joined to it by a hyphen, mi and bi are used. In Otho, this changes and the nominative is hardly ever used. For instance, where Caligula has 1 we seolf, 6 he seolf, 4 bu seolf, 1 3e seolf, and 3 heo seolf, Otho has no nominatives preceding self. I will not elaborate on the shape of the pronoun, but see e.g. Todorovska (1995). The important part is that, as the adjectival endings are lost, morphological independence is too.

I have indicated three changes in the use of emphatics in this section. These changes make it possible for the reflexively marked reflexive to be introduced but, as will be shown next, it cannot be said the changes 'cause' the introduction of the reflexive pronoun.

3 Implications for the Theory of Reflexivization
In the previous section, I outline the morphological changes taking place with the emphatic pronoun. In the present section, I examine some implications of these changes for the theory of Reflexivization (or Binding Theory). First, in what contexts does the change start? Second, how is it possible for two strategies to operate at the same time?

The change to morphologically dependent self starts with third person masculine singular accusative pronouns. By the middle of the 13th century, it is spreading to first and second persons. One expects the 'need' for a reflexive to arise with third persons since ambiguity is possible. These are indeed the contexts where self first becomes morphologically dependent. The remnants of the adjectival inflection, I argue above, are by this time understood as Case markers and it therefore becomes possible for speakers to consider the self and the pronoun as a reflexive⁶. The contexts in which the reflexive form in self is first used are less clear. Visser (1963: 420) says for early Old English that the use of possibly reflexively marked reflexives occurs in oblique and adverbial contexts; it does not in direct object position. Intuitively put, regular pronouns are used reflexively when they are part of the immediate argument structure. (This can be formalized using Binding Domains as in e.g. Chomsky 1981; 1986; Reinhart &
Reuland 1993). In the previous section, I argue that 'real' reflexives are not introduced until the ending shifts, i.e. in the thirteenth century. Hence, one must examine those texts for contexts of the introduction of reflexives but, unfortunately, no definite evidence can be found.

Looking through the Caligula version, reflexives are used as arguments and adverbials (which fits with Visser's observation that the introduction of reflexive direct objects is earlier, i.e. around King Alfred's time). Reflexives occur both as arguments and as adjuncts in Katherine as well, which is a text of about the same time and geographical area as Layamon. There are 7 reflexive objects to prepositions and 5 reflexive direct objects. As in Layamon, there is not one single context where reflexives are used more frequently. Simple pronouns are still used liberally. In this text too, the -en endings on seolf as in (21) and (22) indicate Case rather than adjectival inflection:

   he ... nom upon him seoluen, us for to saluin
   'he took upon himself to save us'.
   Idem 1125-6
   ah Crist ouercom deð, 't sloh hire, in him seoluen
   'but Christ overcame death, and slew her, in himself'.

An added problem (referred to in note 1) is that argument positions are optional all through the history of English, e.g. in (23) and (24) (Visser 1963: 149-50), from the 15th and 18th centuries respectively. In Modern English, pride and contain would have a reflexive object in (23) and (24):

23. Henry, Wallace XI, 1271
   Quha pridyss tharin, that labour is in waist.
24. Sheridan, Rivals, III, 4, 250
   I can contain no longer.

As to the second aspect mentioned above, one may wonder whether or not two reflexivization rules exist (which Faltz says is uncommon). In the Caligula and Otho versions, there are clear uses of reflexive self as in (16) above, but also clear uses of simple pronouns as in (25):

25. Caligula 7219
   3if þu wult þe awraken
   'if you want to revenge yourself'.

The reflexive pronoun with self definitely does not immediately become the preferred reflexive form. For instance, in Shakespeare's As You Like It, there are 7 reflexive uses of himself and 5 of the simple pronoun him used reflexively7.
Sentence (26) is from another play. Even up to the present century, sentences such as (27) are found:

26. Shakespeare, *Taming of the Shrew*, IV, 4, 63
    bid Bianca make her ready.

    They then bethought them of a new expedient.
    (Visser 1963: 437)

The frequency of this use in Shakespeare prompts Visser (1963: 435) to say that "[b]y the time of Shakespeare and Ben Johnson the simple form does not yet seem to have lost so much ground that it would be warranted to call the form with self the regular, the standard, form".

This is reminiscent of the Modern English situation where, in certain varieties, pronouns such as in (28) and (29) can be used reflexively in oblique (i.e. non-direct object) positions. As in Old English where forms in self functioned emphatically, Baker (1995) argues that in more modern stages, long-distance reflexives can be used in emphatic and contrastive cases:


29. I bought me(/myself) some flowers.

If one takes Faltz’s (1985: 265) observation that it is more natural to indicate coreference between subjects and direct objects than between subjects and adjuncts to be correct (also expressed in Binding Domains), the primary rule of reflexivization in Old English is the one using the simple pronoun. It gradually changes from Middle English on, made possible by the reanalysis of self from adjective to (pro)noun. The reason for the reanalysis is the loss of adjectival inflection and the reanalysis of the endings as Case.

**Conclusion**

In conclusion, I examine the grammaticalization in Early Middle English of emphatic elements from independent adjectives to morphologically dependent pronouns. There are three changes that, I argue, occur in the middle of the thirteenth century: loss of adjectival ending on self, reanalysis of the ending as a Case marker and loss of the morphological independence. The introduction of reflexively marked pronouns is made possible by the changes in emphatics, in particular the loss of adjectival inflection. It is, however, not an automatic consequence since simple and reflexive pronouns occur side by side for an extended period.
Notes
1. In fact, Old English also displays a number of detranzitivizing strategies, as Beckman (1878) and Mustanoja (1960: 154ff) argue. Where other languages would have reflexives, English has an intransitive, e.g. to complain, to remember, to rejoice.

2. I use a computer-readable edition and TACT which makes it possible to consider all occurrences of the emphatic.

3. The other four are in lines 934, 4165, 10151, 14911.

4. An aspect I do not examine is the relationship between the loss of a special accusative pronominal (cf. van Gelderen 1993) and the introduction of reflexives. Off hand, there may be such a connection because the special form hine occurs separate from self 11 times whereas hin-seolf occurs only once.

5. In Caligula, of the over 180 instances of zero and -e(n) endings, there are only 3 counterexamples where plural subjects have endings. Two of these disappear in Otho.

6. But note Haiman (1995: 227) who argues that there is "by Chaucer a strong tendency to use the distinctive reflexive where self-alienation is indicated". That is, "the reflexive was reserved for cases of unexpected reference" (Haiman: 228) until at least the 17th century. In modern English, Haiman suggests unexpected coreference is expressed by means of the simple pronoun.

7. Again using the Oxford Text Archive version and TACT.
References
Idem. 1994 Shakespeare’s As You Like It.
Perception of Alveolar and Velar Allophones of English /l/ in Word-Initial and Word-Final Positions

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1. Introduction.

From an articulatory point of view, the English /l/ can be defined as a lateral approximant. It is lateral because the airstream is obstructed at some point along the middle of the oral tract, but released along one or both sides of the tongue. It is also approximant because the incomplete closure between the side(s) of the tongue and the roof of the mouth narrows the oral tract without producing turbulent airstream (Ladefoged 1993:10).

English /l/ is realized by different allophones depending on which position it occupies in the syllable, namely pre- or post-vocalic.

In articulating a word-initial /l/ the tongue “tip is touching the alveolar ridge, and one or both sides are near the upper side teeth, but not quite touching” and the front of the tongue is raised towards the hard palate (Ladefoged 1993:65). A word-final /l/, instead, is produced by drawing the tongue body up and back in the mouth while optionally maintaining the tongue tip in contact with the alveolar ridge (see Giles and Moll 1975:211-212). If the tongue tip is touching the alveolar ridge, the raising of the back of the tongue towards the soft palate is a secondary articulation called velarization. On the other hand, if there is no contact with the alveolar ridge, the sound produced is more like a back vowel or glide (Ladefoged 1993:65; Clark and Yallop 1990:129-130; Hardcastle and Barry 1985:31-33, 41-43).

These articulatory variations have acoustic correlates. Clark and Yallop (1990:266) explain that if there is a tongue body movement to a posterior position, F1 will rise modestly and F2 will drop significantly; also, if there is a tongue body shape in neutral or posterior position, F2 will fall substantially as constriction increases.

Spectrographic analyses of the positional variants of /l/ can also reveal their acoustic differences. In her study of acoustic variation of American English /l/, Lehiste (1964:14) found that the “main difference between the initial and final allophones of /l/ lies in the relative closeness of F1 and F2 in final positions” in the sense that the values for F1 and F2 of the final allophone of /l/ are, respectively, higher and lower than those for F1 and F2 of the initial allophone of /l/. The average formant positions registered by Lehiste (1964:14) in her control group “were 295, 950, and 2610 cps for initial /l/, and 455, 795 and 2585 cps for final /l/”5. Ladefoged (1993:203) also reports very similar formant positions for word-initial /l/, namely 250, 1200 and 2400 Hz6.

Both articulatorily and acoustically word-initial [l] resembles [n], while word-final [l] resembles [u] and [w]. Like [l], [n] is pronounced by creating complete obstruction in the mouth in the alveolar region with the tongue tip or blade, while maintaining voicing. However, air does not flow out along the sides of the tongue;
instead, the velum is lowered, which allows the air to go out through the nasal cavity. In the acoustic domain, both [I] and [n] show formant structure similar to that of vowels, but are less clearly marked, and they are characterized by abrupt amplitude and spectral discontinuities at the formant transitions into or out of a vowel (Ladefoged 1993:201, 203, 205; Ohala forthcoming:11). The main difference between the two is that in /I/ there “are but very few and weak harmonics indicating the occurrence of formants ranking at about 2500 cps and characteristics of nasals” (Tarnóczy 1948:5).

[u] is a high back rounded vowel, and, like [h], [u] is a fully voiced sound. It is pronounced by retracting the tongue body towards the back of the mouth and raising it towards the soft palate, and often also by rounding and protruding the lips, which approach each other very closely. Thus the main articulatory difference between [h] and [u] is the presence of lip-rounding in the latter, which further contributes to lowering the value of F2 (see Clark and Yallop 1990:266).

[h] and [u] are similar also from an acoustic point of view; their formant structures are very much alike, except that [u], being a vowel, has a more intense amplitude than [h].

[w] is the non-syllabic counterpart — and thus a shorter version — of [u], articulated by creating a labio-velar constriction, which rapidly glides into a vowel. As is the case with any other approximant, its formant structure is similar to that of its corresponding vowel, usually changing (Ladefoged 1993:203), and its articulation varies “slightly depending on the articulation of the following vowel” (Ladefoged 1993:64). Thus, [w] is also similar to [h], the difference lying in (a) the longer duration of and (b) the absence of labial constriction in the latter.

The distribution of [I], [n], [w], and [h] in English is subject to a few phonotactic constraints. In syllable-initial position before a vowel, [I], [n] or [w] can occur, but the velarized [h] cannot, although [h] is articulatorily and acoustically similar to [w]. In word-final position after a vowel, [w]10, [h] or [n] can occur, but [I] cannot, although it is articulatorily and acoustically similar to [n]. The sounds [w] and [n] are thus similar to, but only in partially overlapping distribution with, the sounds [h] and [I], respectively. As a result, they belong to different phonemes, [I] and [h] being subsumed under /I/, [n] under /n/ and [w] under /w/.

Given that [I] and [h] are only partially similar to each other and given that they cannot replace each other in all environments, it is likely that they are recognized as allophones of the same phoneme /I/ not only because of their physical properties, but especially because of their distributional constraints.

It is thus possible to hypothesize that if an alveolar [I] should occur word-finally, and if a velar [h] should occur word-initially, they might be perceived as /n/ and /w/, respectively, given that these sounds are similar to the /I/ allophones, but without being limited in their distribution. In the case of a syllable-final alveolar [I], misperception should occur more frequently in the presence of a preceding front vowel, given that a more velarized variant of /I/ is usually realized in this environment. Hardcastle and Barry (1985:43) note that in some dialects of British English, velarized [h] tends to be realized as a non-syllabic back vocoid12 “more frequently with front vowels than with back vowels,” and they explain this “within a perceptual framework. The velar component of” [h] “contrasts more clearly with
front vowels than back vowels making the contribution of actual alveolar contact for the /l/ identification less important." If this is the case, then, a native listener of English is likely to be especially thrown off by a light [l] following a front vowel\textsuperscript{13}.

An experiment was designed to determine whether and to what extent the light and dark allophones of /l/ can be misperceived as /n/ and /w/, respectively, depending on where they occur in the word and on the surrounding vocalic environment.

2. Experimental design.

2.1. Subjects.

Twenty native and three non-native\textsuperscript{14} speakers of American English (fifteen males and eight females) served as volunteer subjects for this experiment. They were not aware of the purpose of the experiment, nor had they received any phonetic training\textsuperscript{15}.

2.2. Stimuli.

It was decided to investigate perception of /l/ allophones in two environments: (a) in pre-vocalic position in /l/VC sequences, and (b) in post-vocalic position in CV/l/ sequences. Language material was obtained from the speech of two female graduate students in linguistics at UC Berkeley, an Italian speaker (this author) and an American speaker.

Given that the quality of /l/ articulations depends on their surrounding phonetic context (see footnote 3), the speech sample was selected so as to exemplify /l/ in a variety of pre- and post- vocalic contexts. In the Italian words, V was varied over each of the attested Italian vowel phonemes /i e a ù o w/. In the English words, it was varied over most of the English vowel phonemes, namely /i i e ù o a/.\textsuperscript{16} A total of 37 words were collected.

As for the /l/, the Italian speaker was the only one who recorded words with word-final alveolar [l] — the only type of /l/ to be found in Italian — and the English speaker was the only one who recorded words with word-final [t], given that their competence on their respective native languages enabled them to accurately pronounce those sounds in those environments.

The non-/l/ consonant, which was not under investigation, took a value over a small subset of Italian and English consonants (e.g., Italian [f i l] fil ‘thread’; English [s i l] sill; see Table 1 for a complete list). In the tokens to be reversed (see below), this C was always a continuant so as to ensure that, even when played backwards, these words would still sound natural. Whenever possible, CVC sequences were selected that corresponded to real English words. To this end, at first only English words were recorded. However, since it was hard for the Italian speaker to pronounce word-final alveolar [l] in English words, it was then decided that she should record Italian words instead.

Recordings were made on a CSL system using a high quality microphone at a cut-off frequency of Hz 20,000. The CVC words that were not going to be played backwards were recorded in the frame sentence ‘Say X for me’, X being the target
word, so that all the target words could equally receive primary stress and highest relative intonation level. The CVC sequences to be reversed, instead, were recorded in the frame ‘Will you say X?’: that is, they were pronounced with a rising intonation to ensure that, once reversed, they would sound natural, and similar to the sets of stimuli that were not reversed.

A white noise waveform was added to the stimuli. In each case, it was the same duration as, but 24 dB lower than, the peak loudness of the loudest signal in the CVC word it was superimposed on. The presence of white noise was supposed to increase the likelihood of the subjects’ misperception of word-final [l] as /n/ and of word-initial [l] as /w/.

The speech sample consisted of both English and Italian CVC syllables (see Table 1 below). They were partly real and partly nonsense words, which, however, respected the phonotactics of the two languages. Sample set I was used to study perception of word-final [l], and sample set II was used to study perception of word-initial [l].

Sample set I consisted of seven Italian words ending in [l] (column A: [f i l] fil ‘thread’; [d e l] del ‘of the (Mac. Sing.)’; [ci l] ciel ‘sky, heaven’; [m a l] mal ‘bad, evil’; [g o l] gol ‘goal (in soccer)’; [s o l] sol ‘sun’; [m u l] mul ‘donkey’), seven Italian words ending in [n] (column B: [v i n] vin ‘wine’; [m e n] men ‘less, fewer’; [b e n] ben ‘well, good’; [m a n] man ‘hand’; [f o n] fon ‘hairdryer’; [k o n] con ‘with’; [s u n], a made-up word), four English words ending in [l] (column C: [b e l] bell; [k e l] Cal; [p e l] Paul; [t u l] tool), nine made-up words respecting English phonotactics, which were originally spoken as beginning with [l] (i.e., [l i m]; [l i s]; [l e f]; [l e v]; [l a n]; [l o s]; [l u t]; [l u z]; [l a t]), but which were presented to listeners reversed (column D: [m i l] meail; [s i l] sill; [f e l] fell; [v e l], a made-up word; [m a l] mul; [s o l] Saul; [t a l], a made-up word; [z u l], a made-up word; [t a l], a made-up word), the first eight words from column D but played in the original sequence (column E: [l i m], a made-up word; [l i s], a made-up word; [l e f], a made-up word; [l e v], a made-up word; [l a n], a made-up word; [l o s], loss; [l u t], a made-up word; [l u z], lose), and 4 English words ending in [n] reversed from original [n]VC sequences (column F: [s i n] seen; [t i n] thin; [s o n], a made-up word; [s u n] soon). Except for the third subset (column C), all the above tokens were recorded by the Italian speaker.

Apart from the words in the first subset (see column A), all the others served as control stimuli, that is, they were included in order to assess the well-foundedness of the experiment’s hypothesis, and the reliability of the subjects’ perception of familiar types of CVC words vis-à-vis that of the unfamiliar CV[l] and [l]VC words (see below).

2.3. Hypothesis.

It was expected that the Italian CV[l] words listed in column A would be perceived as CV[n], especially after a front vowel, for the reasons outlined in Section 1 above.

CV[n] and CV[l] stimuli (columns B, C, and F) were expected to be correctly identified, since they exemplified types of CVC sequences that are familiar to
English speakers, even if some of them had been reversed and uttered with an Italian accent. They were thus supposed to test the subjects' reliability as listeners.

CV[I] stimuli (columns A and D) — some of which also had been reversed and pronounced with an Italian accent — were instead expected to be misidentified because they consisted of unfamiliar sound sequences.

Items in column D, like those in column A, were not only included to test the hypothesis that misperception of word-final /l/ uttered by an Italian speaker should be greater than misperception of word-final velar [H] uttered by an American speaker (see items in column C), but also to make sure that American listeners' misperception of alveolar [l] as /n/ in a word uttered by an Italian speaker would be greater if [l] occurred word-finally rather than word-initially (see items in column E). Thus the items in columns D and E were supposed to show that an alveolar [l] (the only type of /l/ to be found in Italian) would not be misperceived word-initially, even if pronounced by an Italian.

These words were also used to check whether the rate of misperception could be affected (i.e., increased) by the fact that they had been reversed, since they might sound a bit distorted around the transitions and due to the unusual length of a word-final /l/.

Sample set II consisted of reversed CV[H] and CV[n] sequences uttered by the American speaker ([t ñ n]; [t ñ s]; [t ñ z]; [t ñ ñ]; [t ñ ñ]; [t ñ ñ]; [t ñ ñ]; [n ñ ñ]; [n ñ ñ]; [n ñ ñ]; [n ñ ñ] gnash; [n ñ ñ]; [n ñ ñ]; [n ñ ñ] nerve). It was expected that the reversed CV[H] sequences would be misperceived as /w/VC (see Section 1 above), but that the reversed CV[n] sequences would be correctly identified as /n/VC words. The latter were included in the stimuli set in order to check, once again, the reliability of the subjects' perception. Original utterances of [H]VC sequences were not included in this set of tokens, simply because it was not possible to find a speaker who could reliably pronounce [H] word-initially.

The final set of CVC stimuli thus obtained consisted of seven Italian and nine English words ending in [l] (the latter reversed from the original [l]VC sequence in which they had been uttered), four English words ending in [h], eleven words ending in [n] (seven of which were Italian words and four of which were reversed English words), nine English words beginning with [H] (reversed from the original utterance), and five English words beginning with [n] (also reversed from the original).

Table 1 reproduces all the stimuli used in the experiment, listed according to the height of the syllable.

The stimuli were divided into three groups, namely (a) words ending in -L or -N (see Table 1, sample set I, columns A, B, C, D, and F); (b) words beginning with L- or W- (Table 1, sample set II, column G); and (c) words beginning with L- or N- (Table 1, sample set I, column E, and sample set II, column H), and each sequence was randomized independently. This was done to make the experiment easier for the subjects, so that within each set of stimuli their attention would be focused on only one type of task at a time.

Subjects were informed that they would hear three randomized sets of both real and nonsense words uttered by two female speakers. For each stimulus that was played to them, they would have to identify which one of the two choices on their answer sheet corresponded to the initial (second set) or final (first and third
Table 1. List of stimuli grouped according to phonetic environment, (i.e., height of syllable nucleus), followed by expected (left-hand side) and unexpected (right-hand side) target responses.

Note: *Am.* and *It.* stand for ‘uttered by the American speaker’ and ‘uttered by the Italian speaker,’ respectively; *rev* stands for ‘reversed from the original utterance.’

<table>
<thead>
<tr>
<th>syllable nucleus</th>
<th>A. It</th>
<th>B. It</th>
<th>C. Am.</th>
<th>D. It (rev)</th>
<th>E. It</th>
<th>F. It (rev)</th>
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<tbody>
<tr>
<td>[i]</td>
<td>20. [s i l] N L</td>
<td>29. [l i s] L N</td>
<td>37. [θ i n] N L</td>
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<td>[e]</td>
<td>2. [d e l] N L</td>
<td>9. [m e n] N L</td>
<td>15. [b e l] L N</td>
<td>30. [l e f] L N</td>
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<td>[a]</td>
<td>5. [g o l] N L</td>
<td>12. [f o n] N L</td>
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<td>[o]</td>
<td>6. [s o l] N L</td>
<td>13. [k o n] N L</td>
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<td>[ə]</td>
<td>27. [t ə l] N L</td>
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<td>syllable nucleus</td>
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<td>H - Am (rev)</td>
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<td>[ɪ]</td>
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<td>[æ]</td>
<td>43. [t æ 3]</td>
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<td>[ʌ]</td>
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<td>[u]</td>
<td>46. [t ð θ]</td>
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<tr>
<td>[ʉ]</td>
<td>47. [t u n]</td>
<td>52. [n u m]</td>
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<td></td>
<td>W L</td>
<td>N L</td>
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<tr>
<td>[ʊ]</td>
<td>53. [n ʊ v]</td>
<td>N L</td>
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<td>W L</td>
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</table>

The stimuli were played through the earphones in the same randomized sequence to all subjects in individual sessions.
Table 2 shows the list of words used in the training session, followed by the answers subjects had to choose from. Subjects had to pay attention to the final segments in the first four words, and to the final segments in the last four words.

The experimental procedure was explained in detail, repeatedly if necessary, and all questions answered, except no clue was given as to what the right or expected answer should be. Each stimulus was played three times with a 500-msec interval before each repetition, and separated from the next stimulus by a three-second interval. A brief training session was administered to the subjects, which followed the same procedures as outlined above for the experiment. The reason for this was to make sure that subjects understood what was required of them.

Table 2. Words played during the training session, followed by expected (left-hand side) and unexpected (right-hand side) target responses.

<table>
<thead>
<tr>
<th>Stimuli exemplifying word-final [l], [n], and [t]</th>
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<tbody>
<tr>
<td>N L</td>
<td>N L</td>
<td>L N</td>
<td>N L</td>
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</table>

<table>
<thead>
<tr>
<th>Stimuli exemplifying word-initial [l], [n], reversed [l], and reversed [n]</th>
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<tbody>
<tr>
<td>L N</td>
<td>N L</td>
<td>N L</td>
<td>W L</td>
<td></td>
</tr>
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</table>

3. Results.

All subjects were considered reliable listeners, since they correctly identified all or most (see below) of the tokens which consisted of familiar types of sound sequences (see Table 1, except for columns A and G). Only two subjects mistook word-initial [n] for /l/ in item # 52, and only one mistook word-final [l] for /n/ in item # 29.

All subjects but two said that they considered the experimental task to be easy for the most part (i.e., except for the words listed in Table 1, Set II; see below), and thus added that for the most part they avoided random guessing. They also thought that white noise mixed with the signal was the unavoidable hiss of the recording equipment, and were able to tune it out.

As expected, familiar CVC sequences in the training session were correctly identified, while two of the three unfamiliar ones (i.e., Table 2, #s 1 and 8, but not # 4) were misperceived, probably also because of their unexpectedness. The unfamiliar word # 4, instead — which was # 5 played backwards — was not misunderstood; this was probably due to the duration of its /l/, longer than the one in item # 1 (see note # 22 above)27.

An overall comparison between the control stimuli (i.e., columns B, C, E, F, and H vs. the experimental stimuli (i.e., columns A, D, and G) reveals that the data obtained from the two groups of stimuli are significantly different (chi-square test: F(1) = 340.48252, p < 0.05).

Inter-set comparison shows that misperception was more marked where it was expected and almost non-existent where it was not. That is, on the one hand, the
rate of misperception of word-final [l] as /n/ (a) in Italian words pronounced by the Italian speaker (column A) and (b) in reversed English words pronounced by the Italian speaker (column D) was significantly different from the rate of misperception of:

(i) word-final [n] as /l/ in Italian words pronounced by the Italian speaker (column B; chi-square test: $F(1) = 18$, $p < 0.05$ and $F(1) = 57$, $p < 0.05$, respectively);

(ii) word-initial [l] as /n/ in English words pronounced by the Italian speaker (column E; chi-square test: $F(1) = 15.21052$, $p < 0.05$ and $F(1) = 54.06896$, $p < 0.05$, respectively);

(iii) word-final [t] as /n/ in English words pronounced by the American speaker (column C; chi-square test: $F(1) = 18$, $p < 0.05$ and $F(1) = 57$, $p < 0.05$, respectively);

(iv) word-final [n] as /l/ in reversed English words pronounced by the Italian speaker (column F; chi-square test: $F(1) = 18$, $p < 0.05$ and $F(1) = 57$, $p < 0.05$, respectively).

On the other hand, the rate of misperception of word-initial [t] as /w/ in reversed English words pronounced by the American speaker (column G) was significantly different from the rate of misperception of:

(a) word-final [t] as /n/ in English words pronounced by the American speaker (column C; chi-square test: $F(1) = 175$, $p < 0.05$); and

(b) word-final [n] as /l/ in reversed English words pronounced by the Italian speaker (column F; chi-square test: $F(1) = 175$, $p < 0.05$)

The above analysis, therefore, shows that the data gathered cannot be said to be due to chance. However, the data do not perfectly match the original expectations either.

Fig. 1 shows the number of misidentifications of word-final [l] as /n/ in CV[l] stimuli (vertical axis) as a function of the syllable nucleus (horizontal axis) in Italian syllables (white columns) and inverted English syllables (shaded columns).

Unlike what was expected, misperception of word-final [l] as /n/ occurred only occasionally, namely 19.90% of the time. However, as expected, it didn’t occur at random, and this rate of error was significant in comparison to the listeners’ misperception of word-initial [l] (see paragraph (ii) above). In the Italian words, it occurred especially when the syllable nucleus was a high front vowel (chi-square test: $F(1) = 14.22222$, $p < 0.05$).

As Hardcastle and Barry (1985:43) point out, this is the environment which is most likely to trigger — and thus where listeners expect to hear — a vocalized version of a back velar lateral [t]. A velar [t] contrasts more clearly with front vowels, without jeopardizing the hearers’ identification of it as /l/ (see Section 2.3 above). Also, after a front vowel, a dark [t] is less likely to be confused with the final glide of a diphthong, because English doesn’t have diphthongs consisting of a high front vowel and a labio-velar glide. Thus, subjects misunderstood [l] for /n/ in those environments where they unconsciously were expecting either a very dark [t] or not a lateral at all. Notice, however, that the syllable nucleus that favored the highest number of misperception was [e], that is, not the highest vowel of all.

The rate of misperception was greater among the reversed English words. The reason for this may simply be the distortion caused by the stimuli being played
in reverse, as well as the unexpected longer duration of these [l]s in word-final position. However, contrary to my expectations, the number of misperceptions of [l] as /n/ after front vowels (i.e., [iː], [i], [ɛ], and [æ]) was not significantly higher than the number of misperceptions after back vowels (i.e., [o], [u], and [uː]; chi-square test: F(1) = 0.1915, p < 0.01).

Also, misperception occurred more frequently in the case of stimuli having non-low vowels rather than low vowels as their syllable nuclei (chi-square test: F(1) = 19.10526, p < 0.01), which was not expected.

It may be that anticipatory articulation is responsible for this (see Gartenberg 1984: 145-154): that is, it is possible that I uttered these [l]s with a wider (or temporally longer) tongue-palate contact in anticipation of the following high vowel.

At the end of the experiment, the subjects said that they had had no difficulties in deciding between L and N when they had to identify the initial or final segments of these stimuli. When I debriefed them, they were surprised to learn that they had misunderstood some word-final [l]s as /n/s, their most frequent comment being “It really sounded like an N.” Thus, although misidentification was not as high as expected, and elicited through a forced choice between only two alternatives, in the cases when it did occur, it revealed what these subjects really had perceived.

However, two subjects stated that the final segment in word # 20 (i.e., [s ɪ l], reversed from [l ɪ s]) sounded like M, and another said the same about word # 27 (i.e., [t ə ɪ], reversed from [l ə t]). They also explained that, since neither N nor L was an adequate alternative for them, they had had to choose their answer at random (# 20 was classified once as L and once as N, and # 27 as L). As far as I know these were the only cases within this group of words in which guessing occurred; however, I do not know how many other people experienced the same perception with those stimuli, but failed to express it to me.

Anticipatory and perseverative coarticulation may be responsible for this unusual type of misperception. In the case of [s ɪ l] — which was later reversed to [l ɪ s] — it is possible that (a) in anticipation of the following front vowel and (b) due to the Italian speaker’s accent, the [l] was articulated in the dental, not the alveolar region; since there was no immediately surrounding context that could have triggered (and thus justified) a dental articulation (as would be the case, instead, of the -n- in tenth, for example), the place of articulation could be reinterpreted as [+labial].

In the case of [t ə ɪ] — reversed from [l ə t] — it is possible that the rhotacization of the syllable nucleus contributed to lowering the F₂ of the preceding segment, and since low F₂ can be induced by labial constriction as well, the acoustic properties of [l] were probably ascribed to an inferred labial articulation.

Fig. 2 shows the percentage of identification of word-initial [t] as /w/ in [H]VC stimuli (on the vertical axis), as a function of the vowel quality of the syllable nuclei (on the horizontal axis). As expected, most word-initial [H] were mistaken for /w/ Inter-subset comparison shows that the rate of misperception of word-initial [H] as /w/ was significantly different from the rate of misperception of word-final [t] as /n/ (F(1) = 175, p < 0.05) as well as from the rate of misperception of
Fig 1. Rate of subjects' misidentification of word-final alveolar [l] as /w/ in CV[l] stimuli (vertical axis) as a function of the syllable nucleus (horizontal axis) in Italian syllables (white columns) and inverted English syllables (shaded columns).

Fig 2. Rate of subjects' misidentification of word-initial [h] as /w/ in [h]VC stimuli (vertical axis) as a function of the vowel quality of the syllable (horizontal axis).
word-initial [n] as /l/ in reversed English words (chi-square test: $F(1) = 169.09038$, $p < 0.05$).

The quality of the syllable nucleus didn’t affect the responses in any noticeable way. Within this set, the difference between misperception in words having front vowels and words having back vowels as their nuclei was insignificant (chi-square test: $F(1) = 1.91044$, $p > 0.05$), as was the difference between words having high vowels and words having back vowels as their nuclei (chi-square test: $F(1) = 0.64102$, $p > 0.01$).

Despite their agreement in their responses (on average, /w/ was the preferred answer over /l/ 84.53% of the time), several subjects complained about the difficulty in choosing between L and W in one or more of the first four [t]VC stimuli they heard (namely, #s 41, 43, 46, and 47 in Table 1), and a few said that they had to make a guess in those cases. Nobody complained about the other [t]VC words, but maybe this is because the subjects had gotten used to that type of stimuli by then. The difficulty probably arose out of two flaws in the stimuli: (a) distortion due to the fact that they were played in reverse, and (b) lack of labial coarticulation in the velar [t].

Given that for the most part the subjects did not complain in a similar way about the choice between L and N in the other sets (see above), it means that they were more aware of the distinction between [l] and [n] than between [l] and [t] in their respective environments. This is nicely exemplified in the word [t θ l], whose word-final [l] was misunderstood as /n/ 49.13% of the time (item # 27), but whose word-initial [t] was misunderstood as /w/ 95.65% of the time (item # 48).

The data gathered thus support the hypothesis that word-final and word-initial positions are important cues for the accurate perception of [t] and [l], respectively, as allophones of /l/.

4. Conclusion.

At issue in this experiment was the assessment of English speakers’ ability to discriminate between velar [t] and [w] word-finally, and between [l] and [n] word-initially. Because of the distributional constraints affecting [t] and [l], and their phonetic similarity to [w] and [n], respectively, it was expected that [t]VC syllables would be perceived as [w]VC words, and that CV[l] syllables would be perceived as CV[n] words.

In the experiment outlined above, subjects who could correctly identify word-initial [l] and word-final [t] as allophones of /l/ encountered some difficulties in recognizing those sounds as allophones of the same phoneme if they appeared in unusual positions. As expected, word-initial [t] was usually perceived as /w/, independently of the quality of the following vowel. Instead, unlike what was expected, word-final [l] was often accurately perceived as /l/. However, when misperception did occur, it appeared to be influenced (a) by the frontness of the preceding vowel — as expected — among the Italian stimuli, and (b) by the height of the preceding vowel — contrary to the original hypothesis — among the reversed English words. It was thus suggested that in case (a) subjects failed to recognize [l] as /l/ in those contexts in which, if an /l/ appears, it is (expected to be) realized as a very dark variant (i.e., after a front vowel); in case (b) subjects
were more sensitive to a hypothesized longer duration or wider extension of tongue-palato contact in the alveolar region due to anticipatory coarticulation.

At least two of the English CV[l] stimuli (i.e., [s l l] and [t ø l]) were perceived as CV/m/ words by a few subjects, that is, the potentially ambiguous word-final segment [l] was misperceived both in its manner and in its place of articulation (i.e., nasal instead of liquid and bilabial instead of alveolar, respectively). This phenomenon was tentatively accounted for by means of anticipatory and perseverative coarticulation (see Section 3 above).

The rate of misperception of [l] as /n/ and of [θ] as /w/ shows the extent to which ascription of sounds to certain phonemic categories depends on one's (a) intuitive knowledge of what are the expected sound sequences in one's language and (b) sensitivity to the effects of the surrounding environment, rather than on (c) the intrinsic phonetic (articulatory and acoustic) properties of the actual allophones being heard.

This study, therefore, gives support to the claim that grouping of allophones under the same phonemic heading is determined by "a combination of gross phonetic detail plus distributional information" (Ohala 1986:22).

NOTES

1 The amount of lateral tongue-palate contact depends "on the vowel environment. When following an open back vowel there is usually little or no side contact, but when following a close front vowel there may be almost complete bilateral contact." (Hardcastle and Barry 1985:33).

2 Additionally, allophonic variation in /l/ also depends on (a) rate of utterance, (b) position of /l/ in the morpheme, word or phrase, and (c) whether the /l/ is consonantal or syllabic (Lehiste 1964:10; Giles and Moll 1975; Bladon and Al-Bamerni 1976; Garenberg 1984; Sproat and Fujimura 1994:292-293). At the same time, the different allophones of /l/ affect the quality of surrounding vowels. For example, "syllable-final /l/ in mealy has an influence on the preceding vowel, lowering it — this does not occur in freely, where /l/ is not morpheme-final." (Arthur Bronstein, December 13, 1995: personal communication). In this study, I am concerned only with perception of pre- and post-vocalic allophones of non-syllabic /l/. Given the type of stimuli used in the experiment described below, the terms pre-vocalic, syllable-initial, and word-initial on the one hand, and the terms post-vocalic, syllable-final, and word-final on the other will be used interchangeably throughout the paper.

3 Sproat and Fujimura (1993) derive the phonetic differences between light and dark /l/ partly from durational considerations ((a) the light /l/ and the syllable in which it occurs have a shorter duration than dark /l/ and thus the tongue retraction does not have the time to reach its full target; and (b) "the value of the lag between the time at which the tongue tip reaches its extremum of forward movement and the time at which the tongue tip reaches its extremum of retraction and lowering movement [...] is greater for dark /l/s than for light /l/s [...]" (pp. 298-300)), and partly from expected differences between pre- and post-vocalic consonants: they propose that all /l/s involve an apical and a dorsal gesture. The former is consonantal, while the latter is vocalic, since it does not produce a radical constriction in the vocal tract. They also assume that "consonantal gestures tend to be stronger (i.e., have greater displacements) in syllable-initial position and weaker in syllable-final position," and that the opposite holds for vocalic gestures. They relate these ideas "to the fact that the universally basic syllable type is CV: consonantal gestures are more typically manifested at the beginning of syllables and vocalic gestures at the end," and point out that "positing two distinct allophones for English /l/ has the effect of obscuring the broader generalizations that are true not just of syllable-initial and syllable-final /l/, but syllable-initial and syllable-final consonants of other types too; [...]" (pp. 304-305).
Spectrographic analyses (Bladon and Al-Bamerni 1976; Lehiste 1964) and electro-palatographic studies (Gartenberg 1984; Hardcastle and Barry 1985) of English /l/ articulations also revealed that both allophones are in turn subject to variation in quality depending on the surrounding phonetic context. In a cinefluorographic study of allophonic variations of English /l/, Giles and Moll (1975:210-211) noticed that “for each of the subjects the tongue dorsum assumes approximately a constant shape for all of the /l/ productions; however, the lingual apex and root show variations in contour.” By comparing dorsum contours for /l/ “with contours selected from steady state portions of the different vowel articulations” they also showed that “the lingual dorsum shape assumed during production of /l/ allophones is essentially the same as that observed during production of the various vowels studied.” (For comments on the influence of vowel context on perception of word-final alveolar [I] see Section 3 below.)

There is also considerable interplay between allophonic variation of /l/ and variation of the surrounding phonetic context. In analyzing vowel allophones associated with initial and final /l/, Lehiste (1964:10) points out “[...] that the second formant of the initial allophone of /l/ anticipates to a certain degree the second formant position of the following vowel, but that the first and third formants of the vowel are in turn influenced by the preceding /l/.” That is, the first formant of the syllable nucleus following an initial /l/ “is, as a rule, higher than the average value for the first formant” (p. 23). She adds that this supports Fant’s findings that “the recognition of /l/ is accomplished in a considerable degree by the rapid shift up of F₁ from the lateral to the following vowel” (p. 23). Lehiste also states that the third formant for an initial /l/ is also noticeably higher than the average (p. 23). On the other hand, “the final allophone of /l/ shows a much smaller range of variations and is essentially independent of the preceding vowel, but it exerts a strong influence on the second formant of the preceding syllable nucleus” (p. 10), that is, “when the vowel is followed by /l/, the second formant of the vowel is always considerably lower than the average” (p. 26).

Bladon and Al-Bamerni (1976:141-143) report their frequency measurements in mels on three charts from which it is impossible to compute the exact mean values for pre- and post-vocalic /l/. However, in their discussion (p. 142) they state that the mean value of F₂ for word-initial /l/ is 1218 mels.

Formant values for [u] given by Ladefoged (1993:193) are F₁ 310, F₂ 870, and F₃ 2250; those for [l] reported by Lehiste were given above in this section.

Lehiste (1964:32) notes that it is “the formant position of the syllabic [emphasis mine] allophone of /l/” that “resembles that of the back vowel /u/ […].”

In this paper I use the symbol [w] to stand for the syllabic-initial labio-velar onglide and for the syllable final labio-velar offglide.

Lehiste (1964:122) reports average formant values for [w] as second element of /ou/ and /au/ diphthongs which are very similar to those quoted above for velar [I] and for [u], namely F₁ 410-545, F₂ 740-870, and F₃ 2225-2335.

In this paper [w] is taken to represent also the off-glide at the end of such diphthongs as are to be found, for example, in the word how.

Arthur Bronstein (personal communication, December 13, 1995), however, observes that “typically, British English /l/ tends to be ‘clearer,’ in final position, than American English /l/.” For a detailed description of the range of /l/ realizations in different varieties, see Wells 1982: 258-9, 313-317, et passim).

The author’s personal experience also tends to give support to this hypothesis. Being an Italian speaker, she often mispronounces the letter L as [e I] when spelling names, and English speakers mistake her [e I]s for [e n]s.

The latter were first-generation immigrants to the US, who had been exposed to American English only since kindergarten. None of these non-native speakers were still fluent in their native languages. All were, however, fluent in English.

It was later discovered that one subject was a polyglot and a certified translator. She had received phonetic training in languages other than English, especially Polish.

In this paper no distinction is made between stressed [ˈ] and unstressed [ˈ].
Since some of the tokens had to be played backwards (see below), the syllable nucleus never consisted of a diphthong, so as to avoid having reversed CVC sequences with unattested syllable nuclei, like */[ə u]/.

It was assumed that reversing individual segments like /[l]/ and /[n]/ would not remarkably alter their perception. The reason for this is that such continuants are not characterized by a sequence of distinct articulations or discrete acoustic units with clear boundaries that listeners need to hear in that order to ensure their correct identification of the sounds in question. Instead, as spectrograms show, /[l]/s and /[n]/s are continuous acoustic events which do not start or change or end abruptly. It was therefore assumed that any misperception of /[l]/ or /[n]/ in reversed CVC syllables would be attributable to their unusual position within the word, and not to the fact that their acoustic manifestation had been changed remarkably within single reversed segments.

It was, however, impossible to completely prevent distortion of the stimuli. Reversed words still sounded a bit funny, probably partly because the initial consonants were less strongly articulated than the final consonants, which is the opposite of what one usually expects. Also, one subset of the reversed CVC words (see Table 1, column D) was then played to the subjects also in its original sequence as well (see Table 1, column E; see below for an explanation). Therefore, the words in this set did have a rising intonation.

The resulting amplitude was thus the sum, not the average, of the two signals mixed together.

Some of these Italian words in -'/ and -'/n end in a consonant by default; others appear in truncated forms, that is, without the final vowel, as is sometimes done in poetry.

One important way a consonant's place of articulation can be identified is by means of the formant transitions of its adjoining vowels (see, for example, Stevens and Blumstein 1978). A way to check to what extent identification of [I] and [H] as allophones of /[l]/ is dependent upon the vowel transitions into and out of it could have been to substitute an [n] or [l] for [H] word-finally or a [l] for a [l] word-initially, while maintaining the original vowel transitions unchanged. This approach, however, was not adopted in this study because of the difficulty of separating vowel nuclei from their flanking consonants.

Duration measurements of /[l]/ articulations in a study by Gartenberg (1984:141-142) reveal that prevocalic /[l]/ is longer than postvocalic /[l]/ both in terms of total duration and of onset duration.

Actually, some native speakers of English do pronounce [l] word-initially, before high back vowels, as in [t u k] 'look', and children may even be more extreme in this and consistently pronounce [w] instead of [l] in all word-initial positions. (This peculiar phenomenon is called lall by speech pathologists; see Tiffany and Carrell 1977:33.) One of my subjects told me that as a kid his mother made(l) him pronounce all word-initial /[l]/s as [l]s on the ground that she didn't like Spanish-sounding /[l]/s.

In a few cases the transcription provided is more phonemic (broad) than phonetic (narrow). Thus, /[l u l]/ (column C) and /[m u n]/ (column H) are better transcribed as [t u o l] and [m u o n], respectively. With regard to the stimuli in column G, the initial [H] of some of them, namely #s 44, 46, and 47, was so long that it sounded like a [u]. Also, except for #s 40 and 48, all the stimuli, when played backwards, sounded as if they had a more central vowel as their syllable nucleus than when played in the original sequence. Thus #s 41 through 47 sounded, respectively, like [w o n] or [w e n], [w o s] or [w o s], [w o s], [w o f], [w o z], [u o 6], and [u o n].

In the directions, subjects read that if they got distracted during the experiment, they could ask to have the stimuli they had missed played back to them again at the end of the experiment. One subject missed two stimuli, and another missed three, so those stimuli were played back to them. As in the regular experiment session, they were played three times with a half-second pause between each repetition.

Due to a typo that was detected only later in the answer sheet, for item H in the training session, namely [n λ l] — reversed from the original sequence [l λ n] — one subject had to choose between L and N rather than L and W: She chose L. This mistake was thus instructive, because it showed how a differently-phrased question could deeply influence an answer. That is,
that [l], although definitely more similar to a /w/ than an /l/ — at least according to the other subjects’ answers — was still, however, identifiable as an /l/ if compared to an /n/.

Cooper, Delattre, Liberman, Borst, and Gerstman (1952:603) mention reasons of possible confusion between /l/ and /w/.

The initial segment sounded like [w] or [u], depending on its duration, even to linguistically trained people, even if it was ‘only’ velarized, and not also labialized, as a [w] would be.

BIBLIOGRAPHY


Words by Default: Optimizing Constraints and the Persian Complex Predicate*

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1 Introduction

Complex predicates (CPs) are predicates which act in some way as a single word, and in another way like more than one word. Persian (Farsi) has many such complex predicates that consist of a non-verbal element, the host, followed by a light verb. These CPs are of interest because they display both lexical and phrasal properties.

This paper offers an account in which the Persian CP is treated as a construction represented in the lexicon. It is argued that its expression as a simple word or as a phrasal entity is determined by the interaction of a set typologically natural ranked constraints. An outcome of this analysis is that the categorical status of the CP can be viewed as a simple verb by default. V0 status is motivated by the CPs lexical properties. It entails that the host and light verb be unseparated and that they may undergo derivational processes. The V0 status is a default in the sense that it can be overridden if and only if there is a competing higher ranked constraint.

One implication of this proposal is that words and phrasal constructions are treated as the same basic type of entity in that one and the same stored item can appear either as a lexical item or as a phrasal entity, depending on what other constructions it interacts with. This possibility is natural within theories such as Construction Grammar, Cognitive Grammar or HPSG, in which grammar consists of CONSTRUCTIONS which are not-strictly predictable form - meaning patterns that are morphological or phrasal (e.g., Fillmore, Kay, & O’Connor 1988; Pullum & Zwicky 1991; Fillmore & Kay 1993; Goldberg 1992, 1995; Jurafsky 1992, Lakoff 1987, Langacker 1987, 1991; Pollard & Sag 1987). The idea that there are general tendencies in languages that are sometimes violated due to competing motivations has been a long held tenet of functional approaches (cf. Haiman 1985, Bates & MacWhinney 1987, Langacker 1990, and Lakoff 1987).

For clarity, I adopt the representation of Optimality Theory to capture the ranked constraints (see Prince & Smolensky 1993; McCarthy & Prince 1993; Legendre et al. 1993; Grimshaw 1995). The formalism is attractive because it provides a concrete way of capturing defaults, overrides and motivating tendencies. The constraints required for the present analysis are argued to be typologically natural, but no claim is made that they are absolutely universal or that they are innate.
2 Identifying CPs

In Persian, I intend the term complex predicate to refer to cases in which the host appears in bare form, without plural or definite marking. In finite sentences with simple verbs, primary stress is placed on the main verb. But in finite sentences with CPs, primary stress falls on the host instead.

(1) Ali mard-râ zád (simple verb)
   Ali man-acc hit.1.sg
   Ali hit the man.

(2) Ali bâ Babak hárf zad (complex predicate)
   Ali with Babak word hit
   Ali talked with Babak.

3 Non-compositional semantics

The semantics of the complex predicate is often noncompositional in that it is not strictly predictable from the complex predicate’s component parts. For example,

(3) guîS kardan
   ear do
   “to listen”

(4) dust dâStan
   friend have
   “to like/love”

To listen is not literally “to do ear,” to like is not literally “to have a friend.”

It is argued below that the semantics is not naturally attributed either to the host or light verb in isolation, but rather to their combination. From this fact alone, it is clear that many CPs must be listed, presumably in the lexicon, or if we construe the lexicon more broadly to contain constructions as well as lexical items, they must be listed in the “constructicon.”

Additional evidence argues that the CPs generally act as simple lexical items: they differ from their simple verb counterparts in argument structure properties, they can form nominalizations and they resist separation, for example, by adverbs and by arguments.

4 Lexical Properties

4.1 Changes in Argument structure

The complex predicate often differs in its argument taking properties from the corresponding simple verb. For example, in simple sentences, gereftan, “to take,” may occur with an explicit source argument:
(5) ketāb rā az man gereft
book ACC from me took
S/He took the book from me.

When used as a light verb in the CP arusi gereftan, “to throw a wedding,” the benefactive barāye phrase appears:

(6) barāye u arusi gereftam
for her/him wedding took
I threw a wedding for her/him.

In this case, the CP as a whole does not allow a source argument:

(7) * az u arusi gereftam
from her/him wedding took

4.2 Nominalizations

A critical piece of evidence often cited for lexical status is the ability to form nominalizations, since nominalization is taken to be a lexical process and as such, can only be fed by other lexical processes. Persian CPs can form nominalizations by attaching the present stem of the light verb to the host:

(8) V: bāzi kardan Lit., “game + do” (“play”)  
N: bāzikon “player” (as in soccer player)

(9) V: negah dáStan: Lit. “HOST + have” (to keep)  
N: negahdāri: maintenance

A final piece of evidence arguing that the complex predicate is in some sense a lexical item comes from the fact that the host and the light verb resist certain types of separation.

4.3 Host and Light Verb Resist Separation

4.3.1 Separation by Adverbs

In sentences without CPs, adverbs can freely come directly before the verb:

(10) maSq-am-rā tond neveStam
homework-1.sg-def.ACC quickly wrote.1.sg
I did my homework quickly.

However in the case of CPs, the adverb does not separate host from light verb (11). Instead, the adverb precedes the entire CP (12):

(11) ?? rānandegi tond kardam
driving-N quickly did.1sg
Intended, “I drove quickly.”
(12) tond rānandegi kardam
    quickly driving-N did.1.sg
    I drove quickly.

4.3.2 Separation by DO

In the case of transitive CPs, the direct object cannot intervene between the host and light verb in neutral contexts:

(13) ??setāyeS Ali-rā kardam
    adoration Ali-acc did.1.sg
    Intended, "I adored Ali."

Instead, the DO appears before the entire CP:

(14) Ali-rā setāyeS kardam
    Ali-acc adoration did.1.sg
    I adored Ali.

5 CPvo Constraint

The evidence presented so far indicates that Persian CPs have certain properties which are generally taken to be lexical. On the basis of these characteristics, we can posit the first general constraint:

(15) CPvo: Express the X0 and V0 of a complex predicate as a V0.

We will see below that this constraint can be violated. But before turning to the violations, I will point out why this constraint is a well motivated constraint.

The preference for treating the CP as a single syntactically integrated predicate is motivated by its status as a semantically integrated predicate. This can be seen to be a special case of a general iconic principle:

(16) ICONIC: A tight semantic bond between items tends to be represented by a correspondingly tight syntactic bond (Haiman 1983; Bybee 1985)

Ackerman and LeSourd (to appear) propose that the diachronically unmarked expression of complex predicates is as a single syntactically atomic lexical item. In particular, they propose that once independent syntactic forms begin to be associated with non-compositional semantics or new argument structures, the syntactic separability appears to be a marked option. Over time, such syntactically separable items tend to coalesce into syntactically and phonologically atomic lexical items through a process of grammaticalization (see also Mithun 1984, Gerdts and Hinkson 1996 for discussion of this diachronic tendency in the phenomenon of noun incorporation). The suggestion here is that a violable constraint can capture the stage in the synchronic grammar in which the unmarked expression of a complex predicate is as a V0. Let us turn now to certain situations in which the host and light verb do not appear as a V0, but rather as two pieces of a phrasal structure.
It turns out that the complex predicate can be separated by a number of elements: future, modal and progressive auxiliaries, an imperfective prefix, and direct object clitics. Space permits me to only consider two of these cases here, but they can be viewed as two types of constraints which can be used to characterize the other intervening elements as well (see Goldberg, in preparation).

6.1 CPs can be separated by future auxiliary

In formal contexts the future tense is expressed by adding the auxiliary verb zastan (Lit. "want"), inflected for person and number before the verb stem:

(17) (man) xâham  raft
     I     FUT-1.sg went
     "I will go."

When a CP is involved, the future auxiliary must intervene between host and light verb as can be seen in (18):

(18) (man) telefon xâham  kard
     I     telephone FUT-1.sg did
     "I will telephone."

Positioning the future auxiliary before the entire CP is not permitted:

(19) * (man) xâham  telefon kard
     I     FUT-1.sg telephone did.3sg

Notice that the auxiliary cannot naturally be treated as an infix within a lexical unit because of its person and number inflection. Inflectional morphology occurs outside derivational morphology in the vast majority of cases. Therefore there must exist a constraint that is more highly ranked than the CPvo constraint. The relevant constraint is given in (20):

(20) FUT: The future auxiliary appears directly before the verb root.

This constraint can be seen to be natural for the same reason the CPvo constraint was natural: elements that are closely related semantically appear close together in the syntactic string. The future morpheme is semantically a verbal operator in that it predicates something of the event described by the verb. What is unusual about this case is that FUT should outrank CPvo. The explanation of this fact relies on the diachronic history of the CP. Notice that the future auxiliary is a closed class or grammatical element. It is generally recognized that the ordering of grammatical elements is often motivated by an diachronically earlier stage of the language (Givón 1971; Bybee 1985) In a diachronically earlier stage of Persian, what are today complex predicates were verb + complement forms (Windfuhr 1979). This
is generally case with this type of complex predicate cross linguistically (Mithun 1984). At the time when the elements that today are the complex predicate were analyzed as complement and verb, it was completely natural that the verbal tense operator should appear between the complement and the verb. The ranking of the FUT constraint has simply remained fixed, as a high ranking constraint.

Interestingly, a similar verbal auxiliary intervenes between host and verb in the preverb + verb construction in Hungarian (Farrell Ackerman, personal communication), and also in Walpiri (Nash 1980). Therefore the FUT constraint and its ordering with respect to the CPvo is attested in other languages.

The interaction of the two constraints is shown in Figure 1:

<table>
<thead>
<tr>
<th>CPvo, FUT</th>
<th>FUT</th>
<th>CPvo</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. N FUT V</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. FUT N V</td>
<td>!</td>
<td></td>
</tr>
<tr>
<td>c. N V FUT</td>
<td>!</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1

On the left, various candidate forms are given. The constraints are given in the right hand columns, in order of decreasing strength from left to right. A "*" in a block indicates a violation of that constraint. The '!' indicates that this violation is fatal. Because FUT is ranked higher than CPvo, the candidate which satisfies it is preferred, even though the CPvo constraint is violated.

6.2 CPs can be separated by DO clitics

In the case of simple verbs, direct object clitics typically appear directly after the verb, as in (21):

(21) didam -aS
     see.past.1.sg 3.sg.CL
     I saw it.

In the case of CPs, the DO clitic can either appear after the light verb, or it may attach directly to the host, thus separating host from the light verb as in (22):

(22) roSan -aS    kard
     light -3.sg.CL did
     S/He turned it on.

Pronominal elements may not appear in the middle of single zero level categories. That is, the clitic cannot occur between syllables in a multisyllabic single word, even after a stressed morpheme boundary. Therefore, the possibility of inserting the pronominal clitic within the CP provides a strong piece of evidence that the host and light verb should be analyzed as two separate words in (22). This implies that there
is another constraint that serves to override the CPvo constraint. What is required is a constraint that positions the clitic in second position within the predicate. This constraint is given in (23):

(23) CL2: DO clitics are suffixed after the first X0 in the predicate

This constraint is typologically natural since it can be seen to be an instance of Wackernagel's Law that specifies that clitics should appear in second position in the sentence. This generalization holds of Walpiri, Serbo-Croatian, Luiseño, Greek, Sanskrit and an earlier stage of Persian (Anderson 1994; Bubenik 1994; Halpern 1995). In the case of Modern Persian, the clitic appears in second position within the smaller domain of the predicate.1 In the case of simple verbs, CL2 ensures that the clitic is placed after the verb as we saw was the case.

In the case of CPs, CL2 is in direct conflict with CPvo. In (24), CL2 is satisfied, but CPvo is violated. In (25), the opposite is true: CPvo is satisfied but CL2 is violated.

(24) **masxareh** -aS **kardand**
    joke -3.sg.CL did.3.pl
    They made fun of him.

(25) **masxareh** **kardand** -aS
    joke did.3.pl -3.sg.CL
    They made fun of him.

Both (26) and (27) are acceptable and are found in free variation. Therefore constraints CL2 and CPvo are unordered with respect to each other. This is represented in Figure 2 by the dashed line between the two constraints. Both candidates (a) and (b) optimize the relevant constraints.

<table>
<thead>
<tr>
<th>CPvo, clitic</th>
<th>CL2</th>
<th>CPvo</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>( a ). N-CL V</td>
<td></td>
<td></td>
<td>CL2 and CPvo are unranked with respect to each other; a and b are in free variation.</td>
</tr>
<tr>
<td>( b ). N V-CL</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2

So far we have seen that FUT outranks CPvo and that CPvo and CL2 are unranked with respect to each other. This yields the following ranking:

(26) FUT >> \{CL2, CPvo\}

This ranking predicts that speakers will disprefer examples such as (27) in which the clitic follows the light verb in favor of (28), which is in fact the case:

(27) **masxareh** kardand -aS
    joke did.3.pl -3.sg.CL
    They made fun of him.

(28) **masxareh** -aS **kardand**
    joke -3.sg.CL did.3.pl
    They made fun of him.
(27) ?? bâz xâham kard-aS
open  want.1.sg do.past.3.sg-3.sg
Intended, I will open it.

(28) bâz -aS xâham kard
open -3.sg want.1.sg do.past.3.sg
I will open it.

These facts are expected since (27) violates both CL2 and CPvo, while (28) only violates CPvo. This is represented in Figure 3:

<table>
<thead>
<tr>
<th>CPvo, clitic, FUT</th>
<th>FUT</th>
<th>CL2</th>
<th>CPvo</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. N FUT V-CL</td>
<td></td>
<td>*</td>
<td>!</td>
</tr>
<tr>
<td>b. N-CL FUT V</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. FUT N V-CL</td>
<td>!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3

A question arises, if CPvo is violated, can anything at all intervene between host and light verb? The preceding case indicates that the DO clitic can in fact intervene, but it turns out that adverbs and arguments still cannot. Thus, it appears that the CP prefers to be treated as a simple V0, but if that constraint is overridden by a higher ranked constraint, the CP still prefers to be separated only by closed class elements. One way to capture this fact would be to assume that when closed class elements intervene between host and light verb, the complex forms a V. Allowing adverbs and arguments between would result in the CP appearing only as part of a full VP. CPs prefer to be expressed as V0’s, but if that is not possible, they prefer to be expressed within a V. To capture this idea, an additional constraint is required, CPv:

(29) CPv: Express the X0 and V0 of the CP as a V

<table>
<thead>
<tr>
<th>CPvo, Cpv, FUT</th>
<th>FUT</th>
<th>CPvo</th>
<th>CPv</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. N FUT adverb V</td>
<td></td>
<td>*</td>
<td>!</td>
</tr>
<tr>
<td>b. adverb N FUT V</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. adverb FUT N V</td>
<td>!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4

This constraint can be viewed as an instance of the above mentioned ICONIC constraint, assuming an adequate characterization of the correspondence between semantic closeness and syntactic closeness can be explicated. Ultimately, the CPvo
and CP\(\bar{v}\) constraints should be combined into a single gradient constraint. What is clear from the interaction of the clitic and future auxiliary described above, is that simply counting the number of intervening morphemes between host and light verb is not what determines their syntactic "closeness." Rather, it appears to be the type of the first mother node that dominates both host and light verb that is relevant.

7 Summary

To summarize, I have claimed that although the CP is necessarily listed in the lexicon, it is not necessarily treated as a single indivisible word. This analysis at once motivates why it is that certain elements can intervene between the host and light verb, while others cannot: elements can only intervene if there is an independently motivated higher ranked constraint that conflicts with the preference for treating the host and light verb as a single simple word.

Diachronic Shifts

Viewed this way, it is clear that the strength of the CP\(v\)o constraint could increase over time, moving up the ordered set of constraints. It may over time begin to compete, for example, with FUT, resulting in the future marker optionally appearing outside the entire CP. Ultimately, it may increase in strength so as to outrank FUT resulting in the future marker obligatorily appearing outside the entire CP. Alternatively, diachronic change could lead to CL2 growing in strength resulting in the obligatory separation of host and light verb when a DO clitic is present.

Typological Variability

Crosslinguistically, various orderings of similar constraints are attested. Mithun (1984) mentions Samoan as a case in which particles which normally appear directly after the V instead appear outside the entire N+V complex predicate. She also mentions Micronesian languages in which aspecltal markers which normally appear directly after the V appear instead outside the CP.

Therefore viewing the preference for treating the CP as a word, as one constraint interacting with other independently motivated constraints, does more than provide a way to capture the relevant data in Modern Persian. It offers the potential to capture diachronic shifts and cross-linguistic variability in similar constructions.

8 Alternative Accounts

Complex predicates have been the focus of a great deal of attention lately. Theories which draw a strict division between lexical and phrasal entities do not allow for the possibility that one and the same stored entity could appear as either lexical or phrasal depending on what other constructions it interacted with. Instead, researchers have attempted to retain the strict division in various ways. Below are several alternative proposals.
8.1 A Scrambling Analysis

Ghomeshi & Massam (1994) also note the fact that direct object clitics and auxiliaries can intervene between host and light verb in Persian CPs as we already saw, and they therefore conclude that the CPs cannot be lexical. However, their analysis seems to actually propose a lexical and not a phrasal account of Persian CPs. Specifically, they propose that CPs are formed by adjoining an X0 to V0 under a VO node (as a base generated structure). Since positing the mother V0 node seems to make the claim that the CPs are lexical items, the various lexical-like properties of Persian CPs can in fact be accounted for straightforwardly on their analysis. In fact, I have argued that the idea that the CP can be treated as a V0 is essentially right.

It is the phrasal properties that are not sufficiently accounted for. Ghomeshi and Massam invoke scrambling to explain how certain entities are allowed to intervene between host and light verb. However, various word order possibilities in Persian involve maximal categories, not X0 categories as would be required to separate host from light verb. In addition, no constraints on the scrambling operation are discussed; for example, no account is offered as to why the direct object clitics and certain auxiliaries in particular can intervene between host and light verb. The scrambling account is therefore not fully explanatory, since it is not independently motivated and is not adequately constrained.

Other accounts propose generating the complex predicate phrasally. One obvious question such accounts need to address is how the often non-compositional meaning of the complex predicate is to be captured. One way of avoiding the need to argue that the CP as a whole is listed in the lexicon is to argue that the apparently non-compositional semantics is actually specified solely in either the host or the light verb.

8.2 An Argument Transfer Proposal

Mohammad and Karimi (1992) argue that the entire semantic content comes from the nominal element, and that the verbal element is semantically empty. The evidence given to support this claim is the existence of a few cases wherein varying the verb does not result in a noticable change in meaning. For example,

(30) ezhâr kardan/dâStan
    statement + to do/to have = "to state"

Interestingly, ezhâr dâStan above is archaic and is only used in literary contexts. In fact, the actual number of such doublets in current use is vanishingly rare. It is clear that in the majority of cases, a change in the V does result in a change in meaning. For example,

(31) gul zadan / gul xordan
    deceit + strike / deceit + eat
    "to decieve" / " to fall for the deception "

(32) dar āvardan / dar āmadan
   door + bring / door + come
   "to take off/out" / "to come out"

In addition, if the light verb were truly semantically vacuous, with the host supplying all of the semantics, one might expect that there would be only one or two light verbs. However, there are a large number of light verbs, which implies that the language would have to tolerate many trivially synonymous forms. The following are just a subset of the verbs that appear as light verbs: kārdan “do”; zadān “strike”; gereftān “take”; dāstān “have”; dādān “give”; bordan “take (away),” xordan “eat.”

Alternatively, one might expect that the existing light verbs would be in free variation with each other: any host combining with any light verb. However, hosts are quite particular about which light verbs they can occur with. For example:

(33) *komak zadān / komak kārdan
   help strike / help do = "to help"

Therefore, the semantics of the Persian CP is not naturally assigned to the host in isolation.

8.3 Idiomatic Argument Analysis

An alternative would be to posit the full meaning in the light verb. The host could be claimed to be a regular argument of the verb, semantically selected for by the special meaning of the verb. For example, kār kārdan, Lit. “job + do,” meaning “to work,” would be analyzed as a special sense of kārdan which would mean “to work” and which would be understood to semantically select for the nominal argument kār.

The non-compositional meaning and changes in argument structure would not be mysterious on this account because those special properties would be captured in the special sense of kārdan. Also no explanation would be required to explain why the host can be separated from the light verb: the host and light verb would be separable just as any argument + verb combination is separable.

However there exist properties of Persian CPs which remain unmotivated on this account. The light verb would have to select, not only for the semantic type of its argument (which would be unremarkable), but also for its definiteness and specificity characteristics: the hosts must be indefinite and nonspecific. These characteristics usually mark the particular noun’s role in discourse, and are not specified by the verb. That is, we do not generally find unique stems in a language that are differentiated only by the definite/specificity characteristics of their arguments: such specifications are not typically part of a verb’s meaning.

In addition, if the host is treated as an argument, it would presumably be a direct object argument, since it generally has the semantics of a direct object and it does not occur with a preposition. However, several of the Persian CPs are transitive, taking a(nother) direct object. Therefore, the light verbs involved would have to be analyzed as double object verbs. But there are no verbs in Persian other than CPs
that take two objects. Therefore the double object option would have to posited only to account for certain CPs.

In short, there are ways in which the host does not act like a regular argument of the verb. Therefore simply treating the host as an argument does not account for the full range of data.

Finally, neither the Argument Transfer proposal nor the Idiomatic Argument analysis explains why the host and verb can undergo word formation processes, creating derived nominals. One might suggest in response that such argument + verb combinations exist both as syntactic phrases and as lexical items. This brings us to another possible proposal.

8.4 Creating the CPs either in the lexicon or in syntax

There has been a growing body of work that allows complex predicates to be formed either in the lexicon or in the syntax (Butt to appear, Butt, Isoda and Sells (1990), Matsumoto 1992, Mohanan 1994, Williams, to appear.) Alsina (1993) for example, has argued that causatives in certain languages, e.g. Chichewá, are formed in the lexicon, while those in other languages, e.g. Catalan, are formed in the syntax. Only CPs formed in the lexicon are understood to undergo nominalizations. Only CPs formed in the syntax are claimed to be separable.

Nothing prevents such a theory, though, from claiming that a single language has both types of complex predicates (see in fact Mohanan 1994 for such an analysis in Hindi). And in fact, this option would be necessary to account for languages like Persian. We have already seen that the Persian CP allows nominalizations, while at the same time it allows its pieces to be separated in certain circumstances. Therefore the CPs have one property of lexical entities and another property of phrasal items. Such predicates would presumably have to be generated both lexically and phrasally.

There are several drawbacks to this approach. First, is not clear where the idiosyncratic semantics of certain CPs “formed in the syntax” would be specified. As discussed in the previous two sections, there are problems with positing the semantics exclusively either in the host or in the light verb. Instead, the semantics seems to be in their combination.

In addition, if lexical CPs were available along with phrasal CPs, we would expect that speakers would never be required to separate host from light verb: the option of using an inseparable lexical CP should exist. However as we saw above, the future auxiliary does necessarily intervene between host and light verb. Therefore the lexical-and-phrasal account would have to constrain the lexical CPs from ever appearing with the future tense. Unless some independent motivation can be found, this stipulation is unmotivated.

Finally, while the Persian CP is separable under certain conditions, claiming that the CP is formed “in the syntax” does not explain the constraints on separability described earlier. That is, the way in which the Persian CPs fail to show the full range syntactic properties, particularly in being not freely separable, remains unaccounted for.
9 Conclusion

To summarize, I have argued that the Persian complex predicate is represented in the lexicon as a unit, despite the fact that it does not necessarily appear as a syntactically atomic lexical item. This possibility is natural in theories like Construction Grammar, Cognitive Grammar and HPSG, in which no strict division is drawn between lexical items and phrasal constructions. See also Ackerman & LeSourd (to appear) and Matsumoto (1992) for similar proposals. This idea, that items with some phrasal properties can be listed in the lexicon alongside syntactically atomic lexical items is also supported by a fairly large body of work on idioms and idiosyncratic phrasal patterns (e.g., Jackendoff 1975, 1994; Nunberg et al. 1994 and references therein).

Added to the recognition of the fact that status as a stored entity does not entail atomic syntactic status, is the claim that status as a word can be assigned on a default basis. This claim implies that there can be no strict division within the "construction" between words and phrasal elements. One and the same stored item can be realized as either a zero-level word or a phrasal entity, depending on what other constructions it interacts with.

The notion of a default constraint was made concrete by specifying other general constraints that serve to override the constraint. The interaction of the set of constraints was made explicit, using the formalism of Optimality Theory. Motivation for each constraint was suggested by noting its typological naturalness and/or its adherence to more general tendencies in language. Using ranked violable constraints to capture the word order facts allows for the possibility of accounting for diachronic shifts and of typological variation in terms of alternative orderings of the constraints.

10 Endnotes

*I would like to thank Elham Sadegholvad, Michael Azarnoosh, Maryam Hafezi, Kathy Soltani and Ali, Parivash and Faizallah Yazdani for their insightful consultant work. This paper has benefited greatly from conversations with Farrell Ackerman, George Bergman, Joan Bresnan, Gholamhossein Karimi Doostan, Kathleen Hubbard, Saeed Ketabi, Elahe Mir, Orhan Orgun, Karin Pizer, Masha Polinsky and Ivan Sag. Any remaining errors are solely my own.

1. See Anderson 1994 for an OT analysis of second position clitics. He proposes that clitics are placed by the combination of three constraints: Noninitial(cl1, domain), Leftmost(cl1, domain) and Integrity (word). These constraints could be substituted for the present CL2 constraint without affecting the overall argument proposed here.

2. Although see Sells (1994) for an account in which X0 phrases are generated syntactically. Taking this option would mean that Ghomeshi and Massam would not account for the various lexical-like properties of the CP.

3. A parallel analysis has been suggested by Nunberg, Wasow and Sag (1994) for "deformable" idioms in English.

11 References

Ackerman, Farrell and Philip LeSourd. 1992/to appear. Toward a Lexical


Nevis and Vida Samiian (eds). Dept. of Linguistics. Cal State University, Fresno.


NPI Licensing in Adjunct WH-Questions

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1. Introduction

Negative Polarity Items (NPIs) are known to be licensed in wh-questions. But not all wh-questions behave alike with respect to NPI licensing. As pointed out in Han and Siegel (1996), while all argument wh-questions with NPIs can have a Rhetorical Question reading, only a subset of them can have a true wh-question reading. In this paper, we point out that adjunct wh-questions with NPIs cannot have a true wh-question reading.\(^1\) Questions with why and how have a Surprise Reading, either a Question Surprise reading or a Rhetorical Surprise reading. Questions with when and where can have any of the three readings; the question surprise reading, the rhetorical surprise reading or the rhetorical question reading. We define these readings in §2.

The purpose of the present paper is to investigate the full range of grammaticality and interpretational differences attested in adjunct wh-questions with NPIs. In §2, we describe the range of data. In §3, we account for the non-existence of a true question reading in adjunct wh-questions with NPIs. In §4, we provide an analysis of when and where questions with the rhetorical question reading. In §5, we relate the surprise readings of adjunct questions to the factive nature of reason and manner adverbials. In §6, we address the source of the surprise readings which are found in adjunct questions with NPIs and the factors responsible for licensing NPIs in these questions under the surprise readings.

2. The Data

Adjunct wh-questions with NPIs such as ever and any all behave alike in that these questions always lack a neutral information-seeking question reading. However, adjunct wh-questions with NPIs do not all behave the same way with respect to the readings that are available.

Adjunct questions which are formed with why or how are ambiguous. Examples of these questions are given in (1) and (2).

(1) a. Why did Casey agree with anyone?
    b. Why did Bill vote for any Republican?

(2) a. How did Sam solve any problems on the logic final exam?
    b. How did Max finish writing any papers?
One interpretation of these questions is as information-seeking questions but only with a strong presupposition that the speaker is surprised that the situation in question obtains. We call this the SURPRISE QUESTION reading. For example, the sentence in (1b) can be interpreted as a question paraphrasable with There is no obvious reason for Bill to have voted for a Republican, so why did he do it?

These why and how questions with NPIs can also be interpreted with a special kind of rhetorical question reading. Rhetorical questions are constructions which look like questions on the surface but are actually assertions. In the case of the RHETORICAL SURPRISE reading, this assertion carries the presupposition that the speaker can think of no obvious reason or manner for the situation in question to obtain. For example, (1b) can be interpreted as a statement paraphrasable with There is no obvious reason for Bill to have voted for a Republican.

Adjunct questions formed with where or when can also have either the rhetorical surprise reading or the question surprise reading described above. However, in these cases there is an additional rhetorical question reading in which the question is interpreted as a negative assertion with a sentential negation reading. We call this the RHETORICAL QUESTION reading. Examples of these questions can be seen in (3) and (4). For instance, the sentence in (3a) has the rhetorical question reading Bill did not find evidence of ghosts anywhere. It also has the readings analogous to the two described above: the surprise question reading paraphrasable with There is no likely place for Bill to have found evidence of ghosts, so where did this happen? and the rhetorical surprise reading paraphrasable with It is surprising that Bill found evidence of ghosts because there is no obvious place for this to have happened.

(3)  a. Where did Bill find any evidence of ghosts?
     b. Where did John publish any of his papers?

(4)  a. When did Chris ever have time to write any papers?
     b. When did Sam vote for any Republican?

Note that the rhetorical question reading of when and where questions is an assertion with sentential negation, whereas the rhetorical surprise reading is not. The question surprise reading is a question with a presupposition that the speaker is surprised that the event in question happened in a certain location or time. While the event in question is negated in the rhetorical question reading, it actually took place in the question surprise and the rhetorical surprise readings.

The table in (5) summarizes the readings available in various kinds of adjunct wh-questions with NPIs. The possible readings are indicated with a check mark. Since differentiating the question surprise and rhetorical surprise readings does not partition the different adjunct wh-phrases, we will generally group these readings together with the name SURPRISE READINGS. However, it is useful to make the distinction since interesting comparisons can be made between the neutral question and the question surprise readings and between the rhetorical question and the rhetorical surprise readings.
(5) Summary of Readings Available in Adjunct wh-questions

<table>
<thead>
<tr>
<th>Neutral</th>
<th>Rhetorical Question</th>
<th>Surprise Readings</th>
<th>Question Surprise</th>
<th>Rhetorical Surprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>why</td>
<td>*</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>how</td>
<td>*</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>when</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>where</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

2.1. Previous analyses

Ladusaw (1980a, 1980b) and Linebarger (1987) recognize that NPIs are licensed in questions, but they do not directly attempt to account for the phenomena discussed above. Progovac (1993) and Higginbotham (1993) do address the issue of NPI licensing in questions. However, Progovac (1993) wrongly predicts that all wh-questions with NPIs only have the rhetorical question reading available, and Higginbotham (1993) wrongly predicts that all argument wh-questions with NPIs have the wh-question reading available. He does not address NPI licensing in adjunct wh-questions at all.

3. The Lack of the Question Reading in Adjunct Wh-Questions

Although adjunct wh-questions do not all behave the same way, they are all similar in that they lack the neutral information-seeking question reading. Han and Siegel (1996) show that this reading is available in some, but not all argument wh-questions.

As pointed out in Han and Siegel (1996), not all argument wh-questions behave alike with respect to NPI licensing. Certain argument wh-questions, such as those in (6), are ambiguous between a true wh-question reading and a rhetorical question reading.

(6) a. Who has ever been to Moose Jaw?
    b. Who said anything at the semantics seminar?

For instance, the question in (6a) can be interpreted as asking for information about visitors to Moose Jaw or it could be interpreted as an assertion about the speaker’s belief that no one has ever been to Moose Jaw.

However, not all argument wh-questions exhibit this ambiguity. The questions in (7) are not ambiguous. They are grammatical only with a rhetorical question reading.

(7) a. Who has Sam ever agreed with?
    b. What did anybody say at the semantics seminar?
For instance, the question in (7a) can only be interpreted as expressing the speaker’s belief that Sam never agreed with anyone.

Based on these data, Han and Siegel (1996) propose the generalization in (8).

\[
\begin{pmatrix}
\text{C-COMMAND REQUIREMENT}
\end{pmatrix}
\]

When the trace of the \textit{wh}-word c-commands the NPI (as in (6)), both the \textit{wh}-question and the rhetorical question readings are available.

When this c-command relationship does not hold (as in (7)), only the rhetorical question reading is available.

Han and Siegel (1996) propose an analysis of NPI licensing in \textit{wh}-questions, which uses the semantics of questions of Groenendijk and Stokhof (1984, 1985). According to Groenendijk and Stokhof (1984, 1985), a question is a function which partitions the set of all possible worlds. The partition contains the set of propositions which are possible answers. That is, each block of the partition corresponds to the set of possible worlds in which one of the semantically possible answers is true in those worlds. We propose that the negation present in the semantics of \textit{wh}-questions is responsible for the licensing of NPIs. The negation is covert negation that is present in the negative answer returned by the partition. An NPI is licensed if it is in the scope of this negation. For instance, the question in (6a) returns the partition in (9):

\[
\begin{pmatrix}
\text{Nobody has been to Moose Jaw}
\text{John has been to Moose Jaw}
\text{John and Mary have been to Moose Jaw}
\vdots
\text{Everybody has been to Moose Jaw}
\end{pmatrix}
\]

According to Han and Siegel (1996), the NPI \textit{ever} in (6a) on the \textit{wh}-question reading is licensed due to the negation present in the semantics of the \textit{wh}-question. The partition returned by the question contains the negative proposition \textit{Nobody has been to Moose Jaw} which is one of the possible answers. The NPI \textit{ever} is licensed because it is in the scope of the negative Quantifier Phrase (QP) \textit{nobody}.

If we approach the issue of NPI licensing in adjunct \textit{wh}-questions within the framework proposed in Han and Siegel (1996), the fact that NPIs are not licensed in adjunct \textit{wh}-questions under the neutral information-seeking question reading can be explained. The partition returned by these questions simply does not contain a negative proposition in which the NPI is in the scope of a negative QP. For instance, in (1b) (repeated here as (10)), the only negative proposition contained in the partition returned by the question is \textit{Bill voted for some Republican for no reason}. The NPI \textit{any} is not in the scope of the negative QP for \textit{no reason}.
(10) Why did Bill vote for any Republican?

Similarly, in (3b) (repeated here as (11), the only negative proposition contained in the partition returned by the question is John published some of his papers nowhere. The NPI any is not in the scope of the negative QP nowhere.

(11) Where did John publish any of his papers?

4. The Rhetorical Question Reading of when and where Questions

Han and Siegel (1996) propose an analysis of the rhetorical question reading of argument wh-questions with NPIs. On this account, rhetorical questions are analyzed as being syntactically and semantically analogous to neg-inversion constructions. Here, we provide a similar account of NPI licensing in rhetorical adjunct wh-questions. First, we will give a brief description of neg-inversion.

4.1. Syntax and semantics of neg-inversion

Syntactically, neg-inversion refers to the phenomena in which a negative QP or negative adverbial moves to [SPEC, CP] position, accompanied by verb-movement to C. Semantically, the fronted negative QP or adverbial has sentential scope resulting in sentential negation (Liberman (1974)). The sentences in (12) exemplify neg-inversion.

(12) a. Never has anyone agreed with John.
    b. Nowhere did John find white asparagus.

The negative element in each of the sentences in (12) has sentential scope. The examples in (12) are interpreted as John has not agreed with anyone and John was not able to find white asparagus respectively.

Although neg-inversion looks very much like wh-movement in that a phrasal movement to [SPEC, CP] accompanied by verb movement is involved, it is different from wh-movement in that it is clause-bounded:

(13) a. *Never, did Mary believe that [anyone agreed with John t₁]
    b. *Nowhere, did Mary say that [John found any white asparagus t₁]

Although the sentences in (13) are grammatical on the reading in which the negative element is extracted from the higher clause, they are ungrammatical on the relevant reading. This is the reading in which the negative element is extracted from the lower clause.² So (13a) cannot have the reading Mary believed that John never agreed with anyone.
4.2. Rhetorical *wh*-questions are similar to neg-inversion

Rhetorical *wh*-question formation is syntactically similar to neg-inversion in that a *wh*-phrase moves to the [SPEC, CP] position accompanied by verb movement to C.

(14) a. When has anyone agreed with John?
    b. Where did John ever find any white asparagus?

The interpretation of rhetorical *wh*-questions also corresponds to the interpretation of sentences with neg-inversion. That is, the *wh*-phrase in rhetorical *wh*-question functions as a negative QP that has sentential scope. Hence, (14a) means John has not agreed with anyone, and (14b) means John was not able to find any white asparagus. The rhetorical questions in (14a) and (14b) mean the same thing as the neg-inversion sentences in (12a) and (12b) respectively.

Moreover, rhetorical *wh*-questions are clause-bounded, just like neg-inversion.

(15) a. * When did Mary believe that anyone would ever agree with John?
    b. * Where did Mary say that John ever found any white asparagus?

The sentences in (15) are ungrammatical on the reading in which the *wh*-phrase is extracted from the lower clause.

These similarities lead us to posit that rhetorical questions are analogous syntactically and semantically to neg-inversion constructions. On this analysis of rhetorical *where* and *when* questions, the *wh*-phrase functions as a negative QP. NPIs are licensed because of this negative QP which is in the highest c-commanding position in the sentence.

4.3. The rhetorical surprise reading of *why* and *how* questions

Rhetorical questions formed with *why* and *how* behave differently from argument and *where* and *when* rhetorical questions. In argument and *where* and *when* rhetorical questions, the *wh*-phrase, functioning as a negative QP, takes wide scope resulting in a sentential negation reading. However, the *wh*-phrases (functioning as negative QPs) in *why* and *how* rhetorical questions cannot take wide-scope. For instance, (1a) (repeated here as (16)) cannot mean that Casey did not agree with anyone.

(16) Why did Casey agree with anyone?

It means that Casey did agree with someone and the speaker sees no good reason for this to be so (the rhetorical surprise reading). Moreover, *when* and *where* phrases have the option of not taking wide scope. In such cases, these questions with NPIs can also end up with a rhetorical surprise reading.

For instance, in (3b) (repeated here as (17)), Bill found evidence of ghosts and the speaker can think of no obvious place for this to happen.
(17) Where did Bill find any evidence of ghosts?

In sum, rhetorical surprise readings are possible when there is a presupposition that the situation in question obtains. This will be discussed further in §5.

5. Factivity and the Surprise Readings

Recall that, unlike the rhetorical question reading, both the question surprise reading and the rhetorical surprise reading of adjunct wh-questions with NPIs presuppose that the situation in question obtains. That is, (1b) (repeated here as (18a)) presupposes that Bill voted for a Republican, and (2b) (repeated here as (18b)) presupposes that Max finished writing some papers. Also, (3b) (repeated here as (18c)) on the surprise reading presupposes that John published his papers and (4b) (repeated here as (18d)) presupposes that Sam voted for a Republican.

(18) a. Why did Bill vote for any Republican?
b. How did Max finish writing any papers?
c. Where did John publish any of his papers?
d. When did Sam vote for any Republicans?

5.1. why and how questions

The fact that why and how questions cannot felicitously be uttered unless the situation in question obtains could possibly be explained by the semantics of why and how phrases. Lawler (1971) tries to show that why and how are factives by arguing for the factive nature of the corresponding adverbials for no reason and without any instrument. According to Lawler (1971), adverbs of reason, purpose, and instrument are similar to factive predicates in that they presuppose the truth of their complement clauses. Examples illustrating the factive nature of reason adverbials are shown in (19). Both sentences in (19) entail that Harry likes salami. That is, the complement clause is true in both the affirmative and the negative sentences.

(19) a. There is a reason why Harry likes salami.
b. There is no reason why Harry likes salami.

Lawler (1971) argues that instrumental adverbials are factives. Evidence for this comes from the fact that both sentences in (20) entail that Harry fixed the car.

(20) a. With an instrument, Harry fixed the car.
b. Without using any instrument, Harry fixed the car.

However, this is only a partial explanation for the behavior of how. It is clear that in a question which asks the manner in which some situation obtained, that situation
in question is presupposed by the speaker to have taken place. For example, the question in (21) cannot be felicitously asked unless the speaker believes that Pat did fix the car.

(21) How did Pat fix the car?

The test as it is shows that manner adverbials which correspond to the manner wh-word how are not factives. This can be seen by the sentence in (22) which shows that if there is no manner in which Pat fixed the car, then Pat didn’t fix the car.

(22) In no way did Pat fix the car.

So, how questions are a case where the behavior of the wh-phrase is different from the corresponding adverbial. Hence, the correlation between adverbials and the corresponding wh-words proposed by Lawler only explains part of the problem, but it does point to an interesting direction in which a solution might be found.

5.2. when and where questions

When and where questions with NPIs all have a rhetorical question reading available. This is as expected because these wh-phrases, functioning as negative QPs, can all take wide scope, resulting in a sentential negation reading.

An interesting fact is that when and where questions with NPIs are interpreted with the surprise readings only in certain discourse contexts. This is in contrast to why and how questions with NPIs, which are interpreted with the surprise readings in all discourse contexts. Some explanation for this comes from the fact that the wh-phrases when and where are different from why and how in that the corresponding adverbials are not factives, as pointed out by Lawler (1971). This can be seen with the examples in (23). Unlike the sentences in (19), the complement clause is not true in both of the sentences in (23). If there exists no time at which Harry broke his favorite Ming vase, then the entailment is that Harry did not break his favorite Ming vase.

(23) a. There exists some time at which Harry broke his favorite Ming vase.
    b. There exists no time at which Harry broke his favorite Ming vase.

The surprise readings are allowed in discourse contexts where the speaker has the knowledge that the situation in question obtains. For instance, assume that Sam usually does not vote for a Republican. But this time he did. In this context, a speaker who knows Sam’s voting habits can ask the question in (18d) (repeated here as (24)) and it has the question surprise reading.

(24) When did Sam vote for any Republicans?
This question can not felicitously be asked unless the speaker knows that Sam did indeed vote for a Republican.

6. The Surprise Readings and NPI Licensing

It remains to be explained why the adjunct questions with NPIs result in surprise readings and what licenses the NPIs in such readings.

Putting aside the issue of NPI licensing for the moment, we note that in why questions with negation, there is a strong presupposition about the speaker’s beliefs. Compare the why question with and without negation in (25).

(25)  a. Why did John come to the party?
      b. Why didn’t John come to the party?

The question in (25a) can be asked when the speaker has no presupposition about John’s expected behavior and is just seeking information as to why John came to the party. But the negated question in (25b) comes with a strong speaker presupposition that he or she has a certain expectation with respect to John’s behavior. That is, the speaker expected John to come to the party. But the fact is that he didn’t come, so the speaker is surprised and asking the reason why.

It is interesting that why questions with negation (such as (25b)) behave similarly to why questions with NPIs (but without negation) (such as (26)).

(26) Why did anyone come to the party?

They both have the same kind of strong presupposition about the speaker’s expectation. This suggests that there is covert negation somewhere in why questions with NPIs. If this is true, then we can say that (covert or overt) negation is responsible for the presupposition about the speaker’s expectation in why questions resulting in a surprise reading and that the covert negation is responsible for licensing of NPIs in why questions.

We can extend this analysis to how questions with NPIs by positing that how questions with NPIs also have covert negation. This covert negation gives rise to the presupposition about the speaker’s expectation and is responsible for the surprise readings and NPI licensing. The exact location of this covert negation is still an open question. The idea of appealing to covert negation for NPI licensing is reminiscent of Baker (1970a), Baker (1970b) and Linebarger (1987) although we are not committing ourselves to other aspects of their account.

The fact that how questions with overt negation are ungrammatical (as in (27)) makes it hard to relate the negation and surprise readings in this type of question. That is, how questions with overt negation and those with NPIs do not show the same parallel behavior that these types of why questions show.

(27) * How didn’t John behave?
Upon further consideration, it is not surprising that how questions with overt negation act differently from why questions with overt negation since the scope of negation is different in these questions anyway. That is, while negation has scope over how, it does not have scope over why. For instance, in (25b), the question is asking for the reason such that John didn’t come to the party for that reason. But in (27), the question is not asking for the manner such that John didn’t behave in that manner. Evidence for the scope asymmetry between how and why with respect to negation is provided by the fact that how questions with overt negation are sensitive to weak island effects, but why questions with overt negation are not (see Kroch 1989, Szabolcsi and Zwarts 1993). It is true that the question in (27) can be used felicitously in certain limited discourse contexts, as noted by Kroch (1989). For instance, (27) can be asked when the discourse context is such that the speaker knows that John behaved erratically, or in a wide range of manners. Nevertheless, the fact that how questions with negation are grammatical only in a limited discourse contexts, whereas the equivalent why questions with negation are always grammatical in any discourse context is enough to draw the conclusion that the scope of negation is different in the two types of questions.

7. Conclusion

We have addressed the issue of the nature of the differences in the grammaticality and interpretation of adjunct wh-questions with NPIs. We have also proposed an account for some of these differences. However, there are many open questions that must be answered, such as (1) what is the location of covert negation in why and how questions with NPIs, and (2) what is the nature of negation such that it obligatorily gives rise to the surprise readings in why and how questions with NPIs. We leave these difficult questions for future research.

Notes

* We thank Tony Kroch and Sabine Iatridou for very helpful discussion of this material. We also thank the audience at BLS 22 for useful comments.

1 We will only consider questions with simple adjunct wh-words in this paper. The behavior of more complex adjunct wh-phrases can be assimilated to that of the simpler cases. For example, how many and how often behave similarly to how, and how come behaves similarly to why.

2 By putting traces in the examples in (13), we are not making any claims about the actual original attachment site of the adverbials, we only want to show that the adverbial originated in the lower clause of each sentence.
3Note that Lawler’s argument for the factivity of instrument adverbials is problematic. Since instruments are a subset of manners, it is not the instrument adverbal itself that contributes the factivity here, but the nature of the world. For example, in (20b) (repeated below) Harry could have fixed the car with some method that does not require the use of an instrument.

(20b) Without using any instrument, Harry fixed the car.

References


Discourse and the Construction of Categories
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A recent advertisement from the British National Corpus, a consortium of scholars in Britain, announces the goal of creating a one hundred million word corpus of language data. Rightly noting the importance to linguistics of this project, its authors declare, ingenuously perhaps, that among its advantages will be that: “Linguistic researchers will...no longer have to invent example sentences to illustrate points of grammar and meaning, or to test theories.”

The underlying assumption is that there exists between the sample sentences of the grammarian and the distribution of forms in texts a symmetrical relationship. That is to say, the set of meanings and functions associated with forms at the level of the decontextualized sentence will predictably be reflected in their discourse functions, and their presumed typicality for the language will be reflected in their textual frequency. Conversely, the forms, structures, functions, and meanings that are most commonly represented in texts will coincide with those that are most naturally associated with the same forms and meanings that are posited for sentences taken in isolation from discourse contexts.

This assumption is almost never made explicit. Some version of it seems to underlie Jack Du Bois’ famous dictum that “grammars do best what speakers do most,” but Du Bois’ conception of ‘grammar’ is rather distant from that of an abstract system inferred from isolated decontextualized sentences. One fairly clear formulation of the principle is that of Terence Parsons, who in his book Events in the Semantics of English (1990) states that once the need for a category ‘event’ at the sentence level has been established, the discourse use of this category will follow automatically:

Discourse can provide additional constraints on I [the Interval enclosing an event]. For example, in a narrative each event describes an event that occurs after the preceding one. When occurring in a narrative, I will be subject to the condition that it be after the time of the preceding event (if the sentence is an event sentence.) (214)

Since discourse linguists are sometimes charged by those who breathe the cold clear air of formal logic with being “confused”, it is worth noting the muddles here. An event cannot describe anything, much less another event. Replacing ‘describe’ with ‘report’ will not remove the anomaly of an event reporting an event. It is not obvious that Parsons does anything more here than present us with a particular way of using the words ‘preceding’ and ‘after’; everything else is tautologous. The reference to ‘narrative’ calls for a detailed justification from discourse of the 300-odd pages of discussion of ‘event’, not to mention some reference to the considerable body of specialist literature on narrative; yet this passage is essentially the only reference to discourse in the entire book. The passage cited continues: “There are many aspects of this sort affecting I; they are not discussed in this book.”

Chomsky early on declared himself an opponent of discourse linguistics, denouncing all corpora as intrinsically skewed. I am told that Syntactic Structures made do with 24 example sentences and Aspects of the Theory of Syntax 28, and these figures include duplicates. Until quite recently, linguists have by and large acceded to this negative judgement about corpora, and suspicion of corpora has
remained constant across a surprisingly wide range of theoretical approaches. But the advent of gigabyte storage technology, optical text scanning, and unobtrusive sound recording, and the resulting emergence of what might be called a corpus culture in linguistics, have made corpus linguistics an increasingly viable option. It is now possible to examine arrays of text with some degree of confidence that a representative set of contexts for presumed grammatical constructions can be identified. This raises the further possibility that assumptions made about languages from the perspective of sentences taken in isolation can be checked beside inferences from discourse.

There are some good reasons for wanting to do this. For example, research in the areas of typology, universals, and grammaticalization quite often encounters something comparable to the following situation. We wish to make a generalization about languages that put the verb in the position immediately after the subject. Our source, in this case Greenberg, gives us a list of languages that place the verb in second position, and on this list is a language we happen to know well enough to read and perhaps even to speak, and the statement in Greenberg strikes us as at best an oversimplification and perhaps even as being wrong for certain kinds of texts. We know, perhaps, that speakers of this language can and sometimes do place the verb after the subject, and that under certain circumstances of elicitation, especially if the elicitator is a speaker of English, they will cheerfully return English sentences such as “The dog bites the man” with a perfect SVO sentence in their own language.

Yet when we examine longer discourses such as narratives, we do not consistently, or even very often, encounter SVO sentences. We may in fact have difficulty finding counterparts to “subject” and even to “sentence” itself. Moreover, we find that when SVO sentences occur, they reveal a typical function, such as backgrounding of events, that causes us to question whether the bald statement “L is an SVO language” is salvageable. If a language assigns its typical word orders to specific functions and specific genres, what right do we have to privilege one of these functions or genres and, so to speak, name the language after it? And if such sentences occur in isolation, as the result of elicitation, but not or only rarely in real discourse, there would seem to be a risk of treating the contextually anomalous construction as typical.

The existence of one such problematic language in a list leads to some unsettling thoughts. Here are 30 “SVO languages”. I am familiar with one of them, and I know from my experience that according to discourse criteria it isn’t really an SVO language: what of the others in that list? Might I not find, when I examined discourse in each of them, several, perhaps even many, other similar anomalies? And what happens to all the typological work that uncritically takes this list as a faithful reflection of the state of affairs in all 30 languages, and proceeds with massive generalizations based on it?

Of course, it could be that the difference between the grammar of elicited, isolated sentences and discourse grammar is rather minor, and could be negotiated quite simply. Moreover, when very large language samples are being considered, the slight marginal differences among categories will perhaps cancel one another out and permit accurate generalizations to be made. But there is also the danger of the opposite happening, namely that these minor errors will accumulate into something quite significant. For example, if I subjected other languages on the list to an in-depth discourse analysis, I might repeatedly find the formulaic synopsis required by typology to be in conflict with repeated textual patterns.

In this paper I want to discuss a few cases where the analysis of a form and its category assignment that have been made on the basis of sentence level
considerations appear to be in conflict with some aspect of the analysis that seems to be called for on the basis of discourse data. I will refer to such conflicts as source conflicts. I do not have a solution to the problem of source conflicts, but it does seem to me that if instances of them accumulate, and if the disagreement cannot be resolved, as the corpus-related technologies become more sophisticated, an insistence on working exclusively with constructed sentences will increasingly have to be explicitly justified. Part of this justification will involve theorizing contradictions by either reconciling them as non-contradictory within the terms of this or that theory, or by an outright rejection of one or the other kind of evidence.

Apart from my own work on the dispersed verb in English, I have tried to choose examples of source conflict that have been noted elsewhere in the literature. They are drawn from a variety of empirical and theoretical backgrounds. In one or two cases it seems that immediate and important consequences flow from the source conflict, and in others their significance seems to be more potential than real. Because of time limitations, I can only discuss a small number here, but I know of more, and suspect that it is an endemic problem.

A fairly simple example of what I mean is the following. The topic is the English prepositions. The word frequency lists published in 1987 by the Lancaster-Oslo-Bergen corpus project (Johansson, Stig, and Hofland 1987, vol. 1:19) give the following statistics for the six most common prepositions:

<table>
<thead>
<tr>
<th>Preposition</th>
<th>N</th>
<th>Percentage of the six prepositions</th>
</tr>
</thead>
<tbody>
<tr>
<td>of</td>
<td>34,984</td>
<td>38%</td>
</tr>
<tr>
<td>in</td>
<td>20,294</td>
<td>22%</td>
</tr>
<tr>
<td>to</td>
<td>15,701</td>
<td>17%</td>
</tr>
<tr>
<td>for</td>
<td>8,694</td>
<td>9%</td>
</tr>
<tr>
<td>with</td>
<td>7,160</td>
<td>8%</td>
</tr>
<tr>
<td>on</td>
<td>6,263</td>
<td>7%</td>
</tr>
</tbody>
</table>

It will be noted that of is not only the most frequently occurring preposition, it is second only to the definite article the in overall frequency (68,326) and, especially significantly, almost twice as frequent (38% to 22%) as the next most frequent preposition on.

John Sinclair (1991) has pointed out a remarkable fact about the relationship between the characteristic discourse functions of prepositional phrases and these frequency figures. Sinclair notes a finding of the corpus study that the most characteristic use of a preposition in English is to be the head of a prepositional phrase functioning as a sentence adjunct, in traditional terms an adverbial phrase. However, the preposition of does not occur in this function. Instead it appears almost always in a qualifying expression embellishing a noun, for example in the possessive construction, as well as appositional constructions like "The city of New Orleans", and so on.

The conclusion that Sinclair draws is that of is not really a preposition. He does not suggest an alternative within the standard array of categories, but proposes instead that of forms a category with itself as the sole member. Sinclair suggests that as corpus studies progress the number of distinct categories will have to be expanded. Of is evidently better regarded as some kind of linking morpheme, to be separated from the class of prepositions. (Comparison with the Iranian izafat comes to mind, or the Tagalog ng.)
It seems more in keeping with recent work on grammaticalization to see the chief interest in categories as being not the establishment of the degree to which they can be made to conform to universal patterns, in other words their prototypes, but rather what happens to them in the margins. Unfortunately, this enterprise may conflict with the ideal of pinning down universals, both synchronic and diachronic.

The question of the discourse construction of categories has implications beyond the question of paths of grammaticalization and language universals. Quite often psycholinguistic and even neurological conclusions follow from uncritical assumptions about categories. Consider the following two examples.

Finnish is usually described as a language that lacks a definite article. It would therefore be interesting to compare the acquisition of definite referring expressions in children learning languages having clearly identifiable articles such as English, French, and German, with the way that children with a Finnish speaking background acquire similar expressions. Citing a 1995 dissertation by Dasinger on the acquisition of Finnish, Dan Slobin [to appear] notes that “Earlier investigations had shown a common developmental pattern in English French and German — all languages that have definite articles. Finnish provides a useful comparison, in that the language does not have definite articles. Thus there is a typological contrast that might be relevant to the child’s capacity to mark definiteness in discourse...” Slobin reports Dasinger’s finding that while there were important similarities between Finnish and the canonical article languages, there is a peculiarly Finnish pattern. “Finnish children were less successful in tasks requiring definite reference to one of a group of identical objects...” And, again citing Dasinger, Slobin remarks: "The apparent lack of the Finnish-speaking child’s realization of the necessity of explicitly marking intralinguistic relationships in certain situations may very well be the result of the absence of the obligatory expression of definiteness in the language."

In general, Slobin (who of course is anything but a ‘sentence-level’ psycholinguist) has proposed a far-reaching program for first language acquisition research in a typologically diverse spread of languages, including not only article-bearing vs. non-article bearing languages, but different kinds of split ergativity; satellite-framed and verb-framed languages; topic-oriented vs. subject oriented languages, head marking vs. dependent marking, prefixing vs. suffixing, etc. "Every claim in the child language literature can profitably be lined up against relevant typological contrasts and dimensions such as these" (Slobin, to appear.)

A number of researchers have recently described, contra the standard descriptions of Finnish, how a demonstrative se/sie has in the present century come to be distributed in colloquial Finnish in ways that are indistinguishable from canonical definite article languages like English, French, and German. A recent detailed treatment is the dissertation of Ritva Laury (1995), from which the examples in the following discussion are taken. Consider this:

se vesi oli just tullu siihen parketin reunaan
se water was just come:P.PPLE se-ILL parquet-GEN edge-ILL
the water had come just to the edge of the parquet
(Laury 1995:235)

In such cases, NPs that are identifiable are marked with se or one of its inflectional forms. In a few examples it is seen that the Finnish article has grammaticalized even further than that of English, in that generics can also receive se (PRT="partitive case"): 
Ei se parketti hirveen kauan tota, kestä sitä vettä
NEG se parquet terribly long tuo-PRT stay se-PRT water
"Parquet won't tolerate water [for very long]" (Laury 1995:246)

Here, Finnish is aligned with French and German, but not English. Identifiable NPs that are not marked with se resemble the same set that often refuse the definite article in the article-bearing languages, namely:

- Proper names;
- Demonstrative and possessed NPs;
- Body-parts and certain obliques.

Historically, too, there are close parallels. Laury traces the emergence of se as a marker of identifiability from a marker of specificity and discourse prominence. This is the same diachronic path that has often been noted for articles. In her data set there were 380 lexical NPs, 103 of which (27%) were se marked. "However, in the traditional narratives I collected from 13-year old schoolchildren in Helsinki in 1991, se was used with 43% of the lexical NPs. Further, in the Pear Stories, collected from undergraduates at Helsinki University in 1984, the percentage may have been even higher; in an earlier study (Laury 1991), I counted the occurrence of se in six Pear Stories, and found that just over 50% of lexical NPs were se marked." Frequencies of this sort are far beyond what one would expect of a demonstrative, and point unequivocally to the emergence of an article. "...[I]ts frequency in the Helsinki dialect, at least for younger speakers, appears to be so high that at least in narrative discourse it is comparable to the use of articles in those languages which do have them" (249).

Laury points out that Finnish does not use the article in nonidentifiable NPs such as in play the piano —note, however, that English can also omit it, German normally omits it, and even French has du rather than le here. So even in the one instance where Laury suggests that Finnish is not as far advanced as the canonical article languages, it turns out in fact that Finnish is normal. Laury suggests that models of Finnish grammar based on the standard written language have worked to conceal the existence of a perfectly good definite article that manifests itself in live discourse. Examples of this kind suggest that grammatical constructions may often be very delicate flowers that do not survive transplanting out of typical genre contexts, and are especially vulnerable to decontextualized sentences, to internalized written grammatical norms, and even, perhaps, to controlled experimental contexts where, however unconsciously, performance in specific tasks is being monitored.

My next example of source conflict hinges on an observation made by Gill Francis (Francis 1993:142): "The attention paid to verbs and the lexis associated with them is symptomatic of the fact that verbs have always been treated as the privileged word-class in grammatical study."

This of course is a very old bias, though it is rarely recognized as such. The idea that a verb is essential to a sentence is as old as the identification of the sentence as a distinct unit. Going along with this assumption is the equally time-honored assent to the idea that the verb is an open category. Along with the noun it is fact the cornerstone of the notion of an open class, that is, a class of words that can be infinitely added to and which forms the basis of the free generation of utterances to match situations. On this and other such assumptions a considerable neurolinguistic literature exists concerning 'category deficits', the claimed targeting by certain types of aphasia of specific categories.

These assumptions about verbs are certainly valid for the formal written language, where tensed forms identifiable as verbs are frequent. They also underlie
linguistic analysis, where canonical example sentences orbit around a central verb phrase whose head is a verb. Samples of discourse data lead one to suppose, however, that verbs do not occupy the central position traditionally assigned to them, at least not in English. The following seem to be true:

(1) In certain types of discourse, clear examples of verbs are rare. Often, unit verbs, that is, verbs other than the copula manifested as a single-word tensed unit, are absent for very long stretches of discourse. Consider, for example, the Earthquake story collected by Susan Ervin-Tripp (n.d.):

Al: you know that
that *nice *glass *china *display case in our *dining room?
Ned: /in the dining room/
Cyn: /o-o-oh/
Al: **trashed.
Cyn: /forget it./
Ned: absolutely trashed.
Al: whole thing a/bolutely..yeah/
Ned: /*every *single bit/ of *glass and *pottery in th-
Olg: and *crystal?
Ned: *all the crystal..*trashed
Al: crystal
Ned: *everything..*trashed.
Cyn: /o-o-oh my go-o-o-d./
Al: /oh a er *antiques *genuine/*antiques
Ned: /and the amount of money we have lost is going to be
*astronomical.

This is a consummate example of the attrition of unit verbs in involved, emotionally charged story-telling. Notice that in some parts of the discourse there are scarcely any verbs at all, although one would hesitate to say that no events are being reported.

(2) A second observation that emerges out of the study of the verb in live context is that when verbs do occur, they are exceedingly hard to identify as such. Palmer (1987:2) notes that: “If the verbal forms of English are taken to include such multiword forms as is taking, has been taking, may have taken, there are possibly over a hundred forms of the English verb.” But it should be realized that this refers only to what might be called the “canonical” verb phrase. Firth long ago noted the difficulty of arriving at a discourse definition of the “verb”. The problem lay in the propensity of the English “verb” to string itself out over several elements. Firth raised the important question of where the “verb” would have to be deemed to begin and end in a rigorous description:

"...Somehow or other the game of identifying the verb had been mentioned. And, pressed for material, I suggested the sentence ‘She kept on popping in and out of the office all the afternoon.’ Where's the verb? Kept? Popping? Kept popping? Kept on popping? Kept on popping in and kept on popping out (with forms, as they say, understood), or kept on popping in and out, or kept on popping in and out of? Is there a tense there? What conjugation does it belong to? How could you set it out?"

“If you look at the various ways in which what is called the English verb is set out in tabulated paradigms, you will get nowhere at all... In noting
such verbal characteristics as person, tense, aspect, mode, and voice, we cannot expect to find them in any single word called the verb, drawn from a book conjugation" (Firth 1968:121-22).

If the notion "verbal form" is extended to accommodate the perception of Firth, it might well turn out to be an unmanageable concept. For one thing, the category "verb" is not constant across genres. The canonical verb seems to be best represented in environments that present events as summaries, as in the next example, which is the soap opera preview for January 29th:

"Nikki accuses Sharon of wanting the Newman money, then tests her with a tempting offer. Victor sends Brad away. Olivia gets the results of her pregnancy and HIV tests. Malcolm comforts Olivia, but she won’t tell the whole story. Jill feels trapped. Danny is confident Phyllis will set him free. Peter pressures Phyllis into something she has long avoided. Christine lashes out at Danny. Nina wonders if Christine will go through with her wedding to Paul. Dina is shocked to learn John has a young child. Katherine arranges for Dina and John to meet, but it doesn’t work out the way she wanted. Jill tells Nina to support Ryan more. Luan asks Mari Jo for a favor. Phyllis has her day in court." (Data supplied by Tammy White.)

This style of language is synoptic, and uninvolved, in Chafe’s sense. The sentences are simple, contain single-word verbs with lexical subjects; there is no first-person reference or author’s voice. The story lines stop and start, and there is no emotional commitment or involvement suggested by topic continuity. By contrast, the following example, which is an e-mail message on the “Y&R” (“The Young and the Restless”) bulletin board about the same week’s events, takes a judgmental attitude, and does more than merely summarize. It is the personal perspective of someone who has come to identify with the characters. Here the verbal expression is more dispersed, and it is much harder to identify the verb unambiguously, since typically there is more than one form in each surface clause that could qualify as “the verb”:

“Sharon (I’m going to kill her!) actually considers Nikki’s bribe not to be Nick’s bride! She asks her mom about moving to the place of their dreams, Florida perhaps... I know this is probably one of those stupid plot twists the Bells wrote only to provide a story line for Nick and Sharon now that Nick is out of prison, and I’m sure Doris will bring her girl’s common sense back in no time, but still, I can’t understand how Sharon can even consider Nick’s offer. I would have expected her to turn it down immediately. The writers and the actress have worked so hard to change the image of her as a golddigger in the past year, why ruin everything? Sharon has proved that she has genuine feelings for Nicholas as she stood by him through the worst time of his life, despite the fact that they might not be together for a very long time and that his mother and him did everything to drive her away, and now that they’re together and are looking forward to a very bright future, Shar is considering leaving the loving groom at the altar if Nikki gives her big bucks!! This only makes viewers doubt Sharon’s real motives with Nicholas and wonder if Nikki was right about her since the beginning..."
In conversational English texts it seems possible to identify this dimension of involvement to a large extent through manifestations of the verb. Single word verbs are rare in the more oral, involved styles and genres. For instance, in the Lund corpus, for most verbs the -en participle is about three times as frequent as the -ed past tense, and this is a corpus which contains relatively little transcribed conversation. When they do occur, single verbs have two outstanding characteristics:

1. They tend to be drawn from a very small set of basic verbs, generally monosyllabic chiefly Anglo-Saxon words like 'thought', 'said', and 'seems'. The impression is not that of an open class, as is usually claimed for the verb in general.

2. They are almost never isolated in their clause. Instead they are distributed as small elements with complex auxiliary phrases, often discontinuous. (This is the phenomenon of dispersal in the English verb pointed out by Firth.) In this kind of language, the components of the verbal expression are monosyllabic, categorially indistinct, and interspersed with pronominal, adverbial, and other elements. It is not easy to identify "the verb" in such sentences, nor even to separate verbal from non-verbal components of the clause.

When unit verbs are used they point to a functional contrast with these dispersed verbal expressions, and the functional division is something like the following, with features of the left-hand side being conducive to the selection of unit verbs and those on the right conducive to dispersed verbs:

<table>
<thead>
<tr>
<th>Unit Verb</th>
<th>Dispersed Verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd person/distal</td>
<td>1st person/proximal</td>
</tr>
<tr>
<td>Unwitnessed</td>
<td>Experienced</td>
</tr>
<tr>
<td>Remote/retrospective</td>
<td>Close-up/immediate</td>
</tr>
<tr>
<td>Parenthetical/Digressive</td>
<td>Mainline</td>
</tr>
<tr>
<td>Objective</td>
<td>Subjective</td>
</tr>
<tr>
<td>Integrated</td>
<td>Involved</td>
</tr>
</tbody>
</table>

**Functions of Unit Verb and Dispersed Verb**

Broadly, unit verbs suggest a distant perspective on events, and dispersed verbs a close-up, involved perspective. The correlation with 1st and 3rd person is far from absolute, but seems to represent a natural tendency.

In vernacular and conversational narrative, then, unit verbs are the exception. Ordinary spoken English, in fact, abhors single-word verbs, and when they occur, they impart the distant perspective I referred to in my 1991 BLS paper and which includes summaries, parenthetical subordination, and indirectly known events (Hopper 1991). In the latter, the use of the unit verb often functions as a sort of evidential: events not directly experienced can be summarized, and lack the detail that is possible with personal experience. In experienced contexts, they report remote events or identify NPs.

The examples of unit verbs in the following conversations from the Santa Barbara corpus are therefore exceptions, and are amenable to special explanations:

A:  Two weeks ago I'm watching TV
    .. and David Horowitz is going to have
    this former car..radio thief on?
L:  ... It's her boyfriend?
A: (H)... Yeah, her ex-boyfriend.
... Mike.
... He's the one that stole Viktor's radio.

"He's the one that stole Viktor's radio" does not of course narrate or report the act of stealing, but identifies the stealer in a long-past situation. The speaker's friend Viktor repeatedly had his car radios ripped off, and at the time they couldn't figure out who was doing it. Much later, the ex-boyfriend of the person being talked about, Michael, appears on a TV talk show to demonstrate—how to steal a car radio!

W: .. Does,
She doesn't have to work,
does she?
K: .. She doesn't have to,
unless=,
... you know,
I guess Scott's making some good bucks.
M: .. Yeah, but they bought like three cars in a row.
She had that one,
and they sold that,
and bought two other=s

The verbs bought, had, sold again point to antecedent events and are used as evidence of wealth rather than as reports of actions. The normal conversational avoidance of unit verbs in involved lively narration is suggested by the item in the following example, which is entirely typical of conversational language:

Aline: %th... The friend that was there with them,
is this older guy with this young chick.
... () <VOX And she was like a real little pill,
you know,
Lenore: [@@@@@@@@@]
with <X this X> hair=} pulled back,
in <X a X> little pony [2tail=2]
Lenore: [2@2] [3 (H) 3]
Aline: [3and she's like3] sitting there=
and X<VOX>,
(H) He said,
I would have been here,
but <Q she was so late.
And getting her any place on time Q>,
she's going,
(H) <Q Well,
I had to get rea=dy= Q>..
.. I don't know why=.
Lenore: [@@@@@@@@@@@@@@@@@]@@@@
Aline: < @ (SNORT) @> @@
(H) Nothing was gonna help her.
(H) No makeup,
no nothing.
Cause she’s the little <VOX gir-=l,
and he's the older man,
and [he's taking care of me VOX>]

I have elsewhere used these kinds of data to suggest that the verb in English is a
closed category. I don't have any explanation for this functional distribution
between unit and dispersed verbs, though the use of the unit verb for a distal
perspective is perhaps iconic, and the dispersed verbs for close-up where there is
more detail might have something to do with what Langacker calls "granularity",
the degree of resolution imparted or subtracted as distance from the object contracts
or expands. It is however very significant that syntactic and semantic studies of
English almost invariably select sentences with unit verbs (such as John loaded the
wagon with hay, etc.), and appear to assume such sentences to be contextually
neutral, which I hope to have shown they are not. Clearly if one is going to make
up a sentence in order to illustrate a grammatical phenomenon, the impulse will be
to select a perspective that is remote, third person, distant from involvement,
unwitnessed, and so on. In taking such sentences to be the norm for English, we
implicitly exclude emotional involvement from grammatical analysis, and impart to
the verb a privilege which its relatively lowly status in natural discourse doesn’t
seem to merit. We are thus in danger of instating an unnatural and highly marked
type of utterance as the basis for English grammar.

In a couple of recent papers, Yasu Shirai has raised a similar question to the one
I open here and which I have called “source conflicts”. He takes two examples, the
English verb put (1990) and the Japanese verbal construction -teiru (1995). The
paradox that he notes is the same in each case: the natural category that speakers
reach for when they are tested for decontextualized sentences is at odds with the one
that is most frequent in discourse. Shirai’s method was to ask subjects to write out
as many sentences as they could containing the construction in question, that is the
word put or a verb containing teiru. In the latter case, subjects were given a time
limit of 5 minutes.

Shirai found that in isolated sentences, put was presented most often in its
concrete sense of movement (identified as CAUSE+GO) with an agent and a
manipulable inanimate object as patient. Yet in the corpus put is considerably more
frequent in figurative expressions such as put the question this way, put your
initials here, etc. With Japanese -teiru (analyzed in the source as tei-ru), the
problem is one of aspect. In the example that follows it can be seen that this suffix complex
can be progressive as in (a) or resultative as in (b):

(a) Kare wa eiga-o mi-teiru
   he-TOP movie-ACC see-ASP.-NONPAST
   "He is watching a movie"
(b) Miti-ni gomi-ga oti-teiru
    street-LOC trash-NOM drop-ASP.-NONPAST
    "There is trash on the street"

The natural interpretation as measured by the sentence-writing test is the
progressive, as can be seen from the following (abbreviated) statistics:

| Progressive | 371 | 79.4% |
| Resultative state | 87 | 18.6% |
Yet in taped conversations the proportions are reversed:

<table>
<thead>
<tr>
<th>Progressive</th>
<th>8</th>
<th>21.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultative state</td>
<td>24</td>
<td>64.9%</td>
</tr>
</tbody>
</table>

Shirai considers several possible explanations for these facts, and ends up appealing to cognitive prototypes derived from "natural tendencies" such as that for the progressive to be a prime axis of grammaticalization, and for concrete uses to be more cognitively salient. In spite of Shirai’s sophisticated treatment (alternatives are carefully discussed in his papers), I must confess to finding the constant appeal to "prototypes" as forms of explanation worrying, since it always seems to me like a case of *ignotum per ignotius*. Notice that in each of the examples I have discussed, the alleged prototype would have an entirely different character:

- The English preposition *of* would be a preposition but a marginal instance of its prototype, à la Rosch, the central instances of the category being the canonical prepositions like *in, on*, etc.
- The Finnish definite NP would have a prototype in which it was unmarked by *se*.
- The English verb would have a prototype in which it was a single word.

And so on with many other examples. Similar results have been noted by David Banks (1995) with regard to the English verb ‘make’. Here again the actual implementation strongly favors the more grammatical uses, as in “make a mistake”, yet intuitions of meaning invariably fasten upon senses having to do with the creation of material objects. In this category, too, belong the studies of demonstratives by such linguists as Robert Kirsner, William Hanks, Niklaus Himmelmann, Ritva Laury, Sandra Thompson and others suggesting that deictic reference to objective space may be among the least important uses of demonstrative elements. Doris Payne, too, has raised the problem of what are here called source conflicts as a general problem of syntax, pointing to the existence in Panare, and by implication elsewhere, of “synchronic situations where innovative structural arrangements are more frequent than older, more highly syntacticized patterns” (Payne 1994:598). One inference that could be drawn from Payne’s study would be that archaic constructions are “better” examples of basic syntactic patterns than more frequently used ones (by this criterion French would be an SOV language.)

Perhaps we would have to extend the notion of prototype to discourse functions, as was indeed suggested by Sandra Thompson and myself in our papers on Transitivity and on Categoriality (Hopper and Thompson 1980, 1984). Then there might have to be prototypical discourse genres (narrative, perhaps?), prototypical registers, prototypical turn-taking structures, and so on. Yet the alternative seems to be to regard the isolated sentence elicited in experiments and presented in grammatical work as a genre in itself. This genre would be characterized by an absence of involvement and embellishment, intrinsic newness of topics, and a discourse context that was always absent. It would be a bizarre genre, and the idea that it was fundamental to all other genres would be even stranger.

In any event, source conflicts appear to represent a significant problem for accounts of linguistic phenomena that stop at the sentence. They suggest that the potential might always exist for live discourse to undermine conclusions arrived at solely on the basis of single constructed sentences, and that sentence level
intuitions, however we may wish to explain them, are not necessarily relevant to the study of discourse.

Notes
1Thanks to Sandy Thompson for help with the Santa Barbara Corpus data, and for comments on this paper, and to Yasu Shirai for comments. Neither is responsible for any use I’ve made of their data or input.

References
A Syntactic Study of African-American Vernacular English in "Middletown": Evidence of Convergence

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1. Introduction. Recent discussion on African-American vernacular English (AAVE) has lead to a heated debate over the late development of AAVE: is it diverging from or converging with White vernacular English (WVE) (American Speech 62)? While some linguists (Ash and Myhill 1986; Bailey and Maynor 1987, 1989; Graff, Labov, and Harris 1986; Labov 1983, 1987; Labov and Harris 1986; Myhill and Harris 1986) claim that AAVE is diverging from WVE, other linguists (Butters 1987, 1988, 1989; Vaughn-Cooke 1986, 1987; and Wolfram 1987, 1991a) believe otherwise.

Labov (1987), who supports the divergence hypothesis, has observed that the meanings of some linguistic features in AAVE have become so different from their original meanings that the widening of the gap between AAVE and WVE is evident. For instance, Labov (1983) finds that be done in an AAVE sentence, such as (1), originally had the same function of denoting the future perfect as in WVE, but has now acquired a different meaning. Thus, (1) in AAVE is now equivalent to (2) in WVE instead of (3) which is nonsensical.

(1) I'll be done killed that dude if he lays a hand on my child again (Baugh 1979:154).
(2) I'll really and truly have to kill that dude if he lays a hand on my child again (Labov 1983:37).
(3) I'll have killed that dude if he lays a hand on my child again.

On the basis of their Philadelphia study, Labov and Harris (1986:5) claim that "We also believe that Philadelphia reflects a national trend in the black community towards continued linguistic divergence."

Other linguists, however, challenge this diverging hypothesis, criticizing it on the basis that the data used to support the divergence hypothesis manifests insufficiency, incomparability, and age-grading. They have also presented evidence of AAVE-WVE convergence rather than divergence. Most importantly, they point out that the data supporting the divergence hypothesis did not manifest time-depth—a crucial requirement to investigate language change (Vaughn-Cooke 1987; Wolfram 1987). This paper reports the results from a linguistic study on AAVE with time-depth data to test the divergence hypothesis.

2. Design of the Study. The location of this study is Muncie, Indiana, known as America's "Middletown," after Robert and Helen Lynd (1929, 1937) did the
pioneering socioeconomic community study in the United States some sixty years ago. Presently, 6,800 African-Americans, about ten percent of the total population, reside in Muncie. They interact with whites daily at workplaces, and their neighborhoods are not as segregated as those in big urban cities. Since the studies supporting the divergence hypothesis were mainly conducted in big northern cities (Ash and Myhill 1986; Graff, Labov, and Harris 1986; Labov and Harris 1986; and Myhill and Harris 1986), the demographic structure of Muncie may shed some light on the divergence hypothesis: if we want to make a generalization, such as Labov and Harris' "national trend" (1986:5), we should not ignore AAVE speakers who also dwell in mid-size cities like Muncie in the north.

Thirty-two African-American subjects of blue-collar background were involved in this study. The speech samples of sixteen subjects, equally divided into elderly and young, were collected in 1980 and the samples of the other half of the subjects, also equally divided into elderly and young, were collected in 1993. A thirteen-year lapse provides time-depth data for this study. To avoid age-grading, the elderly subjects involved were 55-70 years old, while young subjects were aged 17-19. Except the young subjects of 1980, the rest of the groups were equally divided into males and females. The data were collected during natural conversations at locations comfortable to the subjects with family members or friends present. The samples were more than 30 minutes long, taped after the first half hour of the conversation.

Although linguists have discussed numerous linguistic features of AAVE (Smitherman 1977), Fasold (1981) has identified eight linguistic features unique only to AAVE. By "unique" features, Fasold (1981:190) means those "that are not found in the speech of white Southerners even of lower social classes." Six of such features are syntactic ones. An examination of these six unique syntactic features in the speech of Muncie AAVE subjects may be more relevant and more likely to shed light on the divergence hypothesis.

3. Analysis and Discussion. In the following analysis, both the actual and potential environments for the occurrence of a linguistic feature will be defined and calculated. However, the determination of the potential environments for some syntactic features is difficult, if not impossible; as Labov (1982:87) has noted "there are a number of variables that can be studied now by noting only each occurrence, but not each non-occurrence, since it has not yet been possible to close the possible set of variants." In this case, only the actual occurrences will be counted and discussed.

3.1 Invariant Be not from Absence of Will or Would

Invariant be not resulting from the absence of will or would is known to be used to indicate habitual aspect or distributive aspect (Fasold 1972; Wolfram 1974), as in He always be around here (Fasold 1981).
In order to distinguish invariant *be* with a distributive function, contextual clues are utilized. Determining the potential environment for this feature is difficult, as Wolfram (1991b:1) asks, "Does one then count habitual contexts for non-auxed verbs (e.g., *We do this all the time*) as potential occurrences for habitual *be*?" Because of the indeterminacy involved, no potential environment is specified for this feature, and only actual occurrence is counted. The three-point scale of time reference from Bailey and Bassett's (1986) study is used here to observe the distribution of this feature in Muncie AAVE. Tables 1 and 2 display the distribution of invariant *be* and its following environments in the speech of Muncie AAVE subjects.

Because of the small number of the total occurrences of this feature, discussions on the following environments for its occurrence in Muncie AAVE can neither be conclusive nor accurate. The information may suggest that when invariant *be* with a distributive function occurs in Muncie AAVE, it is usually used to express a habitual aspect and it is frequently followed by verb + *ing* structure. This finding echoes what Bailey and Bassett (1986:166) observed in their study "more examples of *be* [are] used for continuous actions and permanent conditions than for intermittent actions."

Table 1 Distribution of Use of Invariant *Be* not from Absence of *Will* or *Would*

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Definite</th>
<th>Intermittent</th>
<th>Continuous/Stative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 Young</td>
<td>(-)</td>
<td>(-)</td>
<td>1</td>
</tr>
<tr>
<td>1980 Elderly</td>
<td>1</td>
<td>(-)</td>
<td>(-)</td>
</tr>
<tr>
<td>1993 Young</td>
<td>1</td>
<td>(-)</td>
<td>4</td>
</tr>
<tr>
<td>1993 Elderly</td>
<td>(-)</td>
<td>(-)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2</td>
<td>(-)</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 2 Following Environments of Invariant *Be* not from Absence of *Will* or *Would*

<table>
<thead>
<tr>
<th>Invariant <em>Be</em></th>
<th>NP</th>
<th>Adj.</th>
<th>Adv.</th>
<th>V+<em>ing</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definite</strong></td>
<td>(-)</td>
<td>1</td>
<td>1</td>
<td>(-)</td>
</tr>
<tr>
<td><strong>Intermittent</strong></td>
<td>(-)</td>
<td>(-)</td>
<td>(-)</td>
<td>(-)</td>
</tr>
<tr>
<td><strong>Continuous/Stative</strong></td>
<td>(-)</td>
<td>1</td>
<td>(-)</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 3 presents the actual occurrence of invariant *be* in the speech of Muncie AAVE subjects. It shows that although each group used this feature, they did it very infrequently. Because of the indeterminacy involved in defining the potential environment for this feature, it is impossible to determine which group had more occurrence according to the principle of accountability (Sankoff and Thibault 1980; Weiner and Labov 1983).

Table 3 Use of Invariant *Be* not from Absence of *Will* or *Would*

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Invariant <em>Be</em> not from Absence of <em>Will</em> or <em>Would</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 Young</td>
<td>1</td>
</tr>
<tr>
<td>1980 Elderly</td>
<td>1</td>
</tr>
<tr>
<td>1993 Young</td>
<td>5</td>
</tr>
<tr>
<td>1993 Elderly</td>
<td>1</td>
</tr>
</tbody>
</table>

3.2 Absence of Copula/Auxiliary *Be*

Much research has been conducted on the absence of copula/auxiliary *be* in AAVE (Bailey 1965; Baugh 1980; Fasold 1969; Labov 1969; Steward 1967; and Wolfram 1974). Following Labov’s (1969:716-7) and Baugh’s (1980) studies, this study defines two preceding and six following syntactic environments for this feature. Tables 4 and 5 display the percentages of this feature according to its preceding and following syntactic environments respectively.

Table 4 Percentages of Absence of Copula/Auxiliary *Be* According to Preceding Environments

<table>
<thead>
<tr>
<th>Subjects</th>
<th>NP</th>
<th>Pron.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Is</td>
<td>Are</td>
</tr>
<tr>
<td>1980 Young</td>
<td>16.7 (2/12)</td>
<td>0 (0/1)</td>
</tr>
<tr>
<td>1980 Elderly</td>
<td>2.9 (2/68)</td>
<td>27.3 (3/11)</td>
</tr>
<tr>
<td>1993 Young</td>
<td>3.8 (3/79)</td>
<td>5.6 (1/18)</td>
</tr>
<tr>
<td>1993 Elderly</td>
<td>1.8 (1/56)</td>
<td>7.7 (1/13)</td>
</tr>
</tbody>
</table>

We can see from Table 4 that when *are* follows both noun phrases and pronouns, the number of absence of copula/auxiliary *be* in the speech of Muncie AAVE subjects is generally greater than it is in other environments. Table 5 shows that this
feature, while quite infrequent, appears more often in the following syntactic environments of adjective, locative, *verb + ing*, and *gonna*.

Table 5 Percentages of Absence of Copula/Auxiliary *Be* According to Following Environments

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 Young 5.0</td>
<td>18.7</td>
<td>100</td>
<td>33.3</td>
<td>44.4</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(1/20)(3/16)</td>
<td>(1/1)</td>
<td>(3/9)</td>
<td>(4/9)</td>
<td>(0/5)</td>
<td>(0/6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1980 Elderly 1.6</td>
<td>2.6</td>
<td>11.1</td>
<td>9.5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(3/194)</td>
<td>(3/117)</td>
<td>(7/63)(7/74)(0/4)</td>
<td>(0/96)(0/35)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993 Young 0</td>
<td>1.6</td>
<td>2.7</td>
<td>4.5</td>
<td>22.2</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(0/188)</td>
<td>(3/185)</td>
<td>(3/112)</td>
<td>(3/67)(2/9)</td>
<td>(0/60)</td>
<td>(0/63)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993 Elderly 0</td>
<td>2.7</td>
<td>0</td>
<td>3.9</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(0/188)</td>
<td>(3/112)</td>
<td>(0/42)(1/26)(1/2)</td>
<td>(0/71)</td>
<td>(0/57)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 Percentages of Absence of Copula/Auxiliary *Be*

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Absence of Copula/Auxiliary <em>Be</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 Young</td>
<td>19.0 (12/63)</td>
</tr>
<tr>
<td>1980 Elderly</td>
<td>2.6 (14/542)</td>
</tr>
<tr>
<td>1993 Young</td>
<td>2.2 (13/611)</td>
</tr>
<tr>
<td>1993 Elderly</td>
<td>1.1 (5/437)</td>
</tr>
</tbody>
</table>

The overall percentages of the absence of copula/auxiliary *be* in the speech of Muncie AAVE speakers are presented in Table 6. It shows apparently that except for the young subjects of 1980, the other three groups of subjects had a very low percentage: less than 3%. In addition, the difference between the percentages for these three groups is less than 1.5%. This low occurrence of copula/auxiliary *be* may indicate that this feature occurred only sparsely in the speech of Muncie AAVE speakers, especially in that of the 1993 subjects.

3.3 *Been* Used to Express Past Action That Has Recently Been Completed

When expressing a past action that has recently been completed, AAVE speakers may use *been* instead of *have been*, as in *They been there before* for *They have been there before* (Smitherman 1977:22). However, some linguists (Fasold 1981; Rickford 1975) maintain that the structure of *have been* in WVE is not exactly equivalent in meaning to AAVE *been*. Because of this discrepancy, it is
unlikely to define the potential environment for this feature accurately. Thus, only the actual occurrences of this feature are counted and presented in Table 7.

Table 7 Use of *Been* for Expressing Past Action

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Been</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 Young</td>
<td>0</td>
</tr>
<tr>
<td>1980 Elderly</td>
<td>1</td>
</tr>
<tr>
<td>1993 Young</td>
<td>0</td>
</tr>
<tr>
<td>1993 Elderly</td>
<td>1</td>
</tr>
</tbody>
</table>

It is obvious that the occurrence of this feature was very low in the speech of Muncie AAVE subjects. There is only one actual occurrence in the speech of elderly subjects of 1980 and 1993, respectively. Neither the young subjects of 1980 nor those of 1993 used this feature. The information may indicate that Muncie AAVE speakers, young and elderly alike, hardly used this feature in their speech.

3.4 Absence of Plural Suffix

Previous studies (Labov, Cohen, Robins, and Lewis 1968; Rickford and McNair-Knox 1991; Wolfram 1969) show that the absence of plural suffix in AAVE tends to be less frequent than other AAVE syntactic features.

In order to see under which environment the suffix is more likely to be absent, this study identifies three preceding phonological environments: a preceding vowel, a preceding voiced consonant, or a preceding voiceless consonant.

Table 8 Percentages of Plural Suffix Absence in Three Preceding Phonological Environments

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Vowel</th>
<th>Voiced Consonant</th>
<th>Voiceless Consonant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 Young</td>
<td>0 (0/11)</td>
<td>4.7 (1/21)</td>
<td>7.6 (1/13)</td>
</tr>
<tr>
<td>1980 Elderly</td>
<td>3.8 (5/131)</td>
<td>1.9 (10/510)</td>
<td>2.8 (8/282)</td>
</tr>
<tr>
<td>1993 Young</td>
<td>7.8 (3/38)</td>
<td>4.0 (8/199)</td>
<td>4.5 (5/110)</td>
</tr>
<tr>
<td>1993 Elderly</td>
<td>1.6 (1/60)</td>
<td>2.7 (8/293)</td>
<td>1.1 (1/89)</td>
</tr>
</tbody>
</table>

McDavid and McDavid (1964:287) observe that the occurrence of the uninflected plurals of nouns of measure, such as *My husband left me three month ago*, is more related to the historical and geographical distribution of the plurals than to the social distribution, and the consistent use of uninflected plurals is not necessarily found in
the speech of AAVE speakers. As a result, this study excludes occurrences of uninflected plurals of nouns of measure, such as *I was gone in the service for four years; four years, nine month and twenty-six days to be exact*. Table 8 displays the percentages of the occurrences of plural suffix absence in the three preceding phonological environments. We can see that this feature occurred regardless of the preceding phonological environments, and that no particular environment is more favorable for the occurrence of this feature.

Table 9 Percentages of Plural Suffix Absence

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Plural Suffix Absence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 Young</td>
<td>4.4 (2/45)</td>
</tr>
<tr>
<td>1980 Elderly</td>
<td>2.4 (23/923)</td>
</tr>
<tr>
<td>1993 Young</td>
<td>4.6 (16/347)</td>
</tr>
<tr>
<td>1993 Elderly</td>
<td>2.2 (10/442)</td>
</tr>
</tbody>
</table>

Table 9 summarizes the percentages of plural suffix absence for the four groups of Muncie AAVE subjects, regardless of the preceding phonological environments. The figures in Table 9 agree with the previous findings by Wolfram and Fasold (1974:173) that "[AAVE] plural suffix absence is rather infrequent in occurrence...." None of the groups in this study had more than 5% absence of plural suffix in their speech. The data also show that the elderly subjects of both 1980 and 1993 tended to have less absence of plural suffix than did their young counterparts, although the difference is small (less than 3%).

3.5 Absence of Possessive Suffix

Linguists have dealt with this feature from different perspectives. Some have studied it simply as an AAVE syntactic feature (Ash and Myhill 1986; Labov et al. 1968; Labov and Harris 1986); whereas others have studied it in regard to style (Baugh 1979; Rickford and McNair-Knox 1991). Nevertheless, they all agree that AAVE speakers generally do not use possessive suffix when conveying the concept of possession. In AAVE, according to Wolfram and Fasold (1974:173), "possession is indicated by the order of the words." The potential environments for this feature are defined as when a noun, a proper noun, or a noun phrase showing possession is not affixed by the possessive suffix. Table 10 displays the percentages of the absence of possessive suffix for Muncie AAVE subjects.

As we can see, none of the four groups had any possessive suffix absence in their speech. Since three groups had sufficient potential occurrences (Milroy 1989:135), we may say that Muncie AAVE speakers have already acquired the appropriate use of possessive suffix.
Table 10 Percentages of Absence of Possessive Suffix

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Absence of Possessive Suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 Young</td>
<td>0 (0/2)</td>
</tr>
<tr>
<td>1980 Elderly</td>
<td>0 (0/38)</td>
</tr>
<tr>
<td>1993 Young</td>
<td>0 (0/13)</td>
</tr>
<tr>
<td>1993 Elderly</td>
<td>0 (0/25)</td>
</tr>
</tbody>
</table>

3.6 Absence of Third Person Singular Suffix

The absence of third person singular suffix in the speech of AAVE speakers has been investigated in different AAVE studies (e.g., Ash and Myhill 1986; Baugh 1979; Fasold 1978; Labov 1983; Labov et al. 1968; Rickford and McNair-Knox 1991; and Wolfram 1969). Because of the high rate of third person singular suffix absence in AAVE, Labov et al. (1968:164) claim that "there is no underlying third singular -s in AAVE."

Four environments are defined for the present study: (1) regular lexical verbs lacking an -s suffix, such as work or look; (2) auxiliary verbs have or haven't; (3) auxiliary verbs do or don’t; and (4) verbs used in the historical present in a narrative. Since it is not always possible to determine when a speaker intends to use a verb in the historical present, only the actual occurrences of third person singular suffix are counted in this environment.

This study excludes three environments: when speakers quoted from books, such as the Bible; when third person singular suffix was attached to either first person pronouns or nouns in plural forms, as in they commence to getting money... and I has the most homework in...; and when the syntactic structure of done + verb was involved. Table 11 displays the percentages of absence of third person singular suffix in the four environments.

Table 11 Percentages of Absence of Third Person Singular Suffix in the Four Verbal Environments

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Regular Verb</th>
<th>Have/Haven't</th>
<th>Do/Don't</th>
<th>Historical</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 Young</td>
<td>44.4 (8/18)</td>
<td>0 (0/3)</td>
<td>100 (5/5)</td>
<td>(-)</td>
</tr>
<tr>
<td>1980 Elderly</td>
<td>15.1 (11/73)</td>
<td>0 (0/54)</td>
<td>31.3 (5/16)</td>
<td>0 (0/5)</td>
</tr>
<tr>
<td>1993 Young</td>
<td>15.8 (30/189)</td>
<td>0 (0/13)</td>
<td>85.7 (6/7)</td>
<td>(-)</td>
</tr>
<tr>
<td>1993 Elderly</td>
<td>6.6 (6/91)</td>
<td>0 (0/7)</td>
<td>25.0 (1/4)</td>
<td>0 (0/4)</td>
</tr>
</tbody>
</table>
It can be seen that none of the groups exhibited any absence of third person singular suffix in the environment of *have/haven't*. Besides, each group had a higher percentage in the environment of *do/don't* than in the environment of regular verbs. This finding supports Wolfram and Fasold's (1974:155) claim that "The form *don't*, as in *He don't walk*, seems to promote -s absence more than other verbs." This high rate of third person singular suffix absence in the environment of *do/don't* has also been observed by Rickford and McNair-Knox (1991). The overall percentages of third person singular suffix absence, shown by combining the environments of lexical verbs and *do/don't*, are illustrated in Table 12.

Table 12 Percentages of Absence of Third Person Singular Suffix in the Environments of Lexical Verbs and *Do/Don't*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Absence of Third Person Singular Suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 Young</td>
<td>50 (13/26)</td>
</tr>
<tr>
<td>1980 Elderly</td>
<td>10.7 (16/150)</td>
</tr>
<tr>
<td>1993 Young</td>
<td>17.2 (36/209)</td>
</tr>
<tr>
<td>1993 Elderly</td>
<td>6.5 (7/108)</td>
</tr>
</tbody>
</table>

Based on the information in Table 12, we may suggest that the young subjects of both groups tended to have more third person singular suffix absence than did their elderly counterparts. The information may also indicate that the young and elderly subjects of 1980 tended to have more absence of third person singular suffix than did their counterparts of 1993.

4. Conclusion. This study has examined six syntactic features believed to be unique only to AAVE based on the time-depth data from a "typical" American town with relatively small African-American neighborhoods. The results show that these six unique features occurred infrequently and in small numbers in the speech of Muncie AAVE speakers in the last thirteen years. The occurrences of these features in the speech of 1993 subjects are generally lower than those in the speech of 1980 subjects. This finding certainly does not reflect the "national trend" predicted by Labov and Harris (1986:5), nor does it support the divergence hypothesis.

Harold Allen (1991) suggests that AAVE "itself may not be a monolith." Davis and Huang (1995:142) also point out that AAVE "might exhibit regional and social variation like that found in the dialects of whites." The findings from this study certainly confirm their points. While AAVE in some places might be divergent from WVE, Muncie AAVE is not such a case. And the speech of AAVE speakers in Muncie, as Davis and Huang (1995) put it, "seem[s] quite 'ordinary,' and more indicative of the subjects' working class socioeconomic status than anything
like AVE [AAVE]." Thus, we may say that the findings from this "typical" American town, contrary to Labov and Harris' (1986:5) "national trend" of divergence, could be more representative of the present status of AAVE in the United States, at least in most cities of the same size as Muncie.

References

Allen, Harold. 1991. Personal Communication to Davis, Lawrence M.


---, 1991b. Personal Communication to Davis, Lawrence M.
A Mechanism of Semantic Change in Passive Constructions
Matthew L. Juge
University of California, Berkeley

1 Introduction

The study of semantic change has focused primarily on the development of meaning of lexemes and, to a lesser degree, those of sub-lexical morphemes. In this paper I explore a mechanism of semantic change in constructions which consist of an auxiliary verb and a main verb.

The problem which I investigate in this paper is the change of periphrastic passive constructions in a number of Romance and Germanic languages from perfect to present. In short, in the older forms of these languages, a periphrasis consisting of an inflected form of the verb TO BE plus the past participle encoded the passive voice in the perfect, pluperfect, and future perfect tenses. In some of the languages under consideration, this construction came to encode the passive in the present, imperfect, and future. In this paper I present the hypothesis that this change was motivated by the semantics of a class of verbs which I describe as non-resultant stative verbs. This paper represents the initial stage in an ongoing research project in which I hope that the results of text research will corroborate my hypothesis. If this additional research bears out the proposal presented in this paper, it will establish the existence of a previously undescribed mechanism of semantic change in periphrastic constructions, namely change by the attribution of semantic properties of lexical items to constructions in which those lexical items participate.

2 Background

Traditionally, treatments of the development of periphrastic constructions in the Romance languages have emphasized syntactic and morphological considerations, with relatively little attention paid to semantic issues. When semantics is treated, there is a tendency to discuss only the semantics of the auxiliary; even Benveniste (1968) focuses more on the auxiliary than on the main verb. Treatments dealing specifically with the periphrastic passive have either ignored semantics altogether or offered explanations which are not semantically plausible. The problematic development treated here is the shift from perfect to non-perfect tense in periphrastic passive constructions in the Romance and Germanic languages. I hypothesize that the participation of non-resultant stative predicates—that is, verbs which describe a largely static event which is not the direct result of a previous event and which requires constant maintenance for continuation, such as TO LOVE—in this construction encouraged the shift from perfect to non-perfect tense.

3 The problem—shift from perfect to non-perfect tense

In this paper I consider evidence from a number of languages belonging to the Italic and Germanic branches of the Indo-European family, namely, Latin, Portuguese, Spanish, Catalan, French, and Italian on the one hand and English and Dutch on the other. I have chosen to focus on these members of these branches because the other languages which I consider to be major representatives of these
branches (Romanian, German, and the Scandinavian languages) do not display the relevant phenomena.

All of the languages under consideration possess passive constructions which consist of the verb TO BE plus a past participle. In Latin and the older Germanic languages, the perfect tense of the passive called for the auxiliary to be inflected for the present tense (Ex. 1).

1 Lat. non es ... ab his uisus  
   neg be-pres.ind.2s by this.mp.abl see-ppcpl-ms  
   ‘You have not been seen by these [men].’ (Cic. Inv. I.87)

Note that the auxiliary is morphologically present tense while the periphrasis as a whole is perfect tense. Similarly, in the pluperfect and future perfect tenses, the auxiliary is inflected for the imperfect and future, respectively. Thus the tense of the construction is essentially perfect relative to that of the tense encoded in the morphology of the auxiliary verb. The same relationship was found in the older Germanic languages (including Old English) and obtains in Modern Dutch as well (Ex. 2). In these languages, the passive voice is expressed by other means in the non-perfect tenses.

2 Du. Het brood is gebakken  
   the bread be.pres.ind.3s bake-ppcpl  
   ‘The bread has been baked’

This situation contrasts with that found in the modern Romance languages and in Modern English, where the tense of the periphrastic passive construction is identical to the morphological tense of the auxiliary. Consider Example 3 from Spanish.

3 Sp. las puertas son abiertas (a las seis de  
   the.fp door fp be.pres.ind.3p open-ppcpl-fs at the.fp six of  
   la mañana)  
   the.fs morning-fs  
   ‘The doors are opened (at six in the morning).’

The type of perfect passive constructions shown in Latin and Dutch is generally believed to have developed from resultative constructions in the present tense (Bybee et al. 1994, Vincent 1988). In fact, in these two languages, the periphrasis with TO BE plus a past participle is ambiguous between a perfect passive reading and a present resultative reading. Example 4 from Latin can be interpreted as either a future resultative or a future perfect passive.

4 Lat. cena ... erit cocta  
   dinner-fs.nom be.fut.ind.3s cook-ppcpl-fs.nom  
   ‘The dinner will be cooked’/‘The dinner will have been cooked’ (Pl. Cas. 781)

The distinction which I wish to draw between resultative constructions and passive constructions lies largely in a difference in stativity. Resultative constructions indicate that, at the reference time, the point in time to which the verb refers, the subject is in a state which is the result of an event occurring prior to the
reference time. For example, in sentence (4) above, the resultative interpretation asserts that in the future the dinner will be in the state of having been cooked. This interpretation is stative because it describes a state rather than a dynamic activity, that is, one which is not internally consistent. This stative situation contrasts with an action like painting, which, with various component behaviors such as applying paint to the brush and then making brush strokes, is a dynamic activity. Dynamic activities may further be divided into telic and atelic predicates; this distinction focuses on whether an event has an inherent endpoint. Thus, a predicate such as to paint a picture has by its nature an end and is telic, while to paint pictures is atelic.

Returning now to Example 4, the passive reading contrasts with the resultative interpretation in a number of important ways. The first difference is that whereas the resultative emphasizes the state resulting from an event, the passive focuses on the event itself. This difference correlates with the difference in the tense of the two interpretations. Viewed as a resultative, the sentence is in the future tense, while a passive interpretation of the sentence correlates with the future perfect tense. The reader will note that I have just referred to the future perfect as a tense; I have chosen to follow the tradition of classical grammarians and refer to the perfect, pluperfect, and future perfect as tenses. This is done primarily for convenience, as I agree with Comrie that the perfect is neither a tense (1985: 32) nor an aspect (1976: 52) in the same sense that, for example, the future is a tense and the progressive is an aspect. Comrie instead describes the perfect as a verbal category which indicates a relationship between two points in time (1976: 52).

With this usage of the term tense, then, the passive interpretation of the TO BE plus past participle construction exemplified above in Latin differs from the tense of the resultative reading and in the relationship between the tense of the construction and the morphology of the auxiliary. This difference is the result of the process by which the periphrastic passive originated in Latin and Germanic. As I stated earlier, the consensus is that passive constructions consisting of the auxiliary TO BE and a past participle develop from resultative constructions consisting of the same elements. The scenario is as follows.

A past participle from a transitive predicate is used along with a copula in a resultative construction to indicate that the subject is in a state resulting from the indicated activity which occurred prior to the reference time. Take for example sentence (5) below.

5 The glass is broken.

The conditions under which this is true are also often consistent with the assertion of sentence (6).

6 The glass has been broken.

At this point I would like to discuss briefly the nature of the participle, as this is a factor in the correlation between the resultative and the passive. The participle has perfective reference and its valence consists of the theme of the verb to which it is related. For example, a transitive verb such as TO PAINT has two valence elements which can be described as the agent and the theme; thus the element to which the participle refers is the thing painted and is passive. On the other hand, when a verb has only one valence element, such as TO GO, the participle refers to that element, in this case the individual going, and is active. Despite the traditional name ("perfect passive participle"), I suggest that the participle is not inherently
passive or active. Rather, it is active when the verb is intransitive and passive when the verb is transitive.\textsuperscript{2} Thus resultatives used with transitive predicates have as their subjects themes, or patients, and are therefore quite similar to passives.

The difference in tense (present resultative vs. perfect passive) is the result of the difference in emphasis on state (resultative) or on event (passive). Pragmatic and contextual factors are often consistent with both meanings and can lead to reanalysis via inferential reasoning, as described by Bybee et al. (1994) and Hopper and Traugott (1993), among others. The change in the construction comes about because there is a degree of ambiguity in the meaning of the utterance, which leaves the hearer free to slightly reinterpret the expression. In this case, the emphasis shifts from state to action, and the former resultative construction receives a passive interpretation; because the perfect relates a present condition to a prior event, the present resultative gives rise to a perfect passive.

The periphrasis generally retains a resultative meaning along with the passive, with the result that given utterances often have two readings, as in Dutch *Het brood is gebakken* 'The bread is baked'/"The bread has been baked" and Latin (Ex. 4). This type of construction preceded that found currently in Romance and English, and is attested in the history of Finnish as well, to cite an example outside the Indo-European family (Harris and Campbell 1995: 91).

Because of their formal and semantic similarities, it will be useful to clarify the distinction between resultatives and perfects, with particular emphasis on transitive predicates. Resultatives with transitive predicates differ from perfect passives primarily in that resultatives focus on the state while perfect passives emphasize the action creating the state. This difference results in a number of distributional and combinatorial distinctions between the constructions.

**present resultatives (stative) vs. perfect passives (dynamic) in English**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>The house is painted (<em>many times).</em></td>
<td>present resultative</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>The house has been painted (many times).</td>
<td>present passive</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>The house is still painted.</td>
<td>present resultative</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td><em>The house has still been painted.</em>\textsuperscript{3}</td>
<td>perfect passive</td>
<td></td>
</tr>
</tbody>
</table>

The examples above illustrate two points: first, repetition, which is a phenomenon associated with events or actions, conflicts with a construction expressing a state (7-8) and is therefore incompatible with the resultative. Second, persistence or continuation is a characteristic of states and thus conflicts with expressions of actions or events (9-10) such as the passive. On this point Bybee et al. (1994: 63) remark, "The difference between resultative, passive, and anterior [i.e., perfect—MJ] is that only resultative consistently signals that the state persists at reference time."

The developments described so far are those which account for the situation found in classical Latin and modern Dutch. As I stated above, the scenario in these two languages differs from that in Romance\textsuperscript{4} and English primarily in the relationship between the tense encoded morphologically on the auxiliary verb and the tense of the periphrastic passive as a whole. In Latin and Dutch, the periphrasis is perfect tense when the auxiliary is morphologically present tense; in Romance and English, on the other hand, the periphrasis is present tense when the auxiliary is morphologically present tense. The situation in Romance and English represents
a further development from the type of situation found in Latin and Dutch; it is this shift from perfect to present which I now address.

4 Previous research

The only substantive treatment of the shift from perfect to present in the passive of which I am aware is that of Vincent, which focuses on Romance. Vincent (1988a) appeals to the influence of the developing periphrastic active perfect construction found in Late Latin, which, like the passive with TO BE, developed from a resultative construction (REFS); the perfect active periphrasis consisted of a form of the verb habere ‘to have’ plus the past participle. When the auxiliary was present tense, the construction as a whole was perfect tense. Vincent explains the influence of the perfect active periphrasis on the perfect passive periphrasis as follows (1988: 58):

by providing a model in which the auxiliary verb gives expression to the appropriate categories of tense, mood, etc., HABEO CANTATUM ensures that CANTATUM EST should be interpreted as a present imperfective, not perfective.

Vincent’s claim here is that the active perfect periphrasis in the form habeo cantatum ‘I have sung’ influenced the passive perfect periphrasis in the form cantatum est ‘It has been sung’ with regard to the correlation between the morphology of the auxiliary and the grammatical information present in the construction. That is, Vincent claims that the tense, aspect, etc., of the phrase habeo cantatum match that of habeo; this is incorrect, however. Just as in English, the auxiliary is morphologically present tense (habeo) when the phrase is semantically perfect tense (habeo cantatum). Thus, if the pattern of the active periphrasis had applied to the passive periphrasis, the passive construction would have retained its perfect tense reference. Of course, this is not the case; in Romance and English, the tense shifted from perfect to present.

11 Lat. a habeo cantatum b cantatum est
   have-1s.pres sing-ppcpl-n.sg  sing-ppcpl-n.sg be-3sg.pres
   ‘I have sung’                     ‘it has been sung’

5 The instant analysis

The course of development which I propose is schematized in Figure 1 below. On this analysis, resultatives of transitive verbs develop into perfect passives; subsequently, due to the participation of certain types of predicates, the construction is reinterpreted as a present rather than a perfect.
Figure 1—The semantic development of periphrastic passives with TO BE

<table>
<thead>
<tr>
<th>Resultative with transitive verb</th>
<th>Primary mechanism of shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓</td>
<td>shift in emphasis from state to action</td>
</tr>
<tr>
<td>perfect passive</td>
<td>attribution of lexical characteristics to the construction</td>
</tr>
<tr>
<td>↓</td>
<td></td>
</tr>
<tr>
<td>present passive</td>
<td></td>
</tr>
</tbody>
</table>

5.1 Semantic parameters

The lexical semantics of the main verb can affect the interpretation of a construction. The semantic parameters which seem to play a role in the developments under consideration here are stativity, telicity, and resultancy. The first deals with the internal structure of the predicate. Stative verbs, such as KNOW, LOVE, BE LOCATED, are internally consistent and tend to last indefinitely; dynamic verbs, such as WRITE, SING, MOVE, indicate situations in which some type of change or action takes place.

stative vs. dynamic predicates in English

12 Now I understand the explanation.  stative
13 The guitar is midnight blue.  stative
14 It is widely known that Michael is loved by all.  stative
15 Paul is playing the “Moonlight” sonata.  dynamic
16 The cat is purring quite loudly.  dynamic
17 The house is being painted green.  dynamic

Stativity plays a clear role in the present tense in English, where present predicates used to describe a current state of affairs (rather than a general situation) show a formal distinction which depends on the stativity of the predicate. Stative predicates take the simple form of the verb (12-14), while dynamic predicates take the progressive (15-17).

A telic predicate has an inherent endpoint, while an atelic predicate does not. Statives are by nature atelic; dynamic predicates may be telic (sing a song) or atelic (sing bass). Resultancy is a characteristic of certain statives which are related to dynamic predicates; KNOW is a resultant stative, because knowing is generally preceded by learning. In the following examples a perfect form of the verb TO SEE is used to indicate a present state of knowledge, where one path to knowledge is effectively telescoped into reference to the dynamic data-gathering process and is represented as completed, with resultant learning and knowledge (cf. Sweetser 1990: 33).

shift from perfect to non-perfect in active forms—resultant stative predicates

18 Gk. o~ da         Goth. wait       ‘I know’
    see.perf-1s      see.pret.1s
Non-resultant stative verbs, such as LOVE, do not have a direct relation to dynamic predicates in this way, although certainly there are sometimes events which contribute to the ultimate situation. The most important characteristic of these verbs is this: for the effect on the theme to last, the action of the predicate must continue. Like HOLD, MAINTAIN, and ADMIRE, LOVE is this type of predicate. A person must continue to receive love for the effect to continue, whereas a painted house will remain painted indefinitely. Jespersen indicated the special nature of this type of predicate when he asked (1964: 67) "Is love an activity or a state?"

An additional factor here is the fact that, because these predicates are stative, they are atelic, i.e., without inherent endpoints. As such, these verbs differ from telic predicates such as PAINT in that an instance of a non-resultant stative verb in a resultative construction differs substantially from an instance of the same predicate in a perfect passive construction. Consider Examples 20 through 23.

20 The house is painted.
21 The house has been painted.
22 Sammy is loved.
23 Sammy has been loved.

Because PAINT is a telic predicate, the fact that the house is in a painted state is indicative of a prior completed act of painting. LOVE, on the other hand, is atelic and must continue for the effect on the patient to hold. Thus a resultative interpretation of (22) does not imply (23), as was the case with (20) and (21). If Sammy currently shows the effect of being loved (i.e., he is in a loved state), then the loving cannot have already ceased. In painting one can reach a point at which the painting is complete and the desired effect on the house is achieved. Certainly the same does not hold for love; there is no point at which a person has loved someone so that no more loving is required for the continuation of the effect. The same is true of other non-resultant stative statives such as ADMIRE and MAINTAIN.

This incongruity between the present resultative and perfect passive with non-resultant stative predicates encourages the listener to interpret an example such as (24) as present rather than perfect tense. If the listener does interpret this type of utterance as a present passive, then she may (subconsciously) view this present tense reading as an exception based on certain lexemes. The listener may also, however, reinterpret the whole construction as inherently indicating present tense. This would then provide us with the shift from perfect tense to non-perfect tense which this paper seeks to account for.

24 Sp. Nuno es amado
Nuno BE.3s.pres LOVE-ppp.ms
‘Nuno is loved’

At this point I would like to note that I do not believe that a tense change of the type described here is a necessary development; on the contrary, I am aware of no reason to assume that a system such as that found in Dutch (or Latin, for that matter) is inherently unstable. I merely argue that, if such a change does occur, the
process will be as I have set forth herein. As I stated at the outset, this proposed
path of development is hypothetical and awaits verification via detailed text
research.

5.2 Further developments

After the shift in reference from perfect to present in a passive construction
formed with TO BE + past participle, the verbal system has in effect a gap in that a
means of expressing a perfect passive has ceased to serve this function exclusively.
There are a number of possible outcomes of such a situation. The first is that the
language may retain both the older perfect reference and the newer non-perfect, thus
leaving the language with an ambiguous form which does not distinguish perfect
from non-perfect in the passive. I am not aware of a language in which this has
occurred.

The second possibility is that the language may develop another perfect passive
construction out of some other linguistic material. For instance, Jones explains
(1988: 340) that in Sardinian the passive with essere 'to be' is not commonly used
and is believed by some to a borrowing from Italian; in the perfect, the negative
passive may be expressed by the construction TO BE + kene 'without' + participle,
as in (20) (from Jones 1988: 340).

20 Sard. sa pe^-a es' kene mandikata
    the.fs meat-fs be.3s.pres.ind without eat-ppcpl-fs
 'The meat has not been eaten.'

Jones does not provide discussion of this construction and does not indicate
whether it has an affirmative analogue. He does explain that the more common
means of expressing passive meaning is with the reflexive si. Since Sardinian does
not seem to have ever used the TO BE passive extensively, the TO BE + kene +
participle construction does not really constitute a replacement of the type I am
discussing here; it does, however, illustrate one example of a possible source for
such a replacement.

Finally, a language may simply use the perfect forms of TO BE as the auxiliary
in the perfect passive. This has been the strategy of all the languages considered
here in which the perfect-to-non-perfect shift occurred. Thus in English, for
example, is is the 3s form of the passive auxiliary in the present tense and has been
is the 3s form for the perfect tense.

In summary, a resultative construction with a transitive verb develops a perfect
passive interpretation; this in turn becomes a present passive construction, with the
subsequent creation of a new perfect passive construction consisting of TO BE
inflected for the perfect plus the past participle. Figure 2 illustrates this path of
development schematically with examples from Latin and Spanish.
5.3 Blocking

Now let us examine the role of these competing means of passive formation in the development of these passive constructions with TO BE. I earlier addressed the stability of a system in which a copula inflected for the present tense serves as the auxiliary in a perfect passive construction. It seems that one possible reason for the retention of perfect meaning in a passive construction with TO BE + participle is that the presence of a distinct present passive construction might discourage or prevent a present reading of the TO BE passive. For example, perhaps the Latin form amatus est kept the meaning 'he has been loved' during the classical period because the form amatur 'he is loved' in a sense blocked the interpretation of amatus est as a present form. If this is correct, then we would expect to find that a present interpretation of the periphrastic passive did not arise until the loss of the synthetic passive. This question too awaits further exploration by text research.

6 Directions for further research

This analysis predicts that a number of factors should stand out to the text researcher seeking to verify this hypothesis. The first data to be found are the first instances in which a construction with TO BE + participle is unambiguously non-perfect passive—neither resultative nor perfect passive—when the auxiliary is morphologically present tense. Particular attention should be paid to the types of predicates found in these early uses: this theory predicts that atelic non-resultant stative predicates will be the 'leaders' of the change. Further development should include gradual generalization of the imperfective reference to all instances of the construction. A second potential indicator of the shift is the use of perfect tense forms of the auxiliary in the construction. Finally, text research should also provide additional data needed to clarify the issue of possible semantic blocking as described above.

7 Conclusion

In this paper I have argued that the development of non-perfect tense in earlier perfect passive constructions may have been triggered by the dynamic structure of certain types of predicates, namely non-resultant transitive statives such as TO LOVE. Because these predicates are not consistent with the resultative-like meaning of many other perfect passives, they can be interpreted as non-perfect
rather than perfect. That is, their non-resultant stative character encourages the reading that, if the theme is currently in the state predicated by the verb, the situation must be due to a continuing state of affairs rather than to a previously occurring action. The non-perfect reference of some lexemes can be attributed to the construction rather than to certain predicates participating in it, thus resulting in a non-perfect passive which is morphologically identical to the earlier perfect passive. This then allows for the creation of a new perfect passive by means of the use of the perfect form of the auxiliary. It is my hope that ongoing text research will corroborate this proposal.

If this analysis is correct, then it will establish the reassignment of semantic properties of lexical items to constructions as a mechanism of semantic change in constructions, especially periphrastic constructions.

Notes

* This paper has benefited greatly from discussion with and comments from Jocelyn Ahlers, Andrew Dolbey, Suzanne Fleischman, Belén Flores, Susanne Gahl, Andrew Garrett, Zev Handel, Gary Holland, Dan Jurafsky, John McWhorter, Ju Namkung, Eve Sweetser, Elizabeth Traugott, and Natasha Warner, to all of whom I am very grateful. Any errors are of course my own responsibility.

1 Rumanian does make use of a passive construction with a fi ‘to be’ + past participle, but Mallinson attributes this to a nineteenth-century borrowing from French (1988: 418). The primary means of expression of passive meaning is with the reflexive se.

2 Such phrases as well-read present something of a problem for this analysis. Perhaps the solution is that the verb to read is in this instance treated as a one-valence verb and, as such, is very similar to to travel. Thus someone who likes to read may be well-read, just as a person fond of traveling may be well-traveled.

3 Example (11) is grammatical only with the reading that the speaker continues to contend that the house has been painted (presumably in contrast to the claim of the listener); in this case, still is used epistemically and does not relate to the main verb of the sentence (cf. Bybee et al 1994: 65).

4 For convenience, I am using the term Romance to refer only to the Romance languages under consideration, namely, Spanish, French, Portuguese, Italian, and Catalan.

5 Andrew Garrett correctly observes (personal communication) that some knowledge is not preceded by learning, such as how to breathe. Despite this fact, I believe that it is useful to categorize predicates as resultant or non-resultant even though the distinction, like many others in language, is not always clear-cut.

6 If such a replacement were to occur, it seems most likely that the perfect passive would be ‘replaced’ by an already existing construction. That is, what used to be an alternate means of expressing the perfect passive would become the primary (or only) means available. This is similar to what happened in the history of Rumanian, where, as the synthetic passive fell into disuse, the already existing passive-like use of reflexives in Late Latin increased, eventually becoming the primary means of conveying the effect of the passive.

7 I do not mean to imply that these two constructions could not coexist with essentially the same meaning; I merely intend to propose that a language could disallow the interpretation of a periphrastic passive as a present form because a present form already exists. Of course, what constitutes a blocking environment in one language does not necessarily apply to another. For instance, while better can be said to block *more well in English, in Catalan millor ‘better’ and més bé lit. ‘more well’ are essentially interchangeable.

Abbreviations

<table>
<thead>
<tr>
<th></th>
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<th>3</th>
<th>3rd person</th>
<th>Cas.</th>
<th>Casina</th>
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<tbody>
<tr>
<td>1</td>
<td>1st</td>
<td>2nd</td>
<td>abl</td>
<td>ablative</td>
<td>Cic.</td>
</tr>
</tbody>
</table>
References


HARRIS, ALICE C. and LYLE CAMPBELL. 1995. Historical Syntax in Cross-
HARRIS, MARTIN B., and PAOLO RAMAT, eds. 1987. The Historical
HARRIS, MARTIN, and NIGEL VINCENT, eds. 1988. The Romance Languages.
New York: Oxford University Press.
HEINE, BERND, ULRIKE CLAUDI, and FRIEDERIKE HÜNNEMEYER. 1991.
Press.
Mouton de Gruyter.
HOLLAND, GARY. 1995. The Grammaticalization of the Compound Perfect in
Latin, Germanic, and Hittite. Manuscript.
Grammaticalization. Cambridge: Cambridge University Press.
Heinle.
JESPERSEN, OTTO. 1964. Essentials of English Grammar. Tuscaloosa:
University of Alabama Press.
KAY, PAUL, and FILLMORE, CHARLES J. 1995. What’s X Doing Y?
manuscript.
KEMMER, SUZANNE E. 1988. The Middle Voice: A Typological and Diachronic
Educational Series.
KURYLOWICZ, JERZY. 1964. The Inflectional Categories of Indo-European.
Heidelberg: Carl Winter.
MALLINSON, GRAHAM. 1988. Rumanian. In Harris and Vincent, eds., 1988,
391-419.
Cambridge: Blackwell.
Series.
PALMER, L. R. 1954 [1988]. The Latin Language. Norman: University of
Oklahoma Press.
52.449-460.
STERN, HENRY R. 1979. 201 Dutch Verbs. Hauppauge: Barron’s Educational
Series.
Axmaker et al., 389-405.
———. 1990. From Etymology to Pragmatics: Metaphorical and Cultural Aspects


Variability in the Deletion of the Palatal Glide y in Seoul Korean: the variable process and its implications

Hyeon-Seok Kang
Ohio State University

1. Introduction

Though the deletion of w in Korean has been well examined through such studies as Silva (1991) and Kang (1996), the nature of y deletion, a parallel process, has been little investigated. This paper will examine the deletion of y in Seoul Korean on a large sociolinguistic database, reveal the constraints conditioning the process, and attempt to provide partial phonological explanations to this process. Phonological explanations will be attempted in the framework of Correspondence Theory crucially using the notions of the Obligatory Contour Principle and soft (uncategorical) dominance (cf. Kiparsky 1993).

The organization of this paper is as follows. In Section 2, I will provide some background information on y deletion in Seoul Korean. I will discuss the data and explain the methodology used for the analysis of the data in Section 3. The results of the data analysis will be given in Section 4 and the implications of the results will be discussed in Section 5. I will attempt to provide partial phonological explanations to y deletion in Section 6, which is followed by concluding remarks in Section 7.

2. y deletion and its background

Before discussing y deletion, I will first consider some basic notions in Seoul Korean phonology that pertain to the later discussions and then introduce two different processes of y deletion.

The syllable structure of Seoul Korean can be schematized as Figure 1. The minimal syllable is V with three optional elements: an onset consonant, a glide and a coda consonant. The internal structure of the Seoul Korean syllable is not without controversy. I will assume, following Sohn (1987) and H.Y. Kim (1990), that GV sequences in Seoul Korean are rising diphthongs.

\[ \sigma \]
\[ (C)(G)V(C) \]

Figure 1. Syllable structure of Seoul Korean

Table 1. Monophthongs of Seoul Korean

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>[-bk]</td>
<td>+bk</td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>i</td>
<td>u</td>
</tr>
<tr>
<td>e</td>
<td>a</td>
<td>o</td>
</tr>
<tr>
<td>(ε)</td>
<td>a</td>
<td></td>
</tr>
</tbody>
</table>
The monophthongs of Seoul Korean are given in Table 1. The present study assumes, following Hong (1988) and H.B. Lee (1971), that the vowels ū and ø have changed to diphthongs wi and we in Seoul Korean and that vowels e and e have (near-)merged to e. Table 2 gives the current system of y diphthongs in Seoul Korean. As shown in Table 2, the palatal glide y cannot combine with the vowel i.

<table>
<thead>
<tr>
<th>[-bk]</th>
<th>[+bk]</th>
</tr>
</thead>
<tbody>
<tr>
<td>*yi</td>
<td>iy</td>
</tr>
<tr>
<td>ye</td>
<td>yə</td>
</tr>
<tr>
<td>(ye)</td>
<td>ya</td>
</tr>
</tbody>
</table>

Table 2. y Diphthongs of Seoul Korean

The current system of Seoul Korean consonants is given in Table 3. As Figure 1 suggests, consonants can precede and combine with y diphthongs, though not all logical possibilities are possible.

<table>
<thead>
<tr>
<th></th>
<th>bilabial</th>
<th>alveolar</th>
<th>palatal</th>
<th>velar</th>
<th>glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>stop</td>
<td>p, p', ph</td>
<td>t, t', th</td>
<td>k, k', kh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>affricate</td>
<td></td>
<td></td>
<td>c, c', ch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fricative</td>
<td></td>
<td></td>
<td>s, s'</td>
<td></td>
<td>h</td>
</tr>
<tr>
<td>nasal</td>
<td>m</td>
<td>n</td>
<td></td>
<td>y</td>
<td></td>
</tr>
<tr>
<td>liquid</td>
<td></td>
<td>l[l, r]*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>glide</td>
<td>w</td>
<td>y</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The phoneme /l/ has two allophones [l] and [r].

With the background introduced so far, I will discuss the phonological environments where y deletion occurs in Seoul Korean. There are two environments where this process can occur. First, y deletes after palatal consonants as (2) illustrates. This is a categorical process and can be formulated as a rule as rule (1).

(1) y —> ø / {c, ch, c'} V (categorical)

(2)

/ciəs'ta/ "(I) lost" /ci̱chəs'ta/ "(I) am tired" UR
/cyəs'ta/            /ci̱ch'ya's'ta/ Glide Formation^1
/cəs'ta/             /ci̱ch'əs'ta/ y Deletion
/[cəs'ta]^2          /[ci̱ch'əs'ta] SR

Secondly, as (3) shows, y variably deletes before vowel e (but not before any other vowel). Notably, the deletion rate of y is crucially influenced by whether there is a preceding consonant (e.g., /hyesæŋ/ —> /hesæŋ/ 'comet', /yu̱p'ye/ —> /yu̱p'æ/ 'waste water') or not (e.g., /yu̱ye/ —> /yue/ 'postponement', /toye/ —> /toe/...
'ceramic art'). When a consonant precedes y, the deletion of y is significantly more frequent than when not (90% vs. 25% according to my data).

(3) y \rightarrow \emptyset \, / \, (C) \, \_ \, e \, (variable)

The process (1), the categorical deletion, will not be discussed until Section 6. The main focus from Section 3 to Section 5 will be the process (3), i.e., the variable deletion of y.

3. Methodology

3.1. Data

The data were collected during the author's fieldwork in Seoul, Korea, in 1994 and 1995. Approximately 30 minutes of recordings were made from 77 speakers. The speakers were stratified by age, social status, and sex. There were 2 gender groups, 3 age groups and 3 social status groups. Four different styles of speech were elicited — two styles of spontaneous speech: interview speech and ingroup speech; and two styles of read speech: sentence reading and word-list reading. The data used for the present study come from the recordings of four different styles of speech from 71 speakers; six speakers were found not to be a native speaker of Seoul Korean, so their data were excluded. Interview and ingroup speech were elicited from 54 speakers and from 35 speakers, respectively; eighteen speakers overlap.

The judgment regarding the presence and the absence of the glide was made at the time of the transcriptions and rechecked later. All the cases of y which occurs before the vowel e were examined. Each token was judged \{y\}, \{\emptyset\} or 'ambiguous'. Ambiguous cases accounted for approximately 6 percent (207/3448) of the tokens. They were excluded from analysis. Instances of y which occurs before vowel e after palatal consonants were 7 in interview speech and 22 in ingroup speech. As expected, y deleted categorically in all these cases, so these tokens were not included in variable rule analysis either. One hundred tokens were chosen from each of the \{y\}, \{\emptyset\} and 'ambiguous' token groups. Another Seoul Korean speaker independently checked these tokens and labeled each as \{y\}, \{\emptyset\} and 'ambiguous'. There were 91, 87 and 72 percent of agreement between her judgment and mine in \{y\}, \{\emptyset\} and 'ambiguous' token group, respectively. The study of the variable deletion of y is based on 3212 tokens of variable y from 71 speakers' data containing both spontaneous and read speech.

3.2. Variable rule analysis

Statistical analysis of the data was performed using Goldvarb (version 2.1 Rand and Sankoff 1992). Factor groups listed in Table 4 were considered in the preliminary analysis. They will be briefly discussed below.

First, the presence/absence of the preceding consonant was considered in the analysis because the deletion of y is very sensitive to whether there is a preceding consonant or not, as noted earlier. The consonants that can occur before the diphthong ye are p, k, k', h, l, r, n and g. To examine whether these consonants show different effects on the deletion of y, each consonant was coded as a separate factor and 'preceding consonant' was included as a factor group. The distinction between initial vs. noninitial syllables is a crucial distinction in Korean.
As Kim-Renaud (1986) suggests, the initial syllable of the word is a phonologically strong position in Korean, where the deletion of a segment is found noticeably less often than in noninitial syllables (cf. Kang 1996). This initial/noninitial syllable parameter was also considered as a factor group. External constraints, 'speech style', 'gender', 'social status' and 'age' were also included as additional factor groups.

Table 4. Factor groups considered in the preliminary variable rule analysis of y deletion

<table>
<thead>
<tr>
<th>Factor groups</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. presence of the preceding consonant</td>
<td>ø, present</td>
</tr>
<tr>
<td>2. preceding consonant</td>
<td>p, k, k', h, l, r, n, g</td>
</tr>
<tr>
<td>3. initial/noninitial syllable parameter</td>
<td>initial, noninitial</td>
</tr>
<tr>
<td>4. speech style</td>
<td>ingroup speech, interview</td>
</tr>
<tr>
<td></td>
<td>speech, sentence reading,</td>
</tr>
<tr>
<td></td>
<td>word-list reading</td>
</tr>
<tr>
<td>5. gender</td>
<td>male, female</td>
</tr>
<tr>
<td>6. social status</td>
<td>upper, middle, lower</td>
</tr>
<tr>
<td>7. age</td>
<td>16-25, 26-45, 45-</td>
</tr>
</tbody>
</table>

However, the results of the preliminary Varbrul analysis were not promising. The constructed statistical model showed a very bad fit to the data ($\chi^2$cell = 3.1696). It is presumed that this result is due to the fact that factors show rather different effects on the deletion of y with a preceding consonant, on the one hand, and on the deletion of y without a preceding consonant, on the other. Most notably these two were subject to rather different effects by the factors of factor group 'initial/noninitial syllable parameter' as shown in Tables 7 and 8. While the initial and noninitial syllable factors, respectively, showed Varbrul weights of .295 and .657 in the analysis of y deletion with a preceding consonant, the two showed weights of .168 and .970 in y deletion without a preceding consonant. Accordingly separate Varbrul analyses of these two types of tokens of (y) were performed. Table 5 and Table 6 show the factor groups considered in each of these two Varbrul analyses.

Table 5. Factor groups considered in the variable rule analysis of the deletion of y with a preceding consonant

<table>
<thead>
<tr>
<th>Factor groups</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. preceding consonant</td>
<td>p, k, k', h, l, r, n, g</td>
</tr>
<tr>
<td>2. initial/noninitial syllable parameter</td>
<td>initial, noninitial</td>
</tr>
<tr>
<td>3. speech style</td>
<td>ingroup, interview, sentence</td>
</tr>
<tr>
<td></td>
<td>reading, word-list reading</td>
</tr>
<tr>
<td>4. gender</td>
<td>male, female</td>
</tr>
<tr>
<td>5. social status</td>
<td>upper, middle, lower</td>
</tr>
<tr>
<td>6. age</td>
<td>16-25, 26-45, 45-</td>
</tr>
</tbody>
</table>
Table 6. Factor groups considered in the variable rule analysis of the deletion of \( y \) without a preceding consonant

<table>
<thead>
<tr>
<th>Factor groups</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. initial/noninitial syllable parameter</td>
<td>initial, noninitial</td>
</tr>
<tr>
<td>2. speech style</td>
<td>ingroup, interview, sentence reading, wordlist reading</td>
</tr>
<tr>
<td>3. gender</td>
<td>male, female</td>
</tr>
<tr>
<td>4. social status</td>
<td>upper, middle, lower</td>
</tr>
<tr>
<td>5. age</td>
<td>16-25, 26-45, 45-</td>
</tr>
</tbody>
</table>

4. Results

The results of the Varbrul analysis of \( y \) deletion after a consonant are given in Table 7. Five factor groups were selected as significant in the stepwise regression analysis. In the order of selection, they are factor groups 'preceding consonant', 'age', 'initial/noninitial syllable parameter', 'speech style', and 'social status'. The factor group 'gender' was not chosen as significant, suggesting that male and female speakers showed little difference in their behavior toward \( y \) deletion.

In the Varbrul run, sonorant consonants (i.e., \( l, r, n, \eta \)) showed relatively uniform effects on \( y \) deletion, i.e., the weight of each sonorant consonant was as follows: \( l \) (0.076), \( r \) (0.141), \( n \) (0.076), \( \eta \) (0.096). The loglikelihood significance test did not find a significant difference (\( p > .05 \)) between the Goldvarb run where each of the sonorant consonants was analyzed as a separate factor and the run where the sonorant consonants were collapsed together. Table 7 gives the results of the latter Varbrul run.

The results of the Goldvarb run of \( y \) deletion without a preceding consonant are given in Table 8. Four factor groups, 'initial/noninitial syllable parameter', 'age', 'speech style' and 'social status' were selected in the stepwise analysis and in that order. Again the factor group 'gender' was not chosen as a significant factor group. As noted earlier, the results show that the main difference between \( y \) deletion after a consonant and \( y \) deletion without a preceding consonant is the strength of the factor group 'initial/noninitial syllable parameter'. The effect of this constraint is noticeably stronger in \( y \) deletion without a preceding consonant.

Table 7. Goldvarb probabilities for factors for the deletion of \( y \) after a consonant

<table>
<thead>
<tr>
<th>Factor groups</th>
<th>Factors</th>
<th>Weight</th>
<th>% Applications</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Preceding C</td>
<td>( p )</td>
<td>0.504</td>
<td>90</td>
<td>527</td>
</tr>
<tr>
<td></td>
<td>( k )</td>
<td>0.689</td>
<td>96</td>
<td>805</td>
</tr>
<tr>
<td></td>
<td>( k' )</td>
<td>0.626</td>
<td>97</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>( h )</td>
<td>0.747</td>
<td>95</td>
<td>351</td>
</tr>
<tr>
<td></td>
<td>sonorant C</td>
<td>0.099</td>
<td>75</td>
<td>484</td>
</tr>
<tr>
<td>*Initial/Noninitial Syl</td>
<td>initial</td>
<td>0.295</td>
<td>91</td>
<td>958</td>
</tr>
<tr>
<td></td>
<td>noninitial</td>
<td>0.657</td>
<td>89</td>
<td>1284</td>
</tr>
<tr>
<td>*Speech Style</td>
<td>ingroup</td>
<td>0.641</td>
<td>96</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>interview</td>
<td>0.611</td>
<td>95</td>
<td>269</td>
</tr>
<tr>
<td></td>
<td>sentence R</td>
<td>0.538</td>
<td>91</td>
<td>902</td>
</tr>
<tr>
<td></td>
<td>word list R</td>
<td>0.408</td>
<td>86</td>
<td>927</td>
</tr>
<tr>
<td>Gender</td>
<td>male</td>
<td>0.502</td>
<td>90</td>
<td>1165</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>0.498</td>
<td>89</td>
<td>1077</td>
</tr>
<tr>
<td>*Social Status</td>
<td>upper</td>
<td>0.421</td>
<td>87</td>
<td>788</td>
</tr>
<tr>
<td></td>
<td>middle</td>
<td>0.532</td>
<td>91</td>
<td>764</td>
</tr>
<tr>
<td></td>
<td>lower</td>
<td>0.556</td>
<td>91</td>
<td>690</td>
</tr>
<tr>
<td>*Age</td>
<td>16-25</td>
<td>0.628</td>
<td>94</td>
<td>801</td>
</tr>
<tr>
<td></td>
<td>26-45</td>
<td>0.601</td>
<td>94</td>
<td>687</td>
</tr>
<tr>
<td></td>
<td>46+</td>
<td>0.282</td>
<td>82</td>
<td>754</td>
</tr>
</tbody>
</table>

number of cells: 375  
chi-square/cell = 1.2553  
total chi-square = 470.7270  
loglikelihood = −590.548  
Input = 0.945

* Starred factor groups are those chosen in the stepwise regression analysis.

Table 8. Goldvarb probabilities for factors for the deletion of y without a preceding consonant

<table>
<thead>
<tr>
<th>Factor groups</th>
<th>Factors</th>
<th>Weight</th>
<th>% Applications</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Initial/Noninitial Syl</td>
<td>initial</td>
<td>0.168</td>
<td>04</td>
<td>664</td>
</tr>
<tr>
<td></td>
<td>noninitial</td>
<td>0.970</td>
<td>70</td>
<td>306</td>
</tr>
<tr>
<td>*Speech Style</td>
<td>ingroup</td>
<td>0.696</td>
<td>08</td>
<td>154</td>
</tr>
<tr>
<td></td>
<td>interview</td>
<td>0.652</td>
<td>07</td>
<td>222</td>
</tr>
<tr>
<td></td>
<td>sentence R</td>
<td>0.436</td>
<td>39</td>
<td>334</td>
</tr>
<tr>
<td></td>
<td>word list R</td>
<td>0.333</td>
<td>30</td>
<td>260</td>
</tr>
<tr>
<td>Gender</td>
<td>male</td>
<td>0.539</td>
<td>25</td>
<td>481</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>0.462</td>
<td>24</td>
<td>489</td>
</tr>
<tr>
<td>*Social Status</td>
<td>upper</td>
<td>0.408</td>
<td>24</td>
<td>313</td>
</tr>
<tr>
<td></td>
<td>middle</td>
<td>0.519</td>
<td>24</td>
<td>323</td>
</tr>
<tr>
<td></td>
<td>lower</td>
<td>0.568</td>
<td>25</td>
<td>334</td>
</tr>
<tr>
<td>*Age</td>
<td>16-25</td>
<td>0.599</td>
<td>30</td>
<td>330</td>
</tr>
<tr>
<td></td>
<td>26-45</td>
<td>0.594</td>
<td>28</td>
<td>301</td>
</tr>
<tr>
<td></td>
<td>46+</td>
<td>0.325</td>
<td>17</td>
<td>339</td>
</tr>
</tbody>
</table>

number of cells: 114  
chi-square/cell = 1.2403  
total chi-square = 141.3995  
loglikelihood = −270.202  
Input = 0.103
5. Discussion

The results suggest that three linguistic constraints condition the variable deletion of y in Seoul Korean. The first is the presence of the preceding consonant. The deletion of y occurs approximately 90 percent after a consonant and 25 percent without a preceding consonant. This result indicates that the presence of a consonant is an important constraint on y deletion.

The results also show that type of consonants is also an important factor in y deletion. In Varbrul terms, when a Varbrul probability of a given factor is above .5 (or under .5), that factor is said to favor (or disfavor) the application of the rule. Table 7 shows that in terms of Goldvarb probabilities obstruent consonants (p, k, k' and h) favor y deletion, while sonorant consonants disfavor it. This result suggests that the diphthong ye is almost monophthongized after obstruent consonants but not quite yet after sonorant consonants. T.Y. Choi (1983) suggests that in Chunpuk dialect y-diphthongs (not just the ye sequence) have monophthongized after obstruents but not after sonorant consonants. A similar pattern of change is exhibited in the two dialects.

The third linguistic constraint that is shown by the results to play an important role in the variable deletion of y is whether y occurs in the initial syllable of the word or a noninitial syllable. This constraint has significant effects on the deletion of y both after a preceding consonant and without a preceding consonant. Yet it is much stronger in the deletion of y without a preceding consonant. The results show that the deletion of y rarely occurs in the initial syllable when there is no preceding consonant, i.e., only 4% as opposed to 70% of deletion in noninitial syllables. These results support Kim-Renaud's (1986) claim that the word-initial syllable is a phonologically strong position in Korean.

The fact that y deletion is a sociolinguistic process is indicated by the result that factor groups 'social status' and 'age' are found to be significant constraints in the stepwise analysis. The results show that the upper status speakers 'disfavor' y deletion, while the other status groups 'favor' the process. A more clear difference in y deletion is shown among the age groups. The results show that younger speakers delete y more often than older speakers. This result can be taken to suggest that y deletion is not just a synchronic process but also a change in progress. I suggest that ye has almost monophthongized after obstruent consonants, while the change from ye to e after sonorant consonants is still under way. This claim is supported by the following statement from the most prescriptive source, Standard Pronunciation of Seoul Korean published by the Ministry of Education (1988), that "the diphthong ye can be pronounced as e when a consonant, except l [l, r] and n, precedes it". This statement is a prescription that the diphthong ye should be pronounced as ye after sonorant consonants, while allowing the production of ye as e when obstruent consonants precede the diphthong. This prescriptive statement implicitly shows that the production of ye as e after sonorant consonants in the Seoul community is not still as prevalent as the deletion of y after obstruent consonants.

The fact that y deletes even without a preceding consonant (mostly in noninitial syllables) seems to show that a change is happening even in other phonological environments. This result indicates that there may be an inherent instability in the diphthong ye. In the following section I will attempt to provide
phonological explanations to this instability in the diphthong ye and also to the categorical deletion of ye proposing two OCP constraints.

6. Possible phonological explanations

One of the interesting facts in ye deletion in Seoul Korean is that two rather different processes cooccur, as noted in Section 2. To repeat, one is a categorical process formulated as (1) where ye deletes after palatal consonants; the other is a variable process which occurs only before the vowel e. Considering that Korean does not have the diphthong ye, the defining feature that distinguishes the vowel e from the other vowels of Seoul Korean with which ye can combine is the feature [back], i.e., the vowel e is [-back], while the others are [+back] (cf. Table 2). If we adopt the feature system of Clements and Hume (1995), the phonological feature that distinguishes these two groups of vowels is the feature [coronal]. Seoul Korean data show that both categorical and variable deletions of ye, a coronal vowel in Clements and Hume’s (1995) model, are triggered by an adjacent coronal segment, i.e., by the OCP effects. I propose that the two OCP constraints shown in Figure 2 are mainly attributable to the two types of ye deletion in Seoul Korean.

a. OCP(CG: cor)$^3$

\[
\begin{array}{c}
\text{*C} \\
C \\
\parallel \\
V-PL \\
\text{[cor]} \\
\text{[cor]} \\
\text{[-ant]}
\end{array}
\]

Domain: syllable

b. OCP(GV: cor)

\[
\begin{array}{c}
\text{*C} \\
V \\
\parallel \\
V-PL \\
\text{[cor]} \\
\text{[cor]}
\end{array}
\]

Domain: syllable

Figure 2. Two proposed OCP constraints against adjacent coronal segments in Seoul Korean

OCP(CG: cor) shown in Figure 2 is a constraint which prohibits the sequence 'palatal consonant + glide ye' in the domain of syllable in Seoul Korean, while OCP(GV: cor) is a constraint prohibiting the sequence 'glide ye + vowel e' in the same domain. I consider these two as part of the phonological constraints operating in Seoul Korean. I suggest by proposing these two OCP constraints that both categorical and variable deletions of ye are OCP-triggered processes (Yip 1988). That is, I suggest that ye is deleted in Seoul Korean to observe the two OCP's proposed in Figure 2.

However, the strengths of OCP(CG: cor) and OCP(GV: cor) are different. I argue that this is why one triggers categorical deletion and the other, variable deletion. The difference in the strengths of these two constraints can be shown in the framework of Correspondence Theory (CT) if we incorporate the concept of soft (i.e., uncategorical) dominance to this theory (cf. Kiparsky 1993). I use the
eight constraints listed in (4) to show the different strengths of the two OCP constraints.

(4) Constraints required

3. Max (V[+hi]): Every high vowel in underlying representation has a correspondent in surface representation.
4. Max (V[-hi]): Every underlying nonhigh vowel in underlying representation has a correspondent in surface representation.
5. Max (C): Every consonant in underlying representation has a correspondent in surface representation.
6. Max (G): Every glide in underlying representation has a correspondent in surface representation.
7. L-Anchor: The leftmost element of underlying representation has a correspondent at the leftmost position of surface representation.
8. *VV: The vowel hiatus is prohibited.

OCP and *VV constraints are frequently observed constraints among world languages. Refer to McCarthy and Prince (1995) for Max and Anchor family constraints. Since Seoul Korean has such pairs as ui ‘the ear of a cow’ vs. wi ‘top’ and kiun ‘power’ vs. kyun ‘germ’ that distinguish vowels and glides underlyingly, I assume following Hayes (1989) and Y.S. Lee (1993) that moraic structure is given in underlying representation in Korean and that glides and vowels are underlyingly different in this language. The motivation for proposing two Max(V) constraints is that high and nonhigh vowels show different behavior toward deletion in Seoul Korean: The vowels u and i are often deleted after going through a glide formation before another vowel (cf. Silva 1991, Kang 1996); the vowel i is often subject to deletion when in contact with another vowel or between certain consonants (cf. Kim-Renaud 1986, Y.S. Lee 1993); on the other hand, nonhigh vowels are rarely subject to deletion. The ensuing discussion will show that the strengths of the two constraints OCP(CG: cor) and OCP(GV: cor) are crucially different.

First I will consider the categorical deletion of y, as exemplified in Tables 9 and 10. In the tables the thick line and the double line, respectively, indicates hard (categorical) dominance and soft dominance. The thin line indicates that the two adjacent constraints are unranked. Since the deletion of y is sensitive to whether y occurs in the initial or noninitial syllable of the word, I consider both the cases in the tables below.

<table>
<thead>
<tr>
<th>/cias'ta/</th>
<th>OCP(CG)</th>
<th>Max(C)</th>
<th>Max(V[-hi])</th>
<th>*VV</th>
<th>Max(V[+hi])</th>
</tr>
</thead>
<tbody>
<tr>
<td>ciəs'ta</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>cyəs'ta</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>+cas'ta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yəs'ta</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>cis'ta</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>
Table 10.

<table>
<thead>
<tr>
<th>word</th>
<th>OCP(CG)</th>
<th>Max(C)</th>
<th>Max(V[-hi])</th>
<th>*VV</th>
<th>Max(V[+hi])</th>
</tr>
</thead>
<tbody>
<tr>
<td>chieh's'ta</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>chieh's'ta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chieh's'ta</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cieh's'ta</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ciy's'ta</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cieh's'ta</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9 and Table 10 show that y deletion occurs categorically after a palatal consonant because OCP(CG: cor) dominates Max(V[+hi]). Another way of observing the OCP, i.e., the deletion of the preceding palatal consonant is prohibited because Max(C) is also a highly ranked constraint in Seoul Korean. Based on the categorical deletion of y, I temporarily formulate the dominance relationship (5).

(5) OCP(CG: cor), Max(C), Max(V[-hi]), *VV >> Max(V[+hi])

Now I turn to the variable deletion of y. Table 7 shows that y deletes near-categorically when there is a preceding obstruent and a majority of time when a sonorant consonant precedes it. Thus the generalization is that y deletes a majority of the time or more when a consonant precedes it but not categorically. This pattern of y deletion shows that the dominance relationship (6) holds in Seoul Korean (NB. the double angle bracket and the single angle bracket, respectively, indicates hard dominance and soft dominance). Tables 11 and 12 illustrate using the words pʰyeki 'disposal' and yupʰye 'confinement'.

Table 11.

<table>
<thead>
<tr>
<th>word</th>
<th>Max(C)</th>
<th>Max(V[-hi])</th>
<th>OCP(GV)</th>
<th>Max(G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pʰyeki</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>eʰ pʰyeki</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
</tr>
<tr>
<td>pʰyki</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
</tr>
<tr>
<td>yeki</td>
<td>!</td>
<td></td>
<td>!</td>
<td></td>
</tr>
</tbody>
</table>

Table 12.

<table>
<thead>
<tr>
<th>word</th>
<th>Max(C)</th>
<th>Max(V[-hi])</th>
<th>OCP(GV)</th>
<th>Max(G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>yupʰye</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
</tr>
<tr>
<td>eʰ yupʰye</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
</tr>
<tr>
<td>yupʰy</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
</tr>
<tr>
<td>yuye</td>
<td>!</td>
<td></td>
<td>!</td>
<td></td>
</tr>
</tbody>
</table>

(6) Max(C), Max(V[-hi]) >> OCP(GV: cor) > Max(G)

The deletion of y without a preceding consonant shows a rather different pattern. y deletion occurs a majority of the time in the noninitial syllable of the word but this process is near-categorically absent in the initial syllable. This pattern of deletion shows that the dominance relationship (7) holds. Tables 13 and 14 illustrate, with examples of yuye 'postponement' and yesul 'art'.


Table 13.

<table>
<thead>
<tr>
<th>yesul/</th>
<th>Max(V[-hi])</th>
<th>L-Anchor</th>
<th>OCP(GV)</th>
<th>VV</th>
</tr>
</thead>
<tbody>
<tr>
<td>yesul</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>esul</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ysul</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 14.

<table>
<thead>
<tr>
<th>yuye/</th>
<th>Max(V[-hi])</th>
<th>L-Anchor</th>
<th>OCP(GV)</th>
<th>VV</th>
</tr>
</thead>
<tbody>
<tr>
<td>yuye</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yue</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yuy</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(7) Max(V[-hi]) >> L-Anchor > OCP (GV: cor) > *VV

On the basis of the dominance relationships among the constraints shown in (5), (6) and (7), the dominance hierarchies listed in (8) can be established. (8) shows that while OCP(CG: cor) is an undominated constraint, OCP(GV: cor) is dominated by three more powerful constraints, i.e., Max(C), Max(V[-hi]), L-Anchor, which explains why OCP(CG: cor) and OCP(GV: cor), respectively, triggers categorical deletion and variable deletion.

(8) Constraints ranking

a. Undominated: OCP(CG: cor), Max(C), Max(V[-hi])
b. OCP(CG: cor), Max(C), Max(V[-hi]), *VV >> Max(V[+hi])
c. Max(C), Max(V[-hi]) >> OCP(GV: cor) > Max(G)
d. Max(V[-hi]) >> L-Anchor > OCP(GV: cor) > *VV

To summarize, in this section I attempted to provide a phonological explanation to the deletion of y in Seoul Korean. I suggested that y deletion is a process triggered by two OCP constraints operating in Seoul Korean. I claimed that these two constraints have rather different strengths, which result in two different types of deletion, i.e., categorical deletion and variable deletion. I attempted to show the different strengths of the two in terms of the dominance hierarchy crucially used in Correspondence Theory.

7. Conclusion

In this study, I examined the deletion of y in Seoul Korean on a large sociolinguistic database. It was observed first that there are two distinct processes of y deletion in Seoul Korean — one is a categorical process; the other, a variable process. The first five sections of this paper focused primarily on the variable deletion. I attempted to reveal the linguistic and external constraints which condition this variable process using the Varbrul analysis. The results of the analysis suggested that the deletion of y is not just a synchronic sociolinguistic process but also a change in progress.

I also attempted to provide an explanation to two processes of y deletion. I suggested that two different OCP constraints trigger the deletion of y in Seoul Korean. It was crucially claimed that the strengths of these two OCP constraints
are different: The stronger one triggers the categorical deletion, while the weaker one triggers the variable deletion. I suggested that the different strengths of the two OCP constraints can be shown in the framework of Correspondence Theory, if we incorporate the concept of soft dominance to this theory.

Notes

1. Seoul Korean has the following y glide formation rule: \( i \rightarrow y / \_ \_ \_ + \varepsilon \) (cf. Kim-Renaud 1986, Y.S. Lee 1993). The intermediate representations "c\(\_\_\_\_\_\_\varepsilon\)s'ta" and "c\(\_\_\_\_\_\varepsilon\)s'ta", respectively, come from /ci\(\_\_\_\_\_\varepsilon\)s'ta/ and /ci\(\_\_\_\_\varepsilon\)s'ta/. The fact that written forms reflect intermediate representations, not underlying representations, strongly shows the obligatory nature and the psychological reality of this rule.

2. Korean has a coa neutralization rule that neutralizes obstruents to lenis voiceless stops at the coda position, and an obstruent tensing rule that strengthens a lax obstruent to its tense counterpart after an obstruent consonant. However, since these processes are not directly relevant to the current study, I will ignore them in this paper.

3. I acknowledge that constraints similar to, though not identical with, OCP(CG: cor) have been suggested by a number of other researchers (e.g., Kim 1994).

References

Optimal stress feet in Latvian

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1. Introduction¹

The theoretical framework of Optimality Theory (OT), introduced by Prince & Smolensky (1991, 1993) marks a striking new approach to the study of linguistic phenomena. Since Chomsky & Halle (1968), Generative Phonology has mostly been concerned with the linguistic derivation and linguistic rules. OT introduces the idea of constraint ranking in the grammar of a language which allows all possible candidate forms to enter the system and be evaluated simultaneously without having a need for a derivation. An investigation of the stress pattern of Latvian provides an interesting case-study of the advantages of an OT analysis over a rule-based analysis.

Contrary to the assumption in Halle & Vergnaud (1987) and Goldsmith (1990), recent experimental work has demonstrated that the traditional grammars of Latvian are correct in asserting that Latvian has secondary stress (see Endzelīns 1922; Kariņš, 1995, 1996; Sokols et al. 1959). However, the stress patterns described in the traditional grammars are somewhat problematic from a rule-based perspective of metrical phonology such as that presented in Hayes (1995). The language appears to make a distinction between short words (2-3 syllables) and long words (4-5 syllables), whereby the short words build moraic trochees while the long words build syllabic trochees. The rule-based approach is thus forced to conclude that there is one set of rules which apply to the shorter words, and another set of rules which apply to the longer words. The analysis of the same data within an OT framework allows for a unified set of constraints which account for all forms in the language. However, in order for the OT analysis to hold, a "questionable" constraint needs to be posited. This raises a general question concerning what is and what is not a valid constraint to posit in the analysis of a given language.

2. The data within a rule-based parametric analysis (see Hayes 1995)

All of the data for the stress patterns of Latvian discussed below are taken from Endzelīns (1922).² Heavy syllables in Latvian are those with a long syllabic nucleus (long vowel or diphthong). The data in (1) show that for (short) words two or three syllables long, the language appears to build moraic trochees from left to right. The apparent exceptions to this are (1g) and (1h), which have a secondary stress on the word stem, and could thus be explained as being affected by morphological rules.
(1) Examples of stress patterns in Latvian: short words (2 - 3 syllables)

\[ \text{''-'' = light syllable, ''-'' = heavy syllable} \]

a. (má:na) \(\text{(- -)}\) trochee, L→R \(\text{`my (N. fem. sg.)'}\)
b. (má:na:s) \(\text{(- -)}\) trochee, L→R \(\text{`my (N. fem. pl)'}\)
c. (má:jl:ja:) \(\text{(- -)}\) moraic trochee, L→R \(\text{`in the house'}\)
d. (á:da:ta) \(\text{(- -)}\) moraic trochee, L→R \(\text{`needle'}\)
e. (á:da:).t(á:ma) \(\text{(- -)}\) moraic trochee, L→R \(\text{`for the needles'}\)
f. (lá:.(bi:.ba) \(\text{(- -)}\) moraic trochee, L→R \(\text{`grain'}\)
g. (né:).(sí:ti) \(\text{(- -)}\) stressed stem \(\text{`do not hit'}\)
h. (né:).(sí:ti) \(\text{(- -)}\) stressed stem \(\text{`did not hit'}\)

For the (long) words which contain four and five syllables, the language generally builds syllabic trochees from left to right, as seen in (2) and (3). Again, (2g) and (3f-g) are exceptions to the general pattern with a secondary stress on the word stem. In addition to the syllabic trochee, (3d) and (3e) have what appears to be a pseudo-ternary pattern.

(2) Examples of stress patterns in Latvian: long words (4 syllables)

a. (á:da:).(ti:na) \(\text{(- -) (- -)}\) syll. trochee, L→R \(\text{`little needle'}\)
b. (méi.te).(ni:te) \(\text{(- -) (- -)}\) syll. trochee, L→R \(\text{`little girl'}\)
c. (méi.te).(ni:.te:m) \(\text{(- -) (- -)}\) syll. trochee, L→R \(\text{`for the little girls'}\)
d. (lá:si:).(sá:na) \(\text{(- -) (- -)}\) syll. trochee, L→R \(\text{`the reading'}\)
e. (lá:si:).(tá:ji) \(\text{(- -) (- -)}\) syll. trochee, L→R \(\text{`the readers'}\)
f. (lá:si:).(tá:.jiem) \(\text{(- -) (- -)}\) syll. trochee, L→R \(\text{`for the readers'}\)
g. (páp:).(é:.di:).(ná:.t) \(\text{(- -) (- -)}\) stressed stem \(\text{`to feed'}\)

Given the patterns in (1), the stress patterns in (2) are not expected. Whereas in (1) the language appears to build moraic trochees, the forms in (2) indicate that the language is building rhythmically alternating syllabic trochees, disregarding syllable quantity. One possible explanation could be that the heavy syllables in (2) are indeed (originally) stressed, and have simply undergone a sort of three-syllable destressing, whereby (lá:.(si:).).(tá:ji) (with three consecutive stresses) would become (lá:si:).(tá:ji) (with alternating stress). While such an analysis is appealing, it does not account for the form (2d) (lá:si:).(sá:na), which (in principle) could surface as (lá:.(si:).:ša).na with two consecutive stresses as witnessed by (1f) (lá:.(bi:.ba). A process of three-syllable destressing in Latvian does not account for all of the forms in (2) via a moraic analysis. As in (1) above, the form in (2g) can be explained as a “morphological exception” to the pattern of building strict syllabic trochees.

(3) Examples of stress patterns in Latvian: long words (5 syllables)

a. (já:.pa).(slú:di:).na \(\text{(- -) (- -)}\) syll. trochee, L→R \(\text{`must announce'}\)
b. (áp:rau).(dzl:da:).mi \(\text{(- -) (- -)}\) syll. trochee, L→R \(\text{`observing'}\)
c. (ié:drau).(dzé:da:).(má:š) \(\text{(- -) (- -) (- -)}\) syll. trochee, L→R \(\text{`getting acquainted'}\)
d. (nú:svi:li:ná:.ta) \(\text{(- -) (- -) (- -)}\) “ternary” pattern \(\text{`singed'}\)
e. (nú:svi:li:ná:.ta:ma) \(\text{(- -) (- -) (- -)}\) “ternary” pattern \(\text{`for the singed'}\)
f. (pá:.r:).(é:.di:).(ná:.ti) \(\text{(- -) (- -) (- -)}\) stressed stem \(\text{`overfed'}\)
g. (pá:.r:).(é:.di:).(ná:.tiem) \(\text{(- -) (- -) (- -)}\) stressed stem \(\text{`for the overfed'}\)
A simplified summary of a rule-based parametric metrical analysis of Latvian stress is shown in (4). From a rule-based perspective, the language is divided into having rules for short words different from rules for long words.

(4)  a. for 2-3 syllable words: build moraic trochees $L \rightarrow R$
    b. for 4-5 syllable words: build syllabic trochees $L \rightarrow R$
    c. for some 5 syllable words: build a pseudo-ternary system

The analysis in (4) describes a stress pattern which is not attested in the broad typology presented in Hayes (1995). Of course, this could simply be the first such documented case. However, before the theory of parametric metrical phonology is broadened to include such an analysis, the question arises whether such a framework is the most appropriate for describing a language such as Latvian. The rule-based analysis remains segmented between one set of rules for short words, and another set of rules for long words. From the standpoint of phonological theory, a unified approach is generally preferred over a segmented approach. For this reason, I turn to an OT analysis (Prince & Smolensky 1991, 1993) to provide a unified account of the stress patterns of Latvian.

3. An OT account of Latvian stress

The undominated constraints in (5) are needed in order to account for the fact that in Latvian, the first syllable receives primary stress regardless of syllabic weight, and that rhythmic stress is alternating with the strong beat first.

(5)  a. ALIGNHEAD (Head (PrWd), L; PrWd, L) 
    every PrWd begins with the main stress foot
    b. TROCH-FT feet are trochaic

The general pattern seen in (1) - (3) above is that Latvian creates at least two feet per word whenever it can. Building upon Zeps (1989), this translates into words ideally (optimally) consisting of one colon, as shown through the constraint in (6).

(6)  COLON the PrWd consists of at least one colon

This constraint helps to explain the apparent split between short and long words discussed above. Whereas long words have enough syllables to form a colon, and thus can support an alternating stress pattern, short words (having less than four syllables) resort to stressing heavy syllables in order to satisfy the COLON condition.

The constraint COLON is not undominated, as words such as (mána) ‘my’ show. One of the additional constraints shown in (7) must be operative in the language, which would of necessity have to dominate COLON.

(7)  a. FtBIN feet are binary in a syllabic or moraic analysis
     (Prince & Smolensky 1993)
     b. SWP, Stress-to-Weight Principle: every stressed syllable must be heavy
The constraint FTBIN is posited by Prince & Smolensky (1993), following earlier work by McCarthy & Prince (1986) and Prince (1985, 1990). The constraint requires simply that all feet are either bisyllabic or bimoraic. The SWP is a mirror image of the Weight-to-Stress Principle (Prince 1990; Prince & Smolensky 1993), which states that all heavy syllables must receive stress. It is in effect a restatement that stressed syllables are “obligatorily branching” (see for example Hayes 1995; Prince 1985 following earlier work of Halle & Vergnaud 1978 and Hayes 1981). The Weight-to-Stress Principle would not help to rule out a form such as *(á.da).(tà), since there is no heavy syllable in the word which would be affected by the constraint.

Light-syllabled words such as (má-na) ‘my’ and (á.da.).ta ‘needle’ show that if the SWP is active, it is indeed violable. Similarly, a word such as (lá).(bi:.ba) ‘grain’ indicates that if FTBIN is active, it is also violable, since the first syllable has only a light syllable.

The tableaux in (8) and (9) illustrate that both FTBIN and SWP can be ranked above COLON. In tableau (9) and elsewhere, I am not indicating a violation of the SWP on the initial syllable, since all initial syllables always receive stress by virtue of the inviolable ALIGNHEAD, and each candidate with a light first syllable will have the same SWP violation.

<table>
<thead>
<tr>
<th></th>
<th>/a.da.ta/</th>
<th>FTBIN</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(á.da).(tà)</td>
<td>* !</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(á.da).ta</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c.</td>
<td>(á).(dà.ta)</td>
<td>* !</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>/a.da.ta/</th>
<th>SWP</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(á.da).(tà)</td>
<td>* !</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(á.da).ta</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c.</td>
<td>(á).(dà.ta)</td>
<td>* !</td>
<td></td>
</tr>
</tbody>
</table>

However, if FTBIN >> COLON in the tableau for (lá).(bi:.ba), the improper candidate is selected, as seen in (10). In order for the proper candidate to be selected, both SWP and COLON must dominate FTBIN, as shown in (11).

<table>
<thead>
<tr>
<th></th>
<th>/la.bi:ba/</th>
<th>FTBIN</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>* (lá.bi:).ba</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b.</td>
<td>(lá).(bi:.ba)</td>
<td>* !</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>(lá.bi:).(bà)</td>
<td>* !</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>/la.bi:ba/</th>
<th>SWP</th>
<th>COLON</th>
<th>FTBIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(lá.bi:).ba</td>
<td>* !</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(lá).(bi:.ba)</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>(lá.bi:).(bà)</td>
<td>* !</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>
From (9) we know that SWP dominates COLON, and from (11), we know that both SWP and COLON dominate FTBIN. Through transitivity we therefore know the relative constraint ranking shown in (12).

(12) SWP >> COLON >> FTBIN

Unfortunately, the constraint ranking in (12) selects the wrong candidate in a four-syllable such as \((l\acute{a}.si):(\ddot{s}a.na)\) ‘the reading’, as is shown in (13).

<table>
<thead>
<tr>
<th></th>
<th>/la.si:\ddot{s}a.na/</th>
<th>SWP</th>
<th>COLON</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(l\acute{a}.si):(\ddot{s}a.na)</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>*(l\acute{a}).(si:\ddot{s}a).na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>(l\acute{a}).(si:\ddot{s}a).(n\ddot{a})</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are two likely constraints which could help to select the correct candidate for a form such as \((l\acute{a}.si):(\ddot{s}a.na)\), shown in (14). By necessity, the relevant constraint must dominate SWP, as can be seen in (13) above.

(14) a. PARSE-S every syllable must be parsed by a foot (see Prince & Smolensky 1993)

b. *CLASH no adjacent strong beats (see Kager 1994)

The constraint PARSE-S as discussed by Prince & Smolensky (1993) is a member of the PARSE “family” which requires all segments to be parsed into higher prosodic structure. In this instance PARSE-S requires that all syllables be parsed into the metrical structure. The constraint *CLASH is rooted in metrical grid theory, and the idea behind it is discussed in numerous places (see Halle & Vergnaud 1987; Hayes 1995; Kager 1993, 1994; Prince 1983). The idea of the constraint is rooted in the observed fact that many languages shift stress in order to avoid a potential stress clash.

In (15) we see that if PARSE-S is ranked above SWP, the correct candidate, (15b), is barred from surfacing for the word \((\ddot{a}.da).ta\) ‘needle’. In order to select the correct candidate for this word, the relative ranking must be SWP >> PARSE-S, as illustrated in (16).

<table>
<thead>
<tr>
<th></th>
<th>/a.da.ta/</th>
<th>PARSE-S</th>
<th>SWP</th>
<th>COLON</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>*(\ddot{a}.da).(t\ddot{a})</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(\ddot{a}.da).ta</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>*(\ddot{a}).(d\ddot{a}.ta)</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>/a.da.ta/</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(\ddot{a}.da).(t\ddot{a})</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(\ddot{a}.da).ta</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c.</td>
<td>(\ddot{a}).(d\ddot{a}.ta)</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Although unnecessary in (16) because of COLON, (17) shows that PARSE-S (ranked below SWP) is indeed necessary in order to help select the proper candidate for a two-syllable word such as *(má.nas) ‘my’.

<table>
<thead>
<tr>
<th></th>
<th>/ma.nas/</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(má).(nás)</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(má.nas)</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c.</td>
<td>(má).nas</td>
<td>*!</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

If the constraint *CLASH, if ranked above SWP, it selects the correct candidate for the four-syllable word *(lá.si:).(šà.na), as seen in (18).

<table>
<thead>
<tr>
<th></th>
<th>/la.si:ša.na/</th>
<th>*CLASH</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(lá).si:.(šà.na)</td>
<td>*CLASH</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(lá).(si:ša).na</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>(lá).(si:ša).(nà)</td>
<td>*!</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Unfortunately, by having *CLASH >> SWP, the wrong candidate is selected for the three-syllable word *(lá).(bi:ba) discussed above in (11), and shown again with *CLASH in (19). Regardless of whether *CLASH were to be posited as operative on a syllabic or moraic layer, the result is the same, since whatever version selects *(lá.si:).(šà.na) as optimal similarly wrongly excludes *(lá).(bi:ba).

<table>
<thead>
<tr>
<th></th>
<th>/la.bi:ba/</th>
<th>*CLASH</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>*(lá.bi:).ba</td>
<td>*CLASH</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(lá).(bi:ba)</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>(lá.bi:).(bà)</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Indeed, if *CLASH is operative in Latvian, it must be ranked below SWP and PARSE-S, as shown in (20).

<table>
<thead>
<tr>
<th></th>
<th>/la.bi:ba/</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>*CLASH</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(lá.bi:).ba</td>
<td></td>
<td>*!</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b.</td>
<td>*(lá.bi:).ba</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>(lá.bi:).(bà)</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Since we know from (20) that *CLASH must be ranked below PARSE-S and SWP, and from (11) that FTBIN must be ranked below *COLON, we know the partial constraint rankings in (21).
(21) a. SWP >> \{PARSE-S, COLON\} >> FTBIN
b. \{SWP, PARSE-S\} >> *CLASH

As seen in (22), the constraint ranking in (21) also selects the correct candidate for the pseudo-ternary pattern word \(nūo.svi.li.(nā:.ta)\) ‘singed’ from (3d) above. Where a rule-based account of the stress pattern of Latvian fails to account for these forms in a straightforward manner, an OT account succeeds. However, the set of constraints in (21) still cannot account for the stated stress pattern for \(lā.si:).(šā.na)\) (see (13)).

<table>
<thead>
<tr>
<th></th>
<th>/nuo.svi.li.na:ta/</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>nūo.svi.li.(nā:.ta)</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>nūo.svi).(ll.na:).ta</td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>nūo.svi).(li.na:).(tā)</td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Although PARSE-S and *CLASH fail to dominate SWP in Latvian, there must be another constraint active in the language which does. Considering the forms in (23), the relevant constraint appears in some way to affect the alignment of stress feet over the duration of the word.

(23) a. \(lā).(bī:.ba)\) \((\sim)(\sim\sim)\)
b. \(*lā).(si:.ša).na\) \((\sim)(\sim\sim)\)
c. \(lā.si:):(šā.na)\) \((\sim\sim)(\sim\sim)\)

A possible active alignment constraint is presented in (24).

(24) ALIGNEDGE feet are aligned next to the edge of the PrWd

The tableau in (25) shows that with ALIGNEDGE >> SWP, the correct candidate is selected for \(lā.si:):(šā.na)\). In addition, the correct candidates for \(lā).(bī:.ba)\) and \(ā.da).ta\) are also selected, since the surface forms do not violate ALIGNEDGE. Such an alignment constraint appears to be relevant to words four or more syllables long.

<table>
<thead>
<tr>
<th></th>
<th>/la.si:.ša.na/</th>
<th>ALIGNEDGE</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>lā.si:):(šā.na)</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>lā).(si:.ša).na</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>lā).(si:.ša).(nā)</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Unfortunately, the inclusion of ALIGNEDGE >> SWP selects the incorrect candidate for (3c), as shown in (26).
If the stress pattern of Latvian is to be accounted for with the inclusion of ALIGNEDGE (which is open to question), there must be another (undominated) constraint active in the language which rules out two adjacent unstressed moras from surfacing unfooted.

Kager (1994) provides the constraint PARSE-2, shown in (27), which constrains the metrical parse of syllables. Crucially, Kager (1994) writes that a stress unit can be either a syllable or a mora.

(27) PARSE-2 one of two adjacent stress units must be parsed by a foot (Kager 1994)

With the addition of this inviolable and hence undominated constraint, the correct candidate is selected for (3c), as shown in (28).

<table>
<thead>
<tr>
<th>(28) /ie.drau.dze:.da.ma:s/</th>
<th>PARSE-2</th>
<th>ALIGNEDGE</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (ie.drau).(dżę:.da).(mà:s)</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. (ie.drau).(dżę:.da).ma:s</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. (ie.drau).dżę:(dà,ma:s)</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. (ie).(dràu).(dżę:.da).(mà:s)</td>
<td></td>
<td>**!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. (ie).(dràu.dze:.da.(mà:s)</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

The combination of ALIGNEDGE and PARSE-2 also helps to select the correct candidate in (29) below. Importantly, the illicit candidate *(nùo.svi).li.(nà:).(tàm) is ruled out by ALIGNEDGE. We know that *CLASH could not help to rule out the illicit candidate, since \{SWP, PARSE-S\} >> *CLASH, as seen in (20) above.

<table>
<thead>
<tr>
<th>(29) /nuo.svi.li:na:.ta:m/</th>
<th>PARSE-2</th>
<th>ALIGNEDGE</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. * (nùo.svi).li.(nà:.ta:m)</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. (nùo.svi).(li:na:].ta:m</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. (nùo.svi).li.(nà:).(tà:m)</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

As could be expected, all is still not clear with the constraint ALIGNEDGE. As shown in (30), (jà:.pa).(slù.di).na ‘must announce’ does not align its feet at the
word edge. It also lacks a heavy syllable subject to PARSE-2. The constraints thus select the wrong candidate.

<table>
<thead>
<tr>
<th>(30)</th>
<th>/ja:.pa.slu.di.na/</th>
<th>PARSE-2</th>
<th>ALIGNEDGE</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(já:.pa).(slû:.di).na</td>
<td></td>
<td>* !</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>* (já:.pa).slu.(di.na)</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>(já.pa).(slû.di).(nà)</td>
<td></td>
<td>* !</td>
<td>**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A consideration of the forms (1g), (1h), (2g), (3f), and (3g) suggests that there is some sort of interaction between the phonology and morphology in the metrical system of Latvian. What all of these forms have in common is that the stem of the word has a stress. This suggests that there is a constraint such as that shown in (31) active in the language.

(31)  ALIGN-S  \text{Stem} = \text{Foot}  the left edge of the word stem corresponds to the left edge of a foot
(see McCarthy & Prince 1993)

A quick look at all of the words with morphological prefixes in (1), (2), and (3) reveals that this constraint as stated (and ranked above PARSE-2) would force the incorrect candidate to surface for some forms. The relevant forms are listed in (32).

(32) Metrical stress patterns and morphological boundaries

<table>
<thead>
<tr>
<th>surface metrical structure</th>
<th>bracketed stem edge</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (ie.drau).(dzè:.da).(mà:s)</td>
<td>ie.[drau.dze:.da.ma:s]</td>
<td>'getting acquainted'</td>
</tr>
<tr>
<td>b. (áp.rau).(dzi:.da).mi</td>
<td>ap.[rau.dzi:.da.mi]</td>
<td>'scrutinizing'</td>
</tr>
<tr>
<td>c. (núo.svi).li.(nà:.ta)</td>
<td>nuo.[svi.li.na:.ta]</td>
<td>'burned Fem. sg.'</td>
</tr>
<tr>
<td>d. (núo.svi).li.(nà:.ta:m)</td>
<td>nuo.[svi.li.na:.ta:m]</td>
<td>'burned Fem. DAT pl.'</td>
</tr>
<tr>
<td>e. (já:.pa).(slû.di).na</td>
<td>ja:.pa.[slu.di.na]</td>
<td>'must advertise'</td>
</tr>
<tr>
<td>f. (pà).(è:.di).(nà:t)</td>
<td>pa:.è:.di.na:t</td>
<td>'to feed'</td>
</tr>
<tr>
<td>g. (pá:r).(è:.di).(nà:.ti)</td>
<td>pa:r.[è:.di.na:.ti]</td>
<td>'overfed'</td>
</tr>
<tr>
<td>h. (pá:r).(è:.di).(nà:.tiem)</td>
<td>pa:r.[è:.di.na:.tiem]</td>
<td>'for the overfed'</td>
</tr>
<tr>
<td>i. (nè).(sít)</td>
<td>ne.[sít]</td>
<td>'do not hit'</td>
</tr>
<tr>
<td>j. (nè).(sì.ti)</td>
<td>ne.[sì.ti]</td>
<td>'did not hit'</td>
</tr>
</tbody>
</table>

As can be seen, forms (32a)- (32d) violate the constraint ALIGN-S, while forms (32e) - (32j) do not. Unfortunately, the traditional grammars do not provide more example forms, so any generalization drawn from these examples must remain tentative. The pattern which emerges is that some morphological prefixes are in some sense “extrametrical” (see Hayes 1995 and references therein), and hence not counted while placing rhythmic stress, while others are readily included in the metrical structure, and hence counted while placing rhythmic stress. Note that for forms (32f) - (32h), the words have (the expected) alternating stress except for the morphological prefix.
This raises a very interesting question for Latvian morphology: which morphological prefixes are visible to ALIGN-S, and which are not? This question must be pursued elsewhere. For now, I am accepting that different verbal prefixes have different degrees of incorporation into the prosodic word. Some prefixes apparently in some sense become part of the word stem and are thus subject to the regular phonological constraints, while others remain outside of the word stem, and thus leave the word open to the constraint ALIGN-S. If one accepts that the notion of “stem” is subject to both morphological and phonological conditioning, then the constraint ALIGN-S as stated appears to be undominated in Latvian.

With the addition of the undominated constraint ALIGN-S, the correct candidate for (já:.pa).(slu:.di).na is now selected, as shown in (33) below.

<table>
<thead>
<tr>
<th>(33)</th>
<th>/ja:.pa.slu:.di.na/</th>
<th>ALIGN-S</th>
<th>ALIGNEDGE</th>
<th>SWP</th>
<th>PARSE-S</th>
<th>COLON</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>d̪a̰ (já:.pa).(slu:.di).na</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(já:.pa).slu.(di.na)</td>
<td>* !</td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>(já.pa).(slu:.di).(nà)</td>
<td>*</td>
<td>** !</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Although the constraint ALIGNEDGE is, as discussed, somewhat problematic, the constraints which are required to dominate it are generally motivated by the stress pattern of Latvian, as discussed above. Accepting that ALIGNEDGE is indeed part of the constraint hierarchy, Latvian has the active constraints shown in (34) which account for the rhythmic stress patterns stated in Endzelīns (1922). Although *CLASH and FTBIN can be placed in the constraint hierarchy, they do not appear to play an active role in Latvian.

(34) Undominated:
ALIGNHEAD (5a), TROCH-FT (5b), PARSE-2 (27), ALIGN-S (31)
Dominated:
ALIGNEDGE (24) >> SWP (7b) >> {PARSE-S (14a), COLON (6)}

4. Conclusion

Whereas a rule-based account of the stress pattern of Latvian is forced to separate out different metrical rules for long and short words, an OT analysis can account for all of the patterns with a unified set of constraints. However, while the OT analysis can provide a unified account of the data, it does so at the cost of having to posit the questionable constraint ALIGNEDGE (or one similar to it). The “questionable” status of this constraint is supported by the fact that the language does not have any attested forms with the stress pattern (•••) • (•••). Thus, both analyses come with their own cost.

It should be noted that the “problem” with the split rule-based approach is basically rooted in the same forms as the “problem” with the OT analysis: the stress patterns in the forms (lā).(bi:.ba) and (lā.si:).(šā.na) are problematic in any analysis. In the rule-based approach, these forms (and others) lead to the conclusion that the language has one strategy for long words, and another for
short ones. In the OT analysis, these forms lead to the necessity of positing a constraint such as ALIGNEDGE.

As theoreticians, we are inclined to favor the approach which is advantageous over others. In this instance, both theoretical frameworks come with their own difficulties. However, the OT analysis does have the advantage of providing a unified account of all forms. I leave it to future research to determine whether the constraint ALIGNEDGE is justifiable in the analyses of other languages, or whether it is simply an ad hoc constraint allowing one to provide a unified theoretical account of the stress pattern of this language.

Endnotes

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2 For a more thorough account of the data and their presentation, see Kariņš (1996).

3 This suggestion was put forth by Juliette Blevins (personal communication).

4 This is perhaps not an ideal constraint. One alternative (suggested by Sean Erwin at the BLS 22 meeting) is to posit a constraint which would not allow word-internal feet. Unfortunately, such a constraint cannot be ranked higher than the SWP, since the wrong candidate for *(d.e.dau).(džè:da).(mà:s) would be selected (see (26)). A second approach could be to incorporate Juliette Blevins' suggestion about three-syllable clash avoidance into an OT analysis (see above). Such an analysis would have to begin with the WSP (Weight-to-Stress Principle), which would need to be ranked below both *CLASH-3 and PARSE-S, as seen in the tableau (i) below. However, tableau (ii) shows that if PARSE-S is ranked above these constraints, the correct candidate (iib) (d.a:da).ta is ruled out. As discussed above, FT-BIN cannot be ranked above PARSE-S, but must be ranked below it.

<table>
<thead>
<tr>
<th>(i)</th>
<th>/la.si:.ta:.ji/</th>
<th>PARSE</th>
<th>*CLASH-3</th>
<th>WSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(lá).(si:).(tà:.ji)</td>
<td>PARSE</td>
<td>* !</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(lá.si:).(tà:.ji)</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>(lá).(si:.ta:).ji</td>
<td></td>
<td>* !</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(ii)</th>
<th>/ada:ta/</th>
<th>PARSE</th>
<th>*CLASH-3</th>
<th>WSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(á:da).(tà)</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>(á:da).ta</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>(dé).(dà:ta)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

References


Coherence and the Coordinate Structure Constraint

Andrew Kehler
SRI International

1 The Coordinate Structure Constraint

As is well known, the Coordinate Structure Constraint (CSC) was first proposed by Ross (1967):

In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

Following Grosu (1973) and Pollard and Sag (1994), we differentiate between two components of the CSC: the Conjunct Constraint and the Element Constraint. The Conjunct Constraint bars the movement of whole conjuncts out of coordinate structures, ruling out sentences such as (1).

(1) * This is the magazine which John bought the book and.

The Conjunct Constraint has been shown to result from independently motivated constraints in several theories of grammar, for example, Ross (1967) notes that it results independently from his A-over-A Principle, and Pollard and Sag (1994) from their Trace Principle.

We address facts concerning the Element Constraint, which bars the movement of elements contained within a conjunct as opposed to the conjunct itself. The Element Constraint rules out sentences such as (2), because extraction has taken place out of a conjoined verb phrase (VP).

(2) * What book did John buy and read the magazine? (Parallel)

Several counterexamples to the Element Constraint have been discussed in the literature. First, Ross (1967) himself notes that extraction out of coordinate structures is possible when the same element is extracted from all the conjuncts (so-called “across-the-board” application), as in sentence (3).

(3) What book did John buy and read? (Parallel)
The type of relation that holds between the two conjoined VPs in sentences (2) and (3) is what has been called Parallel, in which the and can be roughly paraphrased by and too or and also.

Second, Goldsmith (1985) notes that extraction out of a single conjunct can occur when the "nonetheless" use of and is operative between the conjuncts (paraphrasable by and still, and nonetheless, or and yet), as in example (4); this relation has been called Violated Expectation.

(4) How much can you drink and still stay sober? (Violated Expectation)

Lakoff (1986) notes a similar type of case, in which the operative relation between the conjuncts is Result (in which and is paraphrasable by and therefore or and as a result), shown in example (5). In both of these cases, extraction has taken place out of the first conjunct but not the second.

(5) That's the stuff that the guys in the Caucasus drink and live to be a hundred. (Result) [Lakoff (1986), attributed to Farley]

Finally, extraction can also take place out of coordinate structures when the operative relation is Narration as shown in example (6a), in which and is paraphrasable by and then. However, Lakoff notes that unlike examples (4) and (5), in these cases extraction must take place out of the final conjunct, possibly along with certain others that do not serve a scene-setting function. For instance, if the final conjunct of sentence (6a) is removed to form sentence (6b), the result is unacceptable.

(6) a. What did Harry buy, come home, and devour in thirty seconds? (Narration) [Adapted from Ross (1967)]

b. * What did Harry buy and come home?

To summarize, we can categorize the CSC data into three classes. The first is exemplified examples (2) and (3), in which a Parallel relation is extant between the two conjuncts. For reasons that will become clear in Section 4, we categorize this relation as a Resemblance relation. The second class is exemplified by examples (4) and (5), in which the relations Violated Expectation and Result hold, respectively. Because these relations are rooted in cause and effect, we categorize them as instances of Cause-Effect relations. The final class of cases is exemplified by example (6), in which the Narration relation is operative. We categorize this relation as a Contiguity relation.

Viewing the data in light of this categorization, there doesn't appear to be much support left for the CSC. In fact, in none of the three categories is extraction from a coordinate construct barred entirely. Instead, there appear to be weaker constraints at play that differ with the type of relation: (1) when
a Resemblance relation is operative between the conjuncts, extraction must occur out of each conjunct, (2) when a Contiguity relation is operative, extraction must take place out of the final conjunct (and perhaps certain others), and (3) when a Cause-Effect relation is operative, no constraints appear to be at play.

In the remainder of this paper, we show that the correlation of data with respect to this trichotomy of relation types is not unique to that for extraction from coordinate constructs. We summarize previous work that shows similar patterns in data for VP-ellipsis and gapping. We then discuss how the syntactic operations in question interact with discourse-level coherence resolution mechanisms to account for the data.

2 VP-Ellipsis

There has been an ongoing debate in the literature concerning the level of language processing at which VP-ellipsis is resolved. VP-ellipsis is exemplified in sentence (7).

(7) Ross likes his mother, and Bill does too.

The stranded auxiliary in the second clause (the target clause) indicates the elision of a verb phrase, a representation for which must be recovered from the representation of another clause, in this case the first clause (the source clause). Sentence (7) displays a strict/sloppy ambiguity; Bill may like Ross's mother (the strict reading) or his own mother (the sloppy reading).

Inherent in syntactic accounts is the claim that VP-ellipsis is resolved at a level of syntactic structure (either surface structure or LF). On the other hand, inherent in semantic accounts is the claim that VP-ellipsis is resolved at a purely semantic level of representation. This question remains a point of contention, primarily because there are data to support both views.

In previous work (Kehler, 1993; Kehler, 1994a; Kehler, 1995), we have shown that the seemingly contradictory VP-ellipsis data exhibit a pattern that correlates with the type of coherence relation operative between the source and target clauses. Specifically, we show that the data support a syntactic account when a Resemblance relation is operative between the clauses, whereas the data support a semantic account when a Cause-Effect relation is operative. (The data for the third type of relation, Contiguity, requires more attention than we have space for here. See Kehler (1995) for further discussion.)

To show this pattern we examined two types of data. The first type includes examples for which a suitable semantic representation for the source clause is available, but for which there is a mismatch of surface-syntactic form between the syntactic representations of the source and the target clauses. In
such cases, if ellipsis shows a sensitivity to syntactic form, then the syntactic
approaches are evidenced; otherwise, semantic approaches are evidenced. The
second type of data includes examples for which there is no syntactic form
mismatch, but for which reconstruction of the source VP within the target
would possibly result in a syntactic constraint violation in the target. In these
cases, if the source and target pair is unacceptable because of such a constraint
violation, then the syntactic theories are supported; otherwise, semantic ap-
proaches are supported. We examined six types of elliptical contexts: two in
the first category (voice alternation and non-VP antecedents), and four in the
second (Condition A-C violations and subjacency violations). We provide an
eample of each case here to illustrate the pattern.

**Voice Alternation** In sentence (8), an elided target VP in the active voice
receives its interpretation from a source clause in the passive voice, despite the
mismatch of syntactic form. Contra syntactic accounts, the result is acceptable
(here the Violated Expectation meaning of *but* is operative). However, in
accord with syntactic accounts, sentence (9), which is otherwise similar to
sentence (8), is unacceptable (here the Parallel relation holds).

(8) This problem was to have been looked into, but obviously nobody did.
[look into the problem] (Vincent Della Pietra, in conversation)
(Violated-Expectation)

(9) # This problem was looked into by John, and Bob did too. (Parallel)

**Non-VP Antecedents** In example (10), the semantic representation for
the source is evoked by a nominalization, and not a syntactic VP. While this
example is acceptable, the otherwise similar sentence (11) is not.

(10) This letter deserves a response, but before you do, .... [respond]
(Gregory Ward, personal communication) (Violated-Expectation)

(11) # This letter provoked a response from Bush, and Clinton did too.
[respond] (Parallel)

**Condition A Violations** As predicted by Condition A of Binding Theory,
it is generally difficult to obtain a strict reading when the source clause contains
a reflexive pronoun, as shown in sentence (12). However, in sentence (13), the
strict reading is readily available and perhaps preferred.

(12) ?? Fred, voted for himself, and Gary, did too. [vote for Fred,] (Parallel)

(13) John, voted for himself, even though no one else, did. [vote for John,]
(Denial of Preventer)
Condition B Violations  Sentence (14) is also odd, as predicted by Condition B of Binding Theory. However, sentence (15) seems to be acceptable despite the predicted Condition B violation.

(14) ?? John’s lawyer defended him, and he did too. [defend himself] (Parallel)

(15) John’s lawyer defended him because he couldn’t. [defend himself] (Explanation)

Condition C Violations  The unacceptability of examples such as (16) is predicted by Condition C of Binding Theory. On the other hand, sentence (17) is also predicted to be unacceptable, but it is instead acceptable.

(16) ?? Mary introduced John to everyone, and he did too. [introduced John to everyone] (Parallel)

(17) The lawyer defended Bill against the accusations because he couldn’t. [defend Bill against the accusations] (Explanation)

Subjacency Violations  Haïk (1987) gives examples of apparent subjacency violations in cases of antecedent-contained deletion (ACD), exemplified by sentence (18). However, Rooth notes that one would expect subjacency to apply in sentence (19), but it appears not to; in this case the Cause-Effect relation Explanation holds between the clauses. Furthermore, in the corresponding case without ellipsis shown in sentence (20), the gap remains and a subjacency violation results, seemingly precluding the possibility that syntactic material is reconstructed in interpreting sentence (19).

(18) # John read everything which Bill believes the claim that he did. [read φ]

(19) Which problem did you think John would solve because of the fact that Susan did?

(20) # Which problem did you think John would solve because of the fact that Susan solved?

The data given throughout this section suggest that VP-ellipsis resolution requires a syntactically suitable antecedent in examples in which a Resemblance relation is operative, but only a suitable semantic representation in examples in which a Cause-Effect relation is operative. (Again, for reasons of space, we omit discussion of the third category, Contiguity, which appears to have more subtle constraints at work.)
3 Gapping

We now move on to consider the gapping construction. Gapping is characterized by an initial *source* clause and the elision of all but two (and in constrained circumstances, more than two) constituents in one or more subsequent *target* clauses, as exemplified in sentence (21a).

(21) a. Sue became upset and Nan Ø downright angry.

   b. Sue became upset and Nan became downright angry.

We address a particular phenomenon noticed by Levin and Prince (1982), who note that pairs of conjoined sentences such as (21b) have what they call *symmetric* and *asymmetric* readings. That is, sentence (21b) could have a *symmetric* reading in which the two events are understood as independent, or an *asymmetric* reading in which the first event is interpreted as the cause of the second event. In our terms, the symmetric readings correspond to the Resemblance relation *Parallel*, whereas the asymmetric readings correspond to the Cause-Effect relation *Result*. Levin and Prince contrast the sentence (21b) with its gapped counterpart, given in (21a), which unlike sentence (21b) has only the symmetric reading. That is, whereas sentence (21b) can have a reading in which Nan became angry *because* Sue became upset, this reading is unavailable in (21a). This can be seen by the following contexts, again due to Levin and Prince, in which gapping is acceptable in the context favoring the symmetric reading in (22), but not in the context favoring the asymmetric (causal) reading given in (23), although in both cases the non-gapped versions are acceptable.

(22) Sue and Nan had worked long and hard for Carter. When Reagan was declared the winner, Sue became upset and Nan became/Ø downright angry.

(23) Susan’s histrionics in public have always gotten on Nan’s nerves, but it’s getting worse. Yesterday, when she couldn’t have her daily Egg McMuffin because they were all out, Sue became upset and Nan became/#Ø downright angry.

The causal interpretation of the two final clauses in example (23), supported by the given context, is unavailable when gapping has applied.

While Levin and Prince limit their discussion to sentences conjoined with *and*, in a previous paper (Kehler, 1994b) we have shown that this pattern is quite robust with respect to the Resemblance versus Cause-Effect relation distinction. For instance, like *and*, *or* also has Resemblance and Cause-Effect uses. Consider example (24a).
(24) a. John will go to New York, or Bill will go to Boston.

b. John will go to New York, or Bill \(\emptyset\) to Boston.

Sentence (24a) has two readings: a symmetric (disjunctive) reading, and an asymmetric causal reading (e.g., to express a threat of the form *If \(A\) doesn’t happen then \(B\) will!*). Like the case with *and*, the gapped counterpart of sentence (24a) shown in sentence (24b) has only the symmetric reading. Likewise, the sentence (25) is only felicitous with the pure Contrast meaning of *but*, and not with the Violated Expectation meaning.

(25) John voted for Clinton but (\# nonetheless) Tom \(\emptyset\) for Bush.

Finally, gapping is unacceptable with subordinating conjunctions that indicate Cause-Effect relations, as in examples (26a-c).

(26) John voted for Clinton, \{ \# because \\
\# even though \\
\# despite the fact that \} Tom for Bush.

A stipulation commonly seen in the syntactic literature is that gapping may apply only in coordinate structures, and not in subordinate ones (such as those in example (26)). However, the facts concerning *and*, *or*, and *but* suggest that the Resemblance versus Cause-Effect distinction may instead be the correct one to make.

<table>
<thead>
<tr>
<th>Relation Type</th>
<th>Across-the-Board Extraction Required?</th>
<th>VPE Requires Syntactic Parallelism?</th>
<th>Gapping Felicitous?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resemblance</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Cause-Effect</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Contiguity</td>
<td>no*</td>
<td>no*</td>
<td>no*</td>
</tr>
</tbody>
</table>

Table 1: The Pattern for Extraction, VP-Ellipsis, and Gapping

The pattern we have established for extraction, gapping, and VP-ellipsis is summarized in Table 1. The asterisks in the *Contiguity* row indicate the more subtle constraints at play in that case, which we are not addressing here.
4  Hume's Three Types of Coherence

We have categorized the data with respect to the type of relation that holds between the clauses in question; these relations have included Parallel, Result, Violated Expectation, Explanation, and Narration, among others. Past researchers have posited such coherence relations to account for why discourses are interpreted under the assumption that they are coherent, a process which may require that the hearer adopt additional inferences beyond what is explicitly stated. While many such sets of relations have been posited with associated categorizations, our categorization appeals to the sentiment summarized in the following passage, due to the philosopher David Hume (1748):

"To me there appear to be only three principles of connection among ideas, namely Resemblance, Contiguity in time or place, and Cause or Effect."

In this section, we analyze a set of coherence relations as belonging to these three general categories. The three classes are shown to differ systematically in the type of arguments over which the coherence constraints are applied, as well as in the type of inference process underlying this application.

4.1  Resemblance Relations

<table>
<thead>
<tr>
<th>Relation</th>
<th>Constraints</th>
<th>Conjunctions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel</td>
<td>$p_0 = p_1, q_i(a_i)$ and $q_i(b_i)$</td>
<td>and</td>
</tr>
<tr>
<td>Contrast</td>
<td>(1) $p_0 = \neg p_1, q_i(a_i)$ and $q_i(b_i)$</td>
<td>but</td>
</tr>
<tr>
<td></td>
<td>(2) $p_0 = p_1, q_i(a_i)$ and $\neg q_i(b_i)$</td>
<td></td>
</tr>
<tr>
<td>Exemplification</td>
<td>$p_0 = p_1; b_i \in a_i$ or $b_i \subseteq a_i$</td>
<td>for example</td>
</tr>
<tr>
<td>Generalization</td>
<td>$p_0 = p_1; a_i \in b_i$ or $a_i \subseteq b_i$</td>
<td>in general</td>
</tr>
<tr>
<td>Elaboration</td>
<td>$p_0 = p_1, a_i = b_i$</td>
<td>in other words</td>
</tr>
</tbody>
</table>

Table 2: Resemblance Relations

Establishing a passage as coherent under a Resemblance relation requires that commonalities and contrasts among corresponding sets of properties and entities be recognized. For each relation, the hearer identifies a relation $p_0$ that applies over a set of entities $a_1, ..., a_n$ from the first sentence $S_0$, and a corresponding relation $p_1$ that applies over a corresponding set of entities $b_1, ..., b_n$ from the second sentence $S_1$. Coherence results from these corresponding components being related; in this case a common (or contrasting) relation $p$ subsuming $p_0$ and $p_1$ is inferred along with common (or contrasting) properties $q_i$ of the corresponding elements $a_i$ and $b_i$. The Resemblance relations are summarized in Table 2.
4.2 Cause-Effect Relations

Establishing a passage as coherent under a Cause-Effect relation requires that a path of implication be established between the propositions denoted by the utterances. (We are using implication in a very loose sense here, meaning roughly "could plausibly follow from".) For each relation, the hearer identifies a proposition $P$ from the first sentence $S_0$ and a proposition $Q$ from the second sentence $S_1$. Coherence results from these two propositions being related; in this case an implication relationship is inferred between the two. The Cause-Effect relations are summarized in Table 3.

<table>
<thead>
<tr>
<th>Relation</th>
<th>Presuppose</th>
<th>Conjunctions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Result</td>
<td>$P \rightarrow Q$</td>
<td>and (as a result) therefore</td>
</tr>
<tr>
<td>Explanation</td>
<td>$Q \rightarrow P$</td>
<td>because</td>
</tr>
<tr>
<td>Violated Expectation</td>
<td>$P \rightarrow \neg Q$</td>
<td>but</td>
</tr>
<tr>
<td>Denial of Preventer</td>
<td>$Q \rightarrow \neg P$</td>
<td>even though</td>
</tr>
</tbody>
</table>

Table 3: Cause-Effect Relations

4.3 Contiguity Relations

The sole relation in the Contiguity category is Narration. The Narration relation allows one to express a coherent sequence of events centered around some system of entities.

**Narration:** Infer a change of state for a system of entities from $S_1$, inferring the initial state for this system from $S_0$.

Further discussion of this relation is given in Kehler (1995).

5 The Analysis

One of the main differences between the constraints that Resemblance and Cause-Effect relations impose is in the type of arguments over which they are applied. Establishing a Resemblance relation requires access to the semantics of subclausal constituents in the source and target sentences, that is, the relations $p_i$ and the corresponding elements $a_i$ and $b_i$. In contrast, Cause-Effect relations require access only to the clause-level semantics, that is, the $P$ and $Q$. We now ask how this difference affects the constraints on the syntactic
form used in the two clauses being related, in light of syntactic operations such as elision and extraction.

Put briefly, to explain the VP-ellipsis and gapping data noted earlier, in Kehler (1994a) and Kehler (1995) we posited that elided information in the syntax of the target is recovered in just those cases in which the coherence resolution mechanism needs to access the semantics of syntactic nodes within the elided material. This will be the case when Resemblance relations are operative, because the arguments to the relations (the $p_i$, $a_i$, and $b_i$) will generally be associated with nodes within the elided material. In contrast, the elided syntactic material need not be restored when Cause-Effect relations are operative, because the arguments to the relations (the $P$ and $Q$) are associated with the clause-level sentence nodes, which are always present. Therefore, the missing syntax in VP-ellipsis and gapping constructions is recovered only when a Resemblance relation is operative, accounting for why they require a suitably matching syntactic antecedent in these cases.

However, VP-ellipsis and gapping differ in that VP-ellipsis is least constrained when a Cause-Effect relation is operative (requiring only a suitable semantic antecedent without regard to syntactic parallelism), whereas gapping is most constrained in this case (not being felicitous at all). We argue in Kehler (1994a) and Kehler (1995) that this results from the referential properties of the two forms. Particularly, VP-ellipsis is referential; it behaves like a pronoun in that it can refer cataphorically, as well as have antecedents that are evoked from clauses other than the one immediately prior to it. Therefore, in Cause-Effect relations a purely semantic antecedent can be recovered without regard to syntactic parallelism. By similar reasoning, gapping is shown not to be referential (i.e., it does not allow cataphora nor reference to antecedents more than one clause back), so it is infelicitous in Cause-Effect relations because its meaning cannot be recovered without reconstruction of the missing syntax, which comes about only with Resemblance relations.

The constraints on extraction out of coordinate constructions can also be seen to arise out of the interaction between a syntactic operation and coherence resolution processes. Kuno (1987) and others have noted that for extraction to take place, the extracted element must be able to serve as the topic of the clause (in some appropriate sense) from which it is extracted:

*Topichood Condition for Extraction*: Only those constituents in a sentence that qualify as the topic of the sentence can undergo extraction processes (i.e., WH-Q Movement, Wh-Relative Movement, Topicalization, and It-Clefting). (Kuno, 1987, page 23)

An element that is extracted from a conjoined clause must therefore be able to serve as a topic for the conjoined clause. The situation differs for this constraint with respect to the type of coherence relation that is operative between the
clauses. Resemblance relations are coherent by virtue of the fact that they share a common topic, identifiable from the common relation and the common properties of the corresponding elements over which the relation applies (at some, perhaps inferred, level of generalization). Therefore, the topic of a Resemblance construction must be common to each of the conjuncts; that is, if an element in one of the clauses gives rise to a topic, then its corresponding element in the other clause must also. Extraction can thus occur only if both elements are extracted to the topic-denoting position. Of course, this is possible only when the elements are in fact the same, resulting in the “across-the-board” type of extraction. In contrast, there is nothing prohibiting an element in one clause from serving as the topic of a pair of clauses related by a Cause-Effect relation; we therefore do not see similar constraints on extraction in those cases. Finally, the topic of a set of clauses related by Narration need not be mentioned in every clause (in particular, not in scene-setting clauses), so extraction need not take place out of all conjuncts. On the other hand, extraction must take place out of certain of the conjuncts that do not serve a scene-setting function, insofar as an inability to do this would suggest that the extracted element is no longer the topic of that part of the narration.

6 Conclusions

The data discussed herein suggest that there is no purely syntactic Coordinate Structure Constraint operative in natural language grammar, and in fact that it is unlikely that any purely syntactic explanation will be able to account for the data involving extraction from coordinate structures. Instead, as with the data involving VP-ellipsis and gapping, any such explanation needs to take into consideration the type of coherence relation operative between the clauses over which the relevant syntactic operation applies. With each of these phenomena, the strongest constraints on choice of syntactic structure appear to be at play when a Resemblance relation is operative between the clauses; such constraints have independent motivation from the perspective of coherence resolution mechanisms and the syntax/discourse interface.

Acknowledgements

I would like to thank Jerry Hobbs, who brought Lakoff’s article to my attention, and Mary Dalrymple for valuable discussions. This research was funded by the National Science Foundation and the Advanced Research Projects Agency under Grant IRI-9314961 (Integrated Techniques for Generation and Interpretation).
References


1 Introduction

This paper discusses the licensing of negative pronominals in Georgian, which sometimes must appear in conjunction with a negative marker and sometimes need not. If there is no negative marker in the clause, then the negative pronominal must immediately precede the verb, as in (1); if it occurs elsewhere in the clause, then the structure is ungrammatical. However, if there is an overt negative marker before the verb, then the negative pronominal can appear anywhere in the clause, as in (2).

(1) a. შენი Cigni [versad]  vnaxe.
    your book no where-VER 1.see.3
    ‘I couldn’t see your book anywhere.’

b.  *[versad] შენი Cigni vnaxe.

(2) a. [versad]  შეนი Cigni ver  vnaxe.
    no where-VER your book Neg-VER 1.see.3
    ‘I couldn’t see your book anywhere.’

b. nu  gagzavni [nursad]!
    Neg-NU 2.send.3 nowhere-NU
    ‘Don’t send it anywhere.’

Why should this be? If the Georgian negative pronominals are licensed by negation, as (2) would suggest, then why can they appear when no negative marker is present, as in (1)? Conversely, if the negative pronominals are not licensed by negation, then why do they require the presence of a negative marker when not immediately preceding the verb?

Before proceeding, it should be noted that this restricted distribution is peculiar to negative pronominals since Georgian normally demonstrates substantial freedom of word order.¹ For example, a counterpart of (1b) in which \textit{versad} ‘no where’ is replaced by \textit{ik} ‘there’ or \textit{magidaze} ‘table-on’ is grammatical.

In this paper, I argue that Georgian negative pronominals need to be licensed in a way similar to traditional Negative Polarity Items (Progovac 1994; Haegeman 1995); here, I will leave aside the details of the semantic licensing of these negative pronominals (Ladusaw 1980, 1992, 1993; Lineberger 1980; Dowty 1993).² In Georgian the negative pronominals are constrained to appear in the scope of clausal negation. This constraint can be met in one of two ways. First, it can be provided by the negative marker. Since the negative marker appears with the finite verb in T⁰, it too heads the clause, and thus the
entire clause is within the scope of negation. Second, if the negative pronominal appears in the SpecIP position before the verb, it triggers clausal negation via Spec-head agreement which in turn licenses the negative pronominal. This results in there appearing to be a positional licenser for negative pronominals.

2 The Distribution of Negative Pronominals

Before examining the distribution of negative pronominals, consider that of sentential negation. There are three negative particles in Georgian: *ar indicating simple negation; *ver indicating impossibility; and *nu used with negative imperatives (see Nordlinger to appear on a similar three way distinction in Wambaya). All three pattern similarly in that they always occur immediately before the verb, as in (3) and (4).

(3) a. kartul gramaTiKas ar vsCavlobdit.
   Georgian grammar Neg-AR 1.study.3
   ‘We were not studying Georgian grammar.’

b. *ar kartul gramaTiKas vsCavlobdit.

c. *kartul gramaTiKas vsCavlobdit ar(a).

(4) a. sTudenTebo, mešvide gaKvetils nu moamzadebt.
   students seventh lesson Neg-NU 2.prepare.3
   ‘Students, don’t prepare lesson seven.’

b. usatvalod ver gxedavt.
   without glasses Neg-VER 1.see.2
   ‘I cannot see you without glasses.’

Corresponding to the three negative markers, there are three sets of negative pronominals, e.g., *veraperi, *araperi, and *nuraperi all mean ‘nothing’ and are used with the meaning of the corresponding negative marker. The table in (5) provides some examples.

(5)

<table>
<thead>
<tr>
<th>*ar form</th>
<th>*ver form</th>
<th>*nu form</th>
</tr>
</thead>
<tbody>
<tr>
<td>aravin</td>
<td>veravin</td>
<td>nuravin</td>
</tr>
<tr>
<td>araperi</td>
<td>veraperi</td>
<td>nuraperi</td>
</tr>
<tr>
<td>arsad</td>
<td>versad</td>
<td>nursad</td>
</tr>
<tr>
<td>arasodes</td>
<td>verasodes</td>
<td>nurasodes</td>
</tr>
<tr>
<td>aravitari</td>
<td>veravitari</td>
<td>nuravitari</td>
</tr>
</tbody>
</table>
2.1 With a Negative Marker

When a negative marker is present, the negative pronominal can occur anywhere in the sentence (Aronson 1990; see Topuria 1925 on the historical development of this construction). That is, not only can it occur immediately before the Neg+verb complex, as in (6a), but it can occur further to the left of the complex, as in (6b), or to the right of the verb, as in (6c). Note that imperatives need not be verb-initial (cf. (6c) and (18c)).

(6) a. čems Klassi am Cignebs [veravin] ver Kitzulobs.
    our class-in these books no one-VER Neg-VER 3.read.3
    'No one in our class can read these books.'

    b. [versad] šeni Cgni ver vnaxe.
    no where your book Neg-VER 1.see.3
    'I couldn’t see your book anywhere.'

    c. nu gagzavnit [nursad]!
    Neg-NU 2.send.3 nowhere
    'Don’t send it anywhere.'

As can be seen by the sentences in (6), Georgian is what is referred to as a Negative Concord language in that having two or more negative constituents in a clause results in a single negation semantically, not a double one. For example, (6a) only means that it is not the case that someone in the class can read these books; it does not mean that no one cannot read them, that is, that everyone in the class can read them.

2.2 No Negative Marker

When there is a negative marker in the clause, the negative pronominal can appear anywhere. However, the situation changes if no negative marker is present. In this case, the negative pronominal must occur immediately before the verb, as in (7a) and (8a) (Aronson 1990); any other order results in ungrammaticality, as in (7b) and (8b).

(7) a. šeni Cgni [versad] vnaxe.
    your book nowhere-VER 1.see.3
    'I couldn’t see your book anywhere.'

    b. *[versad] šeni Cgni vnaxe.
    (cf. versad šeni Cgni ver vnaxe.)

(8) a. [nurapers] Čam!
    nothing-NU 2.eat.3
    'Don’t eat anything!'
b. *Čam [nurapers]!
   (cf. nu Čam nurapers!)

The Negative Concord seen with the sentences in (6) also appears in sentences without a negative marker when two or more negative pronominals are present, as in (9).

(9) čvens supraze [aravis] [arasodes] šia.
   our banquet-at no one-AR never-AR hungry.3
   ‘At our banquet no one is ever hungry.’

In (9), the only reading is one in which there is only one negation semantically, with the resulting reading that it is not the case at our banquet that some one is hungry at some time.

To summarize so far, when there is no negative marker in the clause, the negative pronominal must occur immediately before the verb, as shown in (10a); any other ordering is ungrammatical. However, when the negative marker is present, any ordering of the negative pronominal is possible, as seen in (10b/c).

(10) a. ... NEG.PRO V ...
    b. ... NEG.PRO ... Neg V ...  c. ... Neg V ... NEG.PRO ...

3 Analysis

3.1 Syntactic Structure

First consider what the syntactic structure of the Georgian clause would have to be in order to allow for the structures in (10). The negative marker always immediately precedes the finite verb. Following Piñón 1992, I posit a complex I\(^0\) which contains both the finite verb and, when present, the negative marker.\(^5\)\(^6\) The head-like behavior of the negative marker is seen most clearly in wh-questions in which the negative marker must follow the wh-phrases and precede the verb (§4.1). The immediately preverbal position of the negative pronominals results when they appear in SpecIP. Note that the preverbal position of the negative pronominals cannot be the result of their being clitic-like heads since when a negative marker is present they distribute like any other maximal projection in the language. The negative pronominals which appear to the right of the verb or further to the left are not in SpecIP and hence are not in a Spec-head relationship with the I\(^0\)+Neg\(^0\) head. The consequences of this disparity are discussed below.
3.2 Movement to SpecIP

Georgian negative pronouns clearly have a licensing requirement. When a negative marker is present, it licenses negative pronouns anywhere in the clause. When there is no negative marker, the negative pronouns must appear immediately before the verb in SpecIP. What is the mechanism of this licensing?

Italian and Spanish negative pronouns have a similar, but by no means identical, distribution to those of Georgian pronouns. The basic distribution of Italian and Spanish negative pronouns is as follows.\(^7\) When a negative pronoun occurs postverbally, the negative marker must be present; when it occurs preverbally, the negative marker cannot be present. This is exemplified by the Spanish sentences in (12).

Neg ate no one no one Neg ate
‘No one ate.’ ‘No one ate.’

One approach to the Italian and Spanish data is to claim that c-command is the relevant relationship: when the negative pronoun c-commands the head of the clause, the negative marker cannot be present and the negative pronoun licenses the semantic expression of negation. A second approach is to postulate Spec-head agreement between the preverbal negative pronoun and the head of the clause, triggering semantic negation in the head of the clause. These two possibilities are not mutually exclusive, and which approach is necessary for the Romance languages is still under debate.

Let us return to the Georgian problem and consider whether either the notion of Spec-head agreement or c-command can explain the distribution of negative pronouns. First consider the structures in which a negative marker is present and the negative pronouns can appear anywhere in the sentence. In this construction, the negative marker provides the negation which scopes over the entire clause, while the negative pronouns are licensed by this negation but do not contribute any negative meaning themselves. The basic idea is that negation is a clausal head and as such the entire clause is in the domain of negation and any negative pronouns in the clause will be licensed. However, the fact that the negative pronouns are in the scope of negation cannot be directly read off of the surface structure as a c-command relationship. The negative marker licenses both preverbal and postverbal negative
pronominals at the surface structure, and there is no plausible form for the phrase structure which allows preverbal negation to c-command both types of positions. Instead, Georgian has a semantic requirement that the negative pronominals be in the scope of clausemate negation (Ladusaw 1992). What is unusual about Georgian is that there is no syntactic scope requirement other than that the relevant negation be in the same clause since negation in a higher clause cannot license negative pronominals in Georgian (see Progovac 1994 on Serbo-Croatian).  

Next consider what happens if there is no negative marker. Above it was assumed that the negative marker indicated that the entire clause was in the scope of negation which licensed the negative pronominals. If there is no negative marker, the negative pronominals must still be licensed by being semantically in the scope of clausal negation. In Georgian this requirement can be satisfied positionally, namely by the appearance of a negative pronoun in SpecIP. This is possible due to Spec-head agreement between SpecIP and 1^0. Following a proposal in Progovac 1994 for Italian, I propose that a negative pronoun in SpecIP triggers negation on the head 1^0. However, this negation is not overtly realised, i.e., it does not force the presence of a negative marker. Once the presence of the negative pronoun in SpecIP triggers the clausal negation in 1^0, the negative pronoun will be licensed, similarly to when the negative marker is present. Note that it is not SpecIP itself which licenses the negative pronoun; rather, this position allows the triggering of sentential negation.

This account has a fortuitous consequence for Negative Concord in Georgian. One problem that analyses of Negative Concord languages face is how to correctly reduce the number of negations to one. If the language always requires a negative marker to license the negative pronoun, this problem is less acute because the negative marker can provide the clausal negation, while the negative pronoun is in fact not negatives at all but instead are licensed by negation. However, such an account becomes more complicated in a language like Georgian or Italian where the negative marker is not always required: if the negative pronoun can provide negation when there is no negative marker, why does it not do so when a negative marker is present, resulting, erroneously, in double negation? Under the account proposed here, the Georgian negative pronouns are not themselves negative. When there is a negative marker present, it provides the clausal negation which in turn licenses the negative pronouns. When there is no negative marker, the negative pronoun in SpecIP triggers clausal negation, which in turn licenses the negative pronoun. If the negative pronoun is not in SpecIP, Spec-head agreement cannot occur and the covert negation is not triggered and as a result the negative pronoun will not be licensed.

4 Predictions of the Account

This account of negative pronoun licensing in SpecIP makes two interesting predictions with regard to Georgian. The first is that positional licensing
of negative pronominals will be impossible in wh-questions since wh-phrases are also licensed in SpecIP (Harris 1984; King 1995). The second prediction concerns the clausal scope of negation. Negative pronominals in SpecIP show the same clausal negation interpretation as negative pronominals licensed by a negative marker. This is seen most clearly by the distribution of the three classes of negative pronominals which pattern as if the negative marker of the corresponding class were present.

4.1 Wh-Questions

Further evidence for the positional licensing of negative pronominals in Georgian comes from the distribution of wh-phrases. Harris (1984) discusses Georgian question formation in detail. Of concern here is the structure of wh-questions. The basic generalization is that wh-phrases must occur immediately before the verb, as in (13) and (14).\(^{10}\) Note that the verb does not raise to \(C^0\) in questions, as reflected by the fact that multiple constituents can precede and follow the verb. In the examples below, any order of the constituents is possible as long as the wh-phrases immediately precede the verb.

(13) a. nino [sad] Cavida?
   Nino where 3.go
   ‘Where did Nino go?’

   b. [sad] Cavida nino?

   c. *[sad] nino Cavida?

   d. *nino Cavida [sad]?

(14) a. es botli araqi [vis] uqide?
   this bottle vodka who 2.buy.3.3
   ‘Who did you buy this bottle of vodka for?’

   b. [visi švili] xar šena?
   whose child 2.be you
   ‘Whose child are you?’

There is one major exception to the generalization that wh-phrases must immediately precede the verb. When the verb is negated, the negative marker precedes the verb and any wh-phrases precede the Neg+verb complex, as seen in (15). This is to be expected if the negative marker forms a complex head with the verb in \(I^0\) (§3.1).

(15) a. [vin] ar mosula?
   who Neg-AR 3.came
   ‘Who has not come?’
b. *ar [vin] mosula?

c. *[vin] mosula ar?

Wh-phrases are also licensed in SpecIP, as reflected by their obligatory preverbal position. This account predicts that either a wh-phrase or a negative pronominal can appear in SpecIP, but not both.11 This prediction is borne out. In order for a wh-question to contain a negative pronominal, an overt negative marker must appear before the verb, as in (16a) and (17a), thus licensing the negative pronominal to appear in any position in the clause.

(16) a. [vin] ar ačuka niKos [araperi] dabadebis dγeze?
   who Neg-AR 3.give.3.3 Niko nothing-AR birthday-for
   'Who didn’t give Niko anything for his birthday?'

b. *[vin] [araperi] ačuka niKos dabadebis dγeze?
   who nothing-AR 3.give.3.3 Niko birthday-for

c. *[araperi] vin ačuka niKos dabadebis dγeze?
   nothing-AR who 3.give.3.3 Niko birthday-for

(17) a. [romeli Cigni] ar CauKitxavs ninos [arasodes]? which book Neg-AR 3.read.3 Nino-DAT never
   'Which book has Nino never read?'

b. *[romeli Cigni] [arasodes] CauKitxavs ninos? which book never-AR 3.read.3 Nino

c. *[arasodes] [romeli Cigni] CauKitxavs ninos?
   never-AR which book 3.read.3 Nino

The data in (16) and (17) also show that positional licensing of negative pronominals must occur at the surface structure. That is, a negative pronominal cannot move to SpecIP, triggering negation, and then scramble to some other position. This conclusion is compatible with the general distribution of negative pronominals in Georgian. If a negative pronominal could move to SpecIP to trigger negation and then move out of that position, it would be expected that negative pronominals could appear in any position without an overt negative marker. However, this is not the case.

4.2 Interpretation of Negation

An interesting concord phenomenon further supports the claim that the negative marker and the covert negation licensed by the negative pronominal in SpecIP have scope over the entire IP in these constructions. As mentioned previously, Georgian has three negative markers: ar marks simple negation, ver denotes impossibility, and nu marks imperatives. Consider the triple in (18).
(18) a. puls axla ar majlevt.
    money now Neg-AR 2.give.1.3
    ‘You are not giving me the money now.’

b. puls axla ver majlevt.
    money now Neg-VER 2.give.1.3
    ‘You cannot give me the money now.’

c. puls axla nu majlevt!
    money now Neg-Nu 2.give.1.3
    ‘Don’t give me the money now.’

The sentences in (18) are identical except for the negative marker. Which negative marker is chosen results in clausal scope not only of negation but also of the corresponding modality. So, in (18a) ar simply negates the proposition that you are giving me money now. However, when ver is used, as in (18b), the possibility of the action is negated, e.g., perhaps your wallet was just stolen. Finally, (18c) shows how imperative mood is introduced by nu. There is no special imperative marking on the verb in (18c), instead this mood is unambiguously marked by nu.\(^{12}\)

Corresponding to the three negative markers, there are three sets of negative pronominals, e.g., araperi, veraperi, nuraperi ‘nothing’. These were shown in Table 5. When a negative marker appears before the verb, not only does it license negative pronominals in the clause, but it also dictates their form; negative pronominals from sets other than that of the negative marker are ungrammatical, as in (19).

(19) a. *[veravin] am Cigns ar Kitzulobs.
    no one-VER this book Neg-AR 3.read.3

b. *[aravis] nu eTqvi!
    no one-AR Neg-Nu 2.tell.3

If the negative marker has the entire clause as its scope and, as a functional head, is providing information as to modality of the clause, it is not surprising that the negative pronominals must agree with the negative marker, otherwise their meaning requirements would be incompatible with those of the clause.

Even more interesting is the case of the negative pronominals in SpecIP. Remember that Spec-head agreement triggered clausal negation, thereby licensing the negative pronominal. A negative pronominal from any of the three sets may appear before the verb. The meanings of sentences like those in (20) suggests that Spec-head agreement also results in the appropriate modality, e.g., impossibility or imperative, being spread to the clause via the clausal head\(^{10}\). In the case of the ver set, the clause as a whole has a reading of impossibility, as in (20a), and in the case of the nu set it has a reading of imperative mood, as in (20b). That is, the positional SpecIP negative pronominal licensing results in the same clausal scope of negation as the negative marker.
(20) a. šeni Cigni [versad] vnaxe.
your book no where-VER 1.see.3
‗I couldn‘t see your book anywhere.‘

b. [nurapers] Čam!
nothing-NU 2.eat.3
‗Don‘t eat anything!‘

The fact that this is a property of the entire clause can be seen when more than one negative pronominal is present, as in (21).

(21) a. [veravin] [verapers] Kitxulobs.
no one-VER nothing-VER 3.read.3
‗No one can read anything.‘

b. *[aravin] [verapers] Kitxulobs.
no one-AR nothing-VER 3.read.3

In (21a), the negative pronominal verapers ‗nothing‘ is in SpecIP and the resulting Spec-head agreement gives a reading of impossibility which is compatible with the other negative pronominal veravin ‗no one‘. The clausal scope of the impossibility modality is seen in (21b) in which the negative pronominal aravin ‗no one‘ is incompatible with the reading of impossibility and the sentence is ungrammatical.

5 Conclusion

In conclusion, evidence from the interaction of the negative marker and the negative pronominals, from wh-questions, and from concord of the negative sets argues that Georgian negative pronominals are licensed when they are semantically in the scope of clausal negation. This negation can be cannonically provided by a negative marker. Alternatively, it can be triggered by Spec-head agreement with a negative pronominal in SpecIP.

Notes

*I would like to thank Raul Aranovich, Cleo Condoravdi, Chris Piñón, Peter Sells, and the audience of BLS 22 for helpful comments. The data are primarily from informant work with Nino Chichua, Dodona Kiziria, and Manana Mgeladze and from Aronson 1990.

1The default word order in Georgian is SOV, although all other orders are possible (Apridonidze 1986; Poctxua 1962; Vogt 1974); in particular, unlike languages like Japanese, Georgian is not strictly verb final.

2There is another issue in the literature as to whether Negative Concord pronominals, such as those in Slavic and Georgian, are semantically a subtype of NPIs, such
as those in English, (Laka 1990; Progovac 1994; Ladusaw 1992, 1993) or are not (Haegeman 1995).

3 A second set of forms can be generated from those in Table 5 by adding the infix -γα- which adds the meaning of ‘no longer’.

Forms for ‘free choice any’ are based on the same pronominal roots as the negative pronominals in conjunction with the suffix -me, e.g., vinme ‘anyone’; like ‘free choice any’ in English, these pronouns are not dependent on negation.

4 Negative pronominals can appear in isolation as answers to questions, e.g., vin modis ‘who is coming?’ aravin ‘no one’. This seems to be a generally true of negative pronominals in Negative Concord languages (see Haegeman 1995), and, in Georgian may be the result of ellipsis.

5 One could posit a NegP (Laka 1990; Zanutttini 1990). However, as negation and the finite verb form an inseparable unit, Neg0 and I0 would have to incorporate via head-movement, resulting in a structure like that in (11).

6 This complex head also encodes modality in these constructions since the negative markers contain modal information (§4.2). Note that there are also separate modal predicates in the language, e.g., ʃewjlebelia ‘impossibility’, unda ‘must’, ʃewjleba ‘can’. These occur with clausal complements in the optative and pluperfect tenses.

7 This distribution is more complicated when all of Romance is taken into account. For example, in Catalan preverbal negative pronominals can co-occur with a negative marker. See Ladusaw 1993 for a comparative/historical approach to the problem.

8 This contrasts, for example, with English in which NPIs must be c-commanded by negation, but this negation may be in a higher clause, e.g., I do[n’t] think that [anyone]NPI came. (see Lineberger 1987 for further discussion of English).

9 What precisely the negative pronominals are, if not truly negatives, is currently under debate. Ladusaw (1992) provides a proposal whereby they are a type of indefinite.

10 In addition, in multiple wh-questions all wh-phrases precede the verb, as in (i). (The order of multiple wh-phrases generally reflects the default order of arguments: subj–i.obj–obj.)

(i.a) niKos dabadebis dγeze [vin] [ra] ačuka?
Niko birthday-for who what 3.give.3.3
‘Who gave what to Niko for his birthday?’

(i.b) maiam [rodis] [romeli Cigni] CaiKItxa?
Maia when which book 3.read.3
‘When did Maia read which book?’

11 There is a problem for this approach. As seen in (16) and (17), SpecIP cannot be filled by both a negative pronominal and a wh-phrase. However, multiple wh-phrases must all appear immediately before the verb, as in footnote 10, suggesting that SpecIP can be multiply filled in Georgian (see Chomsky 1995 on multiple Specifiers). One possibility is that wh-phrases and negative pronominals are different types of phrases and this incompatibility accounts for their complementary distribution. Another possibility is that, in fact, only one of the wh-phrases, the last
one, is in SpecIP and the rest are adjoined to IP. The problem with this account is ensuring that the adjoined phrases are contiguous, e.g., adverbs and arguments of the verb cannot appear amongst the wh-phrases.

12Positive imperatives are formed with the aorist, which is also used for simple past tense.

References


Ordering Restrictions on Aspirated and Ejective Stops in Aymara

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The dialect of Aymara described in De Lucca 1987 exhibits an intricate pattern of wellformedness in the distribution of ejective and aspirated stops. This pattern reveals a dispreference for \( p' \) and \( q' \): these sounds exist in the language’s segment inventory, but are avoided under certain conditions. This dispreference for \( p' \) and \( q' \) mirrors a strong crosslinguistic generalization: in languages with ejective series, the series will be defective at the labial and uvular places of articulation before it is defective at any other place of articulation. These two observations combine to suggest an implicational hierarchy such that \( p' \) and \( q' \) are disfavored over all other ejective stops. In this paper I appeal to phonetic motivations behind the dispreferences for \( p' \) and \( q' \), and provide an Optimality Theoretic analysis of the data.

Aymara is spoken by two to three million people in Peru, Bolivia, and Chile (Briggs 1985, Hardman 1985). De Lucca, a dictionary of 8000 forms, was published in Bolivia; the presence of roots containing both aspirated and ejective stops distinguishes this dialect from those described in other published sources (notably Deza Galindo 1989 and Ayala Loayza 1988, both Aymara dictionaries published in Peru).

Aymara has three series of oral stops/affricates, reproduced below:

\[
\begin{array}{cccccc}
| p \quad | \quad t \quad | \quad t'f \quad | \quad k \quad | \quad q \\
| p'h \quad | \quad q'h \quad | \quad t'h \quad | \quad k'h \quad | \quad q'h \\
| p' \quad | \quad t' \quad | \quad t'f' \quad | \quad k' \quad | \quad q' \\
\end{array}
\]

Roots are overwhelmingly of form (C)V(C)CV.

The language observes various restrictions on the type and location of aspirated and ejective consonants (earlier descriptions of these restrictions may be found in Martin-Barber in Hardman et al. 1974, Adelaar 1986, and especially Landerman 1994). For example, if an Aymara morpheme has a single ejective or aspirated stop, that stop will be the leftmost stop in the morpheme: \( k'anta \) ‘spinning wheel’, \( q'hatu \) ‘market’; *\( kant'a \), *\( qath'u \) (I have converted De Lucca’s orthography to IPA transcription). Although ejection and aspiration must occur on the leftmost stop in a morpheme, that stop need not be morpheme-initial: \( sik'u \) ‘nerve’, \( haijp'hu \) ‘in the dark’. It is also the case that heterorganic ejectives do not cooccur morpheme-internally (*\( t'ak'a \)), nor do homorganic aspirated and ejective stops (*\( q'hoq'a \), *\( t'anh'a \)); I suggest elsewhere (MacEachern, to appear) that these restrictions are due to laryngeal similarity effects.

Ejective and aspirated stops may cooccur morpheme-internally in the dialect of Aymara described here, but certain ordering restrictions are observed. If the initial stop in the root is a dental, palato-alveolar, or velar, then that sound will be ejective, and the second stop in the root will be aspirated:
De Lucca includes 58 roots that fall into this category. Not all possible place of articulation combinations are attested, however, and some of these gaps do not appear to be accidental. For example, the lack of roots of form \( t'...tf'h \), \( tf'...th \), \( k'...qh \) and \( qh...k' \) may follow from prohibitions on the cooccurrence of similar, but non-identical coronal and back lingual articulations. This hypothesis is supported by the lack of Aymara roots of form \( th...tf'h \), \( tf'h...th \), \( kh...qh \) and \( qh...kh \). I do not pursue this here.

The other side of the ordering restrictions on aspirated and ejective stops is that if the initial stop is labial or uvular, and the second stop is at an intermediate (i.e., dental, palato-alveolar, or velar) place of articulation, then the first stop in the root will be aspirated, and the second will be ejective (a few exceptions exist; these are discussed below). De Lucca includes 34 roots of this type.

The restrictions described above entail that, if the places of articulation of the stops are known, and if the number of aspirated and ejective features in a morpheme is known, then the location of the laryngeal features is (nearly always) predictable.

There is one set of data for which the statement above is not true. De Lucca includes a few forms with a labial stop, a uvular stop, and ejective and aspiration features. There are four possible arrangements of two stops and two laryngeal features:

\[
\begin{align*}
q' & \ldots \ p^h \\
q^h & \ldots \ p' \\
p' & \ldots \ q^h \\
p^h & \ldots \ q'
\end{align*}
\]

Of the four patterns shown above, only two are attested. An exhaustive list of these forms is given below:
Notice that the roots of form qʰ ... p’ are singled out by De Lucca as being dialectal variants, while the roots of form q’ ... pʰ stand as representatives of the main dialect. There are no roots of form p’... qʰ or pʰ...q’; this gap may of course be accidental. I return to these facts later in this article.

There are also six forms with initial ejective uvulars which are followed by aspirated stops at intermediate (i.e., non-labial, non-uvular) places of articulation. However, four of these forms have alternate, regular pronunciations (i.e., an aspirated uvular followed by an ejective) in De Lucca or in Miranda 1970 (another Aymara dictionary published in Bolivia). The two residual forms are q’ajtiʰ ‘beating of waves’ (Manco Capaj dialect) and q’atfʰi ‘edge’; the expected forms are *qʰajti’ and qʰat’i. I have no explanation for these roots; they do not necessarily indicate a milder dispreference for q’ as opposed to p’, given that q’ occurs about twice as frequently as p’ in this language. In the remainder of this paper, I disregard these two forms.

I will now present my analysis; I assume familiarity with the principles of Optimality Theory (Prince and Smolensky 1993, McCarthy and Prince 1993) and Correspondence Theory (McCarthy and Prince 1995). I appeal to the following constraints in order to capture the data described above:

<table>
<thead>
<tr>
<th>Constraint</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ident[lar]</td>
<td>Correspondent segments in the Input and Output are identical with respect to laryngeal features. These include [asp] (representing aspiration) and [glott] (representing glottalization).</td>
</tr>
<tr>
<td>Preserve[lar]</td>
<td>Laryngeal features present in the Input must also be present in the Output.</td>
</tr>
<tr>
<td>Leftmost[lar]</td>
<td>Laryngeal features (asp, glott) should be at the beginning edge of the morpheme. One violation is counted for every segment intervening between the aspirated or ejective stop and the left edge of the morpheme: sapʰi incurs two Leftmost violations, lanʰa incurs three, and t’inka earns none (violations could alternatively be counted by some measure of temporal distance between word onset and aspiration/ejective release).</td>
</tr>
<tr>
<td>Leftmost[ejec]</td>
<td>Ejectives should be at the beginning edge of the morpheme. Violations are counted as for Leftmost[lar].</td>
</tr>
<tr>
<td>*p’</td>
<td>Do not allow labial ejectives.</td>
</tr>
<tr>
<td>*q’</td>
<td>Do not allow uvular ejectives.</td>
</tr>
</tbody>
</table>
Before I proceed to establish the constraint rankings of Aymara, a few words on Preserve[lar] are in order. Recall that the location of ejective and aspiration features in Aymara is predictable. This suggests that there is a value attached to having features present in the Input also be present in the Output, even if those features reside on different segments in the Output (i.e., even when violations of Ident[lar] are involved). Preserve[lar] achieves this end; no provisions were made for this effect in McCarthy and Prince 1995, but the authors (p. 265) recognize that such an extension is necessary.

These five constraints are subject to the following ranking in Aymara: Preserve[lar] >> Leftmost[lar] >> \{\*p', *q'\} >> \{Leftmost[ejec], Ident[lar]\}. Curly braces indicate that the rankings of the enclosed constraints have not been definitively established. I provide motivations for these rankings below.

Preserve[lar] must outrank Leftmost[lar] in order to allow forms such as sap'hì ‘root’ and seq’e ‘new liquor’. The tableau in (7) illustrates selection of the output seq’e. The exclamation point indicates a fatal violation; shaded cells signal information which is irrelevant, due to the presence of an earlier, fatal violation.

\[
\begin{array}{|c|c|c|}
\hline
\text{/seq'}/ & \text{Preserve[lar]} & \text{Leftmost[lar]} \\
\hline
\text{seq'e} & & \star \star \\
\text{seq'e} & & \star \\
\hline
\end{array}
\]

The tableau in (8) introduces \*p', \*q', and Ident[lar]; the lack of a column divider between the markedness constraints indicates that they are not yet ranked with respect to one another. Although the segments p’ and q’ are disfavored, we saw in (5) that they are not prohibited; (8) shows that the dispreferred ejectives will surface even when the input contains another segment capable of hosting aspiration or ejective-ness. Forms such as p’ita ‘knitted/crocheted fabric’ and q’ata ‘anklebone’ (*pit’a, *qat’a) show that Leftmost[lar] must outrank \*p’ and \*q’. (8) details the selection of p’ita as the winning candidate. I have proposed a non-transparent input for this form in order to illustrate that laryngeal features cannot surface in violation of the morpheme structure constraints of the language — in this case, the generalization that says laryngeal features must surface on the leftmost stop of the morpheme. The tableau for q’ata would be similar.

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{/pit'a/} & \text{Preserve[lar]} & \text{Leftmost[lar]} & \text{\*p'} & \text{\*q'} & \text{Ident[lar]} \\
\hline
\text{p'ita} & & & * & ** & \\
\text{pita} & & & \star & & ** \\
\text{pit'a} & & & & \star & \star \\
\hline
\end{array}
\]

Of course, there exist many highly-ranked constraints that are not listed in the tableaux given here. For example, k’iita could not be the winning candidate in (8) because it violates Ident[place] (a constraint requiring Input and Output correspondents to be identical for place features; I do not discuss this constraint here). Similarly, \*s’eqe is not a viable winner in (7) because Aymara fricatives cannot be ejective; the constraints prohibiting ejective fricatives are undominated in most languages.

The tableau in (9) introduces Leftmost[ejec], \*p’, and \*q’. \*p’ and \*q’ must outrank Leftmost[ejec] and Ident[lar] in order to account for forms such as p’hat’a ‘digging’ and q’ot’i ‘cataract’; the production of p’hat’a is shown in (9) below (again, I choose a non-transparent input):
I conclude that the following rankings have been established for Aymara: Preserve[lar] >> Leftmost[lar] >> \{\#p', \#q'\} >> [Leftmost[exec], Ident[lar]].

Let us now reconsider Leftmost[exec]. The reader may be wondering why Leftmost[exec] has been held distinct from Leftmost[lar], which describes the preference of both aspiration and glottalization to be at the beginnings of morphemes. I will now show that both constraints are necessary to account for the data discussed here.

Consider an analysis with only two Leftmost constraints, where Leftmost[asp] has replaced Leftmost[lar]. Given these constraints, Leftmost[exec] would have to outrank Leftmost[asp] in order to obtain k'it'hu 'disordered mess' rather than *khit'u.

*p' would have to outrank Leftmost[exec] in order to produce p'hat'a in place of *p'ath'a.

However, these rankings would produce incorrect *pit'a in place of p'ita. The exclamation point in front of the arrow indicates that an incorrect candidate has been selected.

Similar arguments concerning q'ata (*qat'a) could be made with respect to *q'. I conclude that both Leftmost[lar] and Leftmost[exec] are necessary to account for the ordering restrictions observed in this dialect of Aymara.

Of course, it is true that the system of Leftmost constraints could be made symmetrical by adding Leftmost[asp] to existing Leftmost[exec] and Leftmost[lar]. I have refrained from doing this for two reasons: first, the Aymara data does not suggest that such a constraint is necessary, and second, I suspect that this asymmetry is real — Leftmost[lar] has a basis in auditory (processing) factors while Leftmost[exec] has a basis in production (ease of articulation) factors (I
discuss this later). I do not know what a genuine production basis for Leftmost[asp] might be.

Reconsider the data given in (5). There are very few forms on which to rest this part of the analysis, but the data that does exist indicates that the main dialect forms \(q'ap^{hi}\) and \(q'ap^{ha}\) are consistent with a constraint ranking in which \(*p'\) dominates \(*q'\), as can be seen in (13) below (again, I assume a non-transparent input).

<table>
<thead>
<tr>
<th>(q'ap^{hi})</th>
<th>Preserve[lar]</th>
<th>Leftmost[lar]</th>
<th>(*p')</th>
<th>(*q')</th>
<th>Leftmost[ejec]</th>
</tr>
</thead>
<tbody>
<tr>
<td>(q'ap^{hi})</td>
<td>(\star\star)</td>
<td>(\star)</td>
<td>(\star\star)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Now consider the forms \(q^{hop'aki}\) and \(q^{hop'i}\), which De Lucca labels as existing in the Altiplano Central and Altiplano Norte dialects, respectively. As (14) illustrates, these forms are consistent with a ranking in which \(*q'\) dominates \(*p'\).

<table>
<thead>
<tr>
<th>(q^{hop'aki})</th>
<th>Preserve[lar]</th>
<th>Leftmost[lar]</th>
<th>(*q')</th>
<th>(*p')</th>
<th>Leftmost[ejec]</th>
</tr>
</thead>
<tbody>
<tr>
<td>(q^{hop'i})</td>
<td>(\star\star)</td>
<td>(\star)</td>
<td>(\star\star)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Of course, the ranking shown in (14) is inconsistent with the ranking shown in (13) — I would not expect dialects containing \(q^{hop'aki}\), for example, to also contain \(q'ap^{hi}\).

I will now comment on possible functional motivations for the Leftmost, \(*p'\), and \(*q'\) constraints. With respect to the Leftmost constraints, it is well known that languages tend to allow a greater range of contrasts in initial position (Trubetsky 1969, Steriade 1995). Such a tendency serves word delimitation functions and helps to position the most valuable information (i.e., the information that distinguishes among the greatest number of contrasts) early in the speech stream. Extensive psycholinguistic evidence exists showing that lexical decisions are made faster when the recognition point — the moment at which a form can be distinguished from all other forms in the hearer’s lexicon — lies earlier in a word (Tyler and Wessells 1983, Marslen-Wilson 1984, Marslen-Wilson 1987, Emmorey 1987). Thus, placing expanded contrasts at the beginnings of morphemes speeds lexical decisions; placing expanded contrasts at the ends of morphemes would not speed lexical decisions, although it would also aid in word delimitation.

The basis for a distinct Leftmost[ejec] constraint is harder to determine. There may be a production advantage to positioning ejective consonants at well-spaced intervals; data in Kingston 1985 suggest that larynx height readjusts rather slowly, following ejective consonants. Leftmost[ejec] would serve this end, although it is clearly not the only constraint that could do so.

Regarding the markedness bases of the \(*p'\) and \(*q'\) constraints, various scholars (Haudricourt 1950, Wang 1968, Greenberg 1970) have noted that ejectives tend to occur at back rather than forward places of articulation; Fordyce 1980 showed that this holds true over a large language sample, and Maddieson 1984 established that it was primarily bilabial ejectives that were disfavored. The following reasons for the dispreference for \(p'\) have been suggested by other
scholars: (1) The bursts of bilabial stops are relatively weak (Zue 1980) due to the lack of a downstream resonating chamber (Kawasaki 1981). (2) Ejectives involve compression of the air in the supraglottal chamber. Because bilabial constrictions involve the largest supraglottal chamber, the compressive effect will correspondingly be least significant in \( p' \) (various authors beginning with Wang 1968 have noted this, but see especially Javkin 1977). (3) A strong compressive effect will be difficult to achieve in bilabial stops because they expose the greatest amount of yielding cheek wall surface (see Kingston 1985, who follows Ohala and Riordan 1979 on the significance of passive compliance of the vocal tract walls).

Factors just cited for the dispreference of \( p' \) would seem to indicate that \( q' \) should be a preferred articulation: the oral chamber is quite small during uvular production, indicating that laryngeal compression should have a very salient effect. The Aymara data, however, suggest that uvular ejectives are dispreferred. It may be because maintaining a uvular seal during ejective production is difficult when the supraglottal chamber is small, and both of the articulators involved are soft (the tongue dorsum, and the uvula and lower velum). The elevated oral pressure characteristic of ejectives might tend to make the uvular closure slip, resulting in a uvular affricate or fricative.

I have proposed that the ranking Preserve[lar] >> Leftmost[lar] >> \{\*p', *q'\} >> [Leftmost[ejec], Ident[lar]] accounts for the ordering restrictions found in Aymara. Presumably \*t', \*tʃ', \*k', etc. also exist in Aymara, but are outranked by all of the constraints given above. The possibility arises that \*p' and \*q' universally outrank markedness constraints for ejectives at other places of articulation. If this were true, we would expect languages with defective ejective series to be defective at the bilabial and uvular places of articulation before they are defective at any other place of articulation. This question is slightly complicated by the fact that languages strongly tend to have ejectives only at places of articulation where another stop series is instantiated (Greenberg 1970; Fordyce 1980 proposes the ‘ejective-to-plain’ hierarchy to describe the tendency of languages to have ejectives only where they also have plain voiceless stops). Assuming that this characteristic is accounted for by other features of the grammar, the prediction made by my analysis is that if a language lacks an ejective at some place of articulation where another stop series is instantiated, then the missing ejectives will be bilabial and/or uvular; if both \( p' \) and \( q' \) are missing, then ejectives at other places of articulation may also be absent.

A review of the data in Maddieson 1984 and Ruhlen 1975, 1976 bears out this prediction. Of the nearly 100 languages in Ruhlen and the roughly 35 languages in Maddieson with \( p' \) and/or \( q' \) (of course, most of Maddieson’s languages also appear in Ruhlen), only a handful are described as lacking or having marginally-attested ejective stops at places of articulation present in another stop series of the language (dental, alveolar, palatal, velar, or labiovelar, with or without a secondary articulation). I will argue that none of these languages present a robust counterexample to my claim. By contrast, several Na-Dene languages (Chipewyan, Haida, etc.), several Mayan languages (Aguacatec, Huastec, etc.), several Northeast Caucasian languages (Andi, Bagvali, etc.), West Circassian, Mazahua, Gununa-Kena, Ossetic, etc. all include ejectives at intermediate places of articulation, but are missing \( p' \) and/or \( q' \), although labial and/or uvular stops of other series are present.

The nearest exceptions to the generalization I have given are Huambisa (an Andean language of the Jivaro family), Chol (Mayan), Tewa (Tanoan), Osage (Siouan), Teco (Mayan), and Berta (Nilo-Saharan: Chari-Nile). I will now briefly
comment on why I do not consider any of these six languages to constitute a strong
counterexample to the claim made above.

Huambisa (Beasley and Pike 1957) is listed as having only \( p' \) in the
ejective series, although \( t \) and \( k \) are also present in the language. However, \( p' \)
is found only as an expressive interjection among men.

In four of the other languages, one of the relevant sounds is extremely
marginal. In Chol and Tewa, an ejective at an intermediate place of articulation is
missing, but the matching non-glottalic stop is quite rare. Chol (Warkentin and
Brend 1974) has two full series of aspirated and ejective stops, except that it lacks
\( t' \), although it has \( th \). However, \( th \) is very rare. Similarly, Tewa (Hoijer and
Dozier 1949) has \( tj \) but lacks matching \( uj' \); however, the authors report that \( tj \)
was only found in one morpheme (\( tl'u \) ‘younger sibling’). The rarity of the relevant
plosives (\( th \) in Chol and \( tj \) in Tewa) suggests two possibilities: either the plosives
may not be fully integrated into the segment inventories of the languages under
consideration, or the lack of matching ejectives is accidental (crosslinguistically,
ejectives tend to be less frequent than the corresponding plosives).

Osage (Wolff 1952) is said to have \( p' \) and \( k' \) but lack \( t' \), although it has \( t \).
However, Wolff notes that \( k' \) is reconstructed to Proto-Siouan \(^*kq\), while Proto-
Siouan \(^*pq\) and \(^*tq\) normally become Osage \( p \) and \( t \), respectively. The only \( p' \)
mentioned in the article is in \( tap'ok'e \), which is labelled as an allomorph of \( tap'hok'he \)
glossing as ‘he hit(s) it’). These facts suggest that \( p' \) is extremely rare, and
perhaps not even distinctive.

Teco (Kaufman 1969) has only marginal \( t' \), although \( t \) is attested. (This
language is actually in line with the generalization given above; I note it here
because the marginality of \( t' \) is unexpected.)

Finally, regarding Berta, Triulzi et al. 1976 claim the following stops for its
inventory (\( d3 \) is also present):\(^4\)

\[
\begin{array}{ccc}
(15) & p' & k' \\
b & d & g
\end{array}
\]

According to the generalization given above, we would expect unattested \( t' \)
to also be present in the segment inventory. However, the authors note that \( p' \) and
\( k' \) are “weakly glottalized and often approach [p, k] in realization”; because the
language does not have a voiceless plosive series, there is no need to maintain a
contrast between \( k' \) and \( k \) or \( kh \), for example. Furthermore, “[t]he fricative \( /\theta/ \)
seems to fill the position of the missing \( t' \) in the stop series” (Triulzi et al.
1976:520). Weakly glottalized segments will be less subject to the functional
dispreferences for \( p' \) described above; in the absence of phonetic data on this
dialect group, I consider Berta a weak counterexample to the generalization made
above.\(^5\)

I conclude that a study of the largest crosslinguistic surveys available to me
reveals no strong counterexamples to the generalization stated above: no language
will have \( p' \) or \( q' \) unless it also has ejectives at all other places of articulation for
which stops are attested. This typological generalization is mirrored by the
emergence of the unmarked in a small corner of the Aymara lexicon. In that
language, ejective features generally appear as near the beginnings of morphemes as
possible. However, this rule is violated just in case the following three points hold
true: (1) assigning ejective features to the leftmost stop in the morpheme would
create an ejective labial or uvular segment, (2) another host for the ejective feature
can be found, and (3) the constraint requiring aspiration and ejective features to be
leftmost can be appealed by other means (i.e., by placing aspiration before ejectiveness). These observations find a unified explanation in the statement that \( p' \) and \( q' \) are disfavored over all other ejective stops.

1 This work was supported in part by a J.K. Javits Fellowship. I thank Bruce Hayes, Peter Landerman, John McCarthy, and Donca Steriade for comments.

2 Martin-Barber in Hardman et al. 1974 reports that /n/ is realized as [\( \tilde{n} \)] before uvulars and sometimes before velars. I have not altered these segments from De Lucca's orthography, where they are n.

3 Greenberg 1970 states that Amharic and some other Semitic Ethiopian languages have k and q' (but no q), rather than k and k'. Such a language would constitute a solid counterexample to my claim. However, Greenberg does not cite his sources for this observation; the sources I have checked do not indicate that this is true of any Semitic Ethiopian languages.

4 Interestingly, there appears to be a great deal of dialectal variation in the ejective series in Berta. None of my other sources for this language (Andersen 1993, Cerulli and Reidhead in Tucker and Bryan 1966) provide inventories that would constitute counterexamples to my claim; all are missing \( p' \).

5 I am also pursuing references on the Lezghian language Agul (Kumyk), which has an extensive stop series including \( p' \), \( t' \), \( k' \), \( q' \), and \( q^{w'} \), but may be missing \( k^{w'} \), although \( k^{w} \) is attested.

References
la Societe de Linguistique de Paris, vol. 46.

Hoijer, Harry, and Edward P. Dozier, 1949. The phonemes of Tewa, Santa Clara
dialect. IJAL 15:139-144.

Javkin, Hector. 1977. Towards a phonetic explanation for universal preferences in
implosives and ejectives. Proceedings of the 3rd annual meeting of the
Berkeley Linguistics Society, 559-565.


Kawasaki, Haruko. 1981. An acoustical basis for universal constraints on sound

Kingston, John. 1985. The phonetics and phonology of the timing of oral and

Landerman, Peter. 1994. Glottalization and aspiration in Quechua and Aymara
reconsidered. Language in the Andes, ed. by Peter Cole, Gabriella Hermon
and Mario Daniel Martin, 332-378. Latin American Studies, University of
Delaware.

MacEachern, Margaret R. (to appear). Laryngeal similarity effects in Quechua and
Aymara. The proceedings of the fifteenth West Coast Conference on
Formal Linguistics.


Marslen-Wilson, William D. 1984. Function and process in spoken word
recognition. Attention and performance, Vol. 10: Control of language
processes, Herman Bouma and Don G. Bouwhuis, eds., 125-163.
Hillsdale: Erlbaum.

Marslen-Wilson, William D. 1987. Functional parallelism in spoken word

McCarthy, John, and Alan Prince. 1993. Prosodic Morphology I: Constraint
satisfaction and interaction. University of Massachusetts and Rutgers ms.

Papers in Optimality Theory, University of Massachusetts Occasional
Papers 18, Jill N. Beckman, Laura Walsh Dickey, and Suzanne Urbanczyk,
eds., 249-384.

Miranda, R. P. Pedro. 1970. Diccionario breve castellano-aymara y aymara-
castellano. La Paz, Bolivia.

voiced stops. Speech Communication Papers presented at the 97th Meeting
of the Acoustical Society of America, ed. by Jared J. Wolf and D. Klatt, 89-

interaction in generative grammar. Rutgers and University of Colorado at
Boulder ms.

Reidhead, P.W. 1946. Report of linguistic survey among tribes Berta, Ingassana,
Koma, Uduk, Jum jum, Maban. (Reprinted in Tucker and Bryan 1966.)

Universals Project, Stanford University.

Steriade, Donca. 1995. Licensing by cue. UCLA ms.

languages of Ethiopia, M. Lionel Bender, ed., 513-532. Monograph No. 5
Occasional Papers Series, Committee on Ethiopian Studies. African Studies
Center, Michigan State University.


Wang, William S.Y. 1968. The basis of speech (draft copy). Project on Linguistic Analysis, Phonology Laboratory, Department of Linguistics, University of California, Berkeley. Second Series, No. 4.


A constructional approach to English verbal gerunds

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English verbal gerunds have long been of interest to syntacticians. Verbal gerund phrases display a mix of nominal and verbal properties which provide a challenge to any syntactic framework that assumes a strict version of X-bar theory. Various approaches have been proposed to get around these problems, but they all involve abandoning a fundamentally desirable theoretic assumption or adopting a highly abstract structure for which independent motivation is difficult to find, or both. An ideal analysis of verbal gerunds in English would be able to account for their mixed verbal and nominal properties without the addition of otherwise unmotivated mechanisms. In this paper, I will propose an analysis based on recent work in Construction Grammar and Head-driven Phrase Structure Grammar that treats verbal gerunds as a hybrid category that inherits some properties of nouns and some properties of verbs.

1 Properties of verbal gerunds

The strongest evidence for the nominal nature of verbal gerunds comes from the external distribution of verbal gerund phrases (VGerPs). VGerPs appear in contexts where otherwise only noun phrases can occur. For one, clauses, unlike NPs, are generally prohibited from occurring sentence internally, as shown in (1).

(1) a. *I believe that Pat took a leave of absence bothers you.
     b. *Why does that Pat took a leave of absence bother you?

However, VGerPs are subject to no such constraint:

(2) a. I believe that Pat’s/Pat taking a leave of absence bothers you.
     b. Why does Pat’s/Pat taking a leave of absence bother you?

This is a point about which there has been some disagreement in the literature. Reuland (1983), for instance, claims that accusative subject VGerPs cannot appear clause internally. However, consider the following examples:

(3) a. *Did that Pat got arrested bother you?
     b. *Did for Pat to get arrested bother you?
     c. *Did to get arrested bother you?
     d. ?Did Pat getting arrested bother you?
e. Did getting arrested bother you?
f. Did Pat's getting arrested bother you?
g. Did Pat's arrest bother you?

While (3d) may be somewhat awkward, there is a clear difference in acceptability between (3a–c) on the one hand and (3d–g) on the other. Therefore I think it is reasonable to conclude that with respect to the prohibition against sentence-internal clausal arguments, VGerPs behave like NPs and not like Ss.

One thing worth observing here is that verbal gerund phrases do not have the full distribution of NPs. In particular, as we see in (4), verbal gerunds cannot be possessive specifiers.

(4) a. Pat's leave of absence's bothering you surprises me.

b. *Pat's/Pat taking a leave of absence's bothering you surprises me.

But, as Zwicky and Pullum (1996) observe, only a restricted subclass of what are otherwise clearly NPs can show up as possessives. So, (4) suggests that verbal gerunds, like of the other cases they describe, fall into a "functionally restricted" subclass of nouns that cannot head possessive phrases.

On the other side of things, there are contexts which admit verbal gerunds but not regular NPs. Jørgensen (1981) and Quirk et al. (1985:1230) discuss a class of predicative adjectives which select for an expletive subject and a verbal gerund complement, as in (5).

(5) There's no use (you/your) telling him anything.

The fact that the complement's subject can appear in the possessive shows that the complement really is a verbal gerund phrase and that this is not a case of subject-to-object raising. Examples such as this provide suggestive evidence that verbal gerunds form a subcategory of noun.

While the external syntax of verbal gerunds is much like that of NPs, their internal structure is more like that of VPs. For one, VGerPs take accusative NP complements, while the nominal gerund in (6b) can only take a PP complement:

(6) a. (Pat's/Pat) loudly calling *(of) the roll started each day.

b. The loud calling *(of) the roll started each day.

Another verb property of verbal gerunds is that verbal gerunds take adverbial modifiers. In contrast, common nouns take adjectival modifiers:

(7) a. Pat financed (me/my) carefully restoring the painting.

b. The careful/*carefully restoration of the painting took six months.
Similarly, verbal gerunds, unlike nouns, can be negated with the particle *not:*

(8)  
  a. Pat’s not having bathed for a week disturbed the other diners.  
  b. *The not processing of the election results created a scandal.*

These facts have been used to motivate the claim that verbal gerunds must be verbs at some level. However, none of the behavior exhibited in (6)–(8) is unique to verbs. Some of the verb-like properties of gerunds, such as licensing adverbial modifiers, are also shared by determiners, prepositions, and adjectives:

(9)  
  a. Sandy is awakened early almost every morning.  
  b. Sandy lives directly beneath a dance studio.  
  c. Sandy’s apartment has an insufficiently thick ceiling.

Similarly, *not* can be used in some circumstances to negate adverbs, adjectives, PPs, and determiners:

(10)  
  a. Not surprisingly, the defendant took the Fifth.  
  b. The conference will be held in Saarbrücken, not far from the French border.  
  c. Not many people who have gone over Niagara Falls live to tell about it.

These facts about modification and negation do not show that verbal gerunds are verbs. What they show is that verbal gerunds, unlike common nouns, are part of a larger class of expressions which includes verbs.

The complementation facts also do not constitute a strong argument that verbal gerunds must be verbs. Like verbs and verbal gerunds, prepositions also can take NP complements. On the other hand, some verbs only take PP complements:

(11) The strike extended *two weeks/through the summer.*

The fact that some verbal gerunds take accusative objects is therefore not especially striking. What is important is that a verbal gerund, unlike a nominal gerund, takes the same complements as the verb from which it is derived:

(12)  
  a. Chris casually put the roast in the oven.  
  b. Chris/s/Chris casually putting the roast in the oven appalled the visiting vegetarians.  
  c. Chris’s casual putting of the roast in the oven appalled the visiting vegetarians.
So, what we can say is that a VGerP headed by the -ing form of a verb has the same internal syntax as a VP headed by a finite form of that same verb.

To summarize, VGerPs have four basic properties that need to be accounted for. These are given in (13).

(13) a. A verbal gerund takes the same complements as the verb from which it is derived.

   b. Verbal gerunds are modified by adverbs and not by adjectives.

   c. The entire verbal gerund phrase has the external distribution of an NP.

   d. The subject of the gerund is optional and, if present, can be either a genitive or an accusative NP.

The properties in (13) are shared by accusative subject (ACC-ing), genitive subject (POSS-ing), and subjectless (PRO-ing) verbal gerund phrases and are not shared by any other English constructions. The three types of verbal gerunds seem to be subtypes of a single common construction type, and any analysis of verbal gerunds ought to be able account for their similarities in a systematic way.

It is important to note, however, that there are differences among the three types which also must be accounted for (Reuland 1983, Abney 1987). Of course, the most obvious difference is the definitional one, namely the case of the subject. In that respect, POSS-ings are more like NPs, while ACC-ings are more like Ss. Another difference can be found in their agreement behavior when conjoined:

(14) a. That Pat came and that Chris left bothers/??bother me.

   b. Pat coming (so often) and Chris leaving (so often) bothers/??bother me.

   c. Coming (so often) and leaving (so often) bothers/??bother me.

   d. Pat's coming and Chris's leaving ??bothers/bother me.

   e. Pat and Chris *bothers/bother me.

Conjoined ACC-ing or PRO-ing VGerPs, like conjoined Ss, prefer singular (or default) number agreement on the verb. Conjoined POSS-ing VGerPs, like conjoined nouns, prefer plural agreement. Furthermore, the two types of verbal gerunds cannot be comfortably conjoined:

(15) a. *Pat's coming and Chris leaving bothers/bother me.

   b. *Pat coming and Chris's leaving bothers/bother me.
The patterns of compatibility in (14) and (15) follow naturally from the assumption that \textit{ACC-ing} and \textit{poss-ing} VGerPs are of different semantic types. Poss-ing VGerPs, like NPs, have nominal semantics, with an index specified for person, number, and gender. In contrast, \textit{ACC-ing} VGerPs, like Ss, have propositional semantics.

Another difference between the two types of VGerPs pointed out by Abney (1987) is that \textit{poss-ing} but not \textit{ACC-ing} VGerPs with \textit{WH} subjects can front under 'pied piping':

(16) This is the reporter whose/*who(m) winning the Pulitzer Prize surprised Sandy.

Again, the same contrast can be seen between NPs and Ss:

(17) a. This is the reporter whose success surprised Sandy.

b. *This is the reporter for whom to win the Pulitzer Prize surprised Sandy.

Here again is an instance where \textit{poss-ing} VGerPs pattern more like NPs while \textit{ACC-ing} VGerPs pattern like Ss. However, it is hard to see how this difference can be attributed to a difference in the semantics of the two types of gerund phrases. Instead, what this evidence shows is that at some purely syntactic level \textit{poss-ing} VGerPs have something in common with NPs while \textit{ACC-ing} VGerPs have something in common with Ss.

2 HPSG preliminaries

An ideal analysis of verbal gerunds in English would be able to account for their mixed verbal/nominal properties without the addition of otherwise unmotivated mechanisms. Recent work in Construction Grammar (Fillmore and Kay to appear) and Head-driven Phrase Structure Grammar (Pollard and Sag 1994) provide the foundation for such an analysis. Sag (to appear) proposes an elaboration of the HPSG X-bar theory to include hierarchically classified phrase structure rules. Under this view, the internal structure of a phrase is determined by both the lexical properties of the head and by the construction type of which the phrase is an instance. In this section, I will present a brief overview of the relevant features of Sag’s (to appear) hierarchy of phrase types.

In HPSG, words and phrases are taken to be types of \textit{signs}, “structured complexes of phonological, syntactic, semantic, discourse, and phrase structural information” (Pollard and Sag 1994:15). Signs are represented by typed feature structures, and the grammar of a language is represented as a set of constraints on types of signs. These sign types are further organized into a multiple-inheritance hierarchy to allow linguistic generalizations to be precisely stated.
Considerable work in HPSG has focused on examining the hierarchical structure of the lexicon. More recently, Sag (to appear) has investigated applying the same methods of hierarchical classification to types of phrasal signs. A small part of the phrase type hierarchy is given in (18).

(18)

Phrases can be divided into two types: endocentric headed phrases and exocentric non-headed phrases. Since syntactic constraints are stated as constraints on particular types of signs, the HPSG Head Feature Principle can be represented as a constraint on all signs of the type headed. Headed phrases can be further subdivided according to the kind of subcategorization dependency they discharge: subject, specifier, or complement. In addition, constructions inherit constraints from the cross-cutting classification of phrases into either clauses or non-clauses. Among other things, clauses have a constraint on the type of their semantic content. A clause’s content must be a parameterized state of affairs (psoa), something that roughly corresponds to a proposition.

These two hierarchical classifications define a set of constraints on phrasal signs. A construction is a phrasal sign type that inherits from both the phrase hierarchy and the clause hierarchy. Since a construction licenses a type of complex sign, it must include information about how both the form and the meaning are assembled from the form and the meaning of its component parts. A construction may inherit some aspects of its meaning from its supertypes, and in contrast to the strictly head-driven view of semantics presented by Pollard and Sag (1994), a construction may also have idiosyncratic meaning associated with it.

The fin-head-subj-cx and the nonfin-head-subj-cx constructions combine a subcategorized-for subject with a finite and non-finite head, respectively. The finite version, for normal English sentences like They walk requires a nominative subject. The non-finite version, for ‘minor’ sentence types like absolutes, requires an accusative subject. The noun-poss-cx construction combines a noun head with a possessive specifier to form a phrase with a nom-
obj (i.e., an index bearing unit) as the CONTENT value. To be more precise, the construction type noun-poss-cx is subject to the following constraint:

\[
(19) \quad \text{SYNSEM} | \text{LOCAL} \left[ \begin{array}{c}
\text{CAT} | \text{HEAD} \, \text{noun} \\
\text{CONT} | \text{nom-obj}
\end{array} \right] \\
\text{SPR-DTR} | \text{SYNSEM} | \text{LOCAL} | \text{CAT} | \text{HEAD} \left[ \begin{array}{c}
\text{noun} \\
\text{CASE} \, \text{gen}
\end{array} \right]
\]

3 A new analysis

As we saw in section 1, verbal gerunds display a mix of nominal and verbal properties that seems puzzling given many assumptions about syntactic structure. Various approaches have been proposed to get around these problems. Abney (1987) argues for a highly abstract phrase structure involving phonologically null heads and syntactic word formation. Pullum (1991) suggests allowing a V to project an NP under certain circumstances, but his analysis crucially depends on the default nature of the GPSG Head Feature Convention, something which has itself raised serious formal problems (Shieber 1986, Bouma 1993). Lapointe (1993) proposes a more conservative modification to standard notions of endocentricity by introducing dual lexical categories like \(\langle N \mid V \rangle\), a V which projects a VP dominated by an NP. Wescoat (1994), on the other hand, proposes to preserve phrasal endocentricity by allowing a single word to project two different unordered lexical categories and therefore two different maximal phrases. While these analyses differ greatly in their technical details, they all assign VGerPs some variation of the following structure:

\[
(20)
\]

This reflects the traditional description of VGerPs as 'verbal inside, nominal outside' quite literally by giving VGerPs a VP node dominated by an NP node. However, since (20) is quite unlike the structures one typically finds in English, each of these analyses requires abandoning a fundamentally desirable theoretic assumption or adopting a highly abstract structure for which independent motivation is difficult to find.

The factorization of syntactic information in the HPSG lexicon allows an analysis which requires no such move. Words in HPSG select for arguments of a particular category. Therefore, categorial information projected from the
lexical head determines the external distribution of a phrase. Selectional information, from a lexical head’s valence features, determines what kinds of other phrases can occur in construction with that head. Constructional information, represented as constraints on particular constructions, controls the combination of syntactic units. Within each of these three domains, VGerPs show fairly consistent behavior. What is unusual about verbal gerunds is their combination of noun-like categorial properties with verb-like selectional properties.

Within HPSG, the categorial properties of verbal gerunds are determined by their lexically specified HEAD value. Like all other linguistic objects, types of HEAD values can be arranged into a multiple inheritance type hierarchy expressing generalizations across categories. The distribution of VGerPs can be accounted for by the (partial) hierarchy of HEAD values in (21).

(21)

\[
\begin{array}{c}
\text{head} \\
\text{noun} & \text{verbal} \\
\text{p-noun} & \text{c-noun} & \text{gerund} & \text{verb} & \text{adjective}
\end{array}
\]

Since gerund is a subtype of noun, a phrase projected by a gerund will be able to occur anywhere an NP is selected for. Thus, VGerPs will have the external distribution of NPs. Adverbs modify objects of category verbal, which include verbs, adjectives, and verbal gerunds, among other things. Since adjectives only modify c(ommon)-nouns, VGerPs will contain adverbal rather than adjectival modifiers. Since verb is a distinct subclass of verbal disjoint from gerund, VGerPs will not have the distribution of true VPs. This cross-classification directly reflects the traditional view of gerunds as intermediate between nouns and verbs. By formalizing this intuitive view as a cross-classification of HEAD values, we can localize the idiosyncratic behavior of verbal gerunds to the lexicon.

The position of gerund in the hierarchy of HEAD values provides an immediate account of the facts in (13b) and (13c). The remaining two gerund properties in (13) can be accounted for most simply by the lexical rule in (22).

(22)

\[
\begin{array}{c}
\text{HEAD} \\
\text{VERB prp} \\
\text{SUBJ (I)NP} \\
\text{COMPS 2} \\
\text{SPR ( )}
\end{array}
\]

\[
\begin{array}{c}
\text{HEAD} \\
\text{gerund} \\
\text{SUBJ (I)} \\
\text{COMPS 2} \\
\text{SPR (I)}
\end{array}
\]

This rule produces a lexical entry for a verbal gerund from the present participle form of the verb. The verbal gerund differs syntactically from the participle
Figure 1: Lexical entry for **painting** (participle).

in two ways: it is of category *gerund* and it subcategorizes for both a specifier and a subject. Since a verbal gerund selects for the same complements as the verb it is derived from, the phrase formed by a verbal gerund and its complements will look like a VP. And, since a gerund selects for both a subject and a specifier, it will be eligible to head either a *nonfin-head-subj-cx*, which combines a head with an accusative NP subject, or a *noun-posc-cx*, which combines a head with a genitive NP specifier. Since the subject and specifier are identified with each other, no verbal gerund will be able to combine with both a subject and a specifier. Genitive subject VGerPs will inherit all the constraints that apply to possessive constructions in general, for example, restrictions on the specifier NP and on pied piping. The differences in agreement found between verbal gerunds with accusative subjects and those with genitive specifiers follow from the differences between the two constructions: the *noun-posc-cx* construction licenses a phrase with nominal semantics while the *nonfin-head-subj-cx* construction licenses a phrase with propositional semantics.

To see how these constraints interact to account for the syntax of verbal gerunds, it will be useful to consider an example of each type. First, consider the (partial) lexical entry for the present participle of the verb *paint*, in Figure 1. This entry states that there is a word (pronounced /pɛıntɪŋ/) which is the present participle form of a verb. It selects for two arguments, a subject and a complement, which fill the ARTISTE and MODEL roles of the verb's meaning. Most of the information in a lexical entry like Figure 1 is inherited from higher lexical types. In general, only the phonology, semantics, and perhaps subcategorization frame need to be stipulated for each lexical entry. From the entry in Figure 1, the lexical rule in (22) produces a matching
entry that differs only in the shaded values. The output of the lexical rule is of category gerund, rather than verb, and the gerund selects for both a subject and a specifier. All other information about the verbs gets carried over from the input to the lexical rule.

Now we turn to the constructions which a verbal gerund is eligible to head. There are two cases, POSS-ing VGerPs and ACC-ing VGerPs. First we will look at the structure of the VGerP Brown's painting his daughter, shown in Figure 2. The head of this phrase, painting, is a verbal gerund formed by the lexical rule in (22). It combines with its complement NP (marked 3) via the head-comp-cx construction. It then combines with a genitive specifier to form a noun-poss-cx construction.

Note that the resulting verbal gerund phrase still has an unsatisfied SUBJ requirement, which is token-identical to the specifier Brown's. Since the two head/subject constructions require a nominative or accusative subject, the verbal gerund phrase will not be able to head a head/subject construction and the subject requirement will never be discharged. This presents no difficulty for the analysis, as no constraint requires that NPs have an empty SUBJ list. In
fact, it is crucial to Borsley's (to appear) analysis of predicative constructions described in Pollard and Sag (1994) that there be no such requirement. Since the entire phrase is an instance of noun-posc-cx, its content is a nom-obj by the constraint in (19). Since nom-obj's have an index with person, number, and gender features, conjoined phrases with nom-obj semantics trigger plural agreement.

An equivalent example with an accusative subject would be Brown painting his daughter. This example differs from the previous example only in the way the subject combines with the head. The nonfin-head-subj-cx construction combines a non-finite head with an accusative subject. As before, the lingering SPR value will not create a problem, as no head-specifier construction allows an accusative specifier. The semantic content of the entire phrase will be an object of the type psoa, which has no index and therefore no person, number, or gender features. So, conjoined psoa objects trigger singular verb agreement.

As these examples show, the constructions that combine a verbal gerund with its complements and its subject or specifier are the same constructions used for building NPs, VPs, and Ss. This reflects the traditional view that VGerPs are built out of pieces of syntax 'reused' from other parts of the grammar. In one sense, under this analysis a verbal gerund together with its complements really is like V'. Both are instances of the same construction type and both are subject to any constraints associated with that construction. In the same way, a verbal gerund plus an accusative subject really do form an S, while a verbal gerund plus a genitive subject really do form an NP. So, these two types of verbal gerund phrases inherit the constraints on semantic type and pied piping associated with the construction type of which they are an instance. However, in a more important sense, a verbal gerund plus its complements forms a VGer', which combines with an accusative or genitive subject to form a VGerP. The analysis presented here allows this similarity to be captured without weakening HPSG's strong notion of endocentricity.

4 Conclusion

By exploiting HPSG's hierarchical classification of category types and its inventory of elaborated phrase structure rules, we are able to account for the mixed behavior of English verbal gerunds without adding any additional theoretical mechanisms or weakening any basic assumptions. The analysis presented here does not require syntactic word formation and thus preserves lexical integrity. It also does not require any phonologically null elements or abstract structure, and it allows us to maintain the strong notion of endocentricity embodied by the HPSG Head Feature Principle. Finally, by making crucial reference to syntactic constructions, this analysis allows us to capture on the one hand the similarities among the sub-types of verbal gerund phrases and on the other their similarities to other English phrase types.
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References


Jørgensen, E. 1981. Gerund and to-infinitives after 'it is (of) no use', 'it is no good', and 'it is useless'. *English Studies* 62:156–163.


The geography of language origins
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1. Introduction

Where did the world’s languages come from? when? and by what route of migration or spread? So far, linguists have approached this question mostly by tracing descent, reconstructing protolanguages, and trying to apply that information to questions of origin. But since there is very little connection between grammar or lexicon and location, and since the tried-and-true Neogrammarians comparative method can only reach back a few thousand years before the evidence fades out, something else must be tried. This paper will use non-genetic structural comparison to show that structural affinities between large language areas can be mapped out in one-dimensional and two-dimensional space to yield surprisingly close correspondence to actual maps, and to give us an unimpeded, if rather spare and abstract, view of language origins and ancient linguistic prehistory. This is part of a campaign to increase the visibility of non-genetic comparison in historical linguistics.

The raw material for this paper comes from my typology database of just over 200 languages (genetically sampled). Map 1 shows the locations of the sample languages and the breakdown of the sample into 18 large areas. The areal breakdown is dictated partly by the demands of statistical analysis and partly by the linguistic task at hand. For statistical purposes it is important to have sample areas that all contain about the same number of languages, at least about 10 languages each. It is also important that the areas be based on non-linguistic criteria such as geography; otherwise the survey becomes circular. For linguistic purposes, we need areas smaller than continents but larger than classic linguistic areas such as the Balkans or the Indic subcontinent.

It is traditional to sample the world’s languages along genetic lines, and for non-genetic historical comparison it is absolutely essential that the genetic breakdown be rigorous, replicable, and based on groups of roughly the same order. The received genetic classification, according to which the world’s languages fall into some 200 to 300 discrete lineages among which no deeper relationships can be proven (though some are suspected, and of course deeper connections, though no longer provable, must exist in principle), provides a sampling basis that meets these requirements. As is well known, received genetic classification relies on firm evidence of a shared unique origin, and this kind of evidence fades out over time, so that the oldest provable families are mostly about 6000 years old. I use this fade-out point as a way of defining a roughly constant time depth. Any language or language family without further demonstrable kin represents the same kind of grouping, the deepest recoverable lineage -- be it a well-diversified family like Indo-European, a sisterless shallow family like Chumashan, or an isolate like Basque. The survey reported here samples these deepest lineages at the level of their first branches, taking one well-described representative of each initial branch (up to a maximum of six from each of the few families with many early branches, like Indo-European). If all the world’s languages were adequately
described, such a sample, when complete, would contain some 400-500 languages. My sample contains just over 200, partly because it is not quite complete but mostly because of gaps in the descriptive record.

The schematic geography described here rests on comparison of frequencies of structural features in the 18 sample areas. The structural features that lend themselves best to this kind of mapping are somewhat different from the main fare of typology. Most of typological theory and practice deals with universals and implicational relations, but these are of little value for historical comparison: universals have (by definition) no diagnostic value for tracing historical affinities, and features that are implicationally related will all point in the same direction. In contrast, the structural features that will best reveal affinities and differences between areas will not be universals. The features I have targeted are low-frequency ones overall (so that a sharing means something); and their distribution over the face of the earth is not even, but forms statistically significant frequency peaks (so that, again, a sharing means something). In addition, they are relatively slow-changing (so we know the frequency peaks did not arise yesterday), and they are reasonably independent of each other.

Such features are potentially good markers of non-accidental affinity and non-affinity between areas. Maps 2-4 show the real-world geographical distribution of three such markers. Ergativity (Map 2) is a low-frequency feature with peaks in southwest Asia, Australia, and highland New Guinea. Though more easily lost than gained, ergativity shows good tenacity in those language families that exhibit it. Head marking (Map 3) is endemic in the New World and well attested in coastal New Guinea and northern coastal Australia, but rare elsewhere, and of good consistency in families. Identical stems in singular and plural pronouns (tracked here in first person forms) are common in the New World, well represented in New Guinea, sporadic elsewhere in Asia, and unattested elsewhere in my sample. (For some of these features and their stability see Nichols 1995a, 1993.) (1) shows the markers tabulated in this survey, with brief definitions. Note that several of them are not so much structural features as particular values of structural features (ergativity, head marking, verb-subject word order, etc.).

(1) **Structural markers surveyed here.** All are yes-no categories. The brief definitions to the left show what counts as a ‘yes’.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ergativity.</td>
<td>Significant morphological ergativity in verb or noun inflection.</td>
</tr>
<tr>
<td>Inclusive.</td>
<td>Inclusive / exclusive opposition in first person pronouns.</td>
</tr>
<tr>
<td>Head marking.</td>
<td>Overall head-marking type.</td>
</tr>
<tr>
<td>Gender.</td>
<td>Genders, other noun classes, classifier articles, possessive classification.</td>
</tr>
<tr>
<td>Numeral classifiers</td>
<td>Obligatory classifiers in numeral phrases.</td>
</tr>
<tr>
<td>Tones</td>
<td>Phonologically contrastive pitch.</td>
</tr>
<tr>
<td>Person in NP</td>
<td>Person agreement in NP’s (possession, etc.)</td>
</tr>
<tr>
<td>Sg. = pl. pronouns</td>
<td>In (independent) personal pronouns, singular and plural have same root.</td>
</tr>
<tr>
<td>M in 2sg</td>
<td>[m] as first consonant in 2sg independent pronoun root</td>
</tr>
</tbody>
</table>
Verb-subject Derived transitivity
VOS, VSO, VS, and/or OVS basic word order.
In a standard set of verb pairs like 'eat': 'feed', 'come to boil'
: 'bring to boil', etc., the semantically causative member is
morphologically derived (causativized).

NP cases
Morphological genitive or similar adnominal case.

High complexity
The amount of overt morphological marking of core clausal
and phrasal relations exceeds a certain threshold.

M in 1sg
[m] as first consonant in 1sg independent pronoun root

Complex verbs
Conjugation by auxiliary, complex predicates, etc. The
'auxiliary' determines valence and carries agreement, etc.
Both members of a plain - causative pair in a standard list
have this structure.

This much of the paper -- the sample design, the survey design, and the actual
survey work -- represents most of the time and effort that go into a typology study.
But in this report I will gloss over that work and concentrate on the last small part of the
work, the analysis and interpretation of the frequency distributions of the markers.

(2) shows areal frequency data for selected markers, expressed as percentages
of languages in the area having that marker. The analysis below uses these figures.

(2) **Examples of cross-linguistic frequency data on selected markers.**
All entries are percentages (of languages in the area exhibiting the feature).

<table>
<thead>
<tr>
<th>Ergativity</th>
<th>Inclusive</th>
<th>Verb-subject</th>
<th>M in 1sg</th>
<th>Complex verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Africa</td>
<td>0%</td>
<td>8%</td>
<td>17%</td>
<td>25%</td>
</tr>
<tr>
<td>S Africa</td>
<td>0%</td>
<td>22%</td>
<td>10%</td>
<td>22%</td>
</tr>
<tr>
<td>Caucasus-Mesopot.</td>
<td>64%</td>
<td>9%</td>
<td>0%</td>
<td>50%</td>
</tr>
<tr>
<td>Europe</td>
<td>13%</td>
<td>0%</td>
<td>13%</td>
<td>83%</td>
</tr>
<tr>
<td>Inner Asia</td>
<td>40%</td>
<td>30%</td>
<td>0%</td>
<td>56%</td>
</tr>
<tr>
<td>N Asia coast</td>
<td>33%</td>
<td>14%</td>
<td>0%</td>
<td>56%</td>
</tr>
<tr>
<td>SE Asia</td>
<td>13%</td>
<td>83%</td>
<td>29%</td>
<td>0%</td>
</tr>
<tr>
<td>New Guinea coast</td>
<td>14%</td>
<td>57%</td>
<td>0%</td>
<td>11%</td>
</tr>
<tr>
<td>New Guinea interior</td>
<td>31%</td>
<td>5%</td>
<td>0%</td>
<td>18%</td>
</tr>
<tr>
<td>Australia coast</td>
<td>33%</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Australia interior</td>
<td>90%</td>
<td>80%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Alaska-Oregon</td>
<td>30%</td>
<td>30%</td>
<td>60%</td>
<td>0%</td>
</tr>
<tr>
<td>California</td>
<td>14%</td>
<td>29%</td>
<td>10%</td>
<td>14%</td>
</tr>
<tr>
<td>Basin-Plains</td>
<td>18%</td>
<td>45%</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>E North America</td>
<td>0%</td>
<td>40%</td>
<td>0%</td>
<td>9%</td>
</tr>
<tr>
<td>Mesoamerica</td>
<td>30%</td>
<td>60%</td>
<td>69%</td>
<td>0%</td>
</tr>
<tr>
<td>W South America</td>
<td>17%</td>
<td>50%</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>E South America</td>
<td>30%</td>
<td>63%</td>
<td>11%</td>
<td>0%</td>
</tr>
</tbody>
</table>
2. Distance and proximity analysis.

(3) shows a partial frequency ranking of areas for one marker: ergativity is (in my sample) unattested in North Africa, South Africa, and eastern North America; its frequency is high in the Caucasus-Mesopotamia area and in interior Australia. Hence North Africa, South Africa, and eastern North America are tied for first rank, while interior Australia occupies the last, or highest rank. This kind of ranking was done for each marker. The ranking (sorting) was ascending or descending so as to put Africa in the top half of the chart. (Africa was chosen as bellwether area because it is the natural reference point when human origins are at issue.)

(3) Distance and proximity analysis. Sample frequency ranking of data from (2):

<table>
<thead>
<tr>
<th></th>
<th>Ergativity</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. Africa</td>
<td>0 %</td>
<td>1</td>
</tr>
<tr>
<td>S. Africa</td>
<td>0 %</td>
<td>1</td>
</tr>
<tr>
<td>E. North America</td>
<td>0 %</td>
<td>1</td>
</tr>
<tr>
<td>Europe</td>
<td>13 %</td>
<td>2</td>
</tr>
<tr>
<td>SE Asia</td>
<td>13 %</td>
<td>2</td>
</tr>
<tr>
<td>Caucasus-Mesopotamia</td>
<td>64 %</td>
<td>10</td>
</tr>
<tr>
<td>Australia interior</td>
<td>90 %</td>
<td>11</td>
</tr>
</tbody>
</table>

Two kinds of totals are then figured for each area: (a) The sum of its rankings over all 15 markers; for instance (see (2) again), North Africa is at the lowest rank for ergativity but one of the higher ranks for M in first person singular pronouns. (b) The number of rank steps distant from some reference area, summed for all 15 markers; for instance, North Africa and South Africa are at the same rank (zero steps distant from each other) for ergativity but three ranks distant for verb-subject order (see (2) again: between the African frequencies of 17% and 11% intervene those of Europe at 13% and eastern South America at 11%). These two types of totals, (a) the sum of rankings and (b) the sum of steps distant from one or another area, give fairly similar results, in which the clustering of areas together approximately reflects real-world longitude. (4) shows the results for total type (a). At the left in (4) is a graphic display of summed ranks, with schematic vertical linearization. At the right are comments on the positioning of some areas. In this one-dimensional linguistic globe, the far west of the inhabited world (Europe, the Caucasus, Africa) is at one pole and the far east (the southern New World) at the other. Except for the asterisked entries, discussed below, there is surprisingly good correspondence to literal longitude: the linguistic world is an east-west continuum. In various tabulations of this general sort over the last few years I have obtained roughly the same results despite changes in sample size, areal breakdown, the markers surveyed, and details of analysis. The results are therefore quite firm: the single most important determinant of structural features in languages and language areas is longitude.
To be sure there are some surprises here: interior Australia and New Guinea are in the western Old World, coastal Australia is in Asia, and coastal New Guinea is at the far western edge of the world next to Mesoamerica. These surprises, like the basic longitudinal picture, are quite robust. Why the interiors separate from the coasts and move east, and why the coast of New Guinea moves west to join the Americas, will be explained below.

(4) **Results of proximity analysis** (count type (a)), linearized schematically. An asterisk marks areas that are longitudinally out of place.

<table>
<thead>
<tr>
<th>Europe</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe is at the far western periphery of the world.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Caucasus-Mesopotamia</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N Africa</td>
<td></td>
</tr>
<tr>
<td>S Africa</td>
<td></td>
</tr>
<tr>
<td>* Australia interior</td>
<td></td>
</tr>
<tr>
<td>NE Asian coast</td>
<td></td>
</tr>
<tr>
<td>* New Guinea interior</td>
<td></td>
</tr>
<tr>
<td>Inner Asia</td>
<td></td>
</tr>
<tr>
<td>* Australia coast</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Southeast Asia</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E. North America</td>
<td></td>
</tr>
<tr>
<td>California</td>
<td></td>
</tr>
<tr>
<td>Basin - Plains</td>
<td></td>
</tr>
<tr>
<td>W. South America</td>
<td></td>
</tr>
<tr>
<td>E. South America</td>
<td></td>
</tr>
<tr>
<td>Alaska-Oregon</td>
<td></td>
</tr>
<tr>
<td>* New Guinea coast</td>
<td></td>
</tr>
<tr>
<td>Mesoamerica</td>
<td></td>
</tr>
</tbody>
</table>

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa is western and peripheral.</td>
</tr>
<tr>
<td>Interior Australia is in the western Old World.</td>
</tr>
<tr>
<td>Interior New Guinea is in the western Old World.</td>
</tr>
<tr>
<td>Coastal Australia is in Asia.</td>
</tr>
<tr>
<td>Coastal New Guinea is in western America and (with Mesoamerica) at the far eastern periphery.</td>
</tr>
</tbody>
</table>

3. **Nearest neighbors**

For nearest-neighbor analysis I made an 18 x 18 matrix of the areas, in which each cell is the intersection of two areas. In each cell I entered the number of times those two areas had the same or nearly the same frequencies for a marker. Entries range from zero to 5 (out of the 15 markers). The matrix itself is too large for easy printing and is not reproduced here. (5) gives an interpretation of this matrix, showing, for each area, the area(s) it has the greatest number of intersections with. By no means all nearest neighbors are literal geographical neighbors. "**" in (5) marks those that are not, and the right-hand column notes the numerous instances when coast and coast, or interior and interior, of non-adjacent areas are nearest neighbors.
(6) gives a further interpretation of (5), showing clusters I have chosen to call “continents” and “islands” in the schematic geography of structural affinities between areas. There are two large, well-integrated “continents”: the western Old World plus Australia, and the western Americas plus coastal New Guinea and Southeast Asia. Other areas are more isolated, like islands. The Basin-Plains area of western North America is so distinctive and so distant from the others that it is simply not on the map. This is roughly the same picture as shown in (4).

(5) Nearest neighbors of each area. * = one nearest neighbor is not adjacent; ** = none is. The rightmost column notes cases where nearest neighbors are two non-adjacent coasts or two non-adjacent interiors.

<table>
<thead>
<tr>
<th>Region</th>
<th>Nearest Neighbor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Africa</td>
<td>** Australia interior</td>
</tr>
<tr>
<td>Southern Africa</td>
<td></td>
</tr>
<tr>
<td>Caucasus-Mesopotamia</td>
<td>* Europe, Australia coast</td>
</tr>
<tr>
<td>Europe</td>
<td>** Caucasus</td>
</tr>
<tr>
<td>Inner Asia</td>
<td>** E. North America (interiors)</td>
</tr>
<tr>
<td>NE Asian coast</td>
<td>** (marginally, New Guinea) (coasts)</td>
</tr>
<tr>
<td>SE Asia</td>
<td>** W. South America (coasts)</td>
</tr>
<tr>
<td>New Guinea coast</td>
<td>** California, W. South America (coasts)</td>
</tr>
<tr>
<td>New Guinea interior</td>
<td>** (marginally, NE Asian coast)</td>
</tr>
<tr>
<td>Australia coast</td>
<td>* Australia interior, Europe</td>
</tr>
<tr>
<td>Australia interior</td>
<td>* Australia coast, Europe, N. Africa</td>
</tr>
<tr>
<td>Alaska-Oregon</td>
<td>** Mesoamerica</td>
</tr>
<tr>
<td>California</td>
<td>** New Guinea coast (coasts)</td>
</tr>
<tr>
<td>Basin-Plains</td>
<td></td>
</tr>
<tr>
<td>E. North America</td>
<td>** Inner Asia (interiors)</td>
</tr>
<tr>
<td>Mesoamerica</td>
<td>* Alaska-Oregon, South American areas</td>
</tr>
<tr>
<td>W. South America</td>
<td>** Southeast Asia (coasts)</td>
</tr>
<tr>
<td>E. South America</td>
<td>*? Mesoamerica</td>
</tr>
</tbody>
</table>

(6) Continents and islands. Schematic geography based on nearest neighbor analysis. Continents are in boldface. Other entries are islands. The Basin-Plains area has no near neighbors and is entirely off the map.

Inner Asia, Eastern North America

Europe, Caucasus, Australia, Africa

New Guinea interior

NE Asia coast

Americas (chiefly western), New Guinea coast, Southeast Asia
4. Integration and latitude.

(7) shows more results from nearest-neighbor analysis. For each area I counted the total number of times it had identical or near-identical frequencies for one or another marker with one or another area, and these totals are shown in (7). Those totals that are distinctly higher or lower than the average are boxed and labeled as high or low. (Totals that are two standard deviations or more from the mean, marked in capitals are statistically significant.) The total is a measure of how well integrated an area is into the world: an area with a high total has many external connections, and one with a low total has few. The well-integrated areas are coastal Australia, interior Australia, and eastern South America; the poorly integrated ones are Southeast Asia, California, and (especially) the Basin-Plains area. Though it is difficult to make a generalization about what areas are poorly integrated, there is an obvious generalization to be made about the well-integrated areas: they are the southernmost ones. The northern areas can be thought of as a sort of periphery to a southern center. (The same result is obtained with different kinds of calculations of high and low.)

(7) Integration of areas into the world. Totals of identical or near-identical frequencies of markers with other areas. (Low, high = one standard deviation from the mean; LOW, HIGH = two.)

<table>
<thead>
<tr>
<th>Area</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Africa</td>
<td>32</td>
</tr>
<tr>
<td>Northern Africa</td>
<td>30</td>
</tr>
<tr>
<td>Caucasus and ancient Mesopotamia</td>
<td>28</td>
</tr>
<tr>
<td>Europe</td>
<td>28</td>
</tr>
<tr>
<td>Inner Asia</td>
<td>25</td>
</tr>
<tr>
<td>North Asian coast</td>
<td>29</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>17</td>
</tr>
<tr>
<td>New Guinea (north) coast</td>
<td>27</td>
</tr>
<tr>
<td>New Guinea interior</td>
<td>27</td>
</tr>
<tr>
<td>Australia (north) coast</td>
<td>36</td>
</tr>
<tr>
<td>Austria interior (and south)</td>
<td>42</td>
</tr>
<tr>
<td>Alaska-Oregon</td>
<td>27</td>
</tr>
<tr>
<td>California</td>
<td>23</td>
</tr>
<tr>
<td>Basin and Plains</td>
<td>11</td>
</tr>
<tr>
<td>Eastern North America</td>
<td>29</td>
</tr>
<tr>
<td>Mesoamerica</td>
<td>30</td>
</tr>
<tr>
<td>Western South America</td>
<td>26</td>
</tr>
<tr>
<td>Eastern South America</td>
<td>35</td>
</tr>
</tbody>
</table>

5. Language and genetics.

To summarize so far, we have a schematic linguistic geography in which the
main determinant of linguistic structure is longitude, there are two “continents”, namely
the Old World plus Australia and the Americas plus coastal New Guinea and Southeast
Asia, and the southernmost areas are central while the northern ones are more periph-
ernal. Let us now compare this geography to some recent work in human genetics. (8)
shows a human genetic family tree based on genetic distances for a number of different
features. In the geography that may be inferred from this tree, Africa is equidistant
from everything, the New World is close to northern Asia and fairly close to Europe,
and Australia and New Guinea are very close to each other and equally far from both
the Americas and the Old World. This is quite different from the linguistic geography,
in which Africa, though well integrated, is distinctly western and closest to Europe, the
Caucasus, and Mesopotamia; Australia is in the Old World; coastal New Guinea is in
the New World; and the Americas, especially the southern Americas, are at the far
eastern edge of the world and maximally distant from Europe and Africa.

(8) **Tree of human genetic distances.** (Cavalli-Sforza et al. 1994:80. Their
legend: Fig. 2.3.3. Summary tree obtained after averaging the 42 populations in the
nine clusters listed in the text. $F_{ST}$ distances are used.)
The differences between these two geographies must be due to the differences between linguistics and human genetics. Languages and genes, after all, are very different things; in particular, they spread in different ways and at different rates. Also, typological affinity and biological descent are different things. In addition, there are differences of sample and survey design between my survey and that of Cavalli-Sforza et al.; mine does not assume internal unity for New Guinea, Australia, or America, and indeed such lumpings would obscure much of the evidence for the linguistic geography.

6. Explaining the geography of structural markers

So far we have seen that abstract typological proximity echoes abstract real-world geography in some respects: there is an overall typological cline corresponding to longitude, and there are two proximity-based "continents" corresponding to the mainland Old World and the New World. However, there are also some surprises that require explanation:

- Coastal New Guinea and Southeast Asia are in the same continent as western America.
- Eastern North America and South America are closer to Eurasia than western America is.
- Australia is in the Old World.
- Southern areas (Africa, Australia, southern Americas) are better integrated into the world than northern areas are.
- Coastal and interior areas of the same island or continent are often typologically distant from one another.

A single explanation suffices for all these oddities: a set of (otherwise unrelated, typologically independent) structural features has spread around the Pacific rim, hugging the coast. These features include several of the historical markers surveyed here: numeral classifiers, tones, verb-subject order, /m/ as first root consonant in second person pronominals; also, with a wider but similar geographical distribution, head marking, derived transitivity, singular = plural pronouns, genders. (See Nichols & Peterson 1996 for the detailed argument and more maps.) These features define a circum-Pacific coastal area that is historically secondary, superimposed on a pre-existent linguistic geography. The Pacific Rim area has a clear and distinctive identity, which pulls it together and distances it from the rest of the world. The prior linguistic picture accounts for the better integration of the southern areas into the world: the southern continents, and the Old World, represent the background against which the circum-Pacific area formed. That background takes the shape of a worldwide and consistent west-to-east cline. Against this background, the spread of the circum-Pacific features stands out as an event that began well over 16,000 years ago (for the chronology see Nichols 1995b). This was a particular, identifiable, datable event, but I also assume it was a typical event, one instantiation of what must have been a regular process of language spread around the Pacific. Given what is
known about the prehistory of Asia, the Pacific, and the New World, the extralinguistic reality of such events must have involved cultural and linguistic spreads and migration, and presumably also technological advances, from Southeast Asia by coastally adapted people. The human colonization of the Pacific was underway by 50,000 years ago (Roberts et al. 1990), and there is every reason to believe that the background longitudinal linguistic cline was in place by then. A longitudinal continuum centered in the tropics, with colonization of the Pacific and the northern latitudes representing local offshoots from that continuum, is exactly what would be expected from what is known about human evolution, so there appears to be fair large-scale background consistency between language and human genetics.

7. Conclusions

This is a very sparse picture -- an east-west cline, episodes of circum-Pacific spreading which (typologically) distanced coasts from interiors and drew them together with other coasts, probably also local episodes of northward spread at least in the Old World. These events of spreading are blips on a more durable screen in which there is a stable east-west cline and the southern areas are the centers from which spreads emanated. Though spare and abstract, this picture is informative, surprisingly so for its time depth -- perhaps over 50,000 years, ten times the range of genetic (Neogrammarian) comparison. This shows that language origins can be usefully traced in structural markers and modeled as abstract geography, with no need at all for distant genetic comparison.

Acknowledgments. NSF grant DBS 92-22294. UCB Center for Slavic and East European Studies. Thanks to Jonathan Barnes, David Peterson, Robert Rendall.

References

Map 1. Languages in sample (small circles; 202 languages, genetically sampled) and areas (large encircled areas). The 18 areas are defined geographically, and are intended to be larger than traditional language areas but smaller than continents.

The areas are, in approximately west-to-east order:

Southern Africa
Northern Africa
Caucasus and (ancient) Mesopotamia
Europe
Inner Asia
North Asian coast
Southeast Asia
New Guinea (north) coast
New Guinea interior
Australia (north) coast
Australia interior (and south)
Alaska-Oregon
California
Basin and Plains
Eastern North America
Mesoamerica
Western South America
Eastern South America
Maps 2-4. Three structural markers: ergativity (Map 2), head marking (Map 3), singular = plural pronouns (Map 4). All three are slow-changing, low-frequency features with statistically significant frequency differences from continent to continent.
How the length and pitch of aizuti 'back channel utterances' and the nature of the speech activity determine preference structure in Japanese

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The University of Minnesota

1. Introduction

Although Pomerantz (1984) has claimed that delays within turns are components of disagreement in English, I demonstrate that Japanese supporting participants may use prolonged or delayed aizuti 'back channel utterances' to indicate agreement as well as disagreement with the main participant. Based on a comparison of the the pitch and length of 98 aizuti in 10 Japanese conversations using CSpeech, I show that it is not the prolonging or delayed aspect of these aizuti but rather the intonation contour that influences alignments of agreement and disagreement. In the Japanese conversations that I analyzed for this study, prolonged aizuti indicated that a supporting participant viewed what the main participant had just said as "highly noteworthy." I considered aizuti that were more than 300 ms long to be prolonged aizuti. Prolonged aizuti with falling intonation without an initial rise (\(\downarrow\)) were used to create alignment in disagreement. Prolonged aizuti with an initial rise followed by gradually falling intonation (\(\wedge\)) were used to create alignment in agreement with the main participant. Finally prolonged aizuti with a sudden initial rise followed by sharply falling intonation (\(\Delta\)) were used to indicated surprise together with an alignment in agreement with the main participant.

2. Previous studies on aizuti

Previous researchers have focused on the function and the frequency of aizuti. While most previous studies (Mizutani 1984; Maynard 1987, 1989; Yamada 1992; Sugitoo 1992) have claimed that aizuti are supportive, Matsuda (1988) and Imaishi (1992) have also pointed out some of the less positive functions of aizuti.

Mizutani (1984) has described conversations with frequent aizuti as oriented toward good human relations. She emphasizes that aizuti are necessary to build Japanese conversation which she refers to as kyoowa "a conversation co-created by the speaker and listener." Maynard (1987, 1989) demonstrated that Japanese use aizuti more frequently than Americans use back channel utterances. Based on an analysis of casual friendly conversations which do not include conflict or arguments, she proposed six supportive functions of aizuti; 1) continuer, 2) display of understanding of content, 3) support toward the speaker's judgement, 4) agreement, 5) strong emotional response and 6) minor addition, correction, or request for information (Maynard 1989: 171). Sugitoo (1992) notes that participants use aizuti to make the conversation lively and encourage the speaker to keep talking. Based on an analysis of the timing of aizuti, she claims that the participants often overlap utterances with aizuti to co-construct utterances with the speaker. Yamada (1992:131) has also claimed that in Japanese conversation, so-called listening participants actually perform primary active roles as "supporters" of the "leaders," that is, the speaking participants in the conversation, by using aizuti to show this supportive attitude. Finally, in an analysis of the use of aizuti by one speaker in conversations with different interlocutors, Spees (1995) points out that although aizuti may be used with similar frequency, frequency alone can not account for differences in conversational style. She demonstrates that the same speaker may use aizuti in different ways depending on the communicative style of the interlocutor.
Matsuda (1988) and Imaishi (1992) are unique in their analyses of the non-supportive functions and pitch contour of *aizuti*. Matsuda (1988:63) suggests that *aizuti* such as *Huun* 'uh huh' and *Soo desu ka nee* 'I wonder if that is so' can function to convey the listener's denial or doubt when pronounced with falling intonation. She further notes that *Un* 'uh huh,' pronounced with strong falling intonation can convey the listener's sympathy toward the speaker.

Imaishi (1992) has demonstrated that *aizuti* intonation can convey the listener's attitude towards the topic and that *aizuti* with different pitch patterns are used at different points of the conversation. She claims that the *aizuti* Nn (\(\wedge\)) 'Uh huh' pronounced with an initial rise followed by sudden falling intonation indicates the speaker's interest in the topic more than Nn (\(\rightarrow\)) 'Uh huh' pronounced with flat pitch. In her data, Nn (\(\wedge\)) pronounced with an initial rise followed by sudden falling pitch was used at the beginning of the main topic, while Nn (\(\rightarrow\)) with flat pitch was used when the conversation died down 10 minutes into the discussion of the main topic.

Although Mizutani (1984) and Maynard (1987 and 1989) have called for the need to analyze the pitch contour of *aizuti* in different genres, most previous studies have focused on the frequency and supportive function of *aizuti* in Japanese conversations. In my analysis, I build on Matsuda (1988) and Imaishi's (1992) analyses of the non-supportive functions and pitch contour of *aizuti* and show how the length and pitch of *aizuti* are used to negotiate alignments in different speech activities.

3. Data and Analysis

In this study, I analyze how supporting participants vary their *aizuti* length and pitch contour in order to create alignments in agreement and disagreement with the main participant in different speech activities. By speech activities, I mean what the participants are trying to achieve in the conversation or what Heritage and Sorjonen (1994: 4) define as "the work that is achieved across a sequence or series of sequences as a unit or course of action - meaning by this a relatively sustained topically coherent and/or goal-coherent course of action," e.g., persuasion, invitation, or casual talk without a specific goal.

Szatrowski (1991, 1993) has demonstrated that Japanese invitation conversations are made up of units called *wadan* that are co-constructed by the inviter and invitee who alternate in their use of utterance functions from two groups as shown below. I follow Szatrowski's distinction between "information presenting participants" which I refer to as "main participants" and "supporting participants," respectively.

<table>
<thead>
<tr>
<th>INFORMATION PRESENTING PARTICIPANT</th>
<th>SUPPORTING PARTICIPANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention Requests</td>
<td>Information Requests</td>
</tr>
<tr>
<td>Discourse Markers</td>
<td>Confirmation Requests</td>
</tr>
<tr>
<td>Information Presentation</td>
<td>Comments</td>
</tr>
<tr>
<td>Agreement Requests</td>
<td>(&lt;\text{Attention Displays}&gt;(a-i))</td>
</tr>
<tr>
<td>Invitations</td>
<td>Relation-building Expressions</td>
</tr>
<tr>
<td>Relation-building Expressions</td>
<td>(&lt;\text{Attention Displays}&gt;(j, k))</td>
</tr>
<tr>
<td>(Szatrowski 1995)</td>
<td></td>
</tr>
</tbody>
</table>
In my analysis, I focus on the aizuti Un used by supporting participant when it is followed by an utterance by the main participant or another aizuti by the supporting participant. Using CSpeech, I analyzed the pitch and length of 98 aizuti in a total of 10 conversations (8 telephone conversations and 2 face-to-face conversations). In the present study, I will focus on the aizuti used by one speaker, Reiko, who participated in Conversations 1 through 3 because Reiko’s aizuti were representative of what I found in the other conversations. Conversations 1 and 2 were telephone conversations between two Japanese language teaching assistants and involved nemawashi, a behind the scene’s activity of persuasion in preparation for a teaching assistant meeting scheduled for the following day. The term nemawashi literally means "digging around the roots of a tree prior to transplanting." This technique "maneuvering behind the scenes" is widely used among Japanese politicians and business people to obtain consensus in advance to avoid future confrontation in public (Kodansha International 1994: 309-310). The main participants in these conversations tried to persuade Reiko to agree with their proposal so that they could be assured that Reiko would collaborate in persuading other teaching assistants to agree with them at the subsequent meeting. Conversation 3 was a casual face-to-face breakfast table conversation between a mother, father, and Reiko (the daughter) with no specific goal.

Results of my analysis show that 1) compared to short aizuti, prolonged aizuti indicate that a supporting participant views what the main participant has just said as "highly noteworthy" and 2) the length and pitch contour of these aizuti together with the nature of the speech activity in which they are used determine the alignment implied by the supporting participant as shown in the Figures 1 to 3.

![Figure 1: disagreement](image1)

Figure 1: disagreement
Conversation 1:
persuasion (conflict)
[-initial rise, +fall]
47R: U::N (401 ms)

![Figure 2: agreement](image2)

Figure 2: agreement
Conversation 2:
persuasion (non-conflict)
[+initial rise, +fall (gradual)]
9R: U::N (596 ms)

![Figure 3: surprise and agreement](image3)

Figure 3: surprise and agreement
Conversation 3:
casual talk (non-conflict)
[+initial rise (abrupt), +fall (abrupt)]
9D: HU::N (529 ms)

Conversation 1 was a conversation involving conflict where the main participant was trying to persuade the supporting participant, who did not agree with her, to see her point of view. In this conversation, the supporting participant used pro-
longed aizuti with the pitch curve given in Figure 1. This falling intonation with no initial rise indicated that what the main participant was insisting on was troublesome, thus showing that the supporting participant was aligned in disagreement with the main participant. In contrast, in Conversation 2, which did not involve conflict, the supporting participant used prolonged aizuti with the pitch curve given in Figure 2. This initial rise followed by gradually falling intonation indicated the supporting participant's sympathetic alignment in agreement with the main participant. Finally, in conversation 3, which did not involve conflict, the supporting participant used prolonged aizuti with the pitch contour in Figure 3. This sharp initial rise followed by abruptly falling intonation indicated the supporting participant's surprise as well as alignment in agreement with the main participant.

In Conversation 1, two Japanese teaching assistants are disagreeing about whether or not they should give their students a copy of the transcript for a listening comprehension assignment. While Nami (N) wants to give the students the transcript, Reiko (R) does not want to do so. Prior to 39N, Nami and Reiko have expressed their difference of opinion explicitly.

(1) Conversation 1: Persuasion (conflict)
Nami (N)=a female Japanese TA, 40's, 2 years of teaching experience.
Reiko (R)=a female Japanese TA, 30's, 4 years of teaching experience.

N's proposal 39N: Dakara tatoeba ano toransukuriputo o kopi-sita no o agete ne?
40R: UN. (192 ms)
41N: kotae wa moo agenai yoo ni sityatte,
42N: de zibun de // kotae figyuauto-sinasai to.
43R: U:N. \ (336 ms)
44R: U//:----:N. \ (807 ms)

Account 45N: de: ano: u: dotti ni site mo,
46N: ano tesuto no ressun tesuto nanka no mondai wa mata sukosi tigau mono o dasu desyo/lo?
47R: U:N. \ (401 ms)

Account 48N: Dakara oboete kuru tte koto mo dekinai desyo.
49R: (. ) U:----:N. \ (689 ms)
50N: U//N. (210 ms)

R's rejection of N's proposal 51R: Soo ne, nanka watasi, u:n ano: toransukuriputo ageru to iu no tyotto teekoo ga aru n da kedo:///.

N's proposal 39N: So, for example, (we'll) give them copies of the transcripts right? and
40R: UN. (192 ms)
41N: (we'll) make it so (that) we won't give them the answers anymore, and
42N: and, we'll // (tell them to) figure out the answers on their own.
43R: U:N. \ (336 ms)
44R: U//:----:N. \ (807 ms)
Account 45N: then, uh, anyway,
46N: uhm as for the test's questions for the lesson
tests and such we give them
slightly different ones, righ/t?

47R: \U::N. \ (401 ms)

Account 48N: So (they) can't come to (the test) with it memorized,
right.
49R: (.) \U:::N. \ (689 ms)
50N: \U/\N.

R's rejection of N's proposal 51R: Hmn. Somehow, yeah, uhm, it's that
I have resistance to giving them the transcript, but.

In 39N, 41N, and 42N, Nami begins by trying to persuade Reiko to agree to
give the transcript to the students. In response, Reiko begins to present an
alignment in disagreement by first withholding an aizuti after 41N. Then, Reiko's
aizuti in 43R (336 ms) and 44R (807 ms) are considerably longer than her previous
aizuti in 40R (192 ms) and are pronounced with falling intonation without an initial
rise (\). Reiko's delay in 41N and prolonged aizuti with falling pitch in 43R and
44R convey her negative attitude toward Nami's proposal in 39N to 42N. This
interpretation is further supported by Nami's subsequent account in 45N and 46N
ending with the modal desyoo because if Reiko had agreed with Nami she probably
would not have felt it was necessary to supply an account. Ford (1993: 114) claims
that "in dispreferred responses, accounts often follow the non-agreeing part of the
turn." Reiko responds to Nami's account with a prolonged aizuti with sharply
falling intonation in 47R (401 ms) and after Nami provides another account ending
in desyoo in 48N, Reiko uses an even longer aizuti in 49R (689 ms) also with
falling intonation. These aizuti suggest Reiko's alignment in disagreement with
Nami and foreshadow Reiko's explicit disagreement in 51R.

In contrast, in Conversation 2, Reiko uses aizuti to show her agreement with the
main participant, Tae. In Conversation 2, Tae is telling Reiko about how one of
their students, Smith, had reported to Ms. Ito, another teaching assistant, that he
had not taken the previous exam and successfully persuades Reiko to agree that
they should give the student a make-up exam. Reiko responds to Tae's explanation with prolonged aizuti pronounced with an initial rise followed by gradually falling intonation (♀), suggesting her alignment in agreement with Tae. This interpretation is supported by Reiko's utterance in 16R Honto, hidoi ne!: 'Really. That's awful, isn't it' which explicitly indicates her agreement with Tae.

(2) Conversation 2: Persuasion (non-conflict)
Tae (T)= a female Japanese TA, 30's, 8 years of teaching experience.
Reiko (R)=a female Japanese TA, 30's, 4 years of teaching experience.

1T: Nde ne:,
2R: UN. (273 ms)
3T: Nde kyoo nanka ne tesuto mo ku, ano kotae mo kubatte ne tesuto mo kaesite kara ne kite ne:, {with laughter}
4R: UN. ♀ (369 ms)
5T: zitu wa oziisan ga nakunatte osoosiki osoosiki de autoobutaua datta kara ne, // tesuto ukerarenakatta tte itte kita n da tte:? {with laughter}
6R: HU:…………………:N? (2071 ms)
7R: A ho:n//too:.
8T: UN de meekuappu doo siyoo ka na to omotte Tookyoo de tukatta yatu ne/?:
9R: UN. (596 ms)
10T: nita mondai da kedomo:,
11R: UN. (299 ms)
12R: Arimasu:? 5
13T: tyotto tyotto dasite mite ne:? 5
14R: UN. ♀ (507 ms)
15T: u:n soide ii yoo dattara, maa sore de yatte mo ii ka na to omotte!: 5
16R: Honto, hidoi ne!: {laugh},
17T: Tonikaku asita {laugh}, asita ne?
18R: UN. ♀ (598 ms)
19T: minna ni soodan-site:,
20R: UN. ♀ (427 ms)
21T: un kimemasyoo ne tte itte ta n da kedo:.

1T: then,
2R: UN. (273 ms)
3T: then, today, (he) came after (she) handed out, uh, handed out the answer sheet too and returned the exam too, and {with laughter}
4R: UN. ♀ (369 ms)
5T: (she) said it's that (he) came up saying that the fact is, his grandfather passed away and because (he was) out of town for the funeral //he couldn't take the (previous exam).{with laughter}
{laugh}
6R: HU:…………………:N? (2071 ms)
7R: Oh really.
8T: Uh so, I am wondering how to give
(him) a make-up exam and, the one we used in
Tokyo (University)?
9R: U:::N. (596 ms)
10T: (has) similar exam questions, but
11R: UN. (299 ms)
12R: Do you have (it)?
13T: (I)’ll try to look for it and,
14R: U:::N. (507 ms)
15T: Uh, if it seems OK, well, (I) guess if we use that,
I think it would be OK.
16R: Really, that’s awful, isn’t it! {laugh}
17T: Anyway tomorrow {laugh}, tomorrow?
18R: U:::N. (598 ms)
19T: "(we’ll) all confer and,
20R: U:::N. (427 ms)
21T: uh let's decide", it's that (I) told (her that) but.
In 1T, 3T, and 5T, Tae begins by explaining that Ms. Ito found out that Smith had not taken the test after she had already handed back the corrected exam to the other students. Tae describes the student's report to Ms. Ito, emphasizing his delay in reporting his situation with her laughter in 3T and 5T which indicates that it was an unexpected event for her. She also repeats similar syntactic structure in 3T saying kotaeh mo kubatte '(she) handed out the answer sheet too' and tesuto mo kaesite '(she) returned the exam too' to emphasize the student's delay in coming to Ms. Ito and imply that the student is troublesome. In 5T, Tae further shows her negative evaluation toward the student by lengthening the final vowel at the end of her utterance ending with tte;' '(she) said' pronounced with rising intonation.

During Tae's construction of the troublesome event, Reiko uses prolonged aizuti pronounced with an initial rise followed by gradually falling intonation (︵) in 4R, 9R, 14R, 18R, and 20R. This aizuti indicates Reiko's understanding and sympathetic alignment with Tae's story and foreshadows Reiko's agreement with Tae's proposal shortly after this conversational segment.

Finally, in Conversation 3, a non-conflict conversation, Reiko uses long aizuti with a sudden initial rise followed by sharply falling intonation after the main participant presents some news. This aizuti indicates what Maynard refers to as "strong emotional response" (Maynard 1989: 170-171) as well as an alignment in agreement with the main participant.

In Conversation 3, Reiko's father and mother are telling their daughter about how their dog will not eat bread unless it has butter on it while they are eating breakfast.

(3) Conversation 3: Casual talk (non-conflict)
Mother (M)=60's, Father (F)=60's, Daughter (D)=30's

1F: Bataa tuitoru de tabe//ru.
2M: Un,
   Bataa tuitoru de taberu no.
3M: Bataa tuite nakattara kuti tubutte
    // zettai kuti akanai.
4F: Gii to koo yatte.
   (.)
5M: Hoide mo sita ni hottoite yaru to ne,
6D: UN. (192 ms)
7M: ki ga muku to taberu si intinti de mo
    hottaru baai ga aru.
   (.)
8M: Dakara natu? ari no su
    ga taihen.
9D: HU:::N. \( \sqrt{V} \) (529 ms)
10M: Kono mae mita desyoo.
11D: UN. (162 ms)
12M: De aritooru tyuu \{laugh\} kusuri katte kite
    maite yatta.
13D: Aritooru? \{laugh\}

1F: It's that the dog eats (it) with butter // on it.
2M: UN.
   it's that the dog eats (it) with butter on (it).
3M: If there is no butter on (it), he clamps (his) mouth shut and // absolutely will not open (his) mouth.
4F: (He) clamps (his) mouth shut like this.
( )
5M: But if I put the bread down,
6D: UN. (192 ms)
7M: there are times he eats it and
times when he leaves it even a day.
( )
8M: So in summer? the ant nests
are terrible.
9D: HU:::N. \(\wedge\) (529 ms)
10M: You saw (them) last time, right?
11D: UN. (162 ms)
12M: Then I bought the insecticide called aritooru
'ants pass through' \{laugh\} and scattered it.
13D: Aritooru 'ants pass through'. \{laugh\}

In 5M and 7M the mother explains that when they put the bread out for the dog sometimes he eats it and sometimes he leaves it. After the mother draws the conclusion that the ant nests are terrible in the summer in 8M, emphasizing the word taihen 'terrible,' Reiko responds with a long aizuti with initial rise followed by sharply falling intonation \(\wedge\). This suggests her surprise and agreement with her mother's assessment of the terribleness of the ant nests.

4. Conclusion
In conclusion, based on an analysis of the use of aizuti in several speech activities, I found that the supporting participant's alignment with the main participant was not exclusively manifested by delays created by prolonged aizuti, but rather was related to the intonation contour of the aizuti. I demonstrated that in
persuasion contexts, prolonged aizuti pronounced with falling intonation without an
initial rise (\(\wedge\)) indicated the supporting participant's alignment in disagreement.
Prolonged aizuti pronounced with an initial rise followed by gradually falling
intonation (\(\wedge\)) suggested the supporting participant's alignment in agreement with
the main participant. Finally, in casual family conversation where no decision was
at stake, prolonged aizuti with a sudden initial rise followed by abruptly falling
intonation (\(\wedge\)) was used to indicate surprise as well as an alignment in agreement
with the main participant. This research points to the importance of considering
pitch, length and the nature of the speech activity in the analysis of aizuti.

NOTES

*I would like to thank Professor Polly Szatrowski for her valuable suggestions
and constant encouragement and students in the 1996 Japanese Syntax and
Semantics class at the University of Minnesota for their comments.
1. I define prolonged aizuti as aizuti more than 300 ms long because the aizuti in
other sections of this conversation, where there was clear agreement, were all less
than 300.
2. I have indicated the length of Reiko's aizuti on the right in milliseconds.
3. According to Hasunuma (1992) desyoo functions to get the listener to realize
that they share information with the speaker. Szatrowski (1994) has
demonstrated that desyoo is used to provide a basis, in particular in situations of
potential conflict such as refusing a suggestion or invitation.

REFERENCES

English conversations: 102-130. Cambridge: Cambridge University
Press.

Goodwin, Charles. 1984. Notes on story structure and the organization of
participation. Structure of social action: Studies in conversation analysis,
ed. by J. Maxwell Atkinson and John Heritage, 225-246. Cambridge:
Cambridge University Press.

____________. 1986. Between and within: alternative sequential treatments of

Goodwin, Marjorie Harness. 1990. He-said-she-said: Talk as social organization
among Black children. Bloomington and Indianapolis: Indiana University
Press.

Hasunuma, Akiko. 1993. Nihongo no danwa maakaa "daroo" to "zya nai ka" no
kinoo--kyoottuu ninsiik kanki no yoohoo o tyuisin ni-- (The function of the
Japanese discourse markers daroo and janaika as an evocation of shared
knowledge). Koide kinen nihongo kyooolku kenkyuukai ronbunssyuu, ed.
by Shigeko Imada, Tazuko Ueno, Michiko Sasaki, Taeko Nakamura,

activities across sequences: And-prefacing as a feature of question design.

Imaishi, Sachiko. 1992. Denwa no kaiwa no sutoratezii (Telephone conversation

for processes of conversational negotiation. The University of Michigan:
Ph.D. dissertation.


Sugitoo, Miyoko. 1993. Kookateki na danwa to aizuti no tokutyoo oyobi sono taimingu (Effective discourse and characteristics of aizuti 'back channel utterances' and their timing). Nihongogaku 12.4. 11-20.


Indexical Meaning, Linguistic Ideology, and Japanese Women's Speech

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1. INTRODUCTION*

Gender differences in speech patterns have been widely studied in Japanese sociolinguistics (e.g. Ide 1979, 1982, 1990; Jugaku 1979; Kindaichi 1957; McGloin 1990; Mizutani & Mizutani 1987; Reynolds 1985; Shibamoto 1985, 1990; Smith 1992). A number of linguistic features (e.g. sentence-final particles, honorifics) have been correlated with gender: Compared to Japanese men's speech, Japanese women's speech has been characterized as polite, gentle, nonassertive, and empathetic. Previous studies, often relying on either the researchers' introspection or self-report surveys, have tended to essentialize these differences as constituting distinct Japanese men's and women's languages. However, the actual speech of Japanese men and women does not always conform to such dichotomous categorization. Hence the need for empirical studies of within-gender variation in speech styles is now increasingly being recognized (Jorden 1990; Okamoto & Sato 1992). This study, an extension of my earlier work (Okamoto 1995), examines variation in Japanese women's speech styles through an analysis of actual conversations. Based on my analysis, I will reexamine the relationship between language and gender and consider the nature of the indexical processes in which linguistic forms are related to social meanings.

2. DATA

The data consists of 10 audio-taped informal conversations, each between two close friends. A total of 20 women, all residents of Tokyo, participated as subjects. There were 10 college students, ages 18 to 20, and 10 middle-aged women, ages 43 to 57.¹ The subjects were asked to tape-record their *oshaberi* 'chat' with their close friends for about 45 minutes.² Each conversation was transcribed to obtain 150 consecutive sentence tokens for each speaker.³

I analyzed the uses of four linguistic features that are often associated with gender: 1. sentence-final forms, 2. "vulgar" or "strongly masculine" lexical expressions, 3. honorifics, and 4. the prefix *o-* for nouns.

2.1. Sentence-final forms

For the sentence-final forms, each token was identified as feminine, neutral, or masculine. This identification was based mainly on the classification given in the literature (e.g. McGloin 1990; Mizutani & Mizutani 1987). The feminine and masculine sentence-final forms were further subdivided into moderately feminine/masculine forms and strongly feminine/masculine forms. (See Okamoto & Sato (1992) for a detailed description of the gender classification of sentence-final forms.)
The results of the analysis regarding the use of sentence-final forms are shown in Tables 1-3 below. Table 1 compares the two age groups, and Tables 2 and 3 (next page) show the use by each subject in each group.

**TABLE 1. Use (in %) of gendered sentence-final forms for the two age groups**

<table>
<thead>
<tr>
<th>Sentence-final forms</th>
<th>Students (ages 18-20)</th>
<th>Middle-aged women (ages 43-57)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feminine forms</strong></td>
<td>12.3</td>
<td>36.3</td>
</tr>
<tr>
<td>• Moderately feminine forms</td>
<td>7.8</td>
<td>18.1</td>
</tr>
<tr>
<td>• Strongly feminine forms</td>
<td>4.5</td>
<td>18.2</td>
</tr>
<tr>
<td><strong>Masculine forms</strong></td>
<td>18.9</td>
<td>12.3</td>
</tr>
<tr>
<td>• Moderately masculine forms</td>
<td>17.5</td>
<td>12.2</td>
</tr>
<tr>
<td>• Strongly masculine forms</td>
<td>1.4</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Neutral forms</strong></td>
<td>68.8</td>
<td>51.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The number of subjects is 10 for each age group.
Total number of tokens = 3,000 (150 tokens for each subject)

Although there is wide within-group variation, the older women tended to use more "feminine" sentence-final forms than did the younger women. All the older women except one used "feminine" forms more often than "masculine" forms. In contrast, all the younger women except two used "masculine" forms more often than "feminine" forms. Further, many of the older speakers used "strongly feminine" forms quite frequently, but the younger speakers hardly used them. For example, the younger group used a typical "feminine" particle wa only twice in the entire data set. The older group used it 55 times. Most of the "masculine" sentence-final forms used by the subjects were "moderately masculine" forms. But many younger subjects did use "strongly masculine" forms, though on a limited basis. Examples of "strongly masculine" and "strongly feminine" sentence-final forms are shown below:

**Examples of "strongly masculine" sentence-final forms**

*<Students>*

(SP1) *Iya, datteee tooi zo.* 'But it's far away.'

........... *kamo shin nee kedo ne.* 'It may be that ...'

(SP6) *Nanda yoo.* 'What do you want?'

(SP10) *Katte ni ittero tte.* 'Say whatever you want to say.'
### TABLE 2. Use (in %) of gendered sentence-final forms for individual speakers
<Students>

SP=speaker; F=feminine forms; MF=moderately feminine forms; SF=strongly feminine forms; M=mascule forms; MM=moderately masculine forms; SM=strongly masculine forms; N=neutral forms

<table>
<thead>
<tr>
<th>Form</th>
<th>SP1</th>
<th>SP2</th>
<th>SP3</th>
<th>SP4</th>
<th>SP5</th>
<th>SP6</th>
<th>SP7</th>
<th>SP8</th>
<th>SP9</th>
<th>SP10</th>
<th>M</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>13</td>
<td>15</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td>16</td>
<td>8</td>
<td>19</td>
<td>5</td>
<td>10</td>
<td>12</td>
<td>5-19</td>
</tr>
<tr>
<td>- MF</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td>8</td>
<td>8</td>
<td>3-10</td>
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<tr>
<td>- SF</td>
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<td>7</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>12</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>2-12</td>
</tr>
<tr>
<td>M</td>
<td>11</td>
<td>17</td>
<td>25</td>
<td>17</td>
<td>19</td>
<td>25</td>
<td>17</td>
<td>13</td>
<td>23</td>
<td>23</td>
<td>19</td>
<td>11-25</td>
</tr>
<tr>
<td>- MM</td>
<td>8</td>
<td>15</td>
<td>25</td>
<td>16</td>
<td>19</td>
<td>22</td>
<td>15</td>
<td>13</td>
<td>21</td>
<td>21</td>
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<td>- SM</td>
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<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>-----</td>
</tr>
</tbody>
</table>

### TABLE 3. Use (in %) of gendered sentence-final forms for individual speakers
<Middle-aged women>

<table>
<thead>
<tr>
<th>Form</th>
<th>SP1</th>
<th>SP2</th>
<th>SP3</th>
<th>SP4</th>
<th>SP5</th>
<th>SP6</th>
<th>SP7</th>
<th>SP8</th>
<th>SP9</th>
<th>SP10</th>
<th>M</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>33</td>
<td>10</td>
<td>39</td>
<td>35</td>
<td>43</td>
<td>61</td>
<td>35</td>
<td>27</td>
<td>24</td>
<td>54</td>
<td>36</td>
<td>10-61</td>
</tr>
<tr>
<td>- MF</td>
<td>16</td>
<td>5</td>
<td>21</td>
<td>20</td>
<td>22</td>
<td>27</td>
<td>24</td>
<td>10</td>
<td>13</td>
<td>21</td>
<td>18</td>
<td>5-27</td>
</tr>
<tr>
<td>- SF</td>
<td>17</td>
<td>5</td>
<td>18</td>
<td>15</td>
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<td>34</td>
<td>11</td>
<td>17</td>
<td>11</td>
<td>33</td>
<td>18</td>
<td>5-34</td>
</tr>
<tr>
<td>M</td>
<td>8</td>
<td>17</td>
<td>17</td>
<td>19</td>
<td>3</td>
<td>2</td>
<td>15</td>
<td>23</td>
<td>15</td>
<td>5</td>
<td>12</td>
<td>2-23</td>
</tr>
<tr>
<td>- MM</td>
<td>8</td>
<td>17</td>
<td>17</td>
<td>19</td>
<td>3</td>
<td>2</td>
<td>14</td>
<td>23</td>
<td>15</td>
<td>5</td>
<td>12</td>
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<tr>
<td>- SM</td>
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</tr>
<tr>
<td>N</td>
<td>59</td>
<td>73</td>
<td>44</td>
<td>47</td>
<td>53</td>
<td>37</td>
<td>49</td>
<td>49</td>
<td>61</td>
<td>41</td>
<td>51</td>
<td>37-73</td>
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<tr>
<td>Total</td>
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<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>-----</td>
</tr>
</tbody>
</table>
Examples of "strongly feminine" sentence-final forms

<Middle-aged women>
(SP3) Un, sorya omou wa yo. 'Right, of course, they must think so.'
(SP4) Ara, ureshii wa. 'Oh, I'm happy.'
(SP9) Soo desu tte yo. 'I hear that's the case.'
(SP10) Haru-saki data kashira. 'Was it early spring?'

2.2. "Vulgar" or "strongly masculine" lexical expressions

In addition to the "strongly masculine" sentence-final forms, the speakers occasionally used lexical items commonly perceived as vulgar, strongly "masculine," or very informal. As shown in Table 4, generally, the younger group used these expressions more than the older group, although one subject in the older group (speaker 7) used 6 such expressions.

| TABLE 4. "Vulgar," strongly "masculine," or very informal lexical expressions | Number of tokens per 150 sentences |
|---|---|---|---|---|---|---|---|---|---|---|---|
|   | SP1 | SP2 | SP3 | SP4 | SP5 | SP6 | SP7 | SP8 | SP9 | SP10 | total |
| students | 5 | 3 | 3 | 2 | 7 | 9 | 3 | 3 | 1 | 2 | 38 |
| middle-aged | 1 | 0 | 2 | 1 | 0 | 0 | 6 | 1 | 0 | 0 | 11 |

Examples of "vulgar," strongly "masculine," or very informal expressions in the data include:

<students>
koitsu 'this guy'; aitsu 'that guy'; yatsu 'that guy'; nama yuu na yo 'Don't be cheeky'; bakayaroo 'stupid'; toshi kute n da mon ne '(she) is older'; yabai 'troublesome'; nukasu 'say'; dekai 'humongous'; kuu 'eat/chow down'; umai 'delicious'; mukatsuku 'angry'

<middle-aged women>
chau chau 'no, no'; acha kocha 'here and there'; furo yatta 'gave a bath'; aniki 'older brother'; kuso 'Damn it!'; mukatsuku 'angry'; nyooobo 'wife'

2.3. Honorifics

The subjects did not use honorifics for each other, because they were close friends. However, when they talked about certain third persons (i.e. their superiors and persons they did not know well), they sometimes used nominal and verbal (referent) honorifics. The use of these honorifics was relatively rare among the younger group (5 instances). In contrast, such honorifics were frequently used by the older group (64 instances). In particular, speakers 5 and 6, who used many "feminine" sentence-final forms, also used such honorifics most frequently. Note, however, that there were also 35 instances in which the older speakers did not use honorifics when applicable. Table 5 summarizes the use and nonuse of (referent) honorifics.
Table 5. Use and nonuse of referent honorifics

<table>
<thead>
<tr>
<th></th>
<th>Students</th>
<th>Middle-aged women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of relevant tokens</td>
<td>43</td>
<td>99</td>
</tr>
<tr>
<td>Number of tokens with honorifics</td>
<td>5 (12%)</td>
<td>64 (65%)</td>
</tr>
<tr>
<td>Number of tokens without honorifics</td>
<td>38 (88%)</td>
<td>35 (35%)</td>
</tr>
</tbody>
</table>

Examples of the honorifics used by the subjects are shown below:

<students>
(SP1) *Kekkoo otohii o *meshita *kata da kata*
'She is a pretty old person, so ...'
(SP8) *danna-san yuru-shite kureta ti*
'Her husband allowed her (to go).'

<middle-aged women>
(SP1) *Kore totte kudasatta no ga wakai jousee no kata datta n de ...*
'The one who kindly took this (picture) was a young woman, so ...'
(SP5) *Go-shuujin mo issho ni irashita kata ...*
'Her husband also came with her, so ...'
(SP6) *Okeeko ni wa ne sore de ii tte oshhary n da kedo.*
'(The teacher) said that for practice that will do.'

2.4. The prefix *o-* for nouns

The prefix *o-* for nouns is said to be used for showing respect or refinement (e.g. Niye-kawa 1991). I examined the latter usage, which is considered to be particularly common among women (Martin 1987:332; Mizutani & Mizutani 1987:70-71). The speakers' use of this prefix is shown in Table 6.

Table 6. Use and nonuse of the prefix *o-*

<table>
<thead>
<tr>
<th></th>
<th>Students</th>
<th>Middle-aged women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of relevant nouns</td>
<td>65</td>
<td>86</td>
</tr>
<tr>
<td>Number of nouns with <em>o-</em></td>
<td>28 (43%)</td>
<td>58 (67%)</td>
</tr>
<tr>
<td>Number of nouns without <em>o-</em></td>
<td>37 (57%)</td>
<td>28 (33%)</td>
</tr>
</tbody>
</table>

Although the data is limited, the older group used this "feminine" *o-* more often than the students did. In particular, speakers 5, 6, and 10, who used numerous "feminine" sentence-final forms, also used this prefix most frequently. But speaker 7 in the older group did not use this prefix at all. Examples of the use and nonuse of *o-* are shown below:

Examples of the use of the prefix *o-*

<students>
*o-tomodachi 'friend' (SP1), o-sashimi 'sashimi/raw fish' (SP5), o-uchi 'house', o-sakana 'fish' (SP6), o-kyuuroo 'salary' (SP7), o-wakare 'farewell' (SP7), o-bentoo 'boxed lunch' (SP10)
Examples of the nonuse of the prefix o-, where applicable

<students>
  kane 'money' (SP1, SP6), toire 'bathroom' (SP3), futon 'futon' (SP6),
  niku 'meat' (SP7), matcha 'powdered green tea' (SP7), sara 'dish' (SP8)

<middle-aged women>
  furo 'bath' (SP7), haka 'grave' (SP7), tera 'temple' (SP7), kane 'money'
  (SP7), mimai 'visiting a sick person' (SP7)

3. DISCUSSION

3.1. Norms and Variations in Japanese Women's Speech

The subjects in this study show a great variation in speech styles. Generally, the younger group used "unfeminine" styles more frequently than the older group; the same tendency has also been reported by Okamoto and Sato (1992) and Kobayashi (1993). The present data also show that the within-group variation is much larger in the older group, compared to the younger group. Further, it is noteworthy that several older women used "unfeminine" styles relatively frequently. In fact, only three subjects in the older group (Speakers 5, 6, and 10) used very "feminine" styles--styles that fit the stereotypical women's language.

It has been pointed out that gender distinction in speech style in Japan is more an urban phenomenon than a rural one (Kitagawa 1977:292). Sunaoshi (1995), for example, notes that her subjects, speakers of Ibaraki dialect, rarely used "feminine" forms; in particular those with a thicker regional accent used features considered "masculine" according to the normative characterization. In Tokyo itself there are two regions, Yamanote 'the hillside' and Shitamachi 'the downtown', although their boundaries are now less clear than they once were. And it is the "feminine" speech style of the former that is usually described as "women's language."4 Further, as the present data show, the same speaker may use both "feminine" and "unfeminine" styles, depending on the context (see below for further discussion).

It is evident from these observations that what is commonly characterized as "Japanese women's language" does not accurately reflect Japanese women's actual speech practices. "Japanese women's language," however, is not simply an overgeneralization in linguistic description. Rather, it is a constructed category based on standard Japanese--in particular, the speech style of traditional women in the upscale Yamanote area of Tokyo. It is what "proper" women are expected to use; it represents the hegemonic linguistic norm for Japanese women (see also Inoue (1994) and Okamoto (1994, 1995)). Speech styles that do not fit "women's language" may be criticized as unfeminine, unattractive, ignorant, and symptomatic
of improper upbringing. Such ideological conflicts are sometimes expressed in the media:

*It’s tasteless—Women’s use of men’s language*

... young women have even started using men’s language. Speaking in men’s language is one thing, but there are girls who even use dirty words such as “*Aitsu, nani nebokete yagandai. Bakkeyaroo. Fuzakenjane ego*” ['That guy, is he sleeping or something? You fool. Cut the crap.'], which makes me wonder how in the world their parents and teachers are raising them. But then, their mothers are also actively using men’s language. On TV, I even saw a female professor using men’s language proudly; I felt it was deplorable and questioned her educational level. ... In Japan there is an attractive and adorable women’s language. ... (Letter from a 59-year-old man to the readers’ columns, *Asahi Shinbun*: November 2, 1992, translated from the Japanese original)

It is often said that young women nowadays—whether they are students or working women—cannot use honorifics well. ... I sometimes hear female teachers use the same language as male teachers. ... women using men’s language unnaturally. Are they ignorant or lazy, or are they making foolish efforts not to be dominated by men? (Sumie Tanaka, *Kashikoi Hito ni Narinasai*, 1986; translated from the Japanese original)

3.2. Gender, Indexicality, and Linguistic Ideology

Thus Japanese women do not always speak in stereotypical feminine styles. The use of "masculine" forms by women indicates that language cannot be directly related to gender, as assumed by the notions of distinct male and female languages. Gendering language, or treating linguistic forms as direct indexes of gender, is problematic in two respects: One is the treatment of gender as a unified category functioning as an independent social variable, and the other the direct mapping of linguistic forms to a social aspect of the context. My analysis suggests that social categories, such as gender, status, and intimacy, cannot be abstracted from the context as independent variables determining language choice (see also Eckert and McConnell-Ginet 1992). Rather, the choice of speech styles is a strategy based on a speaker’s consideration of multiple social aspects of the context (e.g. gender, age, intimacy, domain, speech-act type) as well as on the speaker's linguistic ideology, or beliefs and attitudes concerning language use. Based on their perception of multiple social aspects of the context, actors employ the linguistic expressions they consider most appropriate.

Treating linguistic forms as direct indexes of gender leaves little room for linguistic variation and change. Drawing on studies such as Silverstein (1979; 1985; 1992) and Irvine (1992), I argue that in order to adequately account for speech-style variations in Japanese, we need to consider the complex nature of indexical processes in which the relation between social contexts and forms of speaking are mediated by linguistic ideologies. Ochs (1993:146) claims that the relation between language and gender is mediated and constituted through the pragmatic meanings of linguistic features, such as affective stances, social acts, and social activities. For example, she explains that certain sentence-final particles in Japanese (e.g. *ze* and *wa*) directly index affective stances of "coarse versus delicate intensity," which in turn relate to gender and gender images as indirect indexes
(1993:150-151). The notion of indirect index is particularly important in accounting for many apparently inconsistent uses of "gendered" linguistic forms. Ochs, however, focusing on stereotypical speech styles for men and women, does not analyze the multiplicity and diversity of linguistic ideologies that mediate indexical processes. As the results of the present study indicate, not all Japanese women wish at all times to project the image of "traditional" femininity through the use of "women's language." The expression of femininity or masculinity itself also depends on the individual.

Furthermore, the pragmatic meanings of "gendered" linguistic forms may not necessarily be associated with femininity or masculinity. Rather, depending on the social context, they may be thought to indirectly index other social meanings. For example, in choosing linguistic forms characterized as "masculine" in the normative usage, women may express--through their pragmatic meanings (e.g. directness and assertiveness)--various social meanings, such as intimacy, solidarity, power, emotions (e.g. anger), and speech-act types (e.g. criticism). On the other hand, the indirectness or formality of linguistic forms regarded as "feminine" may be interpreted as implicating such social meanings as class status, distance, and speech-act types (e.g. sarcasm). In other words, the potential values of indirect indexes of linguistic forms are multiple and indeterminate. (See also Faier (1995), in which she argues that the relation between language and gender may shift between utterances, even if the same linguistic features are employed.) I argue that the same linguistic form, or its pragmatic meaning, may be interpreted differently (as indirect indexes) due to the diversity of linguistic ideologies that mediate the relation between the pragmatic meaning of the linguistic form and the social aspects of the context, including gender. Associating, for example, the delicate intensity of the particle wa with femininity and the coarse intensity of the particle ze with masculinity is not automatic, but rather based on one's particular attitude toward speech styles. Different attitudes thus may evoke different associations. In the remainder of this paper, I will elaborate on this argument, using examples from the data.

3.3. Indexical Meanings in Specific Social Contexts

As we saw earlier, the young speakers in the present study rarely used "strongly feminine" sentence-final forms (e.g. wa, kashira). However, they did use them when quoting their mothers and female teachers. Some young women told me that they think feminine speech is elegant and nice, but they do not want to use it. They also said they find the use of feminine speech styles among themselves to be inappropriate because they sound "aratumatta" (formal) and "kidotta" (prudish). "Strongly feminine" particles, such as wa and kashira, make speech acts indirect or less assertive (Ide 1990; Reynolds 1985; Uyeno 1971), which in turn may be interpreted as indexing distance. On the other hand, the younger group used "moderately masculine" sentence-final forms (e.g. da, da yo) frequently. A number of young women told me that they do not perceive "moderately masculine" sentence-final forms to be masculine at all. For them, the directness or assertiveness of such forms seems to index intimacy rather than roughness.

The young group also used "vulgar" or "strongly masculine" expressions (i.e. sentence-final forms, lexical items) but their uses were very limited. Some of the subjects explained that they use such expressions only with close peers. Although their use of "moderately masculine" forms is rather casual, their use of
"strongly masculine" forms seems to be a highly conscious decision. Subjects often qualified "strongly masculine" expressions by giggling or using hedges. Such devices indicate that the speakers are aware of the "markedness" (Ochs 1993:154) of these forms, particularly for conversations that are recorded. Yet they choose to use them, which in turn serves to reinforce solidarity. Further, young subjects used "vulgar" expressions for emphasis, when telling a joke, or when criticizing or protesting. And one of the older subjects used "vulgar" expressions (e.g. kusho! 'Damn it!') when expressing her anger toward her in-laws. These examples suggest that women may use "strongly masculine" or "vulgar" forms to express their emotions or particular types of speech-acts.

Turning to the older group: According to the normative characterization, the conversation between speakers 5 and 6 is "feminine," while that between speakers 7 and 8 may be considered "unfeminine." However, the two conversations may also be perceived differently. Speakers 5 and 6 are married to white-collar businessmen and have recently started working part-time as secretaries. They became friends through a tea ceremony class. Speaker 7 is a manager at a craft shop; she is a widow, raising three children. Speaker 8 is married to a white-collar businessman and has a part-time job as a computer technician. During the interview, Speaker 7 criticized the yamanote style of "feminine" speech as insincere and as a device for distancing. Thus the indirect and relatively formal speech styles of speakers 5 and 6 could be interpreted as an index of class status or even as a device for distancing. On the other hand, the direct and forceful speech styles of speakers 7 and 8 may be intended as expressions of intimacy or solidarity.

As we saw, there was also wide variation in the speakers' use of (referred) honorifics. The use of honorifics is often explained by directly linking it with social relations such as status difference and degree of intimacy (e.g. Harada 1976; Niyekawa 1991). Moreover, women are said to use honorifics more often than men (Ide 1990; Niyekawa 1991). These explanations may concur with the canonical honorific usage, but in actual speech speakers do not always follow such conventions. For example, there were many instances in the present data in which speakers did not use referent honorifics when talking about their superiors or people whom they did not know well. However, these speakers did use (both referent and addressee) honorifics in the conversations I had with them, which were carried out in formal styles. The nonuse of referent honorifics in the data, then, seems primarily motivated by the concern that the formality expressed toward the referent who is not present might be taken as a sign of formality or distance toward the addressee, hence inappropriate for a conversation between close friends.

According to Ide (1982:382), Japanese women may also use honorifics and formal forms "to impress others as being a member of a prestigious group." Thus the frequent uses of referent honorifics by some of the older subjects may also be taken as an index of class status. In sum, depending on the situation, referent honorifics may indirectly index a variety of social meanings, such as the referent's higher social status, distance vis-a-vis the addressee, the speaker's class status, and femininity. The multiple indexical values of honorifics can be adequately accounted for only by considering the linguistic ideologies that mediate the process of applying honorifics in specific social situations.

4. CONCLUSION

As the examples discussed above illustrate, the choice of indexical expressions, such as sentence-final forms, lexical items, and honorifics, cannot be
correlated with a single social variable. Rather, speakers' choices reflect the
consideration of multiple social aspects of the context, including the attributes
associated with identity and relationship (e.g. gender, age, social class, intimacy),
the types of domain or genre, and the types of speech acts. The examples also
demonstrate the ways in which linguistic ideologies mediate the relation between
the social aspects of contexts and forms of speaking, and how linguistic ideologies may
lead to variations in the use and interpretation of indexical expressions. Further, the
choice of linguistic expressions may sometimes involve an ideological conflict, as
suggested by the way younger subjects used "vulgar" forms (with qualifiers). To
give another example, in Japan professional women, such as teachers and
politicians, are often criticized for their unfeminine speech styles, as illustrated by
the media excerpts in section 3.1. However, as Reynolds (1990:138) explains,
such usage by professional women may be intended to strengthen solidarity without
losing authority—i.e. to express and construct both power and solidarity. In other
words, women may at times employ "unfeminine" expressions, even when they are
aware of their social markedness. In sum, whether marked or unmarked, Japanese
women select the linguistic strategies that they find most appropriate in a given
social situation in order to communicate desired social meanings.

NOTES

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particular Akiko Honjo, Chizuko Ito, Yoko Tada, and those who participated in
recording the conversations. I would also like to thank Mary Bucholtz, Lieba
Faier, Sachiko Ide, Shiochi Iwasaki, Miyako Inoue, Yoshiko Matsumoto, J. V.
Neustupny, Naoko Ogawa for their valuable comments and discussions.

1All of the college students were attending private colleges: Speakers 1-8
were attending a two-year women's college, and speakers 9 and 10 a four-year
coed college (see Table 2). Three of the middle-aged women (speakers 3, 7, 9 in
Table 3) had full-time jobs; one of them (speaker 1) worked for the family business;
five of them (speakers 2, 5, 6, 8, 10) had part-time jobs, although they identified
themselves as housewives; only one of them (speaker 4) was a full-time housewife.

2The college students' conversations (the same ones used in Okamoto
(1995)) were tape-recorded in 1992, and the middle-aged women's conversations
in 1993. Topics for conversation were not specified, although sample topics were
suggested, among them school matters, friends, shopping, and travel.

3This study employs basically the same method of data collection and
analysis as used in Okamoto and Sato (1992) and Okamoto (1995). See these
previous studies for a detailed description of the kinds of sentence tokens that were
not included in the analysis.

4See Kondo (1990) and Okamoto (1995) for further discussion of
Yamanote-kotoba and Shitamachi-kotoba.

5For example, Faier (1995:7) points out that "accommodating language"--
the communicative style of WMC U.S. American mothers (Ochs 1993)—may be
used by women sarcastically to patronize, that it may be used when speaking to a
pet to "humanize" the animal, and that it may also be used by men/fathers.
It is possible that the interpretation of the pragmatic meanings of linguistic forms themselves are mediated by linguistic ideologies. For example, the pragmatic meaning of the particle wa may be interpreted as delicate intensity or indirect assertion; and that of the particle ze as coarse intensity or forceful assertion. Further study must consider this issue.

REFERENCES


Faier, Lieba. (1995). To Wa or not to Wa: or some thoughts on mapping a relationship between language and gender. Ms., University of California, Santa Cruz.


To will or not to will: the evolution of *willy-nilly*

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INTRODUCTION

1. While retaining its original meaning of ‘unwillingly’, the expression *willy-nilly* has acquired various other senses in current English, such as ‘undecidedly’, ‘unthinkingly’, ‘out of control’, and even ‘howsoever one pleases’, which is almost diametrically opposed to the original meaning of ‘unwillingly’. The shift exhibited by *willy-nilly* raises several theoretical questions about semantic change. First of all, how does an expression go from meaning one thing to meaning another—even its opposite? What constraints on semantic change are imposed by the meaning of the original word or expression? Secondly, it has been noted that the phonological form of a word can influence meaning change (Bolinger 1940, 1949, 1950, Malkiel 1952, 1979, among others). *Willy-nilly* had the characteristic shape (but not the semantics) of many English reduplicative words, so what evidence does it give us concerning how the phonological form of a word constrains or fuels semantic shift? Finally, how do such semantic and sound-symbolic factors interact in semantic shift? By using data from elicitation and from a variety of corpora, this paper examines the history of *willy-nilly* and sheds light on these theoretical questions.

HISTORY

2.1. *WILL AND NILL.* The word *will* (< OE *willan*) originally meant ‘wants, is willing’. *Nill*, which was its negative, came from the combination of *ne* and *will* (> *nwill, nuill > nill*) and meant ‘does not want, is unwilling’. *Will* and *nill* could be used as main verbs; in addition, *nill*, like *will*, could be put into other tenses:

(8 cent.) *Ic hine ne mihte, pa Metod nolde, ganges getwæman*  
I him not was able since God did not want going  
‘I could not prevent him going, since God did not wish it’ *(Beowulf)*  
(1600) *Thinke how I...Was wronged, yet I nould reuengement take.* *(Fairfax)*

2.2. *WILL [x], NILL [x].* The expression *willy-nilly* is etymologically derived from clausal collocations such as: *will I, nil I; will ye, nil ye; will he, nil he;* and *will we, nil we.* As such, they were often set off from the main clause as parenthetical statements. Literally, the collocation *will [x], nil [x]* meant ‘irrespective of [x]’s wishes’, ‘whether [x] is willing or not willing’, ‘whether [x] wants to or not’. This neutral *will [x], nil [x]* was used mostly in the context of sermons or philosophical treatises, where the compulsion to (not) act was imposed by divine decree, universal reason, or law, truly irrespective of whether or not a particular person was willing. Some examples of this are given below.

(c1000) *Forðan þe we synd synfulle and sceolan beon eadmode, wille we,*  
because we are sinful and shall be humble,  
nelle we.  
‘Because we are sinful and shall be humble, will we, nil we.’ *(Ælfric)*
(1553) *Old age cometh upon us all, will wee, or nill wee, and this waie nature provided for vs, that we should waxe yong again in our children and nephewes....* (Wilson)

(1631) *...by submitting our wills to God's will, we shalbe sure both to have our wills effected, yea also that to be effected, which is the best. God's will, will we, nill we, shalbe accomplished.* (Gouge)

(1640) *The days must come when, whether we will or nill, we shall say, with the preacher, "i haue no pleasure in them."* (T. Fuller)

During the same period but in different contexts, the collocation will [x], nill [x] meant ‘unwillingly’. Aside from when it was used in sermons and philosophical treatises, the collocation will [x], nill [x] meaning ‘whether [x] is willing or not’ was an apparent tautology. It therefore violated Grice’s maxim of Quantity, since it added no new information to the exchange. One way to resolve such a violation is to make the collocation less redundant by focusing on one of the disjuncts and effectively ignoring the other.

What remains is the issue of which disjunct to focus on. In its ‘be willing’ sense, will does not impute any particular desire to its subject. On the other hand, we can ordinarily infer from nill ‘be unwilling’ that the subject desires to not do something. For example, if Mary is willing to go jogging, it might not matter to her whether she goes jogging or not. If her mother orders her to go jogging, there is nothing remarkable about the situation, since she was willing to go anyway. However, if Mary is unwilling to, we usually infer that she desires to not go jogging (although this is not a logical entailment). If her mother disregards her wishes and forces her to go, then it is worth noting that Mary went against her will. Commenting on someone’s willingness, therefore, is not as remarkable as commenting on the person’s unwillingness; hence, will [x], nill [x] would tend to be uttered in contexts where somebody was unwilling more than in situations where the person was presumed to be willing. For these reasons, the disjunct that was focused on as more salient was nill [x], so that will [x], nill [x] (literally ‘regardless of [x]’s wishes’) had the pragmatic force of ‘against [x]’s wishes’. In other words, to say “He did it willed he, nilled he,” literally ‘He did it regardless of his own wishes’, pragmatically meant ‘He did it against his own wishes’ or ‘He did it unwillingly’. And, the prototypical frame which was set up by the use of will [x], nill [x] was one in which there was some external compulsion exerted upon an unwilling participant.

Below, I give examples where will [x], nill [x] is more likely to be interpreted in the sense ‘unwillingly’ than ‘whether [x] wants to or not’, although, for certain examples, both interpretations are possible.

(1483) *She commaunded that he shold no lengyr abyde ne dwelle there and thenne he yssued out anone wold he nold he by flux of the wombe.* (Caxton)

(1555) *If my lorde wyll needes coste and inuaide my inwarde manne, wyll i nyll i, and breake violently into my harte, i feare mee i shall eyther displease my lorde of london, which i would be very loth, or els my lord god, whiche i would be more loth....* (Latimer)

(1577) *...he pardonnd all the partes, and advanced the wench to high honor, farre abowe those that had rule of hir afore, so that she ruled them (willed they nilled they:) for he vsed hir as his paramour....* (Holinshed)
(1578)  ...for the horse beeving so hurte and galled, ranne vpon hym with suche force, that (willed or nilled his maister) strikyng hym with his twoo hinder feete, he burste his paunchc.... (Jennings)

(1600)  The nobles were so neere driven and to such streights, that will they, nill they, yeeld they must.... (Livy, tr. Holland) [translates expressit hoc necessitas patribus ‘necessity extorted this from the senators’]

2.3. DEVELOPMENT OF THE ADVERB. In the next stage of development, there was a phonetic contraction whereby all of the finite clause types of the form will [x], nill [x] collapsed into the expression willy-nilly, and it took on the form of an adverb. When all of the clausal collocations collapsed into willy-nilly, the pronouns disappeared and it became unclear who the subject of will and nill was—it could have been the speaker(s), the addressee(s), or a third party. Thus, a sentence such as the next could have several interpretations, among them ‘will I, nill I’, as in (a), or ‘will he, nill he’, as in (b).

I visit him willy-nilly every weekend.
(a)    I visit him will I, nill I every weekend.
(b)    I visit him will he, nill he every weekend.

The earliest instances of the contracted form of willy-nilly predicate unwillingness of the subject in active sentences, as in the next two examples.

(1608)  Thou shalt trust me spite of thy teeth, furnish me with some money wille nille, and ride up with me thyself contra voluntatem et professionem. (Middleton)

(1797)  But her Ladyship would, willi nili, constantly join the one who drank the waters every morning, and converse with her. (Berkeley)

We must remember that willy-nilly at this point was in transition from being a subordinate clause to becoming an adverb. Absent evidence to the contrary, there is a strong tendency to interpret the subject of a subordinate clause as coreferential with the subject of the main clause. Perhaps the residual subordinate character of the expression willy-nilly led to its predicating unwillingness of the syntactic subject. In addition, the fact that the subject of an active sentence is prototypically volitional may explain why, in the earliest use of willy-nilly, the unwillingness was predicated of the subject of active sentences.

However, there is no particular reason why, in the semantically and pragmatically appropriate contexts, unwillingness could not be predicated of other participants. There are multiple factors, such as volitionality of the participants, passivization, and the placement of willy-nilly, which enter into play in determining which participant has unwillingness predicated of it. For example, in the next two examples, there is only one volitional participant; it is therefore unambiguously the volitional participant (John) who is the unwilling entity.

(active)    John willy-nilly solved his math problems.
(passive)   The math problems were solved willy-nilly by John.

However, if there is more than one volitional participant, in many instances it becomes ambiguous as to who is “nilling.” Of the next three examples, only when willy-nilly is placed preverbally in an active sentence (the first example) is it
unambiguously the gangster-turned-informer who is unwilling; where *willy-nilly* is postverbal or in a passive sentence (as in the last two examples), either the gangster or Toby can be interpreted as the unwilling participant.

(active, preverbal) The gangster-turned-informer *willy-nilly* delivered his friend Toby to the police.

(active, postverbal) The gangster-turned-informer delivered his friend Toby *willy-nilly* to the police.

(passive) Toby was delivered *willy-nilly* to the police by the gangster-turned-informer.

From these examples, we see that volition and the syntactic position of *willy-nilly* play a role in determining which participant gets the unwillingness predicated of it.

The observation that modals—which include historical *will* and *nill*—do not always impose their modality on the agent is helpful here. As R. Lakoff (1972) notes, “The decision as to whether a modal is two or three (or one) place, and the decision as to which of the nouns in the sentence is the bearer of the obligation...is based on the context of the utterance, and the pragmatic factors involved in uttering the sentence.” Sweetser (1990) goes on to say,

...[W]ith a few pushes from the context we can see the imposed modality as being incumbent on almost any entity in (or outside of) the sentence. Modals are not simply “voice-neutral”; they are semantically neutral towards the choice of the imposee from among the sentence’s NPs (or even from the context). Compare the following examples (from Lakoff):

> The witch must be kissed by every man in the room,
> (a) or the leader of the coven will demote her to leprechaun.
> (b) or they’ll all be turned into star-nosed moles.
> (c) because that’s the law.

In (a) the obligation to get kissed rests primarily with the witch; in (b) the men are the ones responsible; and in (c) the obligation rests on all the participants, or even the world at large. Another possible interpretation of the first clause...in isolation would be that the hearer is to see to it that the kissing occurs—hence the obligation would devolve on the hearer. In short, any pragmatically reasonable interpretation of the identities of the modal imposer and imposee is possible.

We have seen the process by which the use of *willy-nilly*, originally in active sentences expressing the unwillingness of the subject, could have been extended—through the interaction of both syntactic and pragmatic factors—to show the unwillingness of any of the arguments of the verb. This is exactly what happened: by the early nineteenth century, *willy-nilly* was predicated of participants other than the prototypical agent-subject. For instance, in the first two examples below, the participants who are unwilling are patients, and they are the subject of passive sentences with no overt agent. In the third example, the unwilling participant is also a patient, this time with the grammatical function of direct object.

(1807) *He was sure, willy nilly, to be drenched with a deluge of decoctions.*
(Irving)
COEXISTENCE OF MANY WILLY-NILLYS

3. The development of willy-nilley until the nineteenth century, described above, was fairly linear. During the nineteenth century, however, the situation became more complicated, and the uses of willy-nilley multiplied. One must keep in mind that willy-nilley almost never looked clausal any more and could pragmatically be attributed to any volitional participant in the frame, thereby leading to ambiguity. In addition, the verb nil was no longer current; also, nil did not mean ‘want’ any more, and there existed only relic uses meaning ‘be willing’ as in “See if John will help you” (Sweetser 1990). These factors presumably contributed to the proliferation of willy-nilleys from this period to the present.

3.1. USES MEANING ‘UNWILLINGLY’. In many cases, willy-nilley retained its use meaning ‘unwillingly’. There are three ways in which willy-nilley was used in this sense: (1) as a pseudo-clausal relic retaining the full pronouns, (2) as a semantically adverbial adjective, and (3) as an adverb. These uses are explained individually below.

- PSEUDO-CLAUSAL (AFFECTED) USE WITH FULL PRONOUNS. In some literary genres, there remained a relic, pseudo-clausal use of the collocation which retained the full pronouns. However, these were used in ways which would have been unacceptable previously. For example, Byron says

(1822) And then he called his Brethren to his aid,  
And sent one on a summons to the pair,  
That they must instantly be well arrayed,  
And above all be combed even to a hair,  
And brought before the Empress, who had made  
Enquiries after them with kindest care:  
At which Dudù looked strange, and Juan silly;  
But go they must at once, and will I-nill I. (Byron)

In this passage, it is not I who is unwilling, but Dudù and Juan. The rhyme supports this conclusion, since only if will I-nill I is read willy-nilley does it rhyme with silly in the previous line. The next example must also be interpreted as willy-nilley, since it is man who is unwilling, not I.

(1845) In the matter of phrenology, for example, we first determined, naturally enough, that it was the design of the Deity that man should eat. We then assigned to man an organ of alimentiveness, and this organ is the scourge with which the Deity compels man, will-I nill-I, into eating. (Poe)

- SEMANTICALLY ADVERBIAL ADJECTIVE. At the same time, willy-nilley developed into a semantically adverbial adjective. In the first example below, the willy-nilley nun is unwilling to be (or was unwilling to become) a nun. The same is true for the willy-nilley spinsters in the second example.
(1877) And some one saw thy willy-nilley nun
Vying a tress against our golden fern. (Tennyson)

(1880) All willy-nilley spinsters went to the canine race to be consoled for the evils of imperfect civilisation. (Cornhill Magazine)

CONTINUATION OF ADVERB. The use of willy-nilley as an adverb meaning ‘unwillingly’ (discussed above) also continued:

(1947) The procedure was for the pupil...at a signal from the pilot [to] clamber along the lower wing.... The pupil let go his hold on the strut, and willy-nilley he became a parachutist. This was known as the ‘pull-off’ method. (Newnham)

(1948) And shame was there. I had willy-nilley to get accustomed to living with it—it was guilt in a new guise. (Beauvoir, tr. Moyse and Senhouse)

(1955) Thus a heist mob is one which brooks no interference and robs the victim willy-nilley. (Maurer)

(1959) Willy-nilley I had had existentialism forced upon me. (Mailer)

(1995) The student took the exams willy-nilley. (informant)

(1995) He approached the project willy-nilley. (informant)

(1995) When questioned by the teacher, the pupil willy-nilley admitted to having cheated. (informant)

3.2. NEW USES FROM ‘LACK OF CONTROL’. One might wonder how willy-nilley went from meaning ‘unwillingly’ to having its current senses, which include ‘undecided’, ‘out of control’, and ‘howssoever one pleases’. As mentioned above, in the frame evoked by use of willy-nilley as ‘unwillingly’, there is some external compulsion which is exerted on a participant lacking control. In such a frame, there are two “correlative notions” (Stern 1931) present: (1) the notion that the participant is ‘unwilling’ and (2) the notion that the participant is ‘lacking in control’. The shift from willy-nilley ‘unwillingly’ to ‘without control’ is the result of what Stern calls permutation: a shift in focus from the first of the correlative notions to the second. Once this happened, the expression willy-nilley was free to be applied to other frames (where there was no external compulsion necessarily present), and this is what gave rise to the divergent senses of willy-nilley. In other words, the concept of ‘lack of control’ was extracted from the frame by metonymy (in the sense of Traugott 1989, Traugott & König 1991) and applied to other situations.

LACKING OR UNABLE TO TAKE CONTROL > UNDECIDED. From using a word adverbially to connote passivity and inability to take control, it is a logical extension to use willy-nilley adjectivally to mean, as the OED puts it, “erron. Undecided, shilly-shally.” Examples of willy-nilley in its ‘undecided’ sense are given below; as might be expected, some of them also have connotations of passivity and inability to take control or to assert one’s will. It is significant to note that this adjectival willy-nilley can be attributed to inanimate entities (as shown in all of the next examples); this constitutes a significant break from previous usage, which applied only to volitional participants.

(1883) One notable peculiarity in the character of the woman is that she is capricious and coy, and has less straightforwardness than the man.... If any race of animals existed in whom the sexual passions of the female
were as quickly and as directly stirred as those of the male, each would mate with the first who approached her, and one essential condition of sexual selection would be absent. The drama of courtship, with its prolonged strivings and doubtful success, would be cut quite short, and the race would degenerate through the absence of sexual selection. The willy-nilly disposition of the female in matters of love is as apparent in the butterfly as in the man. It is the factor in the great theory of sexual selection that corresponds to the insistence and directness of the male. Coyness and caprice have in consequence become a heritage of the sex, together with a cohort of allied weaknesses and petty deceits, that men have come to think venial and even amiable in women, but which they would not tolerate among themselves. (Galton)

(1898) Let us have no more shilly shally, willy nilly talk. (Besant)
(1995) The plans were willy-nilly. (informant)
(1995) That was kind of a willy-nilly decision. (informant)

• LACK OF CONTROL > UNWILLINGLY WITHOUT SELF-CONTROL. The idea of lack of control has been extended to mean that a particular participant has no self-control. When somebody has no self-control, it is usually unwillingly, as in the examples below:

(1961) Colmore thought of his own parents, now safely dead: his mother's wen, his father's lack of aspirates. With such a background one could never be really safe however brilliant one was. There were a score of things that could betray one's weakness.... [H]is accent, which had carefully acquired a neutrality as unidentifiable as some composite creature evolved by statisticians, could break down.... Or, more subtly, his whole habit of mind and body, formed in the uncultured, nagging, parsimonious, penurious household of his childhood might, at a crucial moment of his life, reveal him as utterly unsuitable for further [career] advancement—not necessarily...by a word or gesture or family connection, but through the image of himself that had willy-nilly and over an extended period been fixed in the eyes of those who controlled his destiny. (R. Fuller)
(post-1980) But nowadays, it's all too easy to get carried away. So many people have credit cards, because it is quite tough to get through daily life today without one. That's not to say that everyone will succumb to the temptation to use their credit cards willy-nilly, but for addictive personalities credit cards can lead all too easily into temptation. (Hector Corpus)
(1995) A pipe burst in John's basement, and so he was running around willy-nilly. (informant)
(1995) He's gambling willy-nilly. (Informant: "He's addicted to gambling and can't choose whether he gambles or not.")

• LACK OF CONTROL > WILLINGLY WITHOUT SELF-CONTROL. There are, however, instances where the participant is willingly out of control, having relinquished it voluntarily:

(1995) He was at the buffet table eating willy-nilly. (Informant: "He chose not to take control.")
Before the divorce, Gene was using Nancy's money just willy-nilly. (Informant: "Spending it as he pleased, out of control, without restraint on his part.")

The children were running around the playground willy-nilly. (Informant: "Out of control but having fun.")

• LACK OF CONTROL > UNTHINKINGLY > AUTOMATICALLY. If somebody does not have control over his actions, we tend to extend that to mean he is acting without thinking. It is only natural, then, that for some people willy-nilly has come to mean 'unthinkingly'. 'Unthinkingly' can be extended in two ways: (1) if someone is not thinking, then he is acting 'automatically', or (2) if someone is not thinking, he is acting 'illogically', 'unsystematically', and 'without any plan or forethought'. The use of willy-nilly to mean 'automatically' (seen in the first example below) is the first syntactically adverbial use in which the willy-nilly participant is inanimate. Some examples of the first extension, where willy-nilly is used to imply 'unthinkingly' or 'automatically' are:

Indeed, reunification may just follow economics willy-nilly. As of 1 January 1990, and perhaps even by Christmas, the freedom to travel will be a two-way street. (Right now, West Germans still have to go through the old, stultifying visa procedures.) Capital will inevitably flow in with people...and Western-organised production will soon follow. That will force some kind of East German currency reform.... (The Independent)

We have a burglar alarm for our house; we set it at night, and we disarm it in the morning; if we don’t disarm it, and accidentally open a door or a window, we immediately hear a helluva big noise, the sheriff’s office is phoned, and we have to get on the phone and act fast with all sorts of codes and passwords to stop them from driving to our house. This morning, I knew that the alarm had already been disarmed; my wife didn’t. I went out the front door to fetch the newspaper; she expressed her shock by saying, "You just walked willy-nilly out of the house without checking the alarm?!" (informant)

• LACK OF CONTROL > UNTHINKINGLY > ILOGICALLY, UNSYSTEMATICALLY. Below are examples of the second extension, in which willy-nilly is used to mean 'unthinking(ly)', 'illogical(ly)' or 'unsystematic(ally)'.

Marston Parish Council’s plan to build thirty homes to help young people in the village has been turned down—because the council never explained what it wanted.... Members of the district council’s northern area planning committee were asked to turn it down because it was looked at as just another speculative development. No-one knew differently until Mr. Norman Jones,...chairman of Marston Parish Council, told members what it was all about.... "We don’t just want to build houses willy-nilly— we want to help our young people," said Mr. Jones. (Hector Corpus)

Willy-Nilly Wages? A Study of Board Director Pay Shows a Lack of Strategy. (Wall Street Journal headline, Nov. 2)

Don’t just put the name tags around the table willy-nilly; the guests are supposed to be arranged in a particular order. (informant)

He was practicing guitar willy-nilly, without following any specific method. (informant)
(1995) Don’t arrange those books on the shelf willy-nilly. (informant)
(1995) [If you do long-range fiscal planning, you’ll still be going down in funding; the only difference is that] “You’ll have the satisfaction internally of knowing that you’ve done it systematically instead of willy-nilly.” (From the April 17th UC Berkeley Divisional Council Meeting)
(1995) [Organized Research Units eat up campus research money that might otherwise support the faculty’s general research funds, so] “There’s a reason not to just willy-nilly approve these things.” (From the May 1st UC Berkeley Divisional Council Meeting; different speaker from above)

• ILLOGICALLY, UNSYSTEMATICALLY > HOWEVERONE PLEASES. The use of willy-nilly to mean ‘illogically, unsystematically’ can be extended to mean ‘howsoever one pleases’. In other words, willy-nilly, through the series of semantic extensions we have seen, has come to have a definition almost diametrically opposed to willy-nilly meaning ‘unwillingly’. In fact, the first two of the following examples even use willy-nilly in conjunction with will or willing—an unlikely combination when willy-nilly means ‘unwillingly’.

(1954) And other visitors begin, of course, at the end. They are the people without whom the exhibition could not exist, nor the country it trombones and floats in with its lions and unicorns made of ears of wheat, its birds that sing to the push of a button, its flaming water, and its raspberry fountains. They are the suspicious people over whose eyes no coloured Festival wool can possibly be pulled, the great undiddleable; they are the women who ‘will not queue on any account’ and who smuggle in dyspeptic dogs; the strangely calculating men who think that the last pavilion must be first because it is number twenty-two; the people who believe they are somewhere else, and never find out they are not; ...vaguely persecuted people, always losing their gloves, who know that the only way they could ever get around would be to begin at the end, which they do not want to; people of militant individuality who proclaim their right, as Englishmen, to look at the damfool place however they willynilly will.... (Thomas) (underlining mine)

(1961) From all this we can now see that two streams of development run through the history of twentieth-century American folklore. On the one side we have the university professors and their students, trained in Teutonic methods of research, who have sought out, collected and studied the true products of the oral traditions of the ethnic, regional and occupational groups that make up this nation. On the other we have the flag-wavers and the national sentimentalists who have been willing to use any patriotic, “frontier western” or colonial material willy-nilly. (Brown Corpus) (underlining mine)

(post-1980) They could live contentedly without world cruises and mansions, but they had been forced to trim away at the small pleasures and the basic needs.... The London days, when the Gowers’ flat had been an open house, where friends arrived willy-nilly, sure of food and drink and good company, and any Saturday evening could turn into an impromptu party, seemed like another life. (Hector Corpus)
4. This section examines what sound symbolism had to do with the semantic shift from willy-nilly meaning ‘whether [x] wants to or not, nolens volens’ to willy-nilly evoking ideas, variously, of: indecisiveness; halfheartedness; fast, indiscriminate motion; being out of control; unsystematicity; doing something “any old way”; and the like.

4.1. Reduplicative sound symbolism. As mentioned in the introduction, willy-nilly has the appearance of involving reduplication. This superficial similarity to reduplicative words is important because there is both a cross-linguistic and an English-internal tendency for such reduplicative forms to be associated with the types of meanings which willy-nilly developed. I propose that the reduplicative appearance of willy-nilly actually pushed it toward acquiring its present meanings.

Cross-linguistically, there is a tendency for reduplication to be associated with ideas of repetition, intermittent activity, intensification, distributive and abundant activity, casualness, and random, inconclusive action (Sapir 1921, Gonda 1950, Malkiel 1959, Jakobson & Waugh 1979, Moravesik 1978, Haiman 1980, Kiyomi 1995 among others); the data below (Key 1965, Carlson & Thompson 1982) illustrate this:

- repetition: wiyi ‘say, do’ > wiwiwiyi ‘say often, do often’ (Yawelmani); oso ‘he goes’ > osooso ‘he goes again and again’ (Siriono)
- intermittent activity: tuvoko ‘it is stirred up’ > tuvotuvokoye ‘it keeps stirring about, moving about’ (Terena)
- intensification: wala pa ‘to boil’ > wawalapa ‘to boil vigorously’ (Tonkawa); a ‘it’ + joet ‘rains’ > ajoetjoet ‘it rains much’, a ‘he’ + kwiiur ‘run’ > akwiiurkwiiur ‘he runs much, continuously’ (Huave)
- distributive activity, abundance, multiplicity: ζ ‘he’ + ko ‘possess’ > ζ kokoa ‘he has lots and lots to eat’, ζ ‘he’ + sle ‘count’ > ζ slesle ‘he counts and counts’ (Kru)
- casualness: panik ‘climb’ > mag panik panik ‘he is just climbing around’, panaw ‘walk’ > mag panaw panaw ‘he is just walking around’ (Ilocano)
- random, inconclusive action: ŉbas ‘walk’ > ŉb-ib-as ‘pace back and forth’, ŉaxw ‘go’ > ŉaxw-uxw ‘go about in a dither accomplishing nothing’ (Lushootseed)

As explained above, the modern uses of willy-nilly have both denotations and connotations of repetition, intermittent activity, intensified and abundant activity (as in fast, indiscriminate motion), and casual activity (as in doing something unthinkingly and sloppily). Since there is a tendency for such ideas to be associated with reduplication, it is not surprising that seemingly reduplicated willy-nilly acquired them.

English-internally, reduplication is associated with back and forth movement and, by extension, hesitation and ambivalence, disorder, and confusion (Marchand 1969, Thun 1963):

- games characterized by two-phase movement: wiggle-waggle, kit-cat, ping-pong
• ambivalence, double-faced character, implying dubious value of the referent: flimflam, jimjam, knick-knack, trimtrim, whimwham (originally ‘trash, trifle’)
• idle talk: bible-babble, chit-chat, fiddle-faddle, prittle-prattle, ribble-rabble (< rubble ‘gabble’), tittle-tattle
• disorder, confusion, tumult: hugger-mugger (‘muddled, disorderly’), higgledy-piggledy, hurly-burly, hurry-scurry, helter-skelter, razzle-dazzle, hodgepodge
• depreciative (often on the basis of ‘ambivalence’), derogatory, contemptuous, or ridiculing: mishmash, mingle-mangle, slipslop, wish(y)-wash(y), singsong, riffraff, goody-goody, pretty-pretty, juddery-duddy, loco-foco, sacky-dacky, humdrum, fuzzy-wuzzy, hurdy-gurdy, ragtag, claptrap, namby-pamby, flibberty-gibberty, hoity-toity, rumble-tumble

These ideas are related to willy-nilly in that ‘lack of control’ may lead to hesitation and confusion; ambivalence may prevent control; and back and forth movement, or vacillation, is a metaphor for hesitation.

Among English reduplicative words such as the ones listed in this paper, there are several potential candidates for words which bled their meaning onto the semantics of willy-nilly. Such words include the familiar helter-skelter, harum-scarum, hodge-podge, higgledy-piggledy, and pell-mell. According to the OED, all of these expressions (even hodge-podge < hochepot, a French loan denoting a type of stew) are used in their modern sense starting from the 1500s and 1600s. It seems therefore probable that these words served as models for willy-nilly and aided in the semantic changes it has undergone.

4.2. OTHER SOUND SYMBOLISM. There are other sound-symbolic factors which may have pushed willy-nilly to its present meanings. For example, Marchand (1969) and Rhodes (1994) give evidence that an initial [w] in words correlates with denotations of unsteady, uncertain, back-and-forth motion, as in wag, waddle, waggle, wander, waver, wishy-washy, wobble, wonder, whiffle-waffle ‘a person of unsteady, vacillating character’, waffle, whittie-whattie ‘undecided’, widdy-waddy ‘weak, vacillating, unreliable’, wiggle-waggle ‘vacillating’, willy-wally ‘a person without backbone’, wither-wather ‘hesitating, stopping to consider’, wheegee ‘beat around the bush’ (examples from myself, Marchand 1969, and Thun 1963). Perhaps having an initial [w] (like so many words which mean ‘indecisive’, ‘vacillating’, ‘shilly-shallying’, and the like) pushed willy-nilly toward these meanings.

Finally, Marchand points out that the deverbal suffix -y tends to derive adjectives meaning ‘having the undesirable or unpleasant tendency to [verb]’, such as clingy, crumbly, fidgety, fussy, jittery, mokey, raspy, shaky, snappy, sticky, sulky, and weepy. Significantly, adjectival (as well as adverbial) uses of willy-nilly in current English have a distinctly derogatory feel to them.

CONCLUSION

5. For some speakers, willy-nilly has managed to keep its sense of ‘unwillingly’. However, for most people, it has come to have such meanings as ‘out of control’, ‘without any system or logic’, and ‘unthinkingly’. This was due to two factors: (1) the metonymic extraction of the concept of control and application of it to other frames, and (2) the sound symbolic characteristics of the expression, which provided additional motivation for willy-nilly to acquire these meanings. This historical account of willy-nilly provides an example of meaning change fueled and
constrained by semantic and sound-symbolic factors. We would hope to find other items having reduplicative shape but without reduplicative semantics which, reinforced by form, have undergone a similar meaning shift towards these prototypical reduplicative meanings. One candidate was mentioned above: *hodgepodge*, from the French *hocchepot* ‘stew’. Another is the expression *shilly-shally* ‘undecided’, which is from the reduplication of *shall I?* Finally, a third is from the Old French verb *dailier* ‘chat’ which, reduplicated, gave *dilly-dally* ‘loiter in vacillation’ (and is, as the *OED* states, “A varied reduplication of *DALLY* v., with the same alternation as in *zig-zag*, *shilly-shally*, etc., expressing see-saw action’). As for what sort of new semantics the expression acquires, we have seen that it is constrained by its original semantics and metonymic extensions thereof. In this way, *willy-nilly*, a collocation involving obsolete volitional modals, came to be associated—surely more naturally—with similar-sounding reduplicative expressions.

**NOTE**

*I would like to thank Charles Fillmore, Andrew Garrett, Gary Holland, David Peterson, Joyce Tang Boyland, William Weigel, and above all Eve Sweetser for their comments and ideas. The usual disclaimers apply.*

**SOURCES**

ÆLFRIC. c1000. Saints’ lives, xvi, 121.  
BERKELEY, GEORGE M. 1797. Poems of George-Monck Berkeley; with a preface by the editor, consisting of some anecdotes of Mr. Monck Berkeley and several of his friends, preface, cxxix. London: J. Nichols.  
BYRON, GEORGE GORDON. 1822. Don Juan, canto VI, cxviii.  
CAXTON, WILLIAM. 1483. The golden legende, fol. clxxxvii/l.  
FAIRFAX, EDWARD. 1600. Godfrey of Bulloigne, V, xlvii.  
HOLINSHED, RAPHAEL. 1577. The chronicles of England, Scotland and Ireland, i.233/a.

JENNINGS, M. 1578. Maisonneuve gerileon (tr.), i.52b.

LATIMER, HUGH. 1555. Foxe's martyrs, 1324/2.


LIVY. The history of Rome, tr. by Holland (1600), III.xxx, 1081.


MIDDLETON, THOMAS. 1608. A trick to catch the old one, I, ii.

NEWHAM, M. Prelude to glory, iv, 14.


WILSON, THOMAS. 1553. The arte of rhetorique, 57.


REFERENCES


—. 1949. The sign is not arbitrary. Boletín del Instituto Caro y Cuervo 5:52-62.


SAPIR, EDWARD. 1921. Language: an introduction to the study of speech.


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THE INTERACTION OF PARTICIPANT ROLE AND PRAGMATIC FUNCTION IN THE SELECTION OF QUESTION FORM

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1. INTRODUCTION. The constituent question function is universal, but its form varies across languages. Some languages even exhibit argument asymmetries in question form, with Subjects selecting different forms than Objects. In a cross-linguistic survey of about 70 languages almost 20% formed Subject questions differently from Object questions in semantically transitive clauses. In the Nilo-Saharan language Lango, an SVO nominative-accusative language, questioned Subjects are placed in a cleft construction also used for focusing, but questioned Objects remain in-situ following the verb, as seen in (1).

(1) a. gà én àmè òjwàtò òpiò (Lango; Noonan 1992)
   who it REL+PART 3S.hit.PERF Opio
   ‘Who hit Opio?’

b. òkèlò òjwàtò gà
   Okelo 3S.hit.PERF who
   ‘Who did Okelo hit?’

In the Mayan language Mam, a verb-initial ergative-absolutive language, both Subject and Object question words appear in sentence-initial position, the position of focus in Mam (England 1983a, 1983b). In Object questions Subjects and Objects retain their ergative and absolutive case (2a), but in Subject questions the clause is antipassivized, i.e. Subjects are marked with absolutive case and Objects with an oblique case. The resultant absolutive argument is then fronted (2b).

(2) a. alkýee φ-φ-tzyuu-n ky-e xiiinaq (Mam)
   who PST...3S.ABS.grab.AP 3P.OBL.PAT man
   ‘Who grabbed the men?’

b. alkýee-qa xíi tzaj t-tzyu-7n Cheep
   who-PL ...3P.ABS DIR 3S.ERG.grab... José
   ‘Whom did José grab?’

If the form of an interrogative depended solely on the function of questioning, then we would expect question form to be the same for all grammatical relations in a language. However, from the data above we can conclude that factors other than the question function must be involved in selecting question form in these languages.

As mentioned, the Lango cleft in 1a and the Mam fronting seen in 2 are identical to the respective focus strategies employed in these languages. Constituent questions frequently resemble focus constructions cross-linguistically. The overlap between question and focus form is well established in the literature (cf. Croft 1990). In at least some cases there is evidence to document a diachronic relationship between Wh-words and clefts (cf. Givón 1990). There is also a pragmatic factor that would lead us to expect this overlap, since Wh-words have frequently been identified as focal elements (Lambrecht 1993, Givón 1979). Some languages that
display asymmetries in constituent questions display the same asymmetry in the argument focus constructions that the questions resemble, as seen in the antipassive in the Mam focus sentence in 3a, but not in 3b.2

(3) a. Cheep ø-ø-tyuu-n ky-i7j kab’ xiinaq
Jose PST...3S.ABS.grab.AP 3S.OBL.PAT two man
‘José grabbed the men.’
b. kab’ xiinaq xh-ok t-b’iyo-7n Cheep
two men ...3P.ABS 3S.ERG.hit... José
‘José hit some MEN.’

On the other hand, note that 4 shows no asymmetry in Lango focusing equivalent to the question asymmetry exhibited in 1; both Subjects and Objects are clefted.

(4) a. òkèlò émè èmè òjwàtò òpiò
Okelo it REL+PART 3S.hit.PERF Opio
‘It’s Okelo that hit Opio.’
b. òpiò émè èmè òkèlò òjwàtò
Opio it REL+PART Okelo 3S.hit.PERF
‘It’s Opio that Okelo hit.’

If question form were a consequence only of Wh-words being focal elements, ALL languages should use the same construction for questions as they do for focusing, and we should find NO focus asymmetries in languages. The Mam data suggest that in addition to focusing we need to consider the linking of semantic roles and syntactic coding, since a voice alternation is employed in this language. But such an alternation is only sometimes employed. How then is the selection of question form determined in a language?

Other approaches have discussed argument asymmetries in complex constructions, but have overlooked the asymmetries in simple Wh-questions. The Principles and Parameters approach has assumed fronting via Wh-movement to be the basic principle explaining interrogative form. Wh-movement phenomena involving cross-linguistic variation in Wh-word position and Subject-Object asymmetries in extraction have played a major role in recent developments in Government-Binding theory (Chomsky 1981). They have been the major tools in the derivation of the ECP (Chomsky 1982) and the investigation of LF (Huang 1982). However, cross-linguistic research has revealed phenomena that are difficult to unify in a program utilizing invariable principles without excessive use of parametric variation (cf. Legendre et al. 1995 for further discussion). Moreover, these principles do not explain the types of argument asymmetry discussed above.

We will show that the cross-linguistic and language internal variation found in information questions arises both from universal constraints on linking between semantic and pragmatic representations in a grammar to the syntactic forms, and from the interaction of these constraints with others in individual languages. To do this, we need to incorporate information structure and pragmatics into an analysis of question form. Alternations in voice can also be employed asymmetrically in these constructions (as in Mam); thus, some notion of the interaction between semantics and grammatical voice must be included. Finally, because everything must eventually be expressed in the syntax, the linking between pragmatics, semantics and syntax must be considered. Using the constraint-based formalism of Optimality Theory (OT) (Prince and Smolensky 1993), we will account for Subject-Object
asymmetries in constituent questions in Lango, Kwakwala, and Mam, and compare these languages to Basque, a language which lacks such asymmetries. In addition to this, we will discuss the range of Subject-Object asymmetries which should be possible in languages, and propose a theoretical mechanism by which such asymmetries can be described.

The paper is organized as follows. In §2 the survey data which formed the basis for the analysis is discussed in relation to other typological classifications of interrogatives. Then §3 lays out the motivation for the inputs, outputs, and constraints employed in the OT analysis. The constraints are applied to selected languages in §4. Finally, observations and possible extensions are discussed in §5.

2. BACKGROUND: TYPOLOGIES OF INTERROGATIVE FORM. Cross-linguistic investigation has not been concerned with categorizing languages based on observations of asymmetries involved in questioning, or on formal correspondences for different functions. Following Greenberg (1963), empirical typologies have concentrated on word order correlates (Hawkins 1983, Dryer 1991). Such typologies have categorized languages into two classes based on the position of the Wh-word in the clause: (1) languages in which Wh-fronting occurs, such as English; and (2) languages where Wh-words occur in non-initial position, either in situ (e.g. Japanese; Aoun et al. 1993a, 1993b) or in some other special position (e.g. Basque; Kiss 1993). Empirical data show that either strategy is clearly preferred overall. And while studies show at least a tendency for V-initial languages to prefer fronting and V-final to prefer in situ, no deeper insight into interrogative form is provided by these data.

The cross-linguistic survey conducted in conjunction with the current project produced results in keeping with previous studies. We found that the in situ and fronting strategies predominate in languages when they are categorized by position of the Wh-word.

Now consider the Basque data in 5 (Manandise 1988), together with 1 and 2. As in Lango and Mam, Basque shows an overlap in the forms used for Wh-questions and focus constructions. Basque, a predominantly SOV language, uses a pre-verbal position for focusing and questioning.

(5) a. Bonba nork egin zuen (Basque)
   bomb-the.SG.AG who.ERG make.PRF AUX.PST
   "Who made the bomb?"

   b. Bonba Mikelek egin zuen
   bomb.SG.AG M.ERG make.PRF AUX.PST
   "MICHAEL made the bomb."

Revisiting the survey data, we re-categorize languages based on the sentence form employed in forming Wh-word questions. The question forms we see employed are: (1) in situ (Japanese); (2) a special (non-fronted) clausal position (pre-verbal in Basque); (3) a cleft construction (Lango); and (4) use of sentence-initial position (Mam). In addition to focusing, some languages require a voice alternation (Mam) or a resumptive element (Vata; Koopman & Sportiche). The criterion employed here for classifying a question form as a focus construction is that the form must be the same as the argument focus construction in that language. In situ languages can be said to use an unmarked, declarative construction for questioning. The remainder of the languages in the survey form questions by using a construction reserved for questioning that is different from either the declarative
form or any focus construction (e.g. English). Note that we are not claiming that the Wh-word in an English question is not a focal element, but just that it is not marked as focused syntactically. The same is true of the in situ languages. This distinction is crucial and will be discussed again in the analysis section. With these form categories, the resultant typology of Wh-question forms is shown in Figure 1.

![Diagram of question construction type](image)

**FIGURE 1.** Typology of Wh form by construction type employed.

We will concentrate in this analysis on the alternation in questions between declarative and focus constructions observed cross-linguistically in Subject-Object asymmetries. Languages employing some other construction for questioning will not be discussed further in this analysis, though we will return to some speculation concerning this class later.

3. THE THEORETICAL FRAMEWORK AND IMPLEMENTATION OF THE ANALYSIS. Optimality Theory (OT), as described in Prince & Smolensky 1993, is a constraint based formalism which provides a means of exploring the interaction of grammatical constraints without specifying the content of those constraints. It is a valuable tool for examining the interplay of constraints in a variety of linguistic domains. In OT, grammar is viewed as a mapping from inputs to outputs. For a given input there is a set of candidate outputs which are evaluated for well-formedness against a set of strictly ranked, but violable, constraints of Universal Grammar. The winning candidate is the one whose highest constraint violation is lower than the highest violations of all of its competitors. The winner will be the grammatical output for a given input. Constraints are ranked in a strict dominance hierarchy. Therefore, the number of constraint violations a candidate has is not important, but the severity of the violation in the constraint ranking is crucial. Constraint rankings vary across languages, but are fixed within a particular language; thus, one ranking is assumed to hold for all constructions in a language and defines its grammar.

For an OT analysis, we must define a set of input representations and the output forms to which these are mapped. We will also define the constraints which will select the optimal output from among the set of output candidates. These will be defined in the following subsections.

3.1 INPUTS AND OUTPUTS. We assume a model of the grammar in which representations of semantic and pragmatic information are the inputs to a syntactic level where forms are selected. In explaining the selection of question form we
assume that the input representation will include a semantic role of Agent and Patient, and that one of these roles will be unknown to the speaker (the role to be questioned), thus inherently focal. We limit this analysis to the discussion of Agent and Patient questions, though it could be extended to adjunct questions as well, where asymmetries are also observed. The analysis could also be extended to focus constructions, since focused elements are also inherently focal. They differ from questioned elements in that they are asserted by the speaker and assumed unknown to the hearer.

The output level will consist of question forms. The candidate set will consist of those constructions observed as question forms in the languages surveyed. We can define the candidate set formally as follows:

(6) **OUTPUT CANDIDATES:**

a. **IN SITU** - The Wh-word appears in the same position in the clause as the equivalent non-questioned constituent would. (Japanese)

b. **FOCUS** - The construction employed for questioning is the same as that used for focusing. (Basque, Mam, Lango Subjects)

c. **FOCUS AND EPENTHESSIS** - The questioned element is focused, but a resumptive pronoun is found in the position in the clause where the equivalent non-focused constituent would be. (Vata)

d. **FOCUS AND VOICE ALTERNATION** - The Wh-word is focused, but the case marking of the arguments in the question are the same as those of a voice construction. (Mam Subjects)

3.2 **THE CONSTRAINTS.** Constraints are universal principles of well-formedness, and all have been derived from generalization of observed cross-linguistic variation. Constraints are in constant conflict with each other, and the way in which an individual language ranks constraints (and resolves conflicts) determines the pattern of variation found in that language.

The constraints employed in this analysis can be divided into four classes: (1) the Faithfulness constraints, which apply to all levels of the grammar; (2) Semantic mapping constraints, which describe the preferred linkings of semantic representation and syntactic forms; (3) Pragmatic mapping constraints, which reflect the selection of information structure by pragmatic content; and (4) Surface Alignment constraints, which mediate the interaction between semantics and pragmatics. Each will be discussed in turn.

(1) **FAITHFULNESS CONSTRAINTS.** There are two constraints derived in Prince and Smolensky 1993 that have proved applicable in OT analyses of syntax as well as phonology. These ensure that outputs represent inputs as closely as possible, and eliminate candidates which are far from the intention of the speaker.

(i) **PARSE:** everything in the input must be in the output

(ii) **FILL:** everything in the output must be in the input

(2) **SEMANTIC MAPPING CONSTRAINTS.** The mapping of semantic roles to syntactic roles is constrained by preferred linkings of thematic roles to grammatical relations (cf. Role and Reference grammar; Van Valin 1993). For example, Agents are preferentially mapped to the syntactic role of Subject, and Patients are typically mapped to the syntactic role of Object. The constraints in (iii) and (iv) are taken from Legendre et al. 1993, and following them we assume a notion of abstract Case, defining syntactic Subject as any argument marked with either nominative or
ergative case, and Object as an argument marked with either accusative or absolutive case.

(iii) **AGSUB**: Agents are mapped to the syntactic relation Subject.

(iv) **PATOBJ**: Patients are mapped to the syntactic relation Object.

(3) **PRAGMATIC MAPPING CONSTRAINT.** If an argument is inherently focal (new, unknown, or unexpected) then it should be marked in the output as an argument focus relation. We have adopted Lambrecht's (1993, 1994) structural definition of a focal element as that part of the assertion which differs from the presupposition. Contrary to Erteschik-Shir (1986), we maintain that Wh-words in constituent questions may be (but are not always) in a Focus relation in the sentence. The reason they do not satisfy her dominance test is perhaps that they do not direct the hearer's attention to new information, but rather request the new information from the hearer. Following Lambrecht's (1994:348-351) suggestion that the stress accent in constituent questions is used to activate the object of inquiry in the hearer's mind rather than to provide focus, it seems reasonable that stress would fall within the presupposition, rather than on the Wh-word. Stress serves to tell the hearer what the question is about, and argument focus highlights which aspect of the proposition is unknown and desired by the speaker.

The constraint on the mapping of focal information to Focus relation is given in (v). There is a difference between focal information and a Focus relation. Focal information is part of the pragmatic representation; the Focus relation exists between some element of the clause and the proposition. Thus, a participant in an event can be focal—but not a Focus—if (v) is violated.

(v) **FOCUS**: Focal arguments are mapped to an argument Focus relation.

(4) **SURFACE ALIGNMENT CONSTRAINTS.** There are two surface alignment constraints. The first is derived from Lambrecht's observation that French seems to have a "constraint against the co-mapping of the pragmatic relation focus and the grammatical relation Subject" (1994:27). The pragmatic relation typically found with Subjects is that of Topic, thus it is unexpected to find Subjects marked with the pragmatic relation Focus. We would expect to find a similar constraint against marking a constituent both as Topic relation and with the syntactic Object relation, because this too would be unnatural, though this plays no role in the current analysis. We summarize the first surface alignment constraint as follows:

(vi) **FOCSUB**: Don't focus Subjects.

The second surface alignment constraint prohibits marking a Patient as both a syntactic Object and as a Focus relation. The intuition behind this constraint is that (1) one expects the semantic role of Patient to be associated with the syntactic role of Object, and (2) one also expects a Patient to be pragmatically focal. Because of this double mapping from Patient there exists an association between the syntactic role of Object and focal information, thus to mark a Patient as Focus and Object is redundant. Again, we would expect to see a similar constraint against overtly marking Agents as both Topic relations and as syntactic Subjects.

(vii) **P=OBFOC**: Don't mark a constituent as both Object and Focus.
There is an important difference in the way constraints (vi) and (vii) are formulated. The *FOCSUB constraint refers only to what appears in the output and prohibits both of these relations from occurring on the same constituent regardless of its semantic role. This constraint could be satisfied by, for example, the introduction of a resumptive pronoun which would allow the focus and Subject relations to be marked on elements mapped to the same semantic relation but to appear separately in the output. (However, a resumptive pronoun would constitute a violation of FILL.) The *P=OBFOC constraint prohibits marking PATIENTS as both Focus and Object relations; thus introducing a resumptive pronoun would not satisfy the constraint, because both would still be linked to the semantic role of Patient. This constraint can be satisfied by changing the syntactic relation of the constituent, or by neglecting to mark the Focus relation.

As an example of the application of the constraints, the tableau in Table 1 gives the constraint ranking for a language with in situ Wh-words. The in situ form is selected as a consequence of the constraint ranking (from left to right across the top of the table, with the highest constraint to the left). Since the pragmatic mapping constraint FOCUS is ranked lowest, other candidate outputs for A- (Subject) questions and P- (Object) questions all violate more highly-ranked constraints than the in situ form. Constraint violations are indicated by * in the table. Candidates unranked with respect to each other are separated by dotted lines; violations of equivalently-ranked constraints are equally bad. In Table 1, FOCUS is ranked below all other constraints, which are equally ranked.

<table>
<thead>
<tr>
<th>CANDIDATES</th>
<th>AGSUB</th>
<th>PATOBJ</th>
<th>FILL</th>
<th>*FOCSUB</th>
<th>*P-OBFOC</th>
<th>FOCUS</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>in situ</td>
<td>focus</td>
<td></td>
<td>!</td>
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<td>P</td>
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| TABLE 1. The selection of question form in an in-situ question language. |

The next section will apply the constraints to languages with an overlap in question and focus form, particularly ones which exhibit Subject-Object asymmetries.

4. AN OT ANALYSIS OF ARGUMENT QUESTION ASYMMETRIES. We begin with Basque, in which Wh-questioning and argument focusing use the same form, and there are no argument asymmetries in questioning or focusing. As seen in 8 and 9, Basque uses a pre-verbal focus position, which is also the position in which Wh-words are found for both questioned Subjects and Objects in transitive clauses. The pre-verbal focus position is not unique to Basque. It is found in a number of (predominantly V-final) languages (cf. Kim 1988).

(8) a. *Bonba nork egin zuen (Manandise 1988)
bomb-the.ABS who.ERG make.PRF AUX.PST

"Who made the bomb?"
b. Mikelek zer egin zuen
   Michael.ERG what.ABS make.PRF AUX.PST
   "What did Michael make?"
(9) a. Bonba Mikelek egin zuen
    bomb.SG.ABS Michael.ERG make.PERF AUX.PST
    'MICHAEL made the bomb.'
b. Mikelek bonba egin zuen
    Michael.ERG bomb.SG.ABD make.PERF AUX.PST
    'Michael made the BOMB.'

The constraint ranking for Basque is found in Table 2. The semantic mapping constraints (AGSUB and PATOBJ) are ranked above the surface alignment constraints (*FOCSUB and *P=OBFOC), making voice alternations less optimal than constructions which maintain the expected mappings. Similarly, FILL is ranked above the surface alignment constraints, eliminating the possibility of epenthesis. Finally, the need to mark focal elements (FOCUS) is also ranked more highly than the surface alignment constraints, making in situ dispreferred. Thus, the focus construction wins, at the expense of a surface alignment violation for Subject and Object. To avoid a violation of FOCUS the unexpected marking of Subjects (*FocSub) is violated for Subject questions and the redundant marking constraint (*P=OBFOC) is violated for Object questions.

<table>
<thead>
<tr>
<th>CANDIDATES</th>
<th>AGSUB</th>
<th>PATOBJ</th>
<th>FILL</th>
<th>FOCUS</th>
<th>*FOCSUB</th>
<th>*P=OBFOC</th>
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<td>*!</td>
<td></td>
</tr>
<tr>
<td>a. in situ</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>b. *focus</td>
<td></td>
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<td>*</td>
</tr>
<tr>
<td>c. foc and pass</td>
<td></td>
<td></td>
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<td></td>
<td>*!</td>
<td>*</td>
</tr>
</tbody>
</table>

TABLE 2. Basque Questions.

As we saw in 1 and 4, Lango is an example of a language exhibiting an argument asymmetry in questions. Subject questions require clefting like Subject focusing; Object questions remain in situ, whereas Object focusing is also accomplished through clefting. The Lango ranking is shown in Table 3. As in Basque, voice alternation and epenthesis are dispreferred in Lango because of the high ranking of semantic mapping constraints and FILL. For Subject questions, a focus construction is most optimal, since a violation of FOCUS is worse than a violation of *FOCSUB. However, not focusing Objects produces a less severe violation (of FOCUS) than a violation of *P=OBFOC, allowing the in situ construction to win in Object questions.

Notice that the asymmetry in argument questions in Lango is captured in OT by interposing the FOCUS constraint between the two surface alignment constraints, *P=OBFOC and *FOCSUB, in the constraint ranking. We will see that asymmetries are characterized by this ranking strategy, though the type of asymmetry will depend on the constraint interposed and the ranking of the other constraints.
<table>
<thead>
<tr>
<th>CANDIDATES</th>
<th>AGSUB</th>
<th>PATOBJ</th>
<th>FILL</th>
<th>*P=OBFOC</th>
<th>FOCUS</th>
<th>*FOCSUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. in situ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>b. focus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c. foc and epenth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
</tbody>
</table>
| d. foc and antipass |       |        |      |         |       | *!  *
| P          |       |        |      |         |       |         |
| a. focus |       |        |      |         |       | *       |
| c. foc and pass |       |        |      |         |       | *! *   |

**TABLE 3. Lango Questions.**

In the Mam examples in 2 and 3 we saw an asymmetry involving a voice alternation for Subject questions which mirrors the asymmetry in the focusing. For Subjects, an antipassive is used before fronting can occur; fronted ergatives are disallowed in Mam. Fronting of the absolutive Object questions and focus elements is acceptable.

The argument asymmetry in Mam is again captured in the constraint ranking by interposing constraints between the surface alignment constraints (Table 4). This time, it is the semantic mapping constraints which are interposed. Since *FOCSUB is ranked higher than the semantic mapping constraints, the antipassive is employed to avoid a *FOCSUB violation. Focusing is still required after the antipassive, since FOCUS is a highly ranked constraint. *P=OBFOC is ranked below the semantic mapping constraints, selecting the focus construction from among the candidates for Object questions.

<table>
<thead>
<tr>
<th>CANDIDATES</th>
<th>FOCUS</th>
<th>FILL</th>
<th>*FOCSUB</th>
<th>AGSUB</th>
<th>PATOBJ</th>
<th>*P=OBFOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. in situ</td>
<td></td>
<td></td>
<td>*!</td>
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<td></td>
<td></td>
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<tr>
<td>b. focus</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. foc and epenth</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. foc and antipass</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>a. in situ</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>c. foc and pass</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 4. Mam Questions.**

The ranking {*FOCSUB, AGSUB, PATOBJ, *P=OBFOC} produced the Mam asymmetry in which a voice alternation is employed for Subject questions. We predict that the opposite ordering of surface alignment constraints around the semantic ones is also possible, viz. {*P=OBFOC, AGSUB, PATOBJ, *FOCSUB}. This ranking forces selection of a passive for Object questions. Kwakwala requires such a voice alternation for Object questions, as seen in 14b (Anderson 1984). Subjects are questioned and focused by fronting. The complete constraint ranking for Kwakwala is presented in Table 5.

(14) a. ?longwa-ida hə́nilda-x-uxwa-da gəla-x mas-i (Kwakwala)
who.DEM shoot.OBJ.DEM grizzly bear.DEM
‘Who shot that grizzly bear?’
b. *ex?id su?-s 3ohna-s-uxw da logayu
what.DEM.hit.PASS.INST John.INST.DEM hammer
“What did John hit with the hammer?”

<table>
<thead>
<tr>
<th>CANDIDATES</th>
<th>FOCUS</th>
<th>FILL</th>
<th>*P-OFOC</th>
<th>AGSUB</th>
<th>PATOBJ</th>
<th>*FOCSUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. in situ</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. *focus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. foc and epenth</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. foc and antipass</td>
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<tr>
<td>P</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. in situ</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>b. focus</td>
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<td></td>
<td></td>
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<tr>
<td>c. *foc and pass</td>
<td></td>
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</tbody>
</table>

TABLE 5. Kwakwala Questions.

The case of Kwakwala shows that defining a set of constraints allows us to predict the existence of certain grammatical configurations. Similarly, we can predict some combinations will NOT occur in languages. Such predictions result from considering all possible orderings of constraints. This will be discussed in the next section.

5. DISCUSSION. In the analysis above we’ve looked at rankings which describe the facts for specific languages, but other rankings should produce other patterns of asymmetries. By using a software tool (Raymond & Hogan 1995) it is possible to explore the consequences of all possible rankings on the combination of two functions, generating an analytic typology of the form combinations. When this procedure is applied to Subject and Object constructions, we find that several additional types of construction asymmetries are predicted to be possible given the constraints of this analysis. Table 6 shows the possible combinations, with examples of languages selecting these forms if one has been identified.

<table>
<thead>
<tr>
<th>CANDIDATES</th>
<th>a. in situ</th>
<th>b. focus</th>
<th>c. focus and passive</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. in situ</td>
<td>Japanese</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. focus</td>
<td>Lango</td>
<td>Basque</td>
<td>Kwakwala</td>
</tr>
<tr>
<td>c. foc and epenth</td>
<td>Vata</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. foc and antipass</td>
<td>Mam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 6. An Analytic Typology of Argument Question Form.

Japanese and Basque have no asymmetries, but apply in situ and focus constructions, respectively, to both arguments. Lango, Kwakwala, Vata, and Mam exemplify four asymmetry types, as shown. Five other combinations are predicted to be possible; no combinations are disallowed by the constraints as they are defined and applied to Subject and Object questions.

Further empirical investigation can help to verify the analytic typology, and hence the constraints, by corroborating the existence of these types. Also crucial to verifying the validity of the constraints is showing that a ranking applies to all
constructions in a language. This goal is pursued by extending the analysis to other related forms, such as focus constructions, topicalizing constructions, and questioning elements in embedded clauses (Van Valin, to appear). The identification of factors resulting in question forms not included in this typology also remains to be done. Examples of forms not explained include non-focus fronting; (e.g. English) and aspectual alternations (Palauan; Georgopoulos 1985).

In summary, we have shown that the selection of question form is governed by universal constraints on the syntactic representation of semantic and pragmatic information, and the interaction of these mappings. The constraints, though universal, are violable and can be variously ranked in importance across languages, allowing different languages to select different forms for questions. Interposing a constraint between pairs of mapping constraints referring to different semantic or pragmatic roles will result in argument asymmetries in question form. By defining a small set of constraints motivated by preferred representations in languages and exploring their interactions through reranking, we have explained asymmetries in a variety of languages, and predicted the existence of languages with yet other asymmetrical combinations of forms.

NOTES

*Research for this paper was largely supported by a grant from the National Science Foundation (DBS-9209265). Our thanks to Géraldine Legendre and Paul Smolensky, Johns Hopkins University and the University of Colorado, for their support, supervision, and contributions to the work detailed herein. We also thank Colin Wilson for his input.

1A similarity in focal constituency also exists between the head of a relative clause and a focused NP, and there is often formal similarity between these constructions in languages (Schachter 1973).

2Lambrecht (1993,1994) distinguishes between argument, predicate and sentence focus, and relates Wh-questions to argument focus.

REFERENCES


_____. To appear. Toward a functionalist account of so-called extraction constraints. Complex structures: A functionalist perspective, Betty Dezriendt, Louis Goosens, and Johan van der Auwera (eds.). Berlin: de Gruyter.
Pragmatic Inferences and Grammaticalization of Serial Verbs of Displacement in Korean*

Seongha Rhee
The University of Texas at Austin

0. Introduction

Aspectual meaning in Korean is primarily marked by serial verbs (SVs hereafter). The aspecual system is very complex and has been much studied. However, studies from a grammaticalization perspective are largely underrepresented to date.

In this paper I will discuss two verbs in Korean, *pelita* and *chiwuta*, both denoting displacement. These verbs are also often called auxiliary verbs or compound verbs since they function as aspecual auxiliaries and co-occur with other non-finite verbs. Nevertheless these verbs do not show all of the properties of regular auxiliary verbs, which typically have an opaque lexical meaning, and can occur in so-called serial verb constructions (SVCs hereafter). Thus, I will use the term serial verb to refer to these verbs, *pelita* and *chiwuta*, without further discussion on terminology. In these SVCs, the two verbs are serialized with a non-finite marker -e¹. This paper addresses several issues: how metaphor works as the mechanism of semantic generalization at the preparatory stage for grammaticalization; how inference works as the mechanism of grammaticalization along which speakers' viewpoints are gradually semanticized; and how the verbal semantics constantly place constraints on the grammaticalization path.

1. Preliminary

1.1 Problems with Historical Data. It would be beyond the scope of this study to attempt to discuss Old and Middle Korean in depth. However, a brief discussion of the old historical data is in order as background.

Until the Korean orthography, *Hankul*, was invented in 1443, the writing system made use of Chinese characters. Some characters represented semantic values and some phonetic values, maintaining the Korean word order. Therefore, how they were actually read still involves considerable controversy. Another unfavorable aspect of the situation is that there are only twenty-five extant pieces of short poems written before 1443. To make the picture even more complex, fourteen of these were works of the 6th - 8th centuries, but their extant records were written in the 13th century. Therefore, it is not clear how much of each poem retained the original form. The other eleven poems are of the 10th century, whose extant forms are the 11th century records. One serious problem arising from this is that the data from these sources, i.e., all pre-fifteenth century data (Old Korean), cannot be effectively lined up in chronological order.

1.2 History of Grammaticalization of SVCs in General. One striking aspect that can be observed by comparing Old Korean, Middle Korean and Modern Korean data is the gradual change from paucity to very productive use of SVCs. Even though reconstructed Old Korean data have some SVCs, they are largely SVCs of 'manner + movement' or 'direction + movement' types, where movement
verbs are such verbs as 'go', 'come', 'stop', etc. It seems that crosslinguistically these verbs are the first category that develop into serial verb constructions.

2. Grammaticalization of pelita and chiwuta

2.1 Lexical and Auxiliary Meanings. Pelita 'throw away' and chiwuta 'relocate' can be used as lexical verbs or as auxiliaries functioning as SVs. These two verbs denoting the displacement of objects are the most commonly used verbs for auxiliary function of marking perfective. The examples of the two usages are given below.

(1.a) ku-ka sinmwun-ul peli-ess-ta
he-Nom newspaper-Acc throw away-Pst-Dec
'He threw away a newspaper.' (main verb, lexical meaning)

(1.b) ku-ka pap-ul mek-e peli-ess-ta
he-Nom meal-Acc eat-NF throw away-Pst-Dec
'He ate up the meal.' (SV, auxiliary meaning)

(2.a) ku-nun ssal-ul changko-lo chiwu-ess-ta
he-Top rice-Acc storage-to relocate-Pst-Dec
'He relocated the rice into the storage.' (main verb, lexical meaning)

(2.b) swukcey-lul ha-e chiwu-ca
homework-Acc do-NF relocate-Hortative
'Let's finish the homework.' (SV, auxiliary meaning)

2.2 Mechanisms of Grammaticalization. Despite relative success in the description of grammaticalization phenomena, the mechanism of change has remained a puzzle for many students of grammaticalization. Numerous answers have been proposed, including metaphor (Sweetser 1988, 1990; Bybee et al. 1985; Heine et al. 1991, inter alia), metonymy (Traugott et al. 1991, inter alia), inference (Traugott et al. 1991; Bybee et al. 1994, inter alia), and generalization (Bybee 1988; Bybee et al., 1994 inter alia). Because of the complexity of the change patterns in grammaticalization, it does not seem that any single mechanism would fully explain all of the phenomena involved. As a matter of fact, most studies subscribe to more than one mechanism for the explanation. In this section we will explore how metaphor and inference play a role in the semantic generalization and grammaticalization of displacement verbs.

It has been noted that semantic generality of a lexical item is important for its grammaticalization (Hopper et al. 1993:97). This is so because a semantically highly specific lexical item cannot have but very limited distribution and this limited occurrence will not allow it to become grammaticalized. Because of the loss of semantic content involved in this process, the lexical item, now generalized, is less restricted in occurrence and therefore it can be said to be functionally enriched. In the following discussion it seems that the meaning of a lexical item becomes generalized when a metaphor is involved. The rest of the process is due largely to the inferences that arise through conversational implicature.

2.3 Grammaticalization of pelita. Pelita is the most widely used perfective-marking SV in Modern Korean. It occurred as a perfective-marking auxiliary even before the Middle Korean period (15-16c.). Therefore, it has
undergone a long grammaticalization process. The path of semantic generalization is given in (3).

(3) Semantic Generalization of *pelita*

<table>
<thead>
<tr>
<th>Stage I</th>
<th>Stage II</th>
<th>Stage III</th>
<th>Stage IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>throw away</td>
<td>=&gt; leave/abandon</td>
<td>=&gt; quit</td>
<td>=&gt; disappear/spoil</td>
</tr>
<tr>
<td>animate agent</td>
<td>animate agent</td>
<td>animate agent</td>
<td></td>
</tr>
<tr>
<td>physical removal</td>
<td>physical removal</td>
<td>removal</td>
<td></td>
</tr>
<tr>
<td>physical object</td>
<td>from Location 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The examples for each stage are as follows:

Stage I (4) yehAe-mulon cilsampoy pAlisi-ko
separate-rather than weaving cloth throw away-and
'Rather than being separated from you, I will throw away the
weaving cloth, and (follow you begging for your love)'
Sekyengpyelkok Koryo Dynasty (10-14c., wrtn in 16c.) (Lim, 1993)

Stage II (5) ka-si-li ka-si-li-isko nanAn
go-Hon-Fut go-Hon-Fut-Q Beat Filler
pAlisi-ko ka-si-li-isko nanAn
throw away-and go-Hon-Fut-Q Beat Filler
'Are you leaving, really leaving? Are you leaving (me)?'
Kasili Koryo Dynasty (10-14c., wrtn in 16c.) (Lim, 1993)

(6) i stah-Al pAli-kok
this land-Acc throw away-and where
ka-l-ti-e hA-l-ti
go-Adn-Nomz-Q do-Adn-when
'If they say, 'Where can you go by leaving this land?','...'
Anminka 8c.(wrtn in 13c.) (Lim, 1993)

Stage III (7) ilhwum-ul tut-cAvAmyen motin hAingtyek-ul pAli-ko
name-Acc hear-if evil deed-Acc throw away-and
'When (they) hear the name (of Bodhisattva), they will quit old evil
deeds, and (seek after the truth,...)'
Sekposangcel 9:14, 1447 (1978)

Stage IV (8) nA-i mom pAli-ko cip-i phAyha-ko
I-Gen body throw away-and house-Nom ruin-and
Kyeynyese, 17c. (1988)
'It is disadvantageous to yourself and your household, and'
(This is a father's warning given to his daughter about to marry not
to be jealous of husband's possible love-affairs with others. The
use of first person pronoun is to mark the father's empathy.)

(9) pi-ka wa-se os-ul peli-ess-ta
rain-Nom come-because clothes-Acc throw away-Pst-Dec
'(My) clothes were spoiled (=became wet) because of rain.'
Modern Korean
Stages I - IV show the progressive generalization of the semantics of the verb. The features in the basic meaning gradually become lost. The change from Stage I to Stage III is an instance of metaphor, mediated by another small metaphor in Stage II. Expressions such as 'abandoning a love' or 'abandoning homeland' are descriptions of a metaphorical act of 'throwing away'. However, the feature of physical removal (separation) is still preserved. In Stage III semantic components of the verb are further generalized in that physical removal is no longer necessary. The metaphorical change is from a physical domain to a more abstract domain. The verb is more synonymous with 'quit'. Stage IV seems to be a rather recent development, where agent is not necessary in the semantic components of the verb. Considering the importance of the agenthood in the semantics of the verb, 'to throw away', this final stage seems to show an extreme level of bleaching. In Modern Korean usage of all four stages co-occur, and so the verb pelita is considered polysemous.

The semantics of pelita becomes generalized while it is used as a lexical verb. On the other hand, the verb acquires aspectual meaning and speakers evaluative viewpoints while it is used as a SV. The path of acquisition of evaluative viewpoints is given in (10).

(10) Acquisition of Evaluative Viewpoints

<table>
<thead>
<tr>
<th>Stage A</th>
<th>Stage B</th>
<th>Stage C</th>
<th>Stage D</th>
</tr>
</thead>
<tbody>
<tr>
<td>completiveness</td>
<td>irrevocability =&gt; undesirability =&gt; malefaction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Along the journey of grammaticalization pelita picks up many other conventionalized meanings through inferences. At Stage A the verb's sense of 'completeness' becomes salient. The inference in this stage as compared with other stages is different in that it seems to come mainly from the semantics of the verb. The historical data suggest that by Stage A the semantics of pelita had become much more general, encoding 'removal' by generalization. The verb pelita is a telic verb and it must have been frequently used with telic event predicates. The predicate indicating the natural end point is likely to develop a strong sense of telicity through frequent occurrence with the verb pelita which encodes 'removal', an action with natural end point. Considering that completeness and telicity are semantically closely associated, this inference, sketched in (11), may be a natural outgrowth of the change at this stage. This is in consonance with the observation that dynamic verbs or directional predicates are usual sources of completive aspectual auxiliaries (Bybee et al 1994: 59). Examples of Stage A are given in (12) and (13).

(11) X did Y, or Y occurred, where Y is telic event reinforced by co-occurring telic verb

(12) alay-s unhyey-lul nic-e pAli-si-a

previous time-Gen relationship-Acc forget-NF throw away-Hon-as

'As he forgot (completely) the former relationship (with me as a spouse,..)'

Sekposangcel 6:4, 1447 (1978)

(This is a statement by Buddha's wife regarding how completely he was changed after the Enlightenment.)
At Stage B the sense of 'irretrievability of removal' becomes salient. This seems to be a natural inference from the previous stage. If someone says something that would normally mean 'X did Y completely' or 'Y occurred completely', the hearer, in the absence of further information otherwise, tends to infer that 'it was done irretrievably', as illustrated in (14). Since this irretrievability directly affects the present in that its effects persevere into the present, this auxiliary verb has the perfective meaning for present-relevance. Examples of Stage B are given in (15) - (17).

(14) X did Y completely
    Y occurred completely > Y is irretrievable

(15) kulwel   muyhi-e  pAli-la
    document destroy-NF throw away-Imp
    'Cancel the contract.' Penyek Nokeltay early 16c. (1988)
(In response to a complaint by a buyer, who unknowingly bought a sick horse, the annoyed seller of the horse suggests that the buyer cancel the sales contract irrecoverably and pay the cancellation fee included in the contract.)

(16) taymyeng-kwa     kyothonghA-ki-lAl       skuschi-e
    Ming Dynasty-with have relations-Nomz-Acc stop-NF
    pAli-ko mwunye-uy wuli nyenho-lAl   psu-ko
    throw away-and document-at our calendar year-Acc write-and
    'Abandon the diplomatic relations with the Ming Dynasty, use our imperial calendar years on your documents, and ...' Sansengilki 17c. (Kim, 1985)
(Invading Ching Dynasty emperor is demanding a Koryo King to abandon the diplomatic relations with Ming Dynasty permanently and to become a subordinate kingdom to Ching China instead.)

(17) ku thong-uy pyek-ey tah-a swunsikkan-ey
    that tube-Gen wall-Loc touch-NF short moment-Loc
    mall-a peli-nta dry-NF throw away-Dec
    '(The vapor) gets touched on the wall of the tube and immediately gets dried and disappears.' Elumuy Tokani 1993 (Choe, 1993)
(The protagonist bitterly equates his mental state with the vapor in a humidifier. The whole chapter is his reflection on the irretrievability of what he has done.)

At Stage C the 'undesirability' becomes salient. The undesirability seems to come from an aspect associated with the original verbal semantics and human experience. Since humans tend to remove things that are undesirable, this inference is a natural step. Since this undesirability sense develops after the semanticization of irretrievability it is also reasonable to postulate that this is an outgrowth from the
previous 'irretrievability' sense. Something irretrievably done is likely to be undesirable because of consequent unavailability, as in (18). Examples of Stage C are given in (19) – (21).

(18) X did Y completely and irretrievably Y occurred completely and irretrievably > Y is undesirable

(19) ku mal-i taman khong-man kAlhAiy-e mek-ko the horse-Nom only bean-only select-NF eat-and ciph-ul ta husth-e pAli-nAnila straw-Acc all scatter-NF throw away-Dec

'They eat only beans and scatter straws away.' Monge Nokeltay 1741 (1988) (The speaker is warning a horse keeper that if horses are given beans and straws mixed, they will eat the beans only and throw away the straws by strewing them on the ground.)

(20) incelmi-nAn moto sek-e peli-esAp rice cake-Top all decay-NF throw away-Dec 'All the rice cakes went bad.' Chusa Enkan 1841 (Kim, 1986) (The author in exile on an island writes to his wife that the rice cakes she sent to him all went bad because it took many months by boat for transportation from the mainland.)

(21) manyak nay-ka michi-e peli-ntamyen if I-Nom become insane-NF throw away-if 'If I become insane, ...' Elumuy Tokani 1993 (Choe, 1993)

At Stage D the undesirability gives rise to the acquisition of still another feature — 'malefactive'. When the verb has acquired undesirability through inferences again a malefactive meaning will be naturally inferred because, if something undesirable was done, it can be inferred that the agent of the proposition is likely to have intended the malefactive effect on the patient. The inference pattern is given in (22). Examples of Stage D are given in (23) and (24).

(22) X did Y completely irretrievably where Y was undesirable > X intended malefaction

(23) walkhak stwi-e taly-e tul-my e chomAi calak-to suddenly jump-NF run-NF go into-Con skirt-too watutuk cwalwuwuk scicy-e pali-my e Onomatopoeia Onomatopoeia tear-NF throw away-and Chwunhyangcen late 19c - early 20c. (Chun, 1995) '(She) ran toward him (threateningly) and tore her own skirt, and...'

(The protagonist is much agitated upon hearing that her love would leave her, and she runs about and tears her own skirt to show the malice to him by directing it at herself.)

(24) kathi ka-ten salam-i kocacil-ul ha-e together go-Retrospective man-Nom squealing-Acc do-NF peli-ess-ta throw away-Pst-Dec

'The companion squealed on him.' Chenglyangli Yek 1993 (Song, 1993) (The fellow policeman squealed on him to the authorities to ruin him and to earn favor in return.)
The 'malefactive' usage of this SV in Modern Korean is very frequent. But this development seems to have started very recently — around the turn of the century. Since malefactive requires [+volitional] for the agent and [+animate] for the patient, constructions not compatible with these features, such as absence of an agentive subject or an animate patient, will not imply malefaction and no such inference may be made, as shown in (25) and (26). This constraint, however, can be overridden if normally unqualified agents or patients are personified. This constraint on the malefactive usage of the SV shows that the semantic residue of the original verb constrains the development in grammaticalization.

(25) ice cream-i nok-a peli-ess-ta
    ice cream-Nom melt-NF throw away-Pst-Dec
    'The ice cream melted (completely, irretrievably, undesirably, *malefactively)._'

(26) ku-ka namwu-lul pey-e peli-ess-ta
    he-Nom tree-Acc cut-NF throw away-Pst-Dec
    'He cut down the tree (completely, irretrievably, undesirably, *malefactively)._'

Here is an interesting aspect of the usage of this SV peli\-\(a\) with regard to the contrast in the following examples.

(27) akwun-uy cangkwun-i cwuk-e peli-ess-ta
    our army-Gen general-Nom die-NF throw away-Pst-Dec
    'Our general is killed (to our regret)._'

(28) cekkun-uy cangkwun-i cwuk-e peli-ess-ta
    enemy army-Gen general-Nom die-NF throw away-Pst-Dec
    'Enemy's general is killed (to our happiness)._'

As shown in the above examples, peli\(a\) can be used either for desirable or undesirable events depending on the speakers' evaluative viewpoints. We have already seen how a sense of undesirability developed in the grammaticalization path into a malefactive use of the verb. Now the question is whether it can be also used for sense of desirability as well, and if so, why did it not develop into a benefactive. This seems to be a possible development blocked by the original semantics of the verb 'throw away', which is very closely related to our human experience of eliminating undesirable things. Therefore, the desirability sense in (28) is only a context-based, by-product interpretation, where the auxiliary usage of the SV is still for marking 'completeness' or 'irretrievability'. Another factor in this matter is that a different SV, cwuta 'to give', is already a robust marker of benefactive. Therefore, it seems that a choice of inferred senses that determines the direction of development is not random, but rather such selection is always made under the pressure of competition with other elements which may by default have the right of way.

It must be noted that all uses of peli\(a\) discussed above occur in contemporary Korean. The grammaticalization process does not require that all uses become collapsed into one. Instead, the most grammaticalized use of the verb carries all of the changes cumulatively. Therefore, the malefactive use subsumes completiveness, irretrievability and undesirability. Because of this multi-layered grammaticalization, simple synchronic descriptions of the auxiliary often encounter difficulty. However, by referring to the inference patterns in the historical
development of the auxiliary, this diachronic approach better explains 'how' and 'why' it behaves as it does.

2.4 Grammaticalization of chiwuta. Very similar to pelita, chiwuta is also a perceptive-marking SV. This SV is sometimes interchangeable with pelita. The grammaticalization process of this verb seems to have started very recently. Even though it is frequently used as a perceptive auxiliary in contemporary colloquial Korean, it is rarely used in literary works. Since this is a recent development and written data do not provide ample evidence for establishing different stages, the grammaticalization path of this verb cannot be easily plotted linearly. Its (hypothetical) development in semantics of the main verb and auxiliary use is sketched below:

(29) Semantic Generalization of chiwuta

<table>
<thead>
<tr>
<th>Stage I</th>
<th>Stage II</th>
<th>Stage III</th>
</tr>
</thead>
<tbody>
<tr>
<td>animate agent</td>
<td>animate agent</td>
<td>animate agent</td>
</tr>
<tr>
<td>physical relocation</td>
<td>physical relocation</td>
<td>relocation</td>
</tr>
<tr>
<td>from Loc1 to Loc2</td>
<td>from Loc1 to Loc2</td>
<td>(from Loc1 to Loc2)</td>
</tr>
<tr>
<td>physical object</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(30) Acquisition of Evaluative Viewpoints

<table>
<thead>
<tr>
<th>Stage A</th>
<th>Stage B</th>
<th>Stage C</th>
</tr>
</thead>
<tbody>
<tr>
<td>completiveness</td>
<td>irretrievability</td>
<td>undesirability</td>
</tr>
</tbody>
</table>

The examples for each stage are as follows:

Stage I (31) ku-nun ssal-lul changko-lo chiwuu-ess-ta
he-Top rice-Acc storage-to relocate-Pst-Dec
'He relocated the rice into the storage.'

Stage II (32) panucil-ul chiwuu-ko pappi yek-ey naka-ss-ta
sewing-Acc relocate-and hurriedly station-to go out-Pst-Dec
'(She) stopped sewing and hurriedly went to the station.'

Stage III (33) ku-nun ttal-lul chiwuu-ess-ta
he-Top daughter-Acc relocate-Pst-Dec
'He relocated his daughter (he married his daughter to someone).'

Since the changes up to Stage C are parallel to pelita we do not need to give all examples. What seems immediately noticeable as compared with the previous pelita is that this verb chiwuta has undergone less semantic generalization. As a main verb chiwuta goes one stage less than pelita in that it still requires an animate agent. Therefore, despite some parallel usage with pelita the following example shows that the changes do not completely overlap.

(34) pi-ka wa-se os-ul peli/*chiwuu-ess-ta
rain-Nom come-because clothes-Acc throw away/relocate-Pst-Dec
'(My) clothes were spoiled (=became wet) because of rain.'

Likewise on the grammaticalization path, chiwuta does not develop into a SV having an auxiliary function of malefactive marking. This difference is attributable to several factors.
First, it has been already mentioned that unlike *pelita*, *chiwuta* has a very short history of evolution as a SV. For example, a comparison of two Bible versions, the Revised Hunkul Version and the Common Translation, in their usage of *chiwuta*, shows that the RHV does not have any occurrence of auxiliary use of the verb in SV, while the CT published 33 years later has several dozen occurrences. The verbs such as 'devour' and 'eat' are usually translated into one verb in the RHV, but in the CT many of them occur in the form of 'devour/eat-NF *chiwuta*'. Another piece of evidence is that a Korean dictionary, *Sayhankul Sacen*, containing 160,000 entries published in 1970, does not list an entry for the auxiliary use of *chiwuta*, while *Saykwuke Sacen*, a similar-sized dictionary published in 1990 does list this use.

It is interesting to note that the constraint seems to be also attributable to the semantics of the verbs. Both share the core meaning of displacement, but unlike *pelita* which describes an action of simple removal from one location, *chiwuta* is a little more complex in that it also makes reference to the end point location. It has been already noted that semantic generalization is a prerequisite for a verb to go through a grammaticalization process. The constraint on the SV *chiwuta* is not restricted to the malefactive usage. Generally it has a very restricted distribution. For example, non-volitional verbs cannot occur with this SV. Even among volitional verbs, only those used in achievement predicates can occur with this SV as shown in the following examples.

(35)  chayk-ul sey-kwon-ul ilk-e chiwu-ess-ta
     book-Acc three-Classifier-Acc read-NF relocate-Pst-Dec
     'He read 3 books.'

(36)  *chayk-ul sey-sikan-tongan ilk-e chiwu-ess-ta
     three-hour-during
     'He read book(s) for 3 hours.'

Another relevant point is that *chiwuta* has a derogatory connotation that the act denoted by the predicate including V1 in the SV is done in a rather speedy and inferior manner lacking due carefulness (Kim, 1990). This seems to be due to the history of this verb's usage, which the speakers of Modern Korean are not fully aware of. From my data search, I found about fourteen occurrences from some 15th to 17th c. sources. Seven occurrences described taking out human or animal manure and five, removing garbage. Therefore, because of this synchronic pragmatic constraint attributable to the diachronic information, *chiwuta* cannot co-occur with honorific-marked predicates or predicates denoting careful action, unless this nuance is explicitly or contextually canceled.

Still another aspect related to this issue is that, as is commonly recognized in the studies of grammaticalization, when a new grammatical element is introduced into a language, it comes into competition with an already existing element currently carrying out that function, thus resulting in the co-existence of two grammatical elements for the same function. Sometimes an innovative form takes over the old form gradually, sometimes it loses to the old form and disappears, and sometimes both co-exist through division of labor and specialization. In the case of *pelita* and *chiwuta* the new form *chiwuta* seems to be gradually taking over the functions of *pelita*. Since *chiwuta* has such a short development period there is no knowing what the result will be in the future. The current situation seems to be that it is in
active competition with the 'completeness' and 'irretrievability' functions of pelita; it is less active in the 'undesirability' function; and it has not yet entered into competition for the 'malefactive' function. A piece of supporting evidence is that even for the 'undesirability' sense this verb chiwuta is not very productively used. Pelita has primacy in this use, too. Another piece of evidence comes from the fact that even when these verbs are used as lexical verbs (i.e., V1 in SVC) there is an asymmetry of use.

(37.a) ku-nun ssuleyki-lul chiwu/peli-ess-ta
      he-Top trash-Acc relocate/throw away-Pst-Dec
      'He threw away the trash.'

(37.b) ku-nun ssuleyki-lul peli-e peli-ess-ta
      chiwu-e peli-ess-ta
      *chiwu-e chiwu-ess-ta
      *peli-e chiwu-ess-ta
      he-Top trash-Acc DISPLACE-NF DISPLACE-Pst-Dec
      'He threw away the trash.'

The above examples show that even though the two words are interchangeable as lexical verbs as shown in (37.a), as an aspectual auxiliary pelita has primacy over chiwuta as shown in (37.b).

This has the interesting prediction that when a new form comes into a language and vies for primacy in usage, the order of the attack parallels the order of the functions developed by its competitor. The important factors in the competition are the semantic generality that determines the freedom of occurrence, and the available inferences from the contexts in which they are used. Therefore, the changes tend to show certain directionality. It is interesting to note that the direction of change in both cases is from more concrete to more abstract, in each case toward the dimension of 'quality'. This is also in consonance with the 'Semantic-pragmatic Tendencies' in Traugott et al (1991:208-209) that meanings tend to become situated in the speaker's evaluative/perceptual/cognitive situation or subjective belief-state/attitude toward the situation.

3. Conclusion

We have seen how metaphor and pragmatic inference contribute to the grammaticalization process with two examples from Korean displacement SVs, pelita and chiwuta. To undergo a "real" grammaticalization a lexical item has to be semantically generalized first. This generalization is made through metaphor in this case of displacement verbs. Inference seems to be continuously pushing the verb to acquire grammaticalized meanings, but only in a certain direction. Even though all inferences are based on the context, some inferences are based more on the semantics of the verb while others are based more on human experience or world knowledge. We also saw that even between semantically closely related (almost synonymous) SVs one has primacy over the other, which seems to be a result of the different degrees of grammaticalization, which again depends on the levels of generality of their semantics and their history of use.
Notes:

* I am very grateful to Manfred Krifka, Bernd Heine, Joan Bybee and Paul Hopper for valuable comments and insightful criticism on earlier versions of this paper. My deepest thanks go to Hyun Jung Koo who kindly found many hard-to-get data sources, without which this paper could never be written. All shortcomings that remain are, of course, my sole responsibility.

1. This non-finite marker has allomorphs, -a and -∅. There are other non-finite markers but their status is controversial.

2. These are more like compound verbs in that they usually lack auxiliary functions.

3. Similar phenomena with (dis)placement verbs such as throw, throw away, put, etc., in other languages have been noted in: B. Heine (p.c., Diyari); Kitano et al and P. Radetzky (Linguistic Institute 1995 class presentations, Japanese), Ono (1992, Japanese), Ono et al (1992, Japanese); Genetti (1986, Newari); and Nayar (1983, Malayalam).


5. Bybee et al (1994: 296-297) has an excellent discussion showing how different mechanisms are playing roles at different stages of grammaticalization. It shows that metaphor works at the earlier stage while inference and generalization have a more extended effect throughout the grammaticalization.

6. The separation of Stages I, II & III as different periods cannot be evidenced by historical data because of the paucity of historical data. See above section 1.1 for discussion of this problem. But, it seems that pelita already passed these three stages in Old Korean.

7. NanAn is an onomatopoeic word believed to describe a lute sound. The use of this kind of beat-filling onomatopoeic words is common in Old and Middle Korean songs and poems.

8. Bybee (p.c.) suggests that this negative nuance may have been picked up from the context. This seems to be much to the point because inferences cannot be independent of context.

9. I compared Exodus and three prophets, i.e., Micah, Nahum, and Habakkuk.

10. Unlike pelita, this undesirability sense is associated with the 'manner' of the action, probably because of its original semantics, rather than the action itself.


Data Sources:


Songkangkasa (1988, [1747]) in Hankuk Mwunhak Chonglim (Korean literature collection) v.7. Seoul: Daejegak.

References:


Revising Old English Definitions of FRIEND: A Cognitive Account

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While Cognitive Semantics has offered interesting explanations of the present state of languages, it is only recently that it has been applied to diachrony mainly through the work of Sweetser (1984, 1990, etc.) and Traugott (1982, 1985, 1986, etc.). Fruitful results have been obtained and new lines of research opened, however, more research is still required in this area, especially in the updating of the lexicography of older stages of languages. With this paper I offer another study in this line. By analyzing the lexicon of FRIENDSHIP in the Old English (OE) period within the cognitive paradigm, my aim is twofold. On the one hand, I wish to call attention to the fact that historical lexical studies need a solid theoretical basis; that is, they need to participate in and benefit from the results of research in synchronic linguistics in general — until very recently, historical lexical studies have not incorporated theoretical issues into their descriptions (Strite 1989). Because of this, I would like to unify the research methods, both theoretical and empirical, of diachrony and synchrony. And on the other hand, this linguistic analysis also intends to contribute to the reconstruction of the social reality of the OE period. In this paper then, I briefly explain the methodology: the selection and analysis of the corpus, the theoretical premises of Prototype Theory and then show the results of the application of the semantic premises of Prototype Theory to the analysis of FRIENDSHIP in OE.

METHODOLOGY

With respect to the corpus, the field of FRIENDSHIP was selected for various reasons: first, because the more abstract vocabulary — excepting the lexis of emotions such as ‘joy’ and ‘sorrow’ — has tended to be neglected within empirical field studies. Second, because the more abstract vocabulary, such as FRIENDSHIP, has always been and still is one of the most controversial and, at the same time, most challenging for the explanation and corroboration of the different semantic theories. This is due mainly to the vagueness inherent in the abstract lexicon and also to the fact that it seems to be intimately related to and deeply rooted in human cognitive and perceptual systems. And third and last, because of its closeness to the field of SOCIAL TERMS, and therefore its potential to help in the reconstruction of the social reality of the OE period.
Once the semantic field was selected, I used the Anglo-Saxon dictionaries Hall (1988) and Bosworth and Toller (1991) to isolate all those words that can mean 'friend', 'companion', 'comrade', 'kinsman', etc. The corpus was then restricted to Anglo-Saxon poetry. This was not only for methodological and practical reasons, but also because of the character of Anglo-Saxon poetry itself; that is, a special vocabulary in which we find exclusively poetical terms and unique rhetorical devices such as heiti, kenningar, etc.

The corpus, therefore, was restricted to 63 nouns which can mean 'friend', 'comrade', 'kinsman', 'companion', etc. — that is, 63 near synonyms (see Appendix 1) — and to the analysis of about 850 contexts belonging to the Anglo-Saxon Poetical Records (ASPR). The search for all these contexts was greatly facilitated by the Toronto Microfiche Concordance to Old English (Healey and Venezekkey 1980).

Finally, the analysis of each of the terms proceeded as follows: (1) etymology; (2) number of contexts appearing in the ASPR; (3) different meanings or senses of each term; (4) type of context, that is epic, religious or neutral; (5) referents; (6) stylistic function; and finally the (7) prototypical domains that the words reflect, which, as we will see, have been specially useful to decide whether a term is a central or peripheral member of the category, whether it is polysemous and also how it is to be distinguished from near synonyms.

THEORETICAL BASIS

The main aspect of the theoretical basis of this project I would like to insist on is the advantages of Prototype Theory (PT) over the structural model of semantic fields or Structural Field Theory (SFT) in the analysis of FRIENDSHIP in OE. The main linguistic and semantic premises defended by Prototype Theory (summarized in the table in Appendix 2) that contrast with the classical or structural model, are the following:

1. PT defends a non-autonomous, integrating approach to language and semantics, in contrast with the objectivist-autonomous view supported by SFT. Within the cognitive paradigm, language — and so semantics — is, therefore, considered as a non-autonomous system which is integrated within the organism it belongs to, that is, within the broader human cognitive capacities, the sensory and processual systems and within the physical and social environment it exists in. This theory, thus, questions the absolute arbitrariness of the linguistic sign and understands that linguistic structures are motivated in nature and in the way they are perceived and understood by the human being. According to PT, then, the relationship between reality and the mind can only be understood through the body, which is what links them.
2. In addition, PT also seems to contrast with the logical-algebraic approach to language and thought developed by SFT and Logical Semantics. PT conceives language and thought not as a simple mirror of the objective or real world, but as an active and creative system, as a living and dynamic gestalt.

3. Concerning its general notion of a semantic field or category, PT follows a center based model (Figure 1 in Appendix 3, from Wildgen 1987), whose origins go back to Heraclitus. In this model the structure of the semantic field is seen as a clear conceptual center, where the prototype lies, surrounded by a vaguer periphery or a gradation of less central members ‘flowing’ towards the center. This model contrasts with the model of semantic fields based on Aristotle’s categories and supported by SFT (Figure 2 in Appendix 3, from Wildgen 1987): a field perfectly delimited by its membrane or frontier.

The cognitive approach to semantic fields is intimately related to the non-algebraic or non-atomistic view of language and semantics mentioned before. PT contrasts with the componential approach to field studies, whose main objective is to determine the indivisible and abstract components of meaning. Its view, on the contrary, is holistic: categories or fields are ‘gestalt configurations in which the whole is perceptually and cognitively far more simple than the different parts (Lakoff 1987:74).’

4. In addition, in the cognitive field there is a more basic or salient level of categorization, a preconceptual structure of language in which gestalt perception of forms and functions, mental imagery and motor movement are formed; this is the level at which we interrelate with and talk about reality -as observed by Rosch (1975). In the structural paradigm this level does not exist; all members of a field are equally salient.

5. Another premise which contrasts with the structural model of semantic fields is the notion of similarity and gradience. Prototype Theory states that the concept of gradience underlies every process of categorization and is crucial in the psychological and functional mechanisms of the human mind. Thus, the more similar an element is to the prototype, the more central or better member of the category; and vice versa; the less similar or the more peripheral, the worse it represents its category. In SFT, membership is a binary matter; an element either belongs or does not belong: there are no vague nor better or worse members.

6. In relation with this last point, PT considers that lexical concepts and categories have vague or fuzzy boundaries. Within the cognitive paradigm, vagueness is not a defect of the lexical system, but a necessary condition for human communication.
7. With respect to categorial structure, PT prefers polycentric or polysemic structures — Lakoff's radial or cluster models (Lakoff 1987), that is, categories in which it is not always possible to establish a set of essential common attributes. In these categories (the majority of natural categories) membership is determined by contrasting the members with different prototypical representations of the category by means of attribute chains.

8. Finally, and related to the dependent and integrating nature of cognitive semantics, within this theory it is impossible to understand and describe the meaning of words without contrasting them with the cognitive structures they are integrated in: domains, frames, spaces, etc. Therefore, semantic description cannot separate what the structural model has called linguistic meaning and extralinguistic or pragmatic meaning.

In general terms, Prototype Theory has helped to re-interpret fundamental aspects of traditional semantics, some of which, such as meaning and category extension, polysemy, synonymy and semantic change, have been practically ignored by the classical-objectivist theories. Let us now see how the notions of vagueness, gradience and flexibility are applied to the description of the semantic field of FRIENDSHIP in OE.

RESULTS AND DISCUSSION

From the application of Prototype Theory to the category of FRIENDSHIP in OE we now have evidence that supports the following conclusions:

1. First, in order to understand the meaning of each of the terms, as well as their relationships within the category, it is essential to know the social and vassalage structure (Gefolgshaft) of traditional Germanic culture. This means that we cannot describe or understand the concept of FRIENDSHIP in the OE period without bearing in mind its extralinguistic meaning, the experiential reality that surrounds the concept: the fact that it was a real 'institution' with a double function — in war and in peace — where its members acquired a series of strict obligations based on mutual fidelity. In this sense, we know that the clan (represented in our category by the term maeg and its compounds) was the basis of Germanic life and society. This ancient Indo-European institution, multi-ethnic and exogamic, was based on a personal contract between vassal and lord, on which the survival of the whole community depended. The complete list of mutual obligations is too long to be included in this paper, but I will summarize
some of the most important ones, all of which appear in the domains reflected by the members of the category.

The lord's obligations of *wine, wiredrihten, freawine, goldwine*, etc. are to support and protect his vassals and friends (*pegnas, gesipas, geferan, gesteallan, gædelingas, geseldan*, etc.). The lord shares his table with his *beodgeneatas* and *heorpgeeneatas* ('table and hearth companions'). The banquet, therefore, is the social event *par excellence*: in it disputes, reconciliations, alliances, battle strategies, etc. are debated; but above all, it is in the banquet where the booty or treasure is shared out. The most esteemed of the lord's qualities is, thus, his generosity as is clearly indicated by the term *goldwine*. In exchange for these favours, the vassals take an oath of fidelity to their lord, which means that they are pledged to defend him in battle even after his death. The most esteemed of the vassal’s qualities are, therefore, fidelity, strength and courage; cowardliness or abandonment of the battle-field is the worst disgrace, which is usually accompanied by exile and solitude. Finally, vassals also have obligations among themselves: companions have to cooperate and support each other in order to ensure the survival of the whole community.

Without this experiential meaning, how is it possible to understand a term like *goldwine*? As a golden friend? a friend that possesses gold? or as a friend who shares gold?

2. Second, regarding the categorial structure of FRIENDSHIP in OE, we find a clear conceptual center (exemplified by the superordinate category FREOND) which covers the concept of FRIENDSHIP in general and within which a set of submodels or different representations of FRIENDSHIP in OE are related by means of chain relationships. This implies that there are more representative members of the category — determined by formal and statistical criteria as well as by the domains profiled — such as: *pegn, mæg* and *wine*; and more peripheral members such as *gesip, gestealla, geneat, gefera*, etc. Among the most basic frames that structure the category we find: FRIENDSHIP in the CLAN and FRIENDSHIP in BATTLE within the BATTLE/PEACE frame and FRIENDSHIP among EQUALS, FRIENDSHIP from LORD to VASSAL and from VASSAL to LORD within the SOCIAL HIERARCHY frame; all united by means of chain relationships. The category of FRIENDSHIP in OE, thus, can only be understood as a polycentric category, as in Lakoff's *radial model* (Lakoff 1987).

Thus, on a prototypicality scale, *freond* (70 contexts) is the most basic term of the category, in spite of the fact that *freond* appears in fewer contexts than *pegn* or *mæg*, since it is monomorphic, highly frequent and it profiles the broadest variety of domains both within the BATTLE/PEACE and SOCIAL HIERARCHY frames. Examples of these domains are: the advantages of living in the community in contrast with the dangers of exile and solitude; fidelity to one’s friends and lord: obligation to fight for one’s friends and lord until death, to
revenge the death of a friend and lord, to celebrate victory in the banquet, to share the treasure, etc. *Freond*, therefore, represents the superordinate category on which converge all the different submodels of FRIENDSHIP in OE: FRIENDSHIP in the CLAN, in BATTLE, from LORD to VASSAL, from VASSAL to LORD, among EQUALS, etc.

Immediately after *freond* is *pegn* (156 contexts) which represents the conceptual center of the FRIENDSHIP in the BATTLE submodel both from the perspective from LORD to VASSAL and among EQUALS. It is also surrounded by other BATTLE submodels such as *gesip*, *gestealla* and *geneat*. *Degn* is much more frequent than *freond*, but its range of domains is clearly epic; that is, most of the contexts reflect the personal contract between the *pegn* or vassal and his lord in the battlefield. Next on the prototypicality scale, we find *mæg* (100 contexts), the conceptual center of the FRIENDSHIP in PEACE or in the CLAN submodel. The majority of its domains, therefore, profile the safe and peaceful life within the community, the rights and obligations of both community and individuals, as well as the sad and lonely life of the outlaw if obligations are not fulfilled. *Wine* (41), also belongs to the BATTLE submodel but in contrast to *pegn*, the domains profiled by this subcategory reflect the obligations between the wine or lord and his vassals from the perspective of the vassal. This cline continues until the whole or general concept of FRIENDSHIP in OE is built up, which is much more simple than its different parts. An aerial view of these different submodels of the category is provided in Figure 3 (Appendix 3).

3. In third place, we observe that the category has vague boundaries both internally and externally. Externally, the category of FRIENDSHIP in OE 'encroaches' on the domains of other categories such as: KINSHIP, SOCIAL RANK, MILITARY RANK, SERVANTS, etc. The internal delimitation is also represented by a gradation or continuum of meaning. Therefore, most terms are polysemic; that is, we need to contrast them with two or more frames to define them.

4. Nevertheless, the fact that there are no precise limits between the different terms and their meanings, or the fact that most terms may be distributionally and referentially equivalent in some contexts does not imply that they are perfect synonyms as the Anglo-Saxon dictionary definitions suggest. Each term has its own categorial structure: each one reflects different domains and has a prototypical meaning. These, then, are the definitions I suggest for the most basic terms of the category:

*Freond:* (1) person to whom one must always be loyal, (2) especially in adversity and (3) even after death, because (4) one's own survival depends on this relationship. (5) If this person fulfills his part of the contract, he
receives protection and gifts in exchange, but (6) if the contract is broken, the outcome will be exile and self-destruction. (7) The relationship of freond exists at all levels of society and in both directions: from superior to inferior and vice versa, and (8) both within the domains of peace and war.

*Degrn: (1) vassal whose functions are mainly restricted to the domain of war and (2) whose survival depends on keeping his oath of fidelity to his lord. (3) This relationship is mainly on the vertical axis from superior to inferior, and on the horizontal axis among equals.

*Mæg: (1) vassal whose functions are mainly restricted to the domain of the clan or situation of peace, (2) who has obligations both in the community and (3) in battle. (4) Not fulfilling these obligations means self-destruction and exile. (5) This relationship is usually on the horizontal axis, and on the vertical axis from superior to inferior.

*Wine: (1) friend and lord whose functions are mainly restricted to the domain of war. (2) His main obligations are to protect and show generosity to his vassals since (3) he is their only means of survival and vice versa.

CONCLUSION

I suggest that from this study we now have evidence that shows that a full semantic description of the category of FRIENDSHIP in OE has to include notions such as extralinguistic meaning, graduality and vagueness. This does not mean that within the cognitive paradigm the definition of each of the members of the category needs to be vague, since, as we have seen, a prototypical domain and a prototypical meaning have been defined for each term. It seems clear, then, that not only semantics and lexical field studies in general, but also the lexicographic research of older periods of a language such as the one studied can benefit from this theory. The cognitive model not only comes closer to the flexibility and multidimensionality of lexical meaning than the traditional objectivist theories, but it also helps to show that meaning is socially constructed.

NOTES

1. This paper has been written in part under DGICYT Research Project Contract Nr. PS94-0026.
2. I would like to thank all those whose cooperation made this paper possible. In particular, I would like to thank Professor Enrique Bernárdez for his knowledge and support. I am also grateful to Rachel Whittaker and Eve Sweetser for their useful comments and criticism. All mistakes are, of course, mine.

3. In this paper the terms meaning and sense are used as synonyms.


REFERENCES


APPENDIX 1: LIST OF SUBCATEGORIES AND TERMS FROM MORE PROTOTYPICAL TO MORE PERIPHERAL

<table>
<thead>
<tr>
<th>FREOND</th>
<th>WORULDFREOND</th>
<th>GEFARA</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEGN</td>
<td></td>
<td>EAXLGESTEALLA</td>
<td>4</td>
</tr>
<tr>
<td>AMBIHTDEGN</td>
<td></td>
<td>FOLCGESTEALLA</td>
<td>2</td>
</tr>
<tr>
<td>DURNDDEGN</td>
<td></td>
<td>FYRDGESTEALLA</td>
<td>2</td>
</tr>
<tr>
<td>EALDORDEGN</td>
<td></td>
<td>HANGESTEALLA</td>
<td>2</td>
</tr>
<tr>
<td>HANDDEGN</td>
<td></td>
<td>LINDGESTEALLA</td>
<td>2</td>
</tr>
<tr>
<td>HEAHDEGN</td>
<td></td>
<td>NYGDESTEALLA</td>
<td>1</td>
</tr>
<tr>
<td>HEALDEGN</td>
<td></td>
<td>WILLGESTEALLA</td>
<td>1</td>
</tr>
<tr>
<td>MÆGENDEGN</td>
<td></td>
<td>GENEAT</td>
<td>2</td>
</tr>
<tr>
<td>MAGODEGN</td>
<td></td>
<td>BEODGENEAT</td>
<td>2</td>
</tr>
<tr>
<td>METEDEGN</td>
<td></td>
<td>HEORDGENEAT</td>
<td>6</td>
</tr>
<tr>
<td>SELEDEGN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| MÆG   | 100 |
| CNEOMÆG | 15  |
| FREOMÆG | 6   |
| HEAFODMÆG | 5  |
| HILEMÆG | 1   |
| HLEOMÆG | 5   |
| LEODMÆG | 2   |
| SIBGEMÆG | 1  |
| WINEMÆG | 8   |
| WORULDMÆG | 1 |

| WINE | 41 |
| FREA WINE | 4  |
| GOLDWINE | 9  |
| GUDWINE | 2  |
| IUWINE | 1   |
| MÆGWINE | 5  |
| SUNDORWINE | 1  |
| TIRWINE | 1   |
| WINEDRINTEN | 12 |

| GESID | 29 |
| DRIHTGESID | 1  |
| EALDGESID | 2  |
| FOLCGESID | 3  |
| GESIDMÆGEN | 1  |
| WEAGESID | 1   |
| WILLGESID | 2  |
| WYNGESID | 1   |
APPENDIX 2: THEORETICAL PREMISES OF PROTOTYPE THEORY (PT) THAT CONTRAST WITH STRUCTURAL FIELD THEORY (SFT)

<table>
<thead>
<tr>
<th></th>
<th>SFT</th>
<th>PT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Language/semantics</td>
<td>autonomous</td>
<td>integrating</td>
</tr>
<tr>
<td>2. Language/thought</td>
<td>atomistic</td>
<td>dynamic gestalt</td>
</tr>
<tr>
<td>3. Semantic Field</td>
<td>perfectly delimited and componential</td>
<td>center based and holistic</td>
</tr>
<tr>
<td>4. Vocabulary/field hierarchy</td>
<td>all levels equally salient</td>
<td>there is a perceptually and cognitively more salient or basic level</td>
</tr>
<tr>
<td>5. Field membership</td>
<td>binary</td>
<td>gradual</td>
</tr>
<tr>
<td>6. Meaning</td>
<td>perfectly delimited and precise</td>
<td>vague and fuzzy</td>
</tr>
<tr>
<td>7. Categorial structure</td>
<td>determined by set of essential common attributes</td>
<td>determined by attribute chains</td>
</tr>
<tr>
<td>8. Semantic description</td>
<td>limited to linguistic meaning</td>
<td>it is impossible to separate linguistic and extralinguistic meaning</td>
</tr>
</tbody>
</table>
APPENDIX 3: FIGURES

Figure 1

Figure 2

Figure 3

}\begn (1), \mæg (2), \wine (3), \gesib (4), \gestalla (5), \geneat (6), \gefara (7), \winedrihten (8), \goldwine (9), \mago\beg (10), \winemæg (11), cneowmæg (12)
Edge Reduplication and Anchoring in Correspondence Theory*
Minsu Shim
Indiana University

1. Introduction
The expressive form of bisyllabic verbs in Temiar (Benjamin 1976), an
Austroasiatic language of the Malay Peninsula, is indicated by partial reduplication.
Unlike other typical partial reduplication patterns where the reduplicated segments
are continuous ones of the stem, the expressive reduplicative pattern in Temiar is
C₁εC₃-C₁VC₂VC₃ (skipping C₂ of the base) as in (1).¹ Here, reduplication is
prefixing and the first and the last segments of the root are copied in the reduplicant.
The vowel in the reduplicant is prespecified with /el/.

(1)     root   reduplication     gloss
rawëg  reg-rawëg     'to stand conspicuously upright'
bëgay  bey-bëgay     'to waft (smoke)'

This type of reduplication is an example of discontinuous reduplication
since the phonemes of the reduplicant are not continuous ones of the stem. It is a
challenge to analyze discontinuous reduplication in the templatic approaches
proposed in Marantz (1982) and McCarthy and Prince (1986).

Marantz (1982) argues that a reduplicative morpheme consists of a specified
CV-template affixed onto the CV-tier that lacks phonemic content. The phonemes
of the stem are copied and then they associate to the template. Typically, the
association between the copied phonemes and the template is one-to-one left-to-
right for prefixing reduplication and right-to-left for suffixing reduplication. The
Temiar data in (1) is problematic in the CV-template analysis because it involves
"phoneme skipping" which is prohibited in the theory. Based on the template CVC
(with a prespecified vowel), the left-to-right association and the right-to-left
association will produce the incorrect forms as shown in (2a) and (2b) respectively.

(2)     a. *rawewëg
b. *weg-rawëg

The correct forms in (1) cannot be derived in this account. The prosodic template
approach in McCarthy and Prince (1986) does not fare better than the CV-template
analysis because they do not crucially allow segment skipping in the course of
template mapping. The same incorrect forms that are derived in the CV-template
analysis will also be produced in the prosodic template approach. Thus, discontinuous
reduplication is problematic in the template and segment mapping
analysis.

The purpose of this paper is to examine cases of discontinuous reduplication
such as those occurring in Temiar, Nakanai and Umpila in Correspondence Theory
(McCarthy and Prince 1995), which is based on the framework of Optimality
Theory (Prince and Smolensky 1993). It will be argued that the reduplicative pattern in (1) can be explained by a reranking of constraints that are at work in normal reduplication where the reduplicant reflects a contiguous string of phonemes of the base. The analysis in terms of constraint ranking supports the factorial typology of reduplication in Correspondence Theory.

The paper is organized as follows. In section 2, Correspondence Theory is introduced along with the definitions of the major constraints that play a crucial role in the analysis. In section 3 the Temiar data as well as data from Nakanai and Umpila are analyzed. In section 4, the need for alignment constraints in Correspondence Theory is discussed. In section 5, implications of the analyses are discussed. Section 6 concludes the paper.

2. Correspondence Theory

In Correspondence Theory, there are constraints on identity between the base and the reduplicant as well as on identity between input and output. The notion of Correspondence is formalized in (3).

(3) Correspondence

Given two strings $S_1$ and $S_2$, *correspondence* is a relation $R$ from the elements of $S_1$ to those $S_2$. Segments $\alpha \in S_1$ and $\beta \in S_2$ are referred to as *correspondents* of one another when $\alpha R \beta$.

($S_1$ and $S_2$ may be an input string and an output string respectively, or a base and a reduplicant respectively.)

Since the correspondence between input and output as well as base and reduplicant are evaluated in parallel in the framework of OT, constraints for correspondence between input and output are separate from those between base and reduplicant. Also, they can be ranked separately. Some of the major constraints from Correspondence Theory which are employed throughout the paper are:

(4) MAX-BR

Every segment of the base has a correspondent in the reduplicant.

MAX-BR requires total reduplication. If this constraint is violated, reduplication will be partial. In discontinuous reduplication, this constraint is always violated at the expense of other related constraints for partial reduplication.

(5) DEP-BR

Every segment of the reduplicant has a correspondent in the base.

DEP-BR prohibits fixed default segment(s) in the reduplicant. DEP-BR is violated when a prespecified segment appears in the reduplicant since the prespecified segment is not part of the base.
(6) IDENT-BR (F)
Correspondent segments in S₁ and S₂ have identical values for feature [F].

IDENT-BR is violated when the segment in the reduplicant has a different feature value than the corresponding segment in the base.

(7) CONTIGUITY
The phonemes of the reduplicant should be contiguous in the base.

a. I-CONTIG ("No skipping")
The portion of S₁ standing in correspondence forms a contiguous string.
Domain (R) is a single contiguous string in S₁.

b. O-CONTIG ("No intrusion")
The portion of S₂ standing in correspondence forms a contiguous string.
Range (R) is a single contiguous string in S₂.

CONTIGUITY is violated when the base segment string is skipped in the reduplicant or a segment intrudes in the reduplicant separating the base segment string. In discontinuous reduplication, CONTIGUITY is always violated due to I-CONTIG. In the case of reduplication with a prespecified segment in the middle of a reduplicant, O-CONTIG would be violated. In typical continuous partial reduplication, however, CONTIGUITY is always satisfied although MAX-BR is violated.

(8) ANCHOR
L-ANCHOR: The left peripheral element of the R corresponds to the left peripheral element in the B.
R-ANCHOR: The right peripheral element of the R corresponds to the right peripheral element in the B.

In typical prefixing reduplication, the left edge element of the reduplicant corresponds to the left edge element of the base; in typical suffixing reduplication, the right edge element of the reduplicant corresponds to the right edge element of the base. In normal continuous partial reduplication, only one edge element (either left or right) need be anchored. It will be shown, however, that in discontinuous reduplication, both ANCHOR (left and right) must be ranked high.³

Other constraints such as LINEARITY, UNIFORMITY and INTEGRITY are not specified here but it is assumed that these are not violated in the discussion of reduplicative patterns analyzed in the paper. In the next section, I analyze discontinuous reduplication in Correspondence Theory.
3. Analysis of Discontinuous Reduplication

In this section, I analyze discontinuous reduplication in three different languages; Temiar, Nakanai, and Umpila.\textsuperscript{4}

3.1 Temiar reduplication

Consider the Temiar data in (1) which is shown again in (9)

\begin{tabular}{lll}
(9) & root & reduplication & gloss \\
    & råwëg & reγ-rawëg & 'to stand conspicuously upright' \\
    & bëguy & bey- bëguy & 'to waft (smoke)'
\end{tabular}

For the analysis in Correspondence Theory, it has to be assumed that the constraint R=σ (the reduplicant is a syllable) is undominated and higher ranked than MAX-BR since the reduplicant in Temiar is always a syllable in partial (not full) reduplication. If MAX-BR is undominated, the result is always full reduplication. Whether the reduplicant syllable is light or heavy does not need to be specified since it can be determined by other relevant constraints. Since the right peripheral element in the base appears in the right edge of the reduplicant, we must assume that R-ANCHOR is highly ranked.\textsuperscript{5} In addition, L-ANCHOR must also be highly ranked to guarantee the appearance of the left element in the base in the reduplicant.

In typical continuous partial reduplication, only one anchoring constraint (either L-ANCHOR for prefixing or R-ANCHOR for suffixing) need be ranked high. In the discontinuous edge element reduplication in Temiar, however, both anchoring constraints must be ranked high. Thus, ANCHOR is the crucial constraint that ensures the correspondence of peripheral elements of the base in the reduplicant.

It is important to note that the two anchoring constraints (L-ANCHOR and R-ANCHOR) must dominate CONTIGUITY. In continuous reduplication, CONTIGUITY is always ranked higher than one of the anchoring constraints since this constraint filters out any discontinuous candidates. In discontinuous reduplication, however, CONTIGUITY must be dominated by both L-ANCHOR and R-ANCHOR. This constraint ranking is crucial in the analysis of the data under consideration in this paper.

The appearance of coda consonants in reduplication is accounted for by low-ranking NO-CODA. (McCarthy and Prince 1993, 1994)

(10) No-CODA

*CLσ

"Syllables may not have codas"

In Temiar, NO-CODA is ranked below both MAX-IO and MAX-BR so coda consonants will appear in a reduplicant as well as in other output strings. Specifically, the high-ranking R-ANCHOR compels a violation of NO-CODA in the
reduplicant. Thus, the appearance of a coda consonant in the reduplication is not blocked. The overall ranking for the constraints under discussion is in (11).

(11) R=σ » MAX-BR, L-ANCHOR, R-ANCHOR » CONTIGUITY, NO-CODA.

The constraint tableau in (12) exemplifies the selection of the correct output with the properly ranked constraints.6

(12) Temiar expressive reduplication

<table>
<thead>
<tr>
<th>/RED-rəwēg/</th>
<th>R=σ</th>
<th>MAX-BR</th>
<th>L-ANCHOR</th>
<th>R-ANCHOR</th>
<th>CONT.</th>
<th>NO-CODA</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. re-rəwēg</td>
<td>****!</td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. rew-rəwēg</td>
<td>***</td>
<td>*!</td>
<td>*</td>
<td></td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>c. wəg-rəwēg</td>
<td>***</td>
<td>*!</td>
<td></td>
<td></td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>d. reg-rəwēg</td>
<td>***</td>
<td></td>
<td></td>
<td></td>
<td>***</td>
<td>**</td>
</tr>
</tbody>
</table>

Candidate (a) violates Max-BR fatally. Candidate (b) satisfies L-ANCHOR but violates R-ANCHOR. Candidate (c) satisfies R-ANCHOR at the expense of L-ANCHOR. Candidate (d) meets both L-ANCHOR and R-ANCHOR although it violates the non-fatal CONTIGUITY more than other candidates. Thus, candidate (d) is selected as the optimal output. It is crucial that both L-ANCHOR and R-ANCHOR are ranked higher than CONTIGUITY in Temiar reduplication.7

3.2 Nakanai

A similar instance of the reduplicative pattern is observed in Nakanai, an Austronesian language of Papua New Guinea as discussed by Williams 1984. Examples are provided in (13).8

(13) root | reduplication | gloss
---|---|---
mota | ma-mota | ‘vines’
sile | se-sile | ‘tearing’
sio | so-sio | ‘carrying on ceremonial litter’
biso | bo-biso | ‘members of the Biso group’

According to Johnston (1980) from which Williams cites the data, the canonical syllable structure is of the form (C)V. The reduplicative pattern in (13) is slightly different from the one in Temiar in that there is no prespecified vowel in the reduplicant. Since the base syllable ends in a vowel and no prespecified vowel exists in the reduplicant, the final vowel in the base is anchored in the reduplicant. The same constraints and ranking used in Temiar, excluding NO-CODA, should select optimal candidates in Nakanai as in (14). Since the canonical syllable structure does not have a coda, NO-CODA must be undominated even for MAX-IO.
(14) Nakanai reduplication

<table>
<thead>
<tr>
<th>RED-mota/</th>
<th>NO-CODA</th>
<th>R=σ</th>
<th>MAX-BR</th>
<th>L-ANCHOR</th>
<th>R-ANCHOR</th>
<th>CONT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mo-mota</td>
<td>**</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b. mot-mota</td>
<td>*!</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. ta-mota</td>
<td>**</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. ma-mota</td>
<td>**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
</tbody>
</table>

Candidate (a) violates the fatal R-ANCHOR although it satisfies CONTIGUITY. Candidate (b) is out due to the violation of the undominated NO-CODA. Candidate (c) violates the fatal L-ANCHOR. The optimal candidate (d) satisfies both L-ANCHOR and R-ANCHOR but violates CONTIGUITY. Again, CONTIGUITY is crucially ranked lower than both L-ANCHOR and R-ANCHOR.

3.3 Umpila progressive reduplication

Another instance of discontinuous reduplication is found in Umpila, an Australian language of the Cape York (Harris and O’Grady 1976). In this language, the first and last segment of the stem reduplicates as a suffix as in (15).9

(15)  root         reduplication   gloss
maka      maka-l-ma    ‘die’
puuya    puuya-l-pa   ‘blow’
punjka   punjka-l-pa   ‘fall’
tuki      tuku-l-ti    ‘track up’
paa?i    paa?a-l-pi    ‘stand’

The pattern is similar to Nakanai reduplication in that the first and the last segments of the base appear in the reduplicant. A difference is that reduplication is a suffix instead of a prefix. How to express this difference will be discussed in the next section. Ignoring the vowel change and /l/-insertion in the reduplication for now, I provide the following tableau for candidate evaluation. In Umpila, NO-CODA is high-ranked only with regard to constraints for reduplication. Generally, it is low ranked and a coda may appear in the base, but it cannot appear in the reduplicant due to the following ranking: MAX-IO » NO-CODA » MAX-BR.10 This ranking results in an instance of the emergence of the unmarked as discussed in McCarthy and Prince (1994).

(16) Umpila reduplication

<table>
<thead>
<tr>
<th>/punjka-l-RED/</th>
<th>NO-CODA</th>
<th>R=σ</th>
<th>MAX-BR</th>
<th>L-ANCHOR</th>
<th>R-ANCHOR</th>
<th>CONT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. punjka-l-pu</td>
<td>**</td>
<td></td>
<td>***</td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b. punjka-l-punj</td>
<td>***!</td>
<td></td>
<td>**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. punjka-l-ka</td>
<td>**</td>
<td></td>
<td>***</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. punjka-l-pa</td>
<td>**</td>
<td></td>
<td>***</td>
<td></td>
<td></td>
<td>**</td>
</tr>
</tbody>
</table>
The best candidate is (d) which does not violate either of the anchoring constraints at the expense of CONTIGUITY. Other candidates fatally violate high-ranking constraints NO-CODA, L-ANCHOR or R-ANCHOR.

4. Alignment Constraints vs. ANCHOR

So far I have assumed that the ordering of morphemes between base and reduplicant is already specified implicitly in the input. Now I discuss how prefixing and suffixing of the reduplicant morpheme is expressed in Correspondence Theory. In Correspondence Theory, L-ANCHOR implies the prefixing of a reduplicant morpheme to the base. It only requires anchoring of the left element in prefixing reduplication. It does not compel anchoring of the right element. The reverse implication can be made for R-ANCHOR. R-ANCHOR implies the suffixing of a reduplicative morpheme. Thus, normally in partial reduplication the anchoring constraints would subsume a constraint regarding the alignment of a reduplicant. Since ANCHOR can properly express what alignment can do, McCarthy and Prince do away with alignment in reduplication except for cases of 'infixing'. It is assumed in McCarthy and Prince (1995) that prefixing and suffixing is expressed by high-ranking L-ANCHOR or R-ANCHOR. The question of whether morphemes are linearly ordered with respect to one another in the input has not yet been examined (McCarthy p.c.).

A problem emerges when we consider data (9) and (15). Since L-ANCHOR and R-ANCHOR are ranked the same in the hierarchy, we cannot be certain whether the reduplicative morpheme will be affixed as a prefix or a suffix. Yet, in Temiar, it is a prefix whereas it is a suffix in Umpila. We may want to rank L-ANCHOR higher than R-ANCHOR for prefixing and rank R-ANCHOR higher than L-ANCHOR for suffixing. This analysis runs into another problem. Since L-ANCHOR is only for prefixing, it does not need to be satisfied in suffixing reduplication. In other words, the left edge of a suffixing reduplicant does not need to refer to the satisfaction of L-ANCHOR. By the same token, R-ANCHOR need not be satisfied in prefixing reduplication. This is what is expected by ANCHOR in Correspondence Theory. This is not the case in the discontinuous reduplication shown above. Both anchoring constraints must be met regardless of the affixal status. Thus, we need a mechanism that will guarantee the proper position of the affix in the output.

It has been claimed by Meek and Hendricks (1996) that alignment constraints are needed separate from anchoring constraints based on reduplicative patterns in Nancowry and Koasati. It is shown that the reduplicative pattern in Nancowry in (17) must be analyzed by assuming that alignment constraints are needed as well as ANCHOR.

(17)  Nancowry reduplication

<table>
<thead>
<tr>
<th>root</th>
<th>reduplication</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>yak</td>
<td>?uk-yak</td>
<td>'to conceive'</td>
</tr>
<tr>
<td>cat</td>
<td>?it-cat</td>
<td>'to jump'</td>
</tr>
</tbody>
</table>
Since reduplication is prefixing and the right edge of the reduplicant corresponds to the final base consonant, Meek and Hendricks claim that an analysis without alignment constraints will produce two optimal candidates as shown in (18).

<table>
<thead>
<tr>
<th></th>
<th>R-ANCHOR</th>
<th>L-ANCHOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>?uk_R [B]</td>
<td>yak</td>
</tr>
<tr>
<td>b.</td>
<td>√ yak_B</td>
<td>[R?uk]</td>
</tr>
<tr>
<td>c.</td>
<td>√ yu?_R</td>
<td>[ burglary]</td>
</tr>
<tr>
<td>d.</td>
<td>yak_B</td>
<td>[Ryu?]</td>
</tr>
</tbody>
</table>

Candidate (b), which has a suffixing reduplicant, meets R-ANCHOR. Since the reduplication is suffixing, L-ANCHOR is not relevant. The prefixing reduplication in (c) satisfies L-ANCHOR, but R-ANCHOR is irrelevant in evaluation. Thus, Meek and Hendricks claim that alignment constraints are necessary as well as ANCHOR.

If we adopt alignment constraints, prefixation in Temiar and Nakanai will be determined by high-ranking ALIGN-L-RED in (19). The alignment constraint must rank above the anchoring constraints. Suffixation in Umpila is determined by high-ranking ALIGN-R-RED in (20).

(19) ALIGN-L
ALIGN (RED, R, Base, L)
"The right edge of a reduplicant is aligned with the left edge of a base"

(20) ALIGN-R
ALIGN (RED, L, Base, R)
"The left edge of a reduplicant is aligned with the right edge of a base"

Adopting this alignment constraint, I note that these constraints are presumed in the tableaux; ALIGN-L in Temiar and Nakanai and ALIGN-R in Umpila. Since the main focus of this paper is not about the placement of reduplicative affixes, I do not show alignment constraints in the tableaux. However, I discuss the necessity of alignment constraints briefly.

In fact, these alignment constraints are needed in a nontypical reduplicative pattern occurring in Madurese (Stevens 1985). The reduplicative morpheme is prefixed to the base, but the last syllable of the base appears as shown in (21).

(21) Madurese reduplication

<table>
<thead>
<tr>
<th>root</th>
<th>reduplication</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>barampan</td>
<td>pan-barampan</td>
<td>'several'</td>
</tr>
<tr>
<td>oba</td>
<td>ba-oba</td>
<td>'change'</td>
</tr>
</tbody>
</table>

The left edge of the base is not anchored in the reduplicant, although it is predicted given that L-ANCHOR is at work since L-Anchor presumes prefixing in Correspondence Theory. Thus, we do need alignment constraints (ALIGN-L in this
case) as well as R-ANCHOR.\textsuperscript{12}

I have argued for the necessity of alignment constraints in reduplication as well as ANCHOR. Although ANCHOR seems sufficient enough in continuous reduplication, we need alignment constraints to provide the proper order between base and reduplicant as evidenced by the discontinuous reduplication discussed above. Since alignment constraints provide the surface order between base and reduplicant, ANCHOR can be evaluated regardless of whether the reduplicant is a prefix or a suffix since it is free of its role to ensure the linear order of the reduplicant against the base.

So far, I have shown that the discontinuous reduplication in Temiar, Nakanai, and Umpila can be accounted for by the crucial constraint ranking of ANCHOR » CONTIGUITY.

5. Implication

One interesting implication that emerges from my posited optimality-theoretic analysis of discontinuous reduplication is the prediction that discontinuous reduplication must always involve edge elements. To see this, first consider continuous prefixing reduplication such as $C_1 V_1 C_2 - C_1 V_1 C_2 V_2 C_3$. The constraint ranking in (22) selects the optimal form, ignoring low-ranking NO-CODA.

(22) Constraint ranking for partial continuous reduplication
CONTIGUITY, L-ANCHOR » R-ANCHOR

The constraint ranking in discontinuous reduplication is in (23) as we have seen in the above analysis.

(23) Constraint ranking for partial discontinuous reduplication
L-ANCHOR, R-ANCHOR » CONTIGUITY

Hypothetically there can be other partial discontinuous reduplication patterns. Two of these are shown in (24)

(24) Hypothetically possible discontinuous reduplication
\begin{align*}
a. & \quad C_1 V_1 C_3 - C_1 V_1 C_2 V_2 C_3 V_3 C_4 \\
b. & \quad C_2 V_2 C_3 - C_1 V_1 C_2 V_2 C_3 V_3 C_4
\end{align*}

Since form (24a) involves noncontinuity of segments and R-ANCHOR is not satisfied, the logical constraint ranking should be (25a). Also, form (24b) should have the constraint ranking in (25b) since CONTIGUITY is met at the expense of anchoring constraints.

(25) \begin{align*}
a. & \quad L-ANCHOR » CONTIGUITY » R-ANCHOR \\
b. & \quad CONTIGUITY » L-ANCHOR, R-ANCHOR
\end{align*}
However, the hypothetical forms in (24a) cannot be chosen by the constraint ranking in (25a) because (25a) will always pick $C_1 V_1 C_2 - C_1 V_1 C_2 V_2 C_3 V_3 C_4$ as the optimal form since CONTIGUITY eliminates any reduplication output forms that are not contiguous as shown in (26).

(26) Constraint ranking of (25a)

<table>
<thead>
<tr>
<th>RED-C $C_1 V_1 C_2 V_2 C_3 V_3 C_4$</th>
<th>L-ANCHOR</th>
<th>CONTIGUITY</th>
<th>R-ANCHOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $\sqrt{C_1 V_1 C_2 - C_1 V_1 C_2 V_2 C_3 V_3 C_4}$</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. $C_1 V_1 C_2 - C_1 V_1 C_2 V_2 C_3 V_3 C_4$</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. $C_1 V_1 C_4 - C_1 V_1 C_2 V_2 C_3 V_3 C_4$</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

When R-ANCHOR dominates CONTIGUITY, the optimal output will be (26c).

The constraint ranking in (25b) will pick either $C_1 V_1 C_2 - C_1 V_1 C_2 V_2 C_3 V_3 C_4$ or $C_3 V_3 C_4 - C_1 V_1 C_2 V_2 C_3 V_3 C_4$ as the optimal form due to the higher ranking CONTIGUITY as shown in (27).

(27) Constraint ranking of (25b)

<table>
<thead>
<tr>
<th>RED-C $C_1 V_1 C_2 V_2 C_3 V_3 C_4$</th>
<th>CONTIGUITY</th>
<th>L-ANCHOR</th>
<th>R-ANCHOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $\sqrt{C_1 V_1 C_2 - C_1 V_1 C_2 V_2 C_3 V_3 C_4}$</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. $C_3 V_3 C_4 - C_1 V_1 C_2 V_2 C_3 V_3 C_4$</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. $C_2 V_2 C_3 - C_1 V_1 C_2 V_2 C_3 V_3 C_4$</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

The crucial point is that the reduplicants always contain an edge element. Thus, the form in (24b) which does not contain an edge element cannot be optimal. The discontinuous reduplicative patterns in (24) cannot be selected by any reranking among the three constraints. Thus, the appearance of edge segments in discontinuous reduplication is not something special but a simple by-product of proper constraint ranking between ANCHOR and CONTIGUITY. That discontinuous reduplication patterns involving non-edge elements do not ever seem to occur is correctly predicted by OT.

6. Conclusion

I have shown in this paper that discontinuous reduplication in Temiar, Nakanai, and Umpla can be accounted for in Correspondence Theory by the constraint ranking of L-ANCHOR and R-ANCHOR » CONTIGUITY. Since ANCHOR and CONTIGUITY are the basic constraints in normal continuous reduplication, it is theoretically advantageous to use the same constraints with a different ranking instead of evoking a new constraint specifically for discontinuous reduplication. It was further shown in this paper that both alignment constraints and anchoring constraints are needed in the analyses of discontinuous reduplication. I have also shown that the appearance of edge elements in discontinuous reduplication is just a natural result of the constraint ranking rather than a special characteristic of discontinuous reduplication.
Notes

* I wish to thank Stuart Davis for his extremely helpful comments and criticisms of this paper. I alone am responsible for any errors.
1Only two examples of the expressive reduplication are listed in Benjamin. He notes, however, that this pattern is very productive. In the data, [8] is a long vowel.
2Since this paper deals with correspondence between base and reduplicant, I do not list constraints for correspondence between input and output. It is assumed in the paper that those constraints that compel the correspondence between input and output are ranked higher than those for base and reduplicant and are always satisfied in the evaluation, unless otherwise indicated. 
3Although L-ANCHOR is relevant only for prefixing and R-ANCHOR only for suffixing, I assume that both are needed regardless whether reduplication is a prefix or a suffix. A discussion of this matter is provided in section 3.3.
4Reduplication in these languages has been analyzed in Davis (1986) in a derivational approach along the lines of Marantz (1982) that makes use of both phoneme copying and phoneme spreading.
5If the base ended in vowel, we would expect to see the optimal candidate with the vowel anchored to the right edge of the reduplicant. The situation does not occur in Temiar since this type of reduplication occurs only with a CVCVC base.
6Throughout this paper, I assume that the appearance of the specified vowel in reduplication is achieved by undominated constraints which I do not deal with. Since the main focus of the paper is on discontinuous reduplication rather than how to analyze the prespecified vowel, I do not specifically deal with the prespecified vowel. Gafos (1995) shows that the prespecified vowel is present in RED and the appearance of the vowel is controlled by relevant constraints.
7Semai expressive reduplication (Diffloth 1976) is very similar to Temiar except that it does not have the prespecified vowel in the reduplicant (ct-c?et). The reduplicant is called a minor syllable. This reduplication can be analyzed in the same manner as Temiar expressive reduplication.
8Williams notes that the reduplication pattern in (13) is one of several reduplication patterns which is conditioned by the featural shapes of the base. The pattern in (13) occurs only when the first vowel is [-low] and the second vowel is [-high] in the base. Other patterns are not discussed in this paper.
9It is shown in Harris and O'Grady (1976) that the pattern in (15) is one of the several reduplication patterns of L-conjugation verbs. Other types of reduplication are not explored in this paper. See Levin (1985) for analysis of all types of reduplication in Umpila.
10The last two data in (15) exhibit the featural change of the base final vowels when a reduplicative morpheme is affixed. When we assume the correspondence relationship between the base and reduplicant, we would expect correspondence of the base-final vowel in reduplication. The data show, however, that root vowels, not the base final vowel, appear in reduplication. This could be a case where the correspondence between Input and Reduplicant is considered. The analysis of Input-Reduplicant Faithfulness is not in the scope of this paper. I simply use MAX-BR instead of MAX-IR in this case without further explanation. The crucial point is that ANCHOR must be ranked higher than CONTIGUITY in discontinuous reduplication. Also see McCarthy and Prince (1995) for Input-Reduplicant correspondence in detail.
11The reduplicant is prespecified with a glottal onset and a high vowel [i], which alternates between [i] and [u] depending on the place feature of the final consonant.
12The proper form of the reduplicant in Madurese is forced by R=σ, ALIGN-L, CONTIGUITY, ONSET, R-ANCHOR » L-ANCHOR. I do not detail this here.

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Voiceless Nasals in Auditory Phonology  
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Löfqvist (1980) suggests that for each supralaryngeal configuration there is, more or less, a corresponding laryngeal target. And since the larynx and the supralaryngeal articulators are more or less independent of each other, we may assume that any given laryngeal target has a particular functional goal, and isn't merely an automatic consequence of the supralaryngeal configuration. For example, plain intervocalic voiceless stops are often accompanied by a laryngeal abduction. Far from being an automatic consequence of a stop, a spread glottis here serves the functional role of inhibiting the voicing that might otherwise occur throughout a sufficiently brief oral closure, thus potentially salvaging a contrast between voiceless and voiced stops.

However, laryngeal gestures may also possess contrastive status in and of themselves, and similarly, are often associated with particular supraglottal configurations. In this paper, I discuss how spreading the glottis during a nasal stop contributes to the achievement of a potentially contrastive acoustic state. In particular I investigate the timing of this laryngeal gesture with respect to the nasal stop -- these are so-called "voiceless" and "breathy" nasals -- and how certain particular timings here serve to better encode the relevant acoustic information at the level of the peripheral auditory system.

My claims, then, are that different timings of artulatory gestures with respect to one another culminate in better or worse percepts. The better the percept, the less common the pattern, and the worse the percept, the more common the pattern. Optimal timing patterns correlate with degree of auditory nerve response: the greater the auditory nerve response, the less common the pattern, and the lesser the auditory nerve response, the more common the pattern. A functional link may thus be established between recoverability and cross-linguistic tendencies.

Consider first how place of articulation is cued in a plain nasal. Pooling the results of several studies (Fant 1960, Fujimura 1962, Recasens 1983, Dantsuji 1984, 1986, 1987, Kurowski and Blumstein 1984, Bhaskararao and Ladefoged 1991), it seems that CV formant transitions are primary in conveying place information, VC formant transitions are secondary, and nasal murmur formants tertiary. Here, the steady state portion of the nasal, often called the nasal murmur, contains place cues primarily in the form of a nasal zero, or anti-resonance: a frequency range of dampened energy. In Burmese and Catalan, for example, studies show that the murmur itself can help to cue place of articulation (Dantsuji 1984, 1986, 1987; Recasens 1983). The farther back in the oral cavity the constriction, the higher in frequency this reduction in energy. Moreover, nasality as a class may be cued by both a low frequency formant, and a mid-range energy plateau. So intervocalic nasals, for example, ama, ana, aña, enjoy an abundance of cues, and not coincidentally, are never subject to neutralization.

Now, if a spread glottis is implemented simultaneously with a nasal stop (aña, ama, aña) what are the acoustic consequences? Again, pooling the results of several researchers (Ohala 1975, Dantsuji 1984, 1986, 1987, Ladefoged and Maddieson 1996), CV formant transitions would be obscured, VC formant transitions would be obscured, and nasal murmur formants would be obscured. This, of course, is a most undesirable result, because the functional gain of adding the aspiration is lost by losing oral place contrasts.
Instead, the spread glottis is normally timed to the early portion of the nasal stop. In this fashion, a partial nasal murmur survives, and most importantly, CV transitions survive as well, and so all place information is recoverable. In Burmese for example, we find aNma, aNna, and aNña. The typology of voiceless nasals can be accounted for by the salience of contrastive cues. Henderson (1985), for example, reports that voiceless nasals of the Burmese type are cross-linguistically more common than nasals and laryngeal abductions which possess other timing relationships with respect to each other.

But why should this be the canonical realization of voiceless nasals? Relatedly, why are CV transitions especially important? The answer I would like to suggest derives from certain neurological facts about the peripheral auditory system. Briefly, Bladon (1986) discusses some of the major principles of what he terms "auditory phonetics." For present purposes, the two principles in (1) are most relevant.

(1) **On/off response asymmetry**: spectral changes whose response in the auditory nerve is predominantly an onset of firing are much more perceptually salient than those producing an offset (Tyler, Summerfield, Wood, and Fernandez 1982).

**Short-term adaptation**: after a rapid onset of auditory nerve discharge at a particular frequency, there is a decay to a moderate level of discharge, even though the same speech sound is continuing to be produced (Delgutte 1982).

The generalization here is that acoustic signals that involve abrupt increases in acoustic energy trigger maximal auditory nerve response, and presumably result in better percepts.

In (2), I provide a schematic of the articulatory and acoustic properties of the canonical voiceless nasal, and most importantly, the distorting effect imparted by the auditory nerve. Observe that sudden increases in energy -- from voiceless nasal flow, to nasal murmur, to vowel -- results in a heightened neural response, which, again, presumably results in a better percept.

(2) **Gross schematic of articulatory, acoustic, and auditory characteristics of early voicelessness in nasals**:

<table>
<thead>
<tr>
<th>Articulatory:</th>
<th>stop</th>
<th>vowel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supralaryngeal:</td>
<td>nasal</td>
<td></td>
</tr>
<tr>
<td>Laryngeal:</td>
<td>abduction</td>
<td>approximation</td>
</tr>
</tbody>
</table>

**Acoustic signal:**

**Auditory nerve response:**

**Percept:** N n a
So let's look at Burmese in some detail. In (3) are pairs which minimally contrast for voicelessness.

(3)  voiced nasals:  voiceless nasals:
      mâ    lift up    Nhâ    from
      na    pain      Nhá    nose
      nhâ   right     Nhâ   considerate
      njâ   fish      Nhjâ   borrow

Far more interesting are the forms in (4), taken from Okell's (1969) grammar. Voicelessness here is not only lexical, but serves a morphological purpose as well, producing active verbs. These are termed "h/non-h pairs" by Okell. In (4a) are plosives. Note that aspiration here is realized at stop release, after the oral occlusion which, as I've argued elsewhere (along with Kingston 1985, 1990), is the optimal realization of oral stops modified by glottal spreading. In (4b), the linear ordering of the breath morpheme is preceding the plain voiced nasal. So, whether plosive-initial or nasal-initial, the breath morpheme is optimally timed with respect to its affiliated supralaryngeal gesture.

(4)  morphological aspiration (h/non-h pairs -- Okell 1969):
   a.  obstruent-initial:
        pi be pressed  pî be pressed, compress
        pe break off, be chipped pbe break off (a piece)
        po appear  pho reveal
        ce? be cooked  che? cook
        sow? be torn, shabby show? tear
        su? be damp  shu? moisten, make damp
        kwe be split, separated khwe split, separate

   b.  nasal-initial:
        mjìn be high, tall Nhjìn raise, make higher
        ní? be submerged, sink Nhí? submerge, sink
        ne be loose  Nhne loosen (in socket, etc.)
        na? be completely cooked Nhna? complete cooking

By contrast, in Sukuma (Maddieson 1991), the involved gestures are timed rather differently. Instead of early voicelessness, we see late breathiness, that is, the simultaneity of voicing and glottal spreading: m, m̥, ṃ In (5) are some examples.

(5)  nð[n̥]n̥o  ladle
     n̥m̥aala  gazelle
     n̥m̥aala n̥kale  small gazelle
     n̥m̥aajo  word
Were voicing not present here, the all-important offset formant transitions would be fully obscured by voicelessness, that is, by the spread glottis. Consequently, when a language possesses this alternative timing pattern, this additional articulatory asymmetry is necessarily present, so that all contrastive information is recoverable. However, this timing configuration comes at an articulatory cost, as breathy phonation requires the larynx to be spread at one end, and simultaneously adducted at the other. This gesture is plausibly more costly that either a fully spread glottis, or a fully approximated glottis.

At the auditory level, the sequence of acoustic events, from nasal murmur to breathy nasal to vowel, is perhaps somewhat inferior to the incremental rise in energy found in Burmese. Nonetheless, all contrasts are fully recoverable here as well.

(6) **gross schematic of articulatory, acoustic, and auditory characteristics of late breathiness in nasals:**

**articulatory:**
- supralaryngeal: stop
- nasal

**laryngeal:**
- abduction
- approximation

**acoustic signal:**

**auditory nerve response:**

**percept:** n ñ ñ ñ

How might we formally characterize the Burmese and Sukuma patterns? I choose to take seriously the claim that the phonology may be viewed as a struggle between ease of perception and ease of production (Martinet 1952, Lindblom 1990). Since there is no principled reason why a constraint-based grammar cannot be stated in functionally motivated, extra-linguistic terms, Optimality Theory (Prince and Smolensky 1993, McCarthy and Prince 1993) allows us to formally express this struggle.

The primary goal of a phonology, of course, is to render forms distinct. Thus a primary constraint family values rendering contrasts recoverable. Let's call this family **recover**. A contrastive state that is optimally recoverable is in full accordance with **recover**, while a contrast that is sub-optimally recoverable is not. A fully obliterated cue is in even greater violation of **recover**.

(7) **recover:**
- (no stars) render contrasts auditorily recoverable
- * = cue fully (optimally) recoverable
- ** = cue sub-optimally recoverable
- *** = cue unrecoverable
In contrast, encoding contrasts should not require excessive effort. Economization of effort is thus valued as well. Consequently, any implemented gesture violates what I term *economize*.

(8) **economize:** maximize articulatory ease
(no stars) = no gesture
* = relevant gesture implemented

Finally, to the extent that cues can overlap without obscuring contrastive information, they do overlap. Liberman, Cooper, Shankweiler, and Studdert-Kennedy, and Mattingly (1981), among others, argue that the speech perception mechanism is especially designed for decomposing an informationally complex speech signal, and is less adept at decoding isolated speech sounds. Also, increasing exposure to cues may help convey the contrast. Consequently, parallel production of contrastive information may be optimal, but only, of course, up to the recoverability of contrastive values.

(9) **overlap:** cues present in parallel
(no stars) = cue present in full parallel with maximally expanded cue
* = cue not fully overlapped with maximally expanded cue

So we have three constraint families that operate at the lexical level -- which is, of course, where contrasts are encoded. These can be ranked to characterize attested systems of contrast. However, at the lexical level *recover* is always most highly valued. This is merely a formal way of characterizing the primary function of the phonology, that is, to keep forms distinct. This leaves us with two possible rankings at the lexical level: *recover* >> *economize* >> *overlap*, or *recover* >> *overlap* >> *economize*. Of course, upon morpheme concatenation, allophony and neutralization may result. While I'm not looking at these processes here, they obviously require isolating individual cues for either recovery or economization. For example, in languages with nasal place assimilation, an *economize* constraint no nasal release before stops is ranked above the recovery of nasal offset transitions. Without these place cues, only nasal manner may be recovered; independent nasal place is lost (see Jun 1995 for further detail). Beyond the lexical level then, individual cues may be extracted for particular ranking with respect to one another.

Consider the Burmese pattern, presented in (10). Here the relevant gestures are an oral stop, velic lowering, and glottal spreading, which are implemented in order to achieve particular acoustic results. These are repeated in the second cell, at the top of the *recover* column, which is the highest-ranked constraint. Following in this column are the possible timing patterns which may or may not achieve the optimal result. For Nn, onset transitions are pretty much obscured by the glottal noise. However, all other cues are robustly encoded, especially the most important offset transitions. Meanwhile, this timing pattern involves three *economize* violations, as all relevant gestures are implemented. Finally, the glottal noise source, the nasal anti-resonance, which cues place during the steady state murmur, and the low F1 and mid-range energy plateau, which cue the nasal manner, do not fully overlap with each other, and so each incurs a violation here.

Consider next the post-breathy nasal. Here, offset transitions are obscured, but only partially, as offset transitions are breathy, but not voiceless.
Given breathy phonation here, broadband noise is not as readily recoverable as it would be were it fully voiceless, and so this too receives a minor violation. Moving to economize, breathy phonation, as stated, requires both voicing and glottal abduction, and thus receives a violation for each. Note that this makes post-breathy nasals more costly than pre-voiceless nasals, at least from an articulatory point of view. Finally, for overlap, only broadband noise is in violation, as place and nasal cues overlap with the oral closure. In short, ranking economize above overlap characterizes the Burmese pattern.

(10) Nasals and laryngeal abductions in Burmese:

| input place | recover place: offset transitions onset transitions anti-resonance nasal: low F1; mid-range plateau; abduction: broadband noise | economize place: oral closure; release nasal: velic lowering abduction: laryngeal opening | overlap place: anti-resonance nasal: low F1; mid-range plateau abduction: broadband noise |
| nasal abduction | Nn place: offset transitions **onset transitions anti-resonance nasal: low F1; mid-range plateau abduction: broadband noise | Nn place: *oral closure; release nasal: *velic lowering abduction: *laryngeal opening | Nn place: *anti-resonance nasal: *low F1; mid-range plateau abduction: *broadband noise |
| nasal abduction | nn place: *offset transitions onset transitions anti-resonance nasal: low F1; mid-range plateau abduction: *broadband noise | nn place: *oral closure; release nasal: *velic lowering abduction: *laryngeal opening voicing: *approximation | nn place: anti-resonance nasal: low F1; mid-range plateau abduction: *broadband noise |

In contrast, Sukuma, in (11), employs the post-breathy nasal variant. This pattern may be characterized by a simple re-ranking of economize and overlap. Recall that post-breathy nasals have more overlapping of cues than do pre-voiceless nasals, despite their economic disadvantages. Ranking overlap above economize here thus characterizes the Sukuma pattern.
Finally, let's consider the case of Comaltepec Chinantec (Anderson 1989, Anderson, Martinez, and Pace 1990, Pace 1990, Silverman 1995). As in Burmese, Chinantec has voiceless nasals with early voicelessness. Some examples are provided in (12).  

(12) $\text{N}^\text{mi}:l$  
$\text{N}^\text{po}:e;l$  
$\text{N}^\text{najn}?:l$  
water  
green beans  
he kills

However, Chinantec also has voiceless nasals in post-vocalic position, stem-finally. Here, strangely enough, we witness the full simultaneity of all gestures (oral stop, velic lowering, and glottal spreading), with no voicing whatsoever. This pattern would seem to contradict my claims, as such a timing configuration fully obscures oral place of articulation. As it turns out, place of articulation is non-contrastive in such contexts. Anderson et. al. report that the post-nuclear nasal assimilates in place of articulation to a following consonant. Examples are in (13).
The animal was frightened
the child
this child
sick child
he is tiny
small child
big children
black child
pervasive child
he will tremble
he pulls (him)

Consequently, either lexical constraint ranking may correctly characterize the post-vocalic voiceless nasals of Chinantec. This is shown in (13), where only nasality and glottal spreading are contrastive. First, glottal noise is present for the duration of the nasal. This, of course, results in the loss of the low F1 and mid-range plateau which normally cues nasality. Instead, nasality is presumably cued by the characteristic frequency of nasally-channeled noise, as opposed to orally channeled noise. Any other phasing pattern would reduce the salience of the glottal noise source, and so recover alone may characterise the realization of voiceless nasality here.

### Nasality and laryngeal abductions in Comaltepec Chinantec:

<table>
<thead>
<tr>
<th>Input nasal abduction</th>
<th>Recover nasal abduction: broadband noise</th>
<th>Economize nasal abduction: laryngeal opening</th>
<th>Overlap nasal abduction: broadband noise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nn</td>
<td>nasal: low F1; mid-range plateau abduction: broadband noise</td>
<td>Nn nasal: *velic lowering abduction: *laryngeal opening</td>
<td>Nn nasal: **low F1; mid-range plateau abduction: *broadband noise</td>
</tr>
<tr>
<td>nn</td>
<td>nasal: low F1; mid-range plateau abduction: broadband noise</td>
<td>nn nasal: *velic lowering abduction: *laryngeal opening voicing: *approximation</td>
<td>nn nasal: **low F1; mid-range plateau abduction: *broadband noise</td>
</tr>
</tbody>
</table>
So Chinantec is not contradictory at all. Instead, since place of articulation is non-contrastive here, voicelessness is free to co-occur in full parallel with velic lowering: no contrasts are jeopardized.

In summary then, different timings of articulatory gestures with respect to one another culminate in better or worse percepts. Optimal timing patterns correlate with degree of auditory nerve response: the greater the auditory nerve response, the less marked the pattern, and the lesser the auditory nerve response, the more marked the pattern. For nasals with contrastive laryngeal abductions, pre-voicelessness is optimal, and cross-linguistically more prevalent than its sub-optimal post-breathy counterpart. I conclude that a functional link may be established between the timing of articulatory gestures and their recoverability.

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References


An OT account of pidgin phonology:
Coda consonants in Vernacular Liberian English
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1. Introduction. Two truisms of pidgin/creole (PC) genesis are that the bulk of the PC lexicon comes from the language of the socially and politically dominant group, i.e. from the lexifier language, and that the PC’s phonology is heavily influenced by the phonology of the languages of the politically dominated peoples, i.e. from the substrate languages. The present study focusses on the phonology of a specific pidgin, Vernacular Liberian English (VLE). It begins by presenting an analysis of the treatment of coda consonants in VLE and then addresses the relation of the phonology of VLE to that of one of VLE’s substrate languages, Loma. In doing this, I make use of Optimality Theory (OT), arguing that OT provides direct insights into the ways in which substrate languages shape PC phonology.

1.1 The Creole Continuum. In the analysis of pidgin phonology that follows, I make use of the creole-continuum model developed by David DeCamp (1971). Prior to examining pidgin phonology, it is appropriate to set out the basic principles of the continuum model and to apply them to the situation at hand. According to DeCamp, in some situations where the PC co-exists with its lexifier language, the range of speech includes not only the PC and its lexifier language but also a set of intermediate varieties. Originally, the model predicted a vast number of such varieties, but subsequent research into PC continua (Rickford 1987, Patrick 1992) shows there to be only a relatively small number of these intermediate lects.

The terminology of the creole continuum entails the basillect (the variety furthest from the lexifier language), the acrolect (the variety closest to the lexifier language), and the mesolect (the varieties intermediate between the basilict and the acrolect).

The continuum model has been applied most frequently to English-lexifier creoles in the Caribbean; however, Singler (1984, 1995) has shown that in Liberia the model can be applied to VLE, a pidgin. While VLE developed along the Liberian coast well before the present century, it did not enter the interior of Liberia in any significant way until the early 1900’s. The focus of the present study is the VLE of the interior, specifically that spoken by elderly first-language Loma speakers with no western education. Though I focus on the treatment of verbs, the constraints that are posited hold for all VLE parts of speech.

1.2 The Nature of Substratal Phonological Influence. As noted above, the substrate has long been held to play an important role in shaping PC phonology. Singler (1991) makes the point that the substrate’s contribution to PC phonology lies primarily in surface structure conditions, not in phonological processes. VLE and the Mande language Loma, taken together, illustrate this
VLE permits far fewer coda consonants on the surface than do, say, American or British English. Inasmuch as Loma permits no surface coda consonants whatsoever, Loma is an obvious source of the restrictions on coda consonants in VLE. To eliminate the coda consonants, VLE variably employs paragoge (word-final vowel epenthesis), deletion, and resyllabification. Loma makes no use of paragoge, none of resyllabification, and very little of deletion. The surface structure conditions cause VLE to look very much like Loma, but the phonological processes in VLE that achieve that end have no direct foundation in Loma phonological processes.

2. Optimality Theory. Thus, the primary locus of substratal input into PC phonology can be seen to lie in surface structure conditions, i.e. in constraints on the output. Constraints on the output are, in turn, the building blocks of Optimality Theory (OT). The present paper seeks to present an OT analysis of the treatment of coda consonants in the most baseline variety of VLE, a variety I call the Alpha Basilect. Then I will show how a second, less baseline, more English-like variety, the Beta Basilect, differs from the Alpha Basilect. I will then compare the Alpha Basilect's phonology to that of Loma. Finally, I will see how the OT analysis of the Alpha and Beta Basilects stands up in the analysis of a corpus of recorded VLE speech.

In the OT analysis that I propose, I use the Correspondence approach to Faithfulness Constraints (McCarthy and Prince 1994, 1995). I assume DEP and MAX, but with an adjustment. Following--among others--Weinberg's (1996) work on Luiseño, I distinguish between DEP for Consonants and DEP for Vowels. (Subsequently, I propose a second adjustment.) These constraints are given in (1).

1. Faithfulness Constraints

   MAX
   Every segment of the input has a correspondent in the output (i.e. no phonological deletion).

   DEP-C
   Every consonant of the output has a correspondent in the input (i.e. no epenthetic consonants).

   DEP-V
   Every vowel of the output has a correspondent in the input (i.e. no epenthetic vowels).

Further, I will make use of constraints regulating syllabic well-formedness, specifically the ONSET (ONS) and NOCODA constraints listed in (2).

2. Syllabic Harmony Constraints

   ONS
   Syllables must have onsets.

   NOCODA
   Syllables are open.

Finally, VLE has a minimal word requirement. This is achieved by the proper ranking of a set of constraints involving alignment, edges, and the construction of feet. For present purposes, it suffices to employ a cover term for this set, namely MINIMAL WORD (MINWD), as set out in (3).
3. MINIMAL WORD (MINWD) [This is a cover term for the set of constraints by which the minimal size of the Prosodic Word (PrWd) is established. In the present case, a PrWd is taken to be minimally disyllabic.]

The consequence for VLE and for Loma of the cluster of constraints subsumed under MINWD is that a Prosodic Word must be minimally—though not maximally—disyllabic.5

2.1 The Alpha Basilect. In looking at the Alpha Basilect, the first point to be noted is that, even though MINWD requires that words be minimally disyllabic, when the input has the shape CV, other constraints (specifically DEP-C and ONS) outrank MINWD and the optimal candidate is monosyllabic, as in (4). (In (4) and subsequently, brackets are used to set off the boundaries of PrWd’s. Further, a paragogic vowel in VLE is ordinarily [i] or [e], depending on the height of the vowel preceding it.)

<table>
<thead>
<tr>
<th></th>
<th>DEP-C</th>
<th>ONS</th>
<th>MINWD-VERB</th>
<th>DEP-V</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>[du]</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[du.i]</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[du.ti]</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On the other hand, when the input has the shape CVC, then MINWD is not violated. A candidate containing a paragogic vowel is selected as optimal. This is the case in (5), where te.ke emerges as the optimal candidate for /tek/.

5. /tek/ ‘take’

<table>
<thead>
<tr>
<th></th>
<th>NOCODA</th>
<th>MINWD-VERB</th>
<th>DEP-V</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>[te.ke]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>te</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tek</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When the input is already disyllabic, as in (6), then the word-final consonant is not needed for the construction of a minimal PrWd and does not appear in the optimal output. Thus, re.spe is the optimal candidate, not *re.spe.ke.
6. /respekt/ 'respect'

<table>
<thead>
<tr>
<th></th>
<th>NOCODA</th>
<th>MINWD-VERB</th>
<th>DEP-V</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>[re. spe]</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>[re. spe. ke]</td>
<td></td>
<td></td>
<td>*1</td>
<td></td>
</tr>
<tr>
<td>[re. spek]</td>
<td></td>
<td></td>
<td>*1</td>
<td></td>
</tr>
<tr>
<td>[res. pe]</td>
<td></td>
<td></td>
<td>*1</td>
<td></td>
</tr>
</tbody>
</table>

A further point with regard to VLE verbs is that the "two-word" verbs of English, e.g. call up, put down, behave as single units in VLE. This is true syntactically, semantically, and phonologically. It is illustrated in (7), where the pronominal object obligatorily comes after the particle rather than before it as it would in English.

7. a mó tek a dëg?
   I must take out them
   'Should I take them out?'

Consequently, it is appropriate to include both the verb and the particle within a single PrWd. Thus, te.ka in (7) satisfies MINWD.

Phonologically at least, object pronouns also behave as if they are part of the verb in VLE. While this would not be true in English, it is in Loma, according to Dwyer (1981). In Loma, first-and-third-person singular object pronouns consist of tones placed at the beginning of the verb; other object pronouns with segmental content are also verb prefixes.

In VLE the treatment of the object pronoun as part of the verb means that an object pronoun is part of the same PrWd as its verb. Consequently, in those cases where the final consonant of the verb can be transferred to the onset of a following pronoun or particle (either because the onset is unfilled or because a permissible onset cluster is created by the resyllabification of the coda consonant), the optimal output will reflect that resyllabification.

The question then arises as to which onset clusters are permissible and which not. In (8) I posit POSSIBLE ONSET (POSSONS), which is again not a single constraint but rather a cover term meant to encompass the constraints and rankings necessary to yield the appropriate onsets. In positing it, I assume that the principal constraint is scalar and is based on the Sonority Hierarchy. The set of possible onsets in VLE is a subset of the set of possible onsets that obtain in English.

8. POSSIBLE ONSET (POSSONS) [a cover term to encompass the constraints and rankings necessary to yield the appropriate onsets]

The way in which POSSONS affects the Alpha Basilect is seen in the tableaux in (9) and (10). In (9) the combination of verb plus object pronoun meets the
MINWD requirement; further, tw is a possible onset, thus yielding gri.twi.

9. /gri wi/ 'greet us'

<table>
<thead>
<tr>
<th></th>
<th>NOCODA</th>
<th>POSSONS</th>
<th>MINWD-VERB</th>
<th>DEP-V</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>gri.twi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gri.wi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>gri.ti.wi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>grit.wi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
</tbody>
</table>

In contrast, *tm is not a possible onset cluster in VLE. Accordingly, in (10) *gri.tmi is ruled out. *gri.mi is blocked by NOCODA, and gri.mi is the optimal candidate.

10. /gri mi/ 'greet me'

<table>
<thead>
<tr>
<th></th>
<th>NOCODA</th>
<th>POSSONS</th>
<th>MINWD-VERB</th>
<th>DEP-V</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>gri.mi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gri.tmi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>gri.ti.mi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>grit.mi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
</tbody>
</table>

In terms of determining the optimal candidate, when the input is monosyllabic and contains a coda consonant, a paragogic vowel is going to be present in the output no matter what the coda consonant is. Similarly, in the cases when a particle or pronoun follows the verb and POSSONS is not violated, it again does not matter what the coda consonant is. However, in cases that are like (10), when the coda consonant is /p/ or /b/, the constraints and rankings cited thus far select the wrong candidate. This is illustrated in (11), where the ungrammatical *ki.mi is predicted rather than the actually occurring ki.pi.mi.

11. /kip mi/ 'keep me'

<table>
<thead>
<tr>
<th></th>
<th>NOCODA</th>
<th>POSSONS</th>
<th>MINWD-VERB</th>
<th>DEP-V</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>ki.mi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>ki.pmi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>ki.pi.mi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>kip.mi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
</tr>
</tbody>
</table>
In fact, the deletion of /p/ or /b/ is never permitted in the Alpha Basilect. To express this in terms of constraints, it becomes necessary to posit a specific constraint for MAX-LABSTOP in addition to the more general constraint MAX-LABSTOP is given in (12).

12. MAX-LABSTOP

Every labial stop in the input has a correspondent in the output (i.e. no deletion of a labial stop).

The permissibility of a constraint pair like MAX-LABSTOP and MAX is argued for by Kiparsky (1993, 1994), who specifies that it is allowable provided that the more specific constraint represents the marked member of an opposition.

The constraint MAX-LABSTOP is inviolable. With its inclusion in the tableau, the optimal candidate *ki.pi.mi is now selected, as shown in (13).

13. /kip me/ 'keep me'

<table>
<thead>
<tr>
<th>MAX-LABSTOP</th>
<th>NOCODA</th>
<th>POSSONS</th>
<th>MINWD-VERB</th>
<th>DEP-V</th>
</tr>
</thead>
<tbody>
<tr>
<td>*ki.pi.mi</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>[kip.mi]</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ki.pmi]</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ki.mi]</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The constraints and constraint rankings presented thus far account for verbs in the Alpha Basilect. A summary of the rankings is given in (14).

14. Constraint ranking in the Alpha Basilect

DEP-C >> ONS >> MINWD >> DEP-V >> MAX

MAX-LABSTOP, NOCODA, POSSONS >> DEP-V >> MAX

in (14) the leftmost constraints are all unviolated. Forms like /no e/, no.e, 'know it,' establish that DEP-C is more highly ranked than ONS.6

2.2 The Beta Basilect. The Beta Basilect is somewhat less basilectal than the Alpha Basilect. I will present it by showing the ways in which it differs from the Alpha Basilect.

To begin with, while paragoge obtains in the Alpha Basilect, it is highly stigmatized in VLE. In the Beta Basilect, it doesn’t show up at all. Alpha Basilect te.kea is Beta Basilect te. In terms of constraints, this is achieved by specifying that DEP is undominated in the Beta Basilect (DEP-C and DEP-V having been merged).

Secondly, in the Beta Basilect the requirement that there be a Minimal Prosodic Word is no longer highly ranked. Consequently, MINWD is no longer critical. Still, coda consonants move into the onset of the following syllable only when the next word is in the same Clitic Group (Selkirk 1980, Hayes 1989). Thus, /tek + yu/ ‘take you’ yields te.kyu, but /tek + yu + pekē/ ‘take your child’ yields te.yu.pe.kē, with the coda consonant absent from the surface of the verb.

Finally, the Beta Basilect is like the Alpha Basilect in requiring that labial
stops in the input be present in the output. However, since DEP is inviolable, i.e. there can be no epenthesis, another strategy is required. Specifically, it means that coda consonants have to be permitted on the surface. As a result, whereas the Alpha Basilect has *ki.pi 'keep,* the Beta Basilect has *kip.* Where the Alpha Basilect has *ki.pi.mi 'keep me,* the Beta Basilect has *kip.mi.* In terms of constraint rankings, this means that NOCODA is now dominated---by DEP, by MAX-LABSTOP, and by POSSONS. The entire set of relevant constraint rankings for the Beta Basilect is presented in (15):

15. Constraint ranking in the Beta Basilect

\[
\text{DEP} \gg \text{ONS} \\
\text{DEP, MAX-LABSTOP, POSSONS} \gg \text{NOCODA} \gg \text{MAX} \\
\text{DEP, MAX-LABSTOP} \gg \text{MINWD}
\]

To recapitulate the differences that obtain in a comparison of the Beta Basilect (15) with the Alpha Basilect (14): in the Beta Basilect, MINWD has dropped; DEP-V has been united with DEP-C, and DEP is undominated; and NOCODA is now ranked below DEP, MAX-LABSTOP, and POSSONS.

3. VLE and Loma. At the outset, it was asserted that that substratal phonology plays a major role in shaping PC phonology. Moreover, it was claimed that this influence manifests itself in constraints on the output. In a comparison of Loma and the Alpha Basilect, as the chart in (16) shows, highly ranked constraints in Loma are highly ranked constraints in the Alpha Basilect as well. In that way, substratal influence manifests itself in the pidgin.


<table>
<thead>
<tr>
<th>The VLE Constraint</th>
<th>Its status in Loma (Sadler 1951; Dwyer 1981)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOCODA</td>
<td>Inviolable in Loma</td>
</tr>
<tr>
<td>DEP</td>
<td>Inviolable in Loma</td>
</tr>
<tr>
<td>MINWD</td>
<td>MINWD is highly ranked in Loma. The only forms that violate it are the few cases where the input is /CV/.</td>
</tr>
<tr>
<td>ONS</td>
<td>Violated in Loma but not frequently. All PrWd's begin with a consonant.</td>
</tr>
<tr>
<td>MAX-LABSTOP; MAX</td>
<td>According to Sadler (1951:314-6), a glide deletes in some environments when the vowel that follows it agrees with it for backness; a voiced velar fricative is sometimes deleted when it precedes a. These are the only reported violations of MAX. [+COMPLEX] is highly ranked. The only permissible consonant clusters are kw and gw, and the possibility exists that they are labialized velar stops rather than true sequences of consonants.</td>
</tr>
<tr>
<td>POSSONS</td>
<td></td>
</tr>
</tbody>
</table>
As far as coda consonants are concerned, the ranking of two constraints in particular account for the differences between Loma and non-pidginized English. These are the inviolability of NOCODA and the high ranking of MINWD. In its ranking of these constraints, the Alpha Basilect is like Loma, not like non-pidginized English.

The two primary exceptions to a complete substratal explanation for the Alpha Basilect's constraint rankings involve POSSONS and MAX-LABSTOP. While POSSONS comes quite clearly from English, there is no apparent source for MAX-LABSTOP: not in English, not in Loma or in any other Liberian language, and not really in phonetics either. I have no answer for the special status of labial stops vis-à-vis MAX in VLE.

A further point involving VLE relative to Loma is that, if the two basilects are compared to each other in terms of the relationship of each to Loma, it can be seen that each change from Alpha to Beta moves the system further from Loma and closer to English.

4. The creole continuum, OT, and actual speech data. Thus far, I have set out the constraints and constraint rankings for two basilectal varieties and then linked them to a relevant substrate language. My final concern involves the continuum model, OT, and actual speech data. The question that arises is how well OT succeeds in accounting for a corpus drawn from a continuum situation.

The data on which the present study is based come from sociolinguistic interviews with seven elders carried out in 1985 by Sumoyea Guluma in his and their home town of Borkeza, Lofa County. As in Singler (1991), I took 75 verbs from each interview. Each verb was monosyllabic and had a non-nasal coda consonant in its input. The speakers and their coastal job history are given in (17); their pseudonyms reflect jobs that they have held. (Singler 1991 provides more extensive discussion of the speakers, their histories, and the sociolinguistic interviews from which the data are drawn.)

17. The speakers and their occupations.

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Rubber</th>
<th>Other work</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blaster</td>
<td>Yes</td>
<td>No</td>
<td>Soldier</td>
</tr>
<tr>
<td>Bottlepicker</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>French Soldier</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>PFC</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Overseer</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Tailor</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Tapper</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

*Detonator at an iron ore mine

**Warehouse worker in Monrovia

A job outside the Firestone rubber plantation carries comparatively high status; on the other hand, a person whose only job on the coast was as a rubber tapper has low status. Thus, the first two speakers on the list, Blaster and Bottlepicker, hold
comparatively high status, while the last two, Tailor and Tapper, hold low status. The remaining three fall in between the two extremes. Linguistic correlation of this status assignment shows up, for example, in the treatment of aspect, as shown for these speakers in Singler (1995).

I evaluated the 75 verb tokens for each speaker to see which constraint ranking each token conformed to: Alpha but not Beta, both Alpha and Beta, Beta but not Alpha, or neither Alpha nor Beta. For example, for a word like /tek/ in (5), te.ke is the optimal Alpha candidate and te the optimal Beta one.

A tabulation of the number of forms that conform to one or the other or both of the basilects is given in (18).

<table>
<thead>
<tr>
<th></th>
<th>Number of forms conforming to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a) Alpha Basilect</td>
</tr>
<tr>
<td>Blaster</td>
<td>8</td>
</tr>
<tr>
<td>Bottlepicker</td>
<td>6</td>
</tr>
<tr>
<td>French Soldier</td>
<td>14</td>
</tr>
<tr>
<td>PFC</td>
<td>26</td>
</tr>
<tr>
<td>Overseer</td>
<td>32</td>
</tr>
<tr>
<td>Tailor</td>
<td>32</td>
</tr>
<tr>
<td>Tapper</td>
<td>40</td>
</tr>
</tbody>
</table>

Below I treat those cases that do not conform to either basilect. First, however, I wish to consider those instances where the token conforms to one or both of the basilects. In (19), I look at the extent to which a given speaker's conforming forms fit one basilect as opposed to the other.

<table>
<thead>
<tr>
<th></th>
<th>Of those forms that conform to one or both of the rankings, percentage that conforms to the</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alpha Basilect</td>
</tr>
<tr>
<td>Blaster</td>
<td>27</td>
</tr>
<tr>
<td>Bottlepicker</td>
<td>32</td>
</tr>
<tr>
<td>French Soldier</td>
<td>50</td>
</tr>
<tr>
<td>PFC</td>
<td>58</td>
</tr>
<tr>
<td>Overseer</td>
<td>65</td>
</tr>
<tr>
<td>Tailor</td>
<td>74</td>
</tr>
<tr>
<td>Tapper</td>
<td>89</td>
</tr>
</tbody>
</table>

The Alpha figures in (19) constitute \((a+b)/(a+b+c)\) from (18); the Beta figures are \((b+c)/(a+b+c)\). N in (19) is \(a+b+c\) from (18).

The distribution of each of the basilects--and of the two of them taken together--directly corresponds to the job scale represented in (17). The two high-status speakers are the ones who use the Beta Basilect the most and Alpha the least. At the other end, the two low-status speakers use the Beta Basilect the least and Alpha the most. The three speakers of intermediate status fall neatly in
between. The fact that every one of the speakers uses both basilects is to be expected: a speaker controls a range of the continuum, not a point. What makes Tapper more basilectal in his speech than Bottlepicker is not that Tapper only uses the Alpha Basilect and Bottlepicker only the Beta Basilect. They both use both basilects; the difference between them lies in how much each uses each variety. To represent the community grammar of VLE or even the grammar of a single speaker, the kind of variation that is mapped out in (19) must be sanctioned.

At the same time, fully 94 of the 525 tokens (18%) are left out of the chart in (18) precisely because they fail to conform to either basilect. Almost all of the exceptions involve the weakening of the status of NOCODA (80/94, 85%). Thus, glottal stops sometimes show up in coda position (19 times in the corpus). Most of the time, however, a "full" consonant incurs the violation. Except for the fact that /ch/ is especially likely to surface and /l/ especially unlikely to, no distribution by consonantal property emerges. In theory, the weakening of NOCODA ought to correlate with the higher range of the continuum. That seems true for the use of glottal stops: in the mesolect, the use of a glottal stop in coda position in place of some other consonant is common. In the case of full coda consonants, however, there appears to be no particular connection between speaker's range on the continuum and the use of coda consonants in violation of NOCODA.7

5. Conclusion. The analysis of actual speech data presents both the "good news" that the distribution of forms lends credence to the continuum model and the "bad news" that a significant minority of the tokens fit neither of the posited basilects. Moreover, the majority of the exceptions do not conform in any regular way to speakers' range of the continuum; thus, one cannot eliminate the problem by assigning these forms either to a Gamma Basilect or an Alpha Mesolect.

These problems notwithstanding, the VLE data show that it is indeed the case that the Alpha Basilect of VLE takes its input from English and the bulk of its phonotactic principles from Loma. By using OT to analyze VLE's treatment of coda consonants, I have demonstrated OT's ability to give straightforward meaning to the two truisms expressed at the outset. Cast in OT terms, those statements can be recast in the following way: A pidgin gets its input from its lexifier language, and it gets the bulk of its constraint rankings from its substrate.
Notes
1. I am grateful to Katya Zubritskaya and An-Nah Moon for their helpful suggestions. All errors are my own. An NYU Research Challenge Fund Grant made possible the research upon which this paper is based. I am grateful to the elders of Borkeza for their willingness to be interviewed and to David Peewee, Boakai Zoludua, and especially Sumoyea Guluma for their invaluable assistance.
2. As Singler (1995) shows, the Liberian continuum does not encompass Settler English, the language of the descendants of the African Americans who had immigrated to Liberia in the nineteenth century. Instead, VLE (the language along the continuum) is a descendant of the pidgin that has been spoken on the Liberian coast since the eighteenth century if not earlier. The VLE continuum also does not include Kru Pidgin English, which has had a distinct history (Singler 1988).
3. The primary substratal languages for VLE come from the Kru and Mande branches of Niger-Congo, none of which permit coda consonants. While some of these languages permit tautosyllabic nasal consonants (Loma does not), such consonants are located in the nucleus, not the coda.
4. I owe this terminology to Renée Blake.
5. For the data under consideration in the present study, i.e. the basilectal VLE of first-language Loma speakers, MINWD is crucial in those cases where the input has the shape /CVC/. In basilectal VLE this shape, /CVC/, is limited to verbs. The reason for this is historical. VLE evolved on the Liberian coast among speakers of Kru languages. In Liberia’s coastal Kru languages, NOCODA is inviolable, and there is no highly ranked MINWD requirement for PrWd. If a word from English contained a coda consonant and that consonant was never part of the optimal output in any form of the word in any environment, the input changed over time, the coda consonant disappearing from it. In the case of verbs, however, the use of the suffix -ë (< Eng. -ing) would have reinforced and thereby preserved the coda consonant of the stem, e.g. the stem-final k in te.kë, ‘taking.’ Pidgin was introduced on the Liberian coast 150 years or more before it made its way into the interior. Rather than being involved in the original pidginization of English in Liberia, Loma speakers would have learned VLE from the coastal speakers whose ancestors had been VLE’s original architects. As such, the only words they would have learned whose input was CVC would have been verbs.
6. It should be possible to rank MAX-LABSTOP vis-à-vis NOCODA, the crucial forms being ones where the input is a disyllabic verb that ends with a labial stop, e.g. /esep/, ‘accept.’ However, there is a gap in the data, and for now the ranking of the two relative to each other remains unresolved.
7. The remaining fourteen forms involve instances when resyllabification was predicted but did not occur. In eleven of the fourteen, the explanation would seem to be that the verb alone served as PrWd and paragoge resulted, e.g. /tek wi/, ‘take us,’ realized as te.ki.wi rather than te.kwi. This indicates that the inclusion of a pronoun in the same PrWd as the verb constitutes a tendency rather than absolute behavior.
References


———. 1988. The homogeneity of the substrate as a factor in pidgin/creole genesis. Lg 64.27-51.


The discourse function of the quotation marker *tte* in conversational Japanese

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1. Introduction

*Tte*, which frequently occurs in spoken Japanese discourse to mark quotations, has been treated as an informal variant of another quotation marker *to*.

While *to* occurs both in spoken and written discourses, *tte* only occurs in spoken discourse. The alternation between *to* and *tte* in spoken Japanese has been considered to be optional for the speaker. The purpose in this study is to refute the absolute optionality of this alternation. It will be shown that *tte*'s discourse function is distinct from that of *to*.

*Tte* is realized as *te* when the preceding sound is nasal. I will refer to both *tte* and *te* as *tte* in this paper for convenience. The identical form, *tte* (or *te*), may be used for purposes other than the marking of quotations. For example, it may be used as a topic marker or as a sentence-final expression. I have discussed these other uses and their common characteristics elsewhere (Suzuki 1996a). The scope of this paper is limited to *tte* which marks quotations.

*To* and *tte* are not the only markers of quotations in Japanese conversation. There are other expressions such as *toka* and *nante* as in the following examples.

(3) *Nde* / *nanka* warito *ano amerika ni ita toki mo / nihongo* and somehow relatively FL3 America in was time also Japanese *oshietekure TOKA itte* / please-teach QT say 'And when I was in America, they said things like "Please teach me Japanese".'

(2) "*Sanjuu sugita kara na* "NANTE iwaretara, kayashii janai." thirty passed because FP QT if-said vexing TG 'I would be upset if somebody said something like "(She looks old) because she is past thirty", you know?' (More: Aug. 1995: 361)

These expressions are excluded from the scope of this study since they seem to involve special functions other than the marking of a quote. The use of *toka* indicates that the quote marked by *toka* is not the exact repetition of what was said or thought. The same suggestion is present in the use of *nante*. In addition, *nante* seems to be used when the speaker feels dissociated from the content of the quote (For detailed discussion of *nante*, see Suzuki (1996a)).

Data used in this paper are taken from a collection of taped conversations from twelve Japanese undergraduate students who were enrolled in a Japanese university at the time of the recording. The students were either from Tokyo or areas around Tokyo. The conversations between two students at a time were recorded for about thirty minutes without the presence of an observer in order to enhance the naturalness of conversations.

In the transcription of the data each utterance is divided into what Maynard (1989) calls Pause-bounded Phrasal Units (PPUs4). PPUs are bounded by pauses
or skipped beats and marked by distinct intonation contour. Maynard (ibid.: 24) observes that the addressee often gives responses such as back-channeling expressions at the end of PPUs. This means that the addressee recognizes PPUs as significant units of discourse (ibid.: 26). In the examples the boundaries of PPUs are marked by a slash.

In the first glance, it seems that the quotation markers *to* and *tte* are interchangeable. In many cases they are. However, examination of the data indicates that there are contexts that clearly favor *tte*. The standard word order in a sentence that contains a quotation is [Subject/Topic + Quote + Verb of saying/thinking] with the subject/topic often ellipted. When a quote occurs in this location (i.e., immediately preceding the verb of saying/thinking), it is marked by either *to* or *tte* in conversational discourse. However, if a quote does not immediately precede the verb of saying/thinking, it is most likely marked by *tte*. The following example illustrates this contrast.

(3) *Waseda tte aji ga atta n da naa TTE/.../aa sooyuu tokoro*

TP taste S existed NM CP FP QT oh that-kind place

ni korete yokatta naa TO omotte ne /
to can-come was-good FP QT think FP
'I thought, "Waseda has character. [...] Oh, I'm glad to have been able to come to such a place", you know?'

Note that the quote which is physically separated from the verb *omotte* 'think' (*Waseda tte aji ga atta n da naa 'Waseda has character') is marked by *tte* while the quote that immediately precedes the verb (*aa sooyuu tokoro ni korete yokatta naa 'oh, I'm glad to have been able to come to such a place') is marked by *to*. (3) shows a typical distribution pattern of *to* and *tte*. In the following sections I will specify three types of contexts in which *tte* is clearly preferred to *to* and discuss the implication of such preference.

2. **Contexts which favor *tte* over *to***

The first type of context in which *tte* is clearly preferred to *to* is where a verb of saying is omitted as in the following examples.

(4) *De dakara sono terebikyoukoku dattara dokodemo ii n and so FL TV-station if-CP anyplace okay NM janakute enuechikee na n da TTE dakara tashika ni not-CP NHK LK NM CP QT so certain A minpoo no koohai wa mitomeru kedo commercial-station LK desolation TP admit but enuechikee no hoo ga yarigai ga aru kara TTE/ NHK LK way S reward S exist because QT 'And so (he was saying) it is not that he will work for any TV station. (He was saying) he admits that commercial stations are certainly in decline, but NHK (Nihon Hoosoo Kyookai 'Japan Broadcasting Corporation') would be a rewarding place to work'.

(5) *Sasaki no senyoosha moo ichidai kattemorau TTE/

LK private-use-car DO more one receive-buy QT*
'Sasaki’s friend was saying) Sasaki will have them buy one more car for his private use'.

In both (4) and (5) the verb of saying is omitted along with the subject of saying. *Tte* is used as the quotation marker in both of these examples.

The second context is where a quote is separated from the verb of saying/thinking as we saw in (3). A quote may also be separated from the verb by a pause. This typically occurs when the standard word order [Quote + Verb] is reversed as in (6).

(6) *De Imai toka mo tatoeba kataru janai desu ka/ore wa and-and-others also for-example tell TG CP Q I TP enuechikee ikitai n da TTE/ soredesono tame ni kooyuu NHK want-to-go NM CP QT and that for A this-kind koto yaru n da TTE/ thing do NM CP QT 'And people like Imai say, for example, 'I want to go to NHK. For that purpose I will do this kind of thing'.'*

The verb of saying *kataru* 'tell, say' occurs in the first PPU followed by the quotes in the second and third PPUs (*ore wa enuechikee ikitai n da 'I want to go to NHK' and soredesono tame ni kooyuu koto yaru n da 'and for that purpose I will do this kind of thing'*). The quotation marker used is *tte*.

Thirdly, when a quote is so long that it is divided into several PPUs, *tte* occurs after each PPU. We have already seen this in examples (4) and (6). (7) is another example.

(7) *De aitsu wa datte ano aitsu tonikaku moo saisho kara and he TP but FL he anyway FL beginning from enuechikee ni ikitai n da TTE/ shuushoku wa enuechikee NHK to want-to-go NM CP QT employment TP NHK shika nai n da TTE/ de ima wa katsuji yori eezoo no jidai na only not NM CP QT and now TP letter than image LK era LK n da TTE aitsu tsune ni itteru shi/ NM CP QT he always A is-saying and 'And he, but he, anyway from the beginning he has always been saying, "I want to go to NHK. The only place I want to work is NHK. And this is the age of visual image rather than that of printed letters'.'*

In (7) the quote is marked by *tte* not only at the end of it, but also at the end of each PPU.

It is not that *to* is never possible in the contexts described in this section. There are a few instances in which *to* occurs instead of *tte*. However, in these contexts *tte* is much more likely to occur than *to*. Table 1 shows the number of occurrences of *to* and *tte* in each type of context.

<table>
<thead>
<tr>
<th>Table 1</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>to</td>
<td>tte</td>
</tr>
<tr>
<td>First type of context</td>
<td>4 (6.6%)</td>
<td>57 (93.4%)</td>
</tr>
<tr>
<td>Second type of context</td>
<td>5 (13.8%)</td>
<td>26 (83.9%)</td>
</tr>
</tbody>
</table>
In the next section the central function of *tte* is discussed and a hypothesis is given as to why *tte* tends to be assigned that function rather than *to*.

3. Discussion

Examination of the third context, in which a quote is so long that it is divided into several PPUs, may give us clues regarding the central function of *tte*. If the function of *tte* was merely to mark quotations, its occurrence should be expected only at the end of what is quoted. Its presence would indicate that the quotation is over and that now the main text of discourse will begin. In (7), however, *tte* appears at the end of each PPU, not only at the end of the quotation. This indicates that *tte* functions not only to mark what precedes as a quotation, but also to integrate the quoted part into discourse. By marking each PPU as a part of the quotation, *tte* helps the PPUs become connected to the rest of the discourse.

For example, if the second PPU of (7) (*shushoku wa eneichikei shika nai n da 'The only place I want to work for is NHK*) was not marked with *tte*, it would not be clear where that PPU stands in relation to the rest of the discourse. Since that PPU is located away from the clause *aitsu tsune ni itteru shi 'he has always been saying,'* it would not be obvious to the addressee that it represents what was said. Because of the presence of *tte*, the PPU becomes integrated in the discourse.

Halliday (1985) observes that the same kind of marking is achieved in spoken English by repeating the clause that contains the verb of saying as in (8).

(8) My brother, he used to show dogs, and *he said* to me, *he said*, "Look," *he said*, "I really think you've got something here," *he said*. "Why don't you take it to a show?" (Halliday 1985: 228, Italics provided by SS)

Without this kind of repetition, Halliday suggests, the fact that a part of discourse is a quote may easily be lost to the addressee. Thus the phrase *he said* in the above example helps the integration of discourse. In spoken Japanese the speaker achieves the same function systematically by using *tte*.

From this observation, it seems that the central function of *tte* is to identify a part of discourse as a quotation when the identification is not clear. This accounts for why *tte* is preferred in the three contexts mentioned above. In the first context the verb of saying is missing. Thus, it is not easy for the addressee to identify the discourse as what is quoted. In the second context a quote is physically separated from the verb of saying. Again, the identification of the quote is not entirely clear. In the third context the length of the quote makes it hard for the speaker to recognize the quote as such.

The characterization of *tte* as the identifier of quotations also explains why *tte* does not appear in written Japanese. In the written language the identification of quotations is clear. The first context tends not to occur since the verb is usually not omitted. The second context is also rare since the written language normally uses the standard word order and therefore, a quote is not separated from the verb of saying. The third context, which involves long quotes, does not require integration of parts of a quote into the discourse since in the written language the beginning and
end of a quote are signaled by punctuation. A device, which functions similarly to
a double quotation mark in English written discourse, is used in written Japanese.

Why is *tte* and not *to*, assigned this function of identifying quotations?
This may be related to the origin of *tte*. My hypothesis is that *tte* has evolved from,
or at least related to, *to iite*, which is an older form of *to itte* 'saying that' (a
quotation marker + a gerund of the verb of saying). If this hypothesis is correct, it
makes sense that *tte* has the function of identifying quotations. In Halliday's
example of spoken English, the phrase that consists of the subject/topic and the
verb of saying (*he said*) is repeated in order to identify a part of discourse as a
quote. It is natural to use the subject/topic and the verb of saying in the
identification of quotes. Since in Japanese the subject/topic is often ellotted, the
responding Japanese phrase would have the verb of saying without the
subject/topic. If *tte* contains the verb of saying in itself as my hypothesis claims, it
is the appropriate linguistic form in Japanese to achieve the same kind of function as
phrases in English such as *he said* in (8).

Why would the verb of saying have the gerund form? Many Japanese
grammarians call the form the te-form since the ending of the form is *te* (or its
voiced version *de*). Makino and Tsutsui (1991: 466) state that if the last element of
the predicate of a clause is the te-form, "it means that the clause is not the end of the
sentence and that another predicate or clause follows it." This is true in the written
or formal oral discourse. However, Clancy (1982) notes that in conversation te-
endings are often used. Maynard (1989: 38) observes that gerund forms in spoken
Japanese "may be used repeatedly to connect a long string of utterances." This
function of gerund forms is similar to one of *tte*’s functions discussed earlier.
When a quote is long, *tte* is used after each PPU to make sure that the addressee
will not lose sight that each PPU is a quote. In other words, *tte* is used repeatedly
to connect a long string of quotes.8

Some historical accounts appear to support the hypothesis that *tte* is derived
from *to iite*. Tanaka (1977) states that *tte* which marks topics originates from *to itte*
saying that.’ Matsumura (1988) states that *tte* is derived from *tote*. *Tote* is an
archaic expression and has the meaning of *to itte* 'saying that' and *to omotte*
'thinking that’ among other things (Shinmura 1993). Martin (1975: 477; 1987:
121) states that the *te* of a gerund form was originally the infinitive form of the
perfect auxiliary *tsu(ru)*, which was used as the connective particle. Martin goes on
to say that the same *te* is present in the particle *tote* (Martin 1975: 477). Many
dictionaries assume that *tote* is a combination of *to* and the connective particle *te*
(e.g., Wada et. al. 1983; Matsumura 1988; Kindaichi et. al. 1990). However,
Nihon Daijiten Kankookai (1975) observes that since connective particles are
usually attached to predicates, *tote* may be thought of the contracted form of the
combination [to+predicate+te] such as *to itte*. If *tote* comes from *to iite*, then *tte*,
which is derived from *tote*, is also related to *to iite*. 6

4. Conclusion

In the preceding discussion it was observed that the quotation marker *tte*
functions to identify a part of discourse as a quotation when the identification is not
clear and that because of this function *tte* is clearly preferred to another quotation
marker *to* in certain contexts. This means that *tte* is distinct from *to*. The
alternation between *to* and *tte* is not always optional for the speaker. This supports
the isomorphism hypothesis discussed in Haiman (1985) and others. The hypothesis states that different forms entail a difference in communicative function.

The result of this study suggests that the functional equivalency that has been assumed for other pairs of expressions such as *yoo 'seem' and mitai 'seem,' evidential expressions in Japanese, need to be examined more carefully. When a form is described as merely an informal or colloquial version of some other form, the form may actually serve a different communicative function than that of the other form.

NOTES

1 Miura (1974) distinguishes *to and *tte. However, his distinction concerns differences in functions other than the marking of quotations. He treats *to and *tte as identical in their function as quotation markers.

2 In Suzuki (1996) various uses of *tte are related to the notion of incorporation of information. It is argued that *tte is used when the degree of incorporation of information is low. The degree is considered low if the speaker (i) has acquired information recently, (ii) has acquired information from an outside source, (iii) is not strongly convinced of the truth of information, and/or (iv) is emotionally detached from information. In other words, *tte is used when the speaker feels psychologically distanced from the information. This connotation of psychological distance might come from *tte’s function as quotation marker. A quote represents part of a sentence that is not well integrated into the rest of the sentence. What is not well-incorporated grammatically is appropriate in expressing what is not well-incorporated psychologically.

3 The following abbreviations are used.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>Adverbial marker</td>
</tr>
<tr>
<td>CP</td>
<td>Copula</td>
</tr>
<tr>
<td>DO</td>
<td>Direct object marker</td>
</tr>
<tr>
<td>FL</td>
<td>Filler</td>
</tr>
<tr>
<td>FP</td>
<td>Final particle</td>
</tr>
<tr>
<td>LK</td>
<td>Linker</td>
</tr>
<tr>
<td>NM</td>
<td>Nominalizer</td>
</tr>
<tr>
<td>Q</td>
<td>Question marker</td>
</tr>
<tr>
<td>QT</td>
<td>Quotation marker</td>
</tr>
<tr>
<td>S</td>
<td>Subject marker</td>
</tr>
<tr>
<td>TG</td>
<td>Tag-like expression</td>
</tr>
<tr>
<td>TP</td>
<td>Topic marker</td>
</tr>
</tbody>
</table>

4 Maynard uses 'PPU' to stand for Pause-bounded Phrasal Units. In this paper 'PPU' is used as an abbreviation of a Pause-bounded Phrasal Unit (singular) while 'PPUs' stands for Pause-bounded Phrasal Units (plural).

5 What should be called "standard" is not always easy to determine. Here "the standard word order" refers to the word order that is used in written discourse.

6 In Japanese noun phrases are often ellipted if they are recoverable from the context.

7 The third type of context overlaps with the first and second types of contexts. For example, (2) is used to illustrate the first type of context since the discourse does not contain a verb of saying/thinking. At the same time (2) is an example of the third type of context since it is a long discourse which is divided into several PPU's.

8 *tte is also similar to the gerund form in its interaction with discourse markers such as *de 'and'. While the PPU's with *tte or the gerund form-endings represent continuous flow of discourse, PPU's that are headed by *de and other similar expressions represent some sort of change, such as a conclusion to a story. Suzuki (1996b) discusses this phenomenon in detail.
REFERENCES


Taiwanese Tone Sandhi as Allomorph Selection

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National Chung Cheng University
James Myers
University of Michigan

1. Introduction

Recently there has been interest in what might be termed *Lexicalized Phrasal Phonology* (LPP), phonology that appears to apply at a phrasal level but which otherwise has lexical characteristics (Kaisse 1985, 1990, Hayes 1990, Odden 1990, Kenstowicz 1994). A debate in the literature concerns whether LPP should be considered postlexical phonology (e.g. Kaisse 1990), lexical phonology that is able to refer to phrasal information (e.g. Odden 1990), or else a sort of lexical phonology Hayes (1990) calls *precompiled*, in which the generation of allomorphs (i.e. forms of a word where a rule applies and forms where it does not) occurs lexically, whereas selection between these allomorphs for insertion into a syntactic frame occurs postlexically. In this paper we show how the analysis of Taiwanese Tone Sandhi requires separation of LPP into the two mechanisms of allomorph generation and allomorph selection, thus supporting precompilation theory over other models of LPP.

This paper is organized as follows. First, we review the characteristics of LPP and the approaches towards it that have appeared in the literature. Second, we provide evidence to show that Taiwanese Tone Sandhi is indeed a case of LPP. Finally, we argue that Taiwanese Tone Sandhi favors the dual mechanism approach offered by precompilation theory because it involves only the mechanism of allomorph selection, and not that of allomorph generation.

2. Lexicalized Phrasal Phonology

*Lexicalized Phrasal Phonology* is phonology that occurs within domains larger than the word (always syntactic rather than prosodic constituents) and yet displays all the hallmarks of being lexicalized, with lexical exceptions, structure-preserving alternations, and often apparent ordering before rules that are sensitive to morphology or restricted to within the word. In this section, we first explain how LPP is a problem for standard models of Lexical Phonology, and then summarize three approaches towards it that have been taken in the literature.

2.1. The Problem of Lexicalized Phrasal Phonology

The theory of Lexical Phonology distinguishes two kinds of phonological regularities: lexical rules and postlexical rules. A variety of diagnostics have been observed to distinguish these rule types in most cases. In (1) below, we list only those that are most relevant to our discussion.

(1) Lexical rules vs. Postlexical rules (e.g. Hargus and Kaisse 1993)

<table>
<thead>
<tr>
<th>LEXICAL</th>
<th>POSTLEXICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. word-bounded</td>
<td>not word-bounded</td>
</tr>
<tr>
<td>b. may refer to morphology</td>
<td>cannot refer to morphology</td>
</tr>
<tr>
<td>c. may have exceptions</td>
<td>automatic</td>
</tr>
<tr>
<td>d. semi-productive</td>
<td>fully productive</td>
</tr>
<tr>
<td>e. categorical</td>
<td>may be gradient</td>
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</table>
One outstanding problem is the existence of phonological patterns that seem to have the properties of lexical rules but at the same time apply at the phrasal or sentence level, i.e. postlexically (Kaisse 1985, 1990, Hayes 1990, Odden 1990, Kenstowicz 1994). The division of properties is not arbitrary, as indicated in the figure below; the patterns of Lexicalized Phrasal Phonology show primarily lexical characteristics, the only putatively postlexical characteristic being that they are sensitive to information beyond the word boundary. This information, however, is always of a very restricted kind, specifically syntactic structure.

(2) Characteristics of LPP

<table>
<thead>
<tr>
<th>LEXICAL</th>
<th>POSTLEXICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>not word-bounded:</td>
</tr>
<tr>
<td>b. may refer to morphology</td>
<td>refer to syntactic structure</td>
</tr>
<tr>
<td>c. may have exceptions</td>
<td></td>
</tr>
<tr>
<td>d. semi-productive</td>
<td></td>
</tr>
<tr>
<td>e. categorical</td>
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</tbody>
</table>

For example, in Hausa (Hayes 1990) final long vowels of verbs are shortened when preceding a full NP direct object. This rule can be formalized as in (3a) with some illustrative data given in (3b).

(3) Hausa Shortening (Hayes 1990; data from Kraft and Kirk-Greene 1973)

| a. V: → V / [ _ NP ... ] v p, NP non-pronominal |
| b. ná: ká:má: | "I have caught (it)"
| ná: ká:má: fi | "I have caught it"
| ná: ká:má: kí:ff | "I have caught a fish"

Hayes (1990:98) shows that Shortening precedes the rule of Low Tone Raising, which raises a low tone on a word-final long vowel to a high tone when it follows a low tone, as illustrated by the derivations in (4). Low Tone Raising is arguably a lexical rule because it has a number of lexical exceptions and "native speakers seem clearly aware of its effects" (this latter point being indirect evidence for semi-productivity and categoricity). Therefore, in spite of its reference to word-external (i.e. syntactic) information, Shortening must in fact be lexical.

(4) Shortening precedes Low Tone Raising:

\[
\begin{array}{c}
L \rightarrow H / L \_\# \\
/ \$
V \ V
\end{array}
\]

<table>
<thead>
<tr>
<th>&quot;read&quot;</th>
<th>&quot;read X&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>ká:rántá:</td>
<td>ká:rántá: X</td>
</tr>
<tr>
<td>Shortening</td>
<td>X</td>
</tr>
</tbody>
</table>

(X = full NP)
2.2. Three approaches to LPP

There are three approaches to LPP that have appeared in the literature. First, some researchers treat LPP as postlexical phonology that happens to have primarily lexical characteristics (e.g. Kaisse 1985, 1990). The second approach is to treat LPP as lexical phonology, but relaxes the restriction that lexical rules can only refer to word-internal information (e.g. Odden 1990). The third approach is the precompilation theory of Hayes (1990), which posits two separate mechanisms for lexical phonology; in LPP these operate independently in an unusual but constrained fashion.

All three approaches appear overly powerful. As Hayes (1990) points out, viewing LPP as a form of postlexical phonology fails to explain why all of its characteristics are those of lexical rules, except for the fact that syntactic information may be referred to. However, viewing LPP as lexical phonology that can refer to syntactic information ignores the considerable linguistic and psycholinguistic evidence suggesting that phonological forms of words are not built simultaneously with the syntactic form of sentences (e.g. Levelt 1989). Finally, although precompilation theory does not face the problems of these other two models, it does have the apparent disadvantage of positing two separate mechanisms for lexical rules where they posit only one. Because we will be arguing in favor of this third approach, we first need to examine it a bit more closely.

The solution that Hayes (1990) proposes for dealing with the problem of LPP requires that the application of a lexical rule involves two distinct mechanisms, which for clarity we term allomorph generation and allomorph selection. Allomorph generation refers to the generation by a lexical rule of an output form. In standard lexical phonology, there will be precisely one possible output for any given input. In LPP, however, an input will have two allomorphs at the output of the lexical phonology. Allomorph selection then occurs as a part of the general mechanisms of lexical insertion, selecting the proper allomorph for a particular environment. As in standard models of lexical insertion going back to Chomsky (1965), only syntactic information is relevant at this point, which means that allomorph selection can only choose between allomorphs on the basis of syntactic criteria. Precompilation theory therefore explains both why LPP patterns show primarily lexical characteristics (allomorph generation involves true lexical rules) and why the only word-external information they may refer to is syntactic structure (allomorph selection is part of syntactically-sensitive lexical insertion).¹

As an example, the way precompilation theory would model Hausa Shortening is illustrated in (5) and (6).

(5) Lexical representations and rules for LPP in Hausa:

LEXICON
Frame 1:
[- NP ...]vP,
NP non-pronominal
/káranålː/, ...

RULES
Shortening: V: → V /[:-] [Frame 1]
Tone Raising: L → H / L _ #
      /\                          /
       V V
(6) Two mechanisms for LPP in Hausa:

<table>
<thead>
<tr>
<th>ALLOMORPH GENERATION</th>
<th>ALLOMORPH SELECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortening</td>
<td>inserted into</td>
</tr>
<tr>
<td>Raising</td>
<td>syntactic environment</td>
</tr>
<tr>
<td>Output of lexicon:</td>
<td>matching [Frame 1]</td>
</tr>
</tbody>
</table>

/kárántá:/

\[/\]

\[
\]

\[
\]

\[
\]

\[
\]

\[
\]

\[
\]

\[
\]

As noted above, precompilation theory seems overly complex, as it posits allomorph generation and allomorph selection as independent mechanisms. The natural rebuttal to this criticism would be the demonstration that both mechanisms are necessary and independent. The form of the demonstration would be that of a double dissociation, where all of the four logical possibilities listed in (7) would have to be found. As can be seen in this figure, the first three of these have in fact been attested. Standard postlexical phonology takes place entirely after lexical insertion, so neither lexical allomorph generation nor allomorph selection is relevant. In standard lexical phonology, allomorph generation takes place, but since only one allomorph is produced per input, nothing of relevance occurs during allomorph selection. Finally, as we've just seen, standard cases of LPP like that in Hausa involves both allomorph generation and allomorph selection.

(7) The logic of double dissociation:

<table>
<thead>
<tr>
<th>Allomorph Generation</th>
<th>Allomorph Selection</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>no</td>
<td>Standard postlexical phonology</td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>Standard lexical phonology</td>
</tr>
<tr>
<td>yes</td>
<td>yes</td>
<td>Standard LPP (e.g. Hausa)</td>
</tr>
<tr>
<td>no</td>
<td>yes</td>
<td><em>Taiwanese Tone Sandhi</em></td>
</tr>
</tbody>
</table>

The demonstration of double dissociation would therefore be complete if we had a case where allomorph selection takes place, but without the allomorphs first being generated. That is, lexical insertion would choose between allomorphs that are essentially listed in the lexicon. Limited cases of this sort abound, of course; Hayes (1990) uses English *a/an* allomorphy in his argument, and Tranel (1994) includes a discussion of suppletive forms in an analysis of French liaison. We argue that *Taiwanese Tone Sandhi* provides a far more dramatic example. Like standard cases of LPP, Taiwanese Tone Sandhi affects every morpheme in the lexicon. Nevertheless, we give evidence that it does not involve allomorph generation in the usual sense. Instead, the surface tone of a morpheme is simply looked up in a table based solely on the morpheme's abstract tone-class diacritic. This is the claim we argue for in the following sections.
3. Taiwanese Tone Sandhi

Morphemes in Taiwanese are overwhelmingly monosyllabic.2 Taiwanese Tone Sandhi (henceforth TTS) refers to a tonal phenomenon where every morpheme has two alternating tones, one showing up in juncture position (including in citation), the other showing up in context position (e.g. in first position in a bisyllabic compound). The definition for the juncture/context distinction involves, as we discuss later, only syntactic factors.

Examples of the tonal alternations are given below, where the juncture forms are given in the left-hand column and the right-hand column shows the same words in context (lack of a juncture is indicated with "-"'). H, M, and L stand for high, mid, and low tone levels, respectively.

(8) Examples of TTS

<table>
<thead>
<tr>
<th>Juncture Position</th>
<th>Context Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>si[H]</td>
<td>&quot;poetry&quot;</td>
</tr>
<tr>
<td>si[LH]</td>
<td>&quot;time&quot;</td>
</tr>
<tr>
<td>si[M]</td>
<td>&quot;temple&quot;</td>
</tr>
<tr>
<td>si[L]</td>
<td>&quot;four&quot;</td>
</tr>
<tr>
<td>si[HL]</td>
<td>&quot;die&quot;</td>
</tr>
<tr>
<td>si[M]-bun[LH]</td>
<td>&quot;poetry and prose&quot;</td>
</tr>
<tr>
<td>si[M]-kan[H]</td>
<td>&quot;time span; time&quot;</td>
</tr>
<tr>
<td>si[L]-tsi[H]</td>
<td>&quot;temple monk&quot;</td>
</tr>
<tr>
<td>si[HL]-tiam[HL]</td>
<td>&quot;four o'clock&quot;</td>
</tr>
<tr>
<td>si[H]-la[H]</td>
<td>&quot;dead people&quot;</td>
</tr>
</tbody>
</table>

In the remainder of this section, we address evidence showing that TTS is an example of LPP. That is, TTS refers to information beyond the word, but only syntactic information (Section 3.1), while all of its other properties are lexical (Section 3.2).

3.1. The phrasal nature of TTS

The constituent referred to by the juncture/context distinction is often called the Tone Group, which may be larger than a word. Chen (1987) has convincingly shown that the Tone Group is syntactically defined, rather than prosodically defined. Following up on this work, Lin (1994) shows that the boundaries of the Tone Group are defined by matching the right boundary with that of every XP (maximal projection) in an utterance, unless the XP is lexically governed (Chen 1987 had incorrectly reserved this caveat only for adjuncts). These generalizations are exemplified in (9); the underlined morphemes appear with the appropriate juncture tones, while the rest appear with context tones.
(9) Syntax and TTS Tone groups (Chen 1987:114):

Not only is TTS sensitive to syntax, but it is sensitive only to syntax. As illustrated in (10), TTS ignores prosodic information, such as the intonational phrases whose boundaries can be emphasized by pauses (Chen 1987:143). Thus TTS shows the first characteristic of LPP listed above in (2a).

(10) TTS refers to syntax, not to prosody (Chen 1987)

3.2. Lexical properties of TTS

Aside from this reference to syntactic structure, all the other properties of TTS are characteristic of lexical phonology. Because of the lack of the relevant morphology in Taiwanese, there is no evidence one way or the other regarding point (2b), but there is evidence for the remaining three lexical properties listed in (2). First, TTS does not apply automatically for all forms, as there are lexical idiosyncrasies. Second, TTS is only semi-productive, which is typical of a lexical pattern. Third, TTS is categorical, as has been demonstrated using acoustic phonetic methods. We will discuss each of these points in turn.

3.2.1. Lexical idiosyncrasies

Some morphemes are lexically marked to undergo sandhi in a way that is not expected given the regular pattern. For example, the verb meaning "give" normally conforms to the standard TTS pattern, as shown in (11a). However, as shown in (11b), it may appear with an unexpected context tone when preceding certain pronouns; whether this unusual tone appears optionally or obligatorily
depends on the specific pronoun. Other verbs do not behave this way. Note that
the pronouns themselves also show unexpected sandhi patterns.

(11) Lexical idiosyncrasies in TTS

a. Normal TTS

\[ \text{Juncture} \quad \text{Context} \]
\[ \text{ho[M] "give"} \quad \text{ho[L] kao[HL]} \quad \text{"give to the dog"} \]

b. Idiosyncratic TTS

\[
\begin{align*}
\text{free variation} & \quad \{ \text{ho[L] gua[HL]} \\
& \quad \text{ho[M] gua[M]} \quad \text{"give to me"} \\
\text{free variation} & \quad \{ \text{ho[L] li[HL]} \\
& \quad \text{ho[M] li[M]} \quad \text{"give to you"} \\
& \quad \ast\text{ho[L] i[HL]} \\
& \quad \text{ho[M] i[M]} \quad \text{"give to him"}
\end{align*}
\]

3.2.2. TTS is only semi-productive

Psycholinguistic and diachronic studies have shown a difference between
the full productivity of postlexical phonology and the partial productivity of lexical
phonology (e.g. Kiparsky 1975, 1982, 1988, Shattuck-Hufnagel 1986). It appears
that TTS behaves more like lexical phonology in this regard, because the TTS
alternations are at best semi-productive.

Evidence for this comes from experiments that find that native speakers do
not apply TTS consistently (Hsieh 1970, 1975, 1976, Wang 1995). For example,
Hsieh (1975) reports that when native speakers performed a task where they had to
produce the context form of morphemes based on the given juncture form, or vice
versa, they did not apply TTS correctly in all cases.

(12) Results of Hsieh (1975)

<table>
<thead>
<tr>
<th>Juncture → context.</th>
<th>Context → juncture.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real morphemes</td>
<td>Artificial morphemes</td>
</tr>
<tr>
<td>85.0% correct</td>
<td>66.2% correct</td>
</tr>
<tr>
<td>Real morphemes</td>
<td>Artificial morphemes</td>
</tr>
<tr>
<td>96.3% correct</td>
<td>88.7% correct</td>
</tr>
</tbody>
</table>

This failure of TTS when challenged with novel forms and environments is
typical of lexical phonology; English speakers correctly apply Velar Softening in
electricity, for instance, but may not apply it consistently in a novel form such as
cubicity. By contrast, postlexical phonology will either always apply in appropriate
environments (e.g. flapping in English), or will apply at a consistent rate of
probability whether or not the words are novel. Thus, in spite of the fact that the
choice between juncture or context tone clearly must be made during the on-line
generation of syntactic structure, the semi-productivity of TTS marks it as lexical
rather than postlexical phonology.
3.2.3. TTS is Categorical

Although it has been shown that lexical phonology is not always structure-preserving (see Borowsky 1993 for the most extensive summary of evidence), a weaker claim does seem to hold: lexical phonology must always be categorical. That is, phonology that has other characteristics marking it as lexical never produces phonetic output that vary gradationally along a continuum.

This phonetic claim allows us to test the assumption hidden in figures such as (8). Such figures imply that TTS is structure-preserving, since the set of context tones is a subset of the set of juncture tones, but this is only true if a phonological category like [M] is indeed realized phonetically the same way wherever it appears.

Recent acoustic phonetic studies by one of the authors has verified this assumption (Tsay and Charles-Luce, in prep). First, it was shown that the context [M] tone that is paired with the juncture [LH] is phonetically identical with the context [M] that is paired with juncture [H]. Second, juncture and context tones represented by the same categories are in fact phonetically identical, so that, for example, juncture [H] is realized the same way as context [H] (see also Lin 1988 and Peng 1993; the latter observes lowering of pitch in phrase-final and utterance-final position that appears to be due to intonation effects independent of TTS itself).

4. TTS as Allomorph Selection

So far, we have shown that TTS is LPP: it is sensitive to syntactic structure, but every other property marks it as lexical. In this section we argue that TTS involves only allomorph selection but not allomorph generation. This will demonstrate the separation of lexical phonology into these two mechanisms, and thus argue in favor of the precompilation theory of Hayes (1990) as a model of LPP. We thus provide arguments for this claim in Section 4.1, and then in Section 4.2 we show how TTS should be analyzed within precompilation theory.

4.1. Allomorphy in TTS is not generated

Unlike standard cases of LPP as exemplified by Hausa, we argue that the TTS alternations are suppletive, as would be expected if TTS does not involve allomorph generation. We provide three arguments for this claim. First, the direction of TTS alternations is indeterminate. Second, the explanatory power of TTS rules proposed in the literature is extremely limited. Finally, productivity experiments suggest that allomorph selection occurs without allomorph generation. We discuss these points in turn.

4.1.1. The direction of TTS alternations is indeterminate.

The literature on TTS contains some controversy concerning whether the juncture or context tones should be set up as underlying. While the neutralization of juncture [H] and [LH] as context [M] has lead most researchers to conclude that the direction of tone alternation in TTS is Juncture → Context (e.g. Cheng 1968, 1973, Yip 1980), the direction Context → Juncture has also been plausibly argued (e.g. Tsay 1994; see also Hashimoto 1982, Ting 1982, Ho 1984), because [H] and [LH] appear in nearly complementary onset voicing environments.

Further evidence for the direction Context → Juncture comes from neutralization in juncture position. This happens in TTS in so-called short tones with /r/ as coda. The standard short tone TTS pattern, illustrated in (13a), is usually thought to derive from the long tone pattern (e.g. Yip 1980, Tsay 1994).
However, some speakers seem to neutralize short tones in juncture position, as shown in \((13\text{b})\) (Kuo, in prep).

\[(13)\text{ Short tones in TTS} \]

\begin{enumerate}
\item[c] \textbf{Juncture} \\
peʔ[M] & "white" & Context \\
peʔ[L] & "eight" & peʔ[HL]-sá[H] & "white clothes" \\
\textbf{Juncture} \\
peʔ[M] & "white" & Context \\
peʔ[M] & "eight" & peʔ[HL]-tiú[H] & "eight pieces"
\end{enumerate}

Since neutralization occurs in both context and juncture positions, the direction of TTS alternations is indeterminate, so that there is no compelling reason for choosing one of the alternating tones as underlying and the other as derived.

4.1.2. The limited explanatory power of proposed TTS rules

The five (long tone) alternations of TTS are so dissimilar that it is impossible to describe them with fewer than three rules. Even such minor reduction has costs. Tsay (1994) describes the five alternations with four rules by assuming a rule that derives [LH] from underlying [H] in syllables with voiced onsets, even if the voicing is rather abstract and does not show up on the surface in all cases. Yip (1980) requires only three rules, but the analysis makes multiple violations of structure-preservation. For example, the juncture and context [M] tones are not represented the same way, leaving it a puzzle as to why they are realized identically in the phonetics, as discussed above.

\[(14)\text{ Violations of structure preservation in Yip (1980):} \]

\begin{center}
\begin{tabular}{ll}
\textbf{Juncture} & \textbf{Context} \\
\text{H} & \text{M} \\
\text{[+upper]} & \text{[+raised]}[+raised] \\
\text{+[raised]} & \text{[-upper]}[+raised] \\
\text{M} & \text{L} \\
\text{[+upper]} & \text{[+raised]}[+raised] \\
\text{[-raised]} & \text{[-upper]}[+raised]
\end{tabular}
\end{center}

Difficulties like these have led some researchers (e.g. Hsieh 1975) simply to assume five separate rules, each applying disjunctively (disjunctive application, incidentally, is another property characteristic of lexical phonology, as noted by Kiparsky 1982). Rule formalism therefore does nothing to simplify the description of TTS.

4.1.3. Experimental evidence for allomorph selection

Recall from the results of Hsieh (1975) cited above in \((12)\) that subjects are more accurate in applying TTS when actual morphemes are used in novel contexts than when novel (artificial) morphemes are used. The relative accuracy in the former situation implies that subjects are able to select between juncture and context
allomorphs on-line when they know what the allomorphs are. When they must
derive the allomorphs themselves, as in the case of the artificial morphemes, their
accuracy falls off. This suggests that in normal language processing, the
mechanism of allomorph selection is actively used, while that of allomorph
generation is not.

4.2. TTS within precompilation theory

Summarizing the arguments in the previous subsections, TTS demonstrates
that LPP may involve allomorph selection without allomorph generation. If so,
then we must adopt precompilation theory as the proper model for LPP. In this
section we explain how precompilation theory would model TTS.

As illustrated in the following figures, TTS involves the syntax-sensitive
allomorph selection of a sort familiar from Hausa, but there is no lexical rule that
derives the allomorphs. Instead, morphemes are stored in the lexicon with an
abstract diacritic indicating tone category. This diacritic is then used to determine
the proper phonological values for the juncture and context tones by simply looking
them up in a table.

(15) The lexicon in TTS

<table>
<thead>
<tr>
<th>LEXICON</th>
<th>RULES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame 1:</td>
<td></td>
</tr>
</tbody>
</table>
| [...
] _\text{XP}, |
| XP not lexically governed |

\text{si[Tone 1], si[Tone 2], si[Tone 3], ...}

\textbf{ALLOTONE TABLE}

<table>
<thead>
<tr>
<th></th>
<th>Tone 1</th>
<th>Tone 2</th>
<th>Tone 3</th>
<th>Tone 4</th>
<th>Tone 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame 1</td>
<td>LH</td>
<td>H</td>
<td>HL</td>
<td>L</td>
<td>M</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>M</td>
<td>M</td>
<td>H</td>
<td>HL</td>
<td>L</td>
</tr>
</tbody>
</table>

(16) Allomorph selection in TTS

\text{si[Tone 1]}

\text{\text{si[Tone 1]} [Frame 1]}

\text{\text{si[Tone 1]}}

\text{Output of lexicon: si[LH]}

\text{si[M]}

\text{ALLOMORPH SELECTION inserted into}

\text{syntactic environment matching [Frame 1]}

\text{inserted elsewhere}
5. Conclusions

We have argued that Taiwanese Tone Sandhi is an example of Lexicalized Phrasal Phonology. Because TTS involves the mechanism of allomorph selection without the mechanism of allomorph generation, TTS must be analyzed with the dual mechanism approach of precompilation theory. Parsimony considerations thus lead to the conclusion that the proper analysis of LPP, or indeed of lexical phonology in general, requires the dual mechanism approach.

NOTES

1. Although our discussion is couched entirely in rule formalism, there is no reason to believe that the insights could not be given instead in terms of the constraint-based formalism of Optimality Theory (e.g. Prince and Smolensky 1993); see, for example, the OT analysis of the LPP phenomena of French liaison and elision by Tranel (1994). However, we feel that Lexical Phonology provides a much more clearly articulated theory of the lexicon than any yet provided within OT. In particular, OT researchers appear to have lost interest in the important discovery that lexical and postlexical processes differ in specific and systematic ways, a discovery whose fundamental correctness is only reconfirmed by a deeper examination of apparent paradoxes like LPP.

2. Taiwanese is a language in the South Min branch of the Chinese family. For the most part, our discussion refers only to the dialect of this paper's first author (Tsyan), an Inland dialect spoken in the southern area of Taiwan including Chia-Yi, Tainan, and Kaohsiung counties.

REFERENCES


Kuo, Y. C. In prep. "Neutralization in checked tones in Chiayi Taiwanese." National Chung Cheng University ms.


Another Look at Unaccusative Mismatches in Japanese
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Indiana University

0. Introduction
Investigations of lexical semantics and its interaction with syntax have shown fruitful results in the pursuit of the nature of unaccusativity. Since Perlmutter's (1978) work, research on the identification and representation of unaccusativity has been undertaken cross-linguistically as well as from different theoretical perspectives. Examinations of unaccusative verbs from various theoretical frameworks by researchers such as Dowty (1991), Levin & Rappaport Hovav, (1995), Van Valin (1990), and Zaenen (1988, 1993), to name only a few, have come to agree on the generalization that semantic notions such as telicity, agentivity, and/or controllability contribute to the characterization of unaccusativity.

One of the phenomena that have helped elucidate the semantic characterization is "unaccusative mismatches" in the sense of L. Levin (1985). Unaccusative mismatches are described by Levin & Rappaport (1989:2) as "the situation in which different unaccusative diagnostics single out different classes of intransitive verbs within and across languages." An instance of an unaccusative mismatch that has been discussed in Dutch is illustrated in (1).

(1) a. Hij heeft/*is gelopen.
   he has/is run
   'He ran.'

b. Hij is/?heeft naar huis gelopen.
   he is/has to home run
   'He ran home.' (Zaenen 1993:136)

The auxiliary selection has been claimed to serve as a diagnostic test for unaccusativity, namely, have for unergative and be for unaccussative. (1a) shows that manner of motion verbs like run are unergative, but when it is accompanied by a goal phrase, as is illustrated in (1b), the auxiliary selection suggests that the manner of motion verb in this example is unaccusative.

Japanese has been claimed to disallow the conflation of manner of motion and direction of motion (cf. Talmy 1985) of the type illustrated by the Dutch example of (1b). On the other hand, it has also been observed that a particular selection of a goal phrase exceptionally allows for such conflation pattern. (cf. Yoneyama 1986, Tsujimura 1994). This exceptional status has been used to argue for unaccusative mismatches in Japanese since unergative manner of motion verbs exhibit some unaccusative properties when they appear with a goal phrase. (cf. Tsujimura 1994). In this paper I will demonstrate that such an exceptional behavior is only an illusory one and does not constitute an instance of unaccusative mismatches. I will further argue that the same situation can best be viewed as
consisting of an unergative manner of motion verb and a small clause adjunct to which the unaccusativity is attributed.

1. **Goal Phrases and Unaccusative Mismatches in Japanese**

   One of the diagnostic tests that has been extensively adopted for unaccusativity in Japanese is the interpretation and structure of Numeral Quantifier (NQ), as is advanced by Miyagawa (1989). In order to establish an appropriate modification relationship, a NQ and the NP that it modifies must be in a mutual c-command relation. Compare (2) and (3).

   (2) Gakusei-ga [VP inu-to san-biki hasitta].
       student-Nom dog-with three-cl. ran
       'The student ran with three dogs.'

   (3) *Gakusei-ga [VP inu-to san-nin hasitta].
       student-Nom dog-with three-cl. ran
       '(intended reading) Three students ran with dogs.'

   The classifier -biki in (2) and the classifier -nin in (3) are used to count animals and human beings, respectively. In (2) since the NQ san-biki and inu 'dog' are in a mutual c-command relation, the sentence is grammatical. In (3), on the other hand, the NQ san-nin 'three people' and the NP gakusei 'student', which it is intended to modify, are not in a mutual c-command relation, and hence the sentence is ungrammatical.

   Miyagawa argues that the NQ test serves as a diagnostic test for unaccusativity. This is shown in (4).

   (4) Ki-ga [VP taihuu-de ti san-bon taoreta].
       tree-Nom typhoon-by three-cl. fell
       'Three trees fell due to a typhoon.'

   The classifier -bon in (4) refers to long and cylindrical objects, and the NQ sanbon is intended to modify the subject NP ki 'tree'. The fact that the sentence is grammatical even though the NQ sanbon 'three' and the NP ki 'tree' are not in a mutual c-command relation suggests that the NP is originally in the VP-internal direct object position and is later moved to the subject position so that it can receive Case. Hence, this provides evidence that the verb taoreta 'fell' in (4) is unaccusative.

   As is demonstrated in (3), manner of motion verbs such as hasiru 'run', aruku 'walk', and oyogu 'swim' are unergative. Additional examples in (5-6) illustrate this point.
(5) *Gakusei-ga [VP inu-to san-nin aruita].
    student-Nom dog-with three-cl. walked
    '(intended reading) Three students walked with a dog.'

(6) *Gakusei-ga [VP inukaki-de san-nin oyoida].
    student-Nom dog paddling-by three-cl. swam
    '(intended reading) Three students swam by dog paddling.'

The NQ's and the subject NP's are intended to have a modification relation, but since they are not in a mutual c-command relation, the sentences are ungrammatical.

We have briefly mentioned earlier in (1) that in Dutch, manner of motion verbs, which are normally unergative, exhibit the unaccusative property in their auxiliary selection when they are accompanied by a goal phrase. The addition of a goal PP to unergative manner of motion verbs like *hasiru 'run', aruku 'walk', and oyogu 'swim' in Japanese is usually not allowed because, as Talmy (1985) extensively observes, Japanese is one of the languages that prohibit the conflation of manner of motion and directed motion. This is shown in (7-9).

(7) *Taroo-ga kooen-e/nī aruita.
    Taro-Nom park-to/to walked
    'Taro walked to the park.'

(8) *Hanako-ga uti-e/nī hasitta.
    Hanako-Nom house-to/to ran
    'Hanako ran home.'

(9) *Masao-ga kisi-e/nī oyoida.
    Masao-Nom shore-to/to swam
    'Masao swam to the shore.'

Instead, the conflation of manner of motion and directed motion can only be achieved morphologically by forming a complex verb that consists of a manner of motion verb and the inherently directed motion verb iku 'go'. This is shown in (10-12).

(10) Taroo-ga kooen-e/nī aruite-itta.
    Taro-Nom park-to/to walk-went
    'Taro went walking to the park.'

(11) Hanako-ga uti-e/nī hasitte-itta.
    Hanako-Nom house-to/to run-went
    'Hanako went running to the house.'
(12) Masao-ga kis-e/nī oyoide-itta.
Masao-Nom shore-to/to swim-went
'Masao went swimming to the shore.'

As Yoneyama (1986) and Tsujimura (1990, 1991) discuss, however, such conflation pattern is allowed with the selection of particular postposition, namely, made 'as far as'. All the examples in (7-9) become acceptable when the PP is headed by made, as is shown in (13-15).

(13) Taro-ga kooen-made aruita.
Taro-Nom park-as far as walked
'Taro walked to the park.'

(14) Hanako-ga uti-made hasitta.
Hanako-Nom home-as far as ran
'Hanako ran home.'

(15) Masao-ga kisi-made oyoida.
Masao-Nom shore-as far as swam
'Masao swam to the shore.'

Tsujimura (1994) further demonstrates that the combination of a manner of motion verb and a goal PP headed by made induces the unaccusative property, as the NQ test shows in (16). Compare (16) and ungrammatical sentences in (3), (5), and (6).

(16) a. Gakusei-ga [vpinu-to san-nin kooen-made hasitta].
student-Nom dog-with three-cl. park-as far as ran
'Three students ran to the park with a dog.'

b. Gakusei-ga [vpinu-to san-nin uti-made aruita].
student-Nom dog-with three-cl. home-as far as walked
'Three students walked home with a dog.'

c. Gakusei-ga [vpinukaki-de san-nin kisi-made
student-Nom dog paddling-by three-cl. shore-as far as oyoida].
swam
'Three students swam to the shore by dog paddling.'

The grammaticality of these sentences is reminiscent of the unaccusative verb in (4) as well as the Dutch sentences in (1). On the basis of the range of data shown in (16), Tsujimura (1994) concludes that manner of motion verbs accompanied by a goal PP headed by made induce the unaccusative property, and hence this situation constitutes an instance of unaccusative mismatches.
2. Problems

The unaccusative mismatch analysis of the range of data given in (16), however, encounters at least two problems. First, in languages that display unaccusative mismatches with manner of motion verbs and goal phrases, the goal phrases always form a syntactic constituent with the motion verbs if the verbs show the property particular to unaccusatives. In Dutch, for example, it is only when a goal phrase appears preverbally that the unaccusative property is observed. This is illustrated in (17).

(17) a. dat Jan naar Groningengewandeld heeft/is
    that John to Groningenwalked has/is

b. dat Jan gewandeld heeft/*is naar Groningen
    (Hoekstra 1984:246)

In (17a) the goal phrase is in the preverbal position, and hence the selection of *is is possible; whereas in (17b) the goal phrase is postverbal and the auxiliary selection suggests that the unaccusative property is not observed. This rigid word order is presumably to keep the constituency intact so that the manner of motion verb and the goal phrase together receive a proper telic interpretation, given that telicity is one of the main characteristics of unaccusativity.

The situation is rather different in Japanese. Consider the sentences in (18), in which the goal phrase is not adjacent to the manner of motion verbs.

(18) a. Gakusei-ga [vpinu-to kooen-made san-nin hasitta].
    student-Nom dog-with park-as far as three-cl. ran
    'Three students ran to the park with a dog.'

b. Gakusei-ga [vpinu-to uti-made san-nin aruita].
    student-Nom dog-with home-as far as three-cl. walked
    'Three students walked home with a dog.'

c. Gakusei-ga [vpinukaki-de kisi-made san-nin
    student-Nom dog paddling-by shore-as far as three-cl.
    oyoida].
    swam
    'Three students swam to the shore by dog paddling.'

Notice that the lack of adjacency between the verbs and the goal phrase does not change the status of the NQ test. That is, the NQ's are intended to modify the subject NP's, and even though the mutual c-command relation is not observed, the sentences are acceptable. Thus, if the sentences in (18) were considered as instances of unaccusative mismatches, the non-adjacency between the verbs and the goal phrases is left unaccounted for.
The second problem comes from the choice of aspectual modifiers that the alleged unaccusative mismatch sentences can distribute. One of the roles that a goal phrase plays in the type of unaccusative mismatch cases that we are discussing is to add a delimiter to the atelic eventuality denoted by the manner of motion verb, so that the eventuality is interpreted as telic. This change in telicity is reflected on the selection of aspectual modifiers. Manner of motion verbs, which by themselves are unergative, express an atelic eventuality and hence the aspectual modifier of the type "for X-time" cooccurs with them. When manner of motion verbs are accompanied by goal phrases, on the other hand, the eventuality denoted by the combination of the verb and the goal phrase is atelic, and the modifier of the type "in X-time" is selected. This prediction is borne out in the Dutch unaccusative mismatch cases, as is illustrated in (19-20).

(19) a. Hij heeft urenlang gelopen.
   'He has run for hours.'
   b. ??Hij is urenlang naar huis gelopen.
   'He is run home for hours.'

(Zaenen 1993:136)

(20) a. Hij heeft urenlang gezwommen.
   'He has swum for hours.'
   b. *Hij is urenlang wegzwommen.
   'He is swum-away for hours.'

(Zaenen 1993:137)

In the (a) sentences, the manner of motion verbs appear without a goal phrase. The eventualities denoted by these verbs are atelic, and the aspectual modifier of the type "for X-time" is compatible with the nature of the eventualities. As the auxiliary selection shows, the verbs in these sentences are unergative. In the (b) sentences, the delimiting expressions are added, and as the auxiliary selection indicates, they are unaccusative. Notice that in these sentences, the aspectual modifier of the type "for X-time" is not appropriate because the eventuality denoted by the verbs is telic. Thus, in Dutch, the unaccusative mismatch displays a very clear correlation among the presence of delimiting expression, telicity, and auxiliary selection.

The Japanese case of unaccusative mismatches presents a very obscure situation with aspectual modifiers. Examine (21-24).

(21) *unergative verb
   a. Taro-o itizikan(-no aida)aruita.
      Taro-Nom one hour(-Gen for) walked
      'Taro walked for an hour.'
   b. *Taro-ga itizikan-de aruita.
      Taro-Nom one hour-in walked
      'Taro walked in an hour.'
(22) unaccusative verb
   a. *Taro-ga itizikan(-no aida)tuita.
      Taro-Nom one hour(-Gen for) arrived
      'Taro arrived for an hour.'
   b. Taro-ga itizikan-de tuita.
      Taro-Nom one hour-in arrived
      'Taro arrived in one hour.'

(23) a. Taro-ga itizikan(-no aida)koien-made aruita.
      Taro-Nom one hour(-Gen for) park-as far as walked
      'Taro walked to the park for an hour.'
   b. Taro-ga itizikan-de koien-made aruita.
      Taro-Nom one hour-in park-as far as walked
      'Taro walked to the park in an hour.'

(24) a. Gakusei-ga [itizikan-de san-nin koien-made aruita].
      student-Nom one hour-in three-cl. park-as far as walked
      'Three students walked to the park in an hour.'
   b. Gakusei-ga [itizikan(-no aida) san-nin koien-made aruita].
      student-Nom one hour(-Gen for) three-cl. park-as far as walked
      'Three students walked to the park for an hour.'

The contrast between (21a) and (21b) suggests that the manner of motion verb aruku 'walk' without a delimiting expression is unergative and denotes an atelic eventuality. This should be contrasted with the range of aspectual modifiers that unaccusative verbs normally select. The verb tuita 'arrived' in (22) is an unaccusative verb, and as such, it selects the modifier of the type "in X-time". Notice that in (23) either type of aspectual modifier can be selected. If the unaccusative mismatch analysis were correct in that a manner of motion verb accompanied by a goal phrase induces unaccusativity, the freedom of aspectual modifiers observed in (23) would be totally unexpected. Furthermore, if we continue to assume that NQ test serves as a diagnostic for unaccusativity, (24) also presents an unexpected situation. That is, the grammaticality of (24b) suggests that the verb together with the goal phrase should be considered as unaccusative, and hence the selection of aspectual modifiers should pattern like unaccusative verbs like tuku 'arrive' in (22). Contrary to this prediction, either selection of modifiers is accepted.

Hence, the problems concerning the constituency and the selection of aspectual modifiers lead us to the question of whether the phenomenon observed in (16) should indeed be captured in terms of unaccusative mismatches.
3. Small Clause Analysis

An alternative view I would like now to present does not assume the multiple classification or the classification change of the manner of motion verbs that occur with a made phrase, but claims that the range of phenomena observed in (16) reflects a complex structure involving a small clause adjunct headed by the postposition made. Under this view, the manner of motion verbs in Japanese are always unergative regardless of the type of syntactic configurations in which they appear. I do, however, recognize the unaccusative property in (16), and I shall ascribe it to the unaccusative nature of the postposition made which heads a small clause adjunct. The small clause adjunct has a PRO subject that is coindexed with the subject of the unergative manner of motion verb that appears in this construction. The schematic structure is represented in (25).

(25) [NP$_i$...[sc PRO$_i$...made]...walk/run/swim]

The treatment of the postposition made as the small clause head playing a predicative role comes from its etymological source that has been analyzed by Martin (1987). Martin traces the origin of the postposition made to mande-: mande- is the infinitival form of the old intransitive verb maude(e)-, which is the honorific verb to mean "to come" and "to go". Thus, if made indeed has originated from the verb of inherently directed motion, it is reasonable to assume that made can bear a predicative function. Furthermore, in modern Japanese inherently directed motion verbs such as kuru 'come' and iku 'go' are unaccusative. Hence, this etymological analysis can provide support not only for the predicative function of made but also for the source of unaccusative properties.

Under this alternative analysis, the NQ phenomenon observed in (16), which originally motivated the unaccusative mismatch analysis, occurs only internally to the small clause, without relying on the classification shift of the manner of motion verbs from unergative to unaccusative. The sentences in (16) take the schematic structure of (26).

(26) [NP$_i$...[sc PRO$_i$...[ti...NQ...made]]...walk/run/swim]

As an unaccusative predicative element, made is associated only with an internal argument, which I consider to be PRO. The PRO needs to be moved to an ungoverned position, but its trace maintains a mutual c-command relation with the NQ, and since PRO is coindexed with the subject of the manner of motion verb, the NQ receives a proper interpretation. Notice that the NQ phenomenon in (16) arises not as a consequence of the classification shift of the manner of motion verbs but as a result of the unaccusative nature of made. In the case of (5-6), a small clause adjunct headed by made is not present. The manner of motion verbs are unergative and the NQ's have no way to find the NP's with which they can have a mutual c-command relation within the VP's, and the NQ's are unable to receive proper
interpretation. Thus, under this analysis, manner of motion verbs are always unergative while the un accusativity observed in these sentences is attributed solely to *made*.

Recall that the un accusative mismatch analysis has raised at least two problems concerning the constituency and the selection of aspectual modifiers. Neither is at issue under the current approach. First, it should be remembered that in order for a manner of motion verb and a goal phrase to be treated as an equivalent of an un accusative verb, they must form a constituent. Under the small clause analysis, however, there is no need to assume that the manner of motion verb and a *made* phrase form a constituent. As mentioned earlier, the manner of motion verb does not change its classification as unergative and *made* heads its own small clause adjunct. Since the un accusativity comes solely from *made*, the analysis does not require that the manner of motion verb and *made* be treated as a constituent. Rather, they are totally independent of each other.¹

Second, the small clause analysis also has a straightforward explanation for the selection of aspectual modifiers observed in (23-24). In these sentences, the manner of motion verbs are unergative and *made* is analyzed as un accusative, and the eventuality denoted by the manner of motion verbs is atelic whereas the eventuality induced by *made* is telic. It suggests that the two different types of aspectual modifiers are free to occur with either kind of eventuality. When the aspectual modifier of the type "for X-time" appears, it modifies the atelic eventuality denoted by the manner of motion verb while when the modifier of the type "in X-time" is selected, it modifies the telic eventuality associated with *made*. Since these sentences contain two different eventuality types, two possibilities in the selection of aspectual modifiers are a natural consequence of the current analysis. Again, isolating the un accusative properties of *made* from the unergative characteristics inherent to manner of motion verbs leads us to this natural conclusion.

Besides providing the solutions to the problems with the constituency and the selection of aspectual modifiers, the small clause analysis has another advantage over the un accusative mismatch approach concerning the notion of delimitedness. Tenny (1987) claims that there may be no more than one delimiter per eventuality. One of the semantic characteristics of un accusativity that we have been assuming is its telicity or delimitedness. Inherently directed motion verbs such as *go, come,* and *arrive,* being un accusative verbs, are considered to be lexically delimited. Under the un accusative mismatch approach, since the goal phrase headed by *made* plays a role as a delimiter that leads to the telicity that is relevant to un accusativity, we should predict that *made* would not be able to cooccur with an inherently directed motion verb because the combination of the two would end up with two delimiters. This prediction, however, is not borne out, as is illustrated in (27-28).

(27) Taroo-ga koeen-made itta.
    Taro-Nom park-as far as went
'Taro went to the park.'
(28) Hanako-ga watasi-no uti-made kita.
Hanako-Nom I-Gen house-as far as came
'Hanako came to my house.'

The problem with delimitedness does not even arise under the small clause analysis. In both (27-28), the made phrase forms a small clause adjunct and denotes an eventuality independent of the eventuality denoted by the inherently directed motion verb. That is, there are two sets of eventuality denoted in each of these examples, and this situation is entirely consistent with what Tenny claims.

4. Summary
To sum up, I have investigated an alleged case of unaccusative mismatches in Japanese, and have concluded that the range of phenomena that led to the unaccusative mismatch analysis should be reconsidered as not involving the verb's classification change from unergative to unaccusative or multiple classification both as unergative and as unaccusative. The alternative analysis I have proposed in this paper instead claims that the structure comprises a main clause and a small clause adjunct headed by made, whose predicative function can historically be traced to an unaccusative motion verb. The alternative approach departs from the unaccusative mismatch analysis in claiming that manner of motion verbs in Japanese are unambiguously unergative regardless of the syntactic environments in which they appear. I hope to have demonstrated that the small clause analysis not only provides a natural account of the range of phenomenon observed in this paper, but also maintains the general conflation pattern of manner of motion and direction of motion in Japanese without relying on idiosyncratic properties of a particular lexical item.

Notes
1. I tentatively assume that the examples in (18) involve scrambling of the made phrase. Due to some complications caused by the scrambling of a predicative element, I will not discuss this matter here. For more details on this, see Tsujimura (in progress).

References


The Distribution and Representation of Laryngeals

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1. Introduction

There have been various proposals on the representation of laryngeals. However, with respect to the specification of laryngeal node features, all standard analyses assume the presence of a laryngeal node feature, [constricted glottis] or [spread glottis] in the representation of /l/, /h/ as shown in (1) (Clements 1985, Sagey 1986):

(1)

\[
\begin{align*}
/l/ & \quad /h/ \\
\text{[? son]} & \quad \text{[? son]} \\
\text{[? cons]} & \quad \text{[? cons]} \\
\text{LN} & \quad \text{LN} \\
\text{ [+cons. gl]} & \quad \text{ [+spr. gl]} 
\end{align*}
\]

According to this view, /l/ and /h/ share a laryngeal feature with glottalized and aspirated consonants, respectively. That being the case, they are predicted to pattern together in some phonological processes. For example, one of the most common phonological processes involving laryngeal features is laryngeal neutralization, whereby all laryngeal distinctions are lost in syllable-final position. If laryngeals are represented as in (1), it is predicted that they will tend to occur only in syllable-initial position as glottalized and aspirated consonants do. However, there is no systematic survey of the behavior of /l/, /h/ with respect to laryngeal neutralization. The purpose of this paper is to examine the distribution of laryngeals and to relate it to their representations.

In order to address this issue of the representation of /l/, /h/, I did a crosslinguistic survey of the distribution of laryngeals in about 30 American Indian languages. Based on the pattern of the distribution of laryngeals in the languages examined, I propose, first, that laryngeals may be better represented without laryngeal features. Secondly, I propose that their special pattern of distribution in coda position can be accounted for by the Coda Condition (Ito and Mester 1994), together with the assumption that laryngeals are placeless.

This paper is organized as follows: Section 2 examines the distribution of laryngeals as compared to that of laryngeally-marked consonants. I suggest that representing laryngeals with laryngeal node features is not appropriate in some languages, by showing that there are languages in which /l// /h/ pattern differently than laryngeally-marked consonants. In addition, I provide an Optimality Theoretic analysis for the distributional patterns. In section 3, I summarize the distribution of laryngeals in syllable position in the languages that have /l/, /h/ without glottalized or aspirated consonants. Their special occurrence in coda position will be discussed. Section 4 concludes the paper.
2. The laryngeal constraint and /l/, /h/

The most common phonological process involving laryngeal features is laryngeal neutralization, wherein all laryngeal distinctions are lost in syllable-final position. Lombardi (1991) accounts for this type of restriction of laryngeal feature occurrence by way of a positive constraint which states that laryngeal features are licensed in the following configuration:

(2)

\[ \sigma \]

\[
\text{[Root]} \quad \text{[+son]} \\
\mid \\
\text{Lar}
\]

This would predict that laryngeally-marked consonants tend to be restricted to syllable-initial position. In addition, if laryngeals are represented with laryngeal features, it is predicted that /l/ and /h/ will show the same pattern of distribution as glottalized consonants and aspirated consonants, respectively or laryngeally-marked consonants as a whole in this respect. In this section, I examine the distribution of /l/, /h/, comparing it with that of glottalized and aspirated consonants.

For the study of the distribution of laryngeals, phonological descriptions of approximately 30 American Indian languages have been examined. Among them, 15 languages have both laryngeals and laryngeally-marked consonants. These languages can be divided into two classes, according to the distributional difference between laryngeals and laryngeally-marked consonants. In one class, /l/ and/or /h/ show the same pattern of distribution as C' and/or C\(^h\) (3a, 3b). In the other class, /l/ and/or /h/ show a different pattern of distribution than C' and/or C\(^h\) (3c). The languages in which /l/ and/or /h/ show the same pattern of distribution as C' and/or C\(^h\) are further divided into two types. In one group of languages, laryngeals/laryngeally-marked consonants occur only in syllable-initial position (3a). In the other languages, laryngeals/laryngeally-marked consonants occur both in syllable-initial and in syllable-final position (3b). The following summarizes each pattern of language and the distribution of /l/, /h/ and glottalized/aspirated consonants:

(3)

a. languages in which both /l/, /h/ and C'/ C\(^h\) occur only in syllable-initial position

<table>
<thead>
<tr>
<th></th>
<th>syllable-initial</th>
<th>syllable-final</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>?</td>
<td>C'</td>
</tr>
<tr>
<td>NE Maidu</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tojolabal</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cuzco Inca</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Yuchi(^d)</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

✓: occurrence  *: non-occurrence  n/a: non-existence in the inventory
b. Languages in which both /l/, /h/ and C'/Ch occur both in syllable-initial and syllable-final position

<table>
<thead>
<tr>
<th>Language</th>
<th>Syllable-initial</th>
<th>Syllable-final</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C'</td>
<td>h</td>
</tr>
<tr>
<td>Tsotsil</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Mayan Chontal</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Hokan Chontal</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

c. Languages in which /l/, /h/ show different pattern of distribution than that of C'/Ch

<table>
<thead>
<tr>
<th>Language</th>
<th>Syllable-initial</th>
<th>Syllable-final</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C'</td>
<td>h</td>
</tr>
<tr>
<td>Washo</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tolowa</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tewa</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Kiowa-Apache</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Navaho</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Slave</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Siona</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tututni</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

2.1. Laryngeal constraint type
2.1.1 Distribution and representation

In Northeastern Maidu, Tojolabal, the Cuzco dialect of Inca and Yuchi, laryngeal features are restricted to syllable-initial position. Northeastern Maidu (Shipley 1956) has the following consonant inventory: /p, t, c, k, b, d, p', t', c', k', ?, s, h, m, n, l, w, y/. The following consonants occur only syllable-initially: /b, d, p', t', c', k', /l. That is, /l/ and glottalized consonants (/p', t', c', k'/) are limited to syllable-initial position. In addition, voiced obstruents (/b, d/) are also limited to syllable-initial position. This suggests that the laryngeal constraint is active in this language.

Tojolabal (Supple and Douglass 1949) has the following consonant inventory: /p, t, k, t's, c, p', t', k', t's', c'/, ?, s, š, h, m, n, l, r, w, y/. Any consonant except glottalized consonants (/p', t', k', t's', c'/) and /l/ may occur as the first member of word-medial biconsonantal clusters, which means that glottalized consonants and /l/ occur only in syllable-initial position.

It is noteworthy that /h/ does occur in syllable-final position in Northeastern Maidu and Tojolabal. If /h/ is represented with a laryngeal node, it is predicted not to occur in syllable-final position according to the laryngeal constraint proposed by Lombardi. It seems to be a case in which the laryngeal constraint has to refer to a specific laryngeal feature such as [constricted glottis]. However, restricting the laryngeal constraint so that it applies to a specific feature does not capture the
generalization that all laryngeal features are neutralized in syllable-final position. For example, in Northeastern Maidu, voiced stops as well as glottalized consonants are not allowed in syllable-final position, which suggests that the laryngeal constraint applies to all laryngeally-marked consonants.

The interesting fact about Tojolabal and Maidu is that they do not have aspirated consonants in their consonant inventories. Bessell (1993) claims that /h/, /h/ are represented with laryngeal features only when there are phonological reasons for the presence of phonation features such as inventory contrast or reference in phonological rule. Therefore, according to her, when there is no phonological reason for the presence of phonation features in the language, laryngeals are represented as follows:

\[
\begin{align*}
/h/ & : \left[\begin{array}{c}
-\text{son} \\
\text{(+cons)} \\
\text{(-cont)}
\end{array}\right] \\
\end{align*}
\]

Representing /h/ with a laryngeal node gives the wrong prediction that it will pattern together with /h/ and C' in its distribution. Note, however, that Maidu and Tojolabal do not have aspirated consonants in their inventories. Therefore, following Bessell, I propose that /h/ is represented as a placeless continuant without a laryngeal node, unlike /h/, in Tojolabal and Maidu. If so, the laryngeal constraint does not apply to /h/, which will account for the distributional fact of /h/. In addition, /h/ patterns as the other fricatives in Tojolabal in that it may occur as the first member of onset clusters along with /s/ and /s/. If /h/ is represented with a laryngeal node, the fact that /h/ patterns as continuants rather than as other laryngeally-marked segments will not be accounted for.

On the other hand, in the Cuzco dialect of Inca, /h/ is also restricted to syllable-initial position along with /h/ and C'/Ch. The Cuzco dialect of Inca (Rowe 1950) has aspirated consonants in the phonemic inventory, which means that [spread glottis] is used as phonation feature. Therefore, /h/ in the Cuzco dialect of Inca is represented with a laryngeal node and it accounts for the fact that /h/ patterns as other laryngeally-marked consonants.

2.1.2. Optimality Theoretic analysis

In this section, I analyze the laryngeal neutralization phenomena in the framework of Optimality Theory. I adopt the constraint-based approach of Optimality Theory, since it accounts for the languages which do not show laryngeal alternations as well as those which do. Lombardi (1994) suggests the following laryngeal alignment constraint:

\[
\text{(5) Align-Left (Laryngeal node, Syllable)}
\]

This constraint which requires that the laryngeal node occur at the left edge of a syllable, together with the interaction with the Faithfulness constraints, provides two types of laryngeal distribution: 1. syllable-initially restricted laryngeal distribution; 2. unrestricted distribution. That is, if the constraint Align-Left dominates MAX-IO, the effect of the laryngeal constraint is visible. On the other
hand, if it is dominated by MAX-IO, the effect of the laryngeal constraint is not visible. Thus, in Northeastern Maidu, Tojolabal, and the Cuzco dialect of Inca, Align-Left is ranked above MAX-IO. The following tableau illustrates the constraint interaction resulting in laryngeal neutralization:

(6) Align-Left (Laryngeal node, σ) >> MAX-IO

<table>
<thead>
<tr>
<th>(huk') 'one'</th>
<th>Align-Left (Lar, σ)</th>
<th>MAX-IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. huk</td>
<td>!</td>
<td>*</td>
</tr>
<tr>
<td>---b. huk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following is the example from Maidu:

(7) /juhju/ 'quail'

<table>
<thead>
<tr>
<th></th>
<th>Align-Left (Lar, σ)</th>
<th>MAX-IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>---a. juhju</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. juju</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The occurrence of /h/ in syllable-final position in (7a) does not violate the constraint Align-Left, since /h/ does not have a laryngeal node in this language. Therefore, (7a) is chosen as the optimal output.

2.2. No Restriction type

There are languages in which /l/, /h/ and glottalized consonants can occur both in syllable-initial and in syllable-final position. Tsotsil, Mayan Chontal, and Hokan Chontal belong to this type.

Tsotsil (Weathers 1947) is a member of the Mayan family, which has the following consonant inventory: /b, p, t, k, c, č, ?, p’, t’, k’, c’, č’, m, n, s, š, h, v, y, l, r/. Glottalized consonants as well as /l/ and /h/ can occur in syllable-final position. As the first member of biconsonantal onset clusters, /h, s, š, č, c/ may occur. The examples are cm, hn, sn, šm and šm. This indicates that /h/ patterns as other fricatives.

Mayan Chontal (Keller 1959) has the following consonant inventory: /p, t, k, p’, t’, k’, b, d, g, ?, c, č, c’, č’, s, š, h, w, y, m, n, l, r/. Glottalized consonants occur both in syllable-initial and in syllable-final position (#, V, VC, VCV and VCV and #). The distribution of /l/, /h/ is exactly the same as that of glottalized consonants.

Hokan Chontal (Waterhouse and Morrison 1950) has the following consonant inventory: /l’, c’, č’, L’, k’, ?, f, s, š, x, p, t, c, t’, č, k, b, d, r, g, m’, n’, ň, l’, w’, N, l, l’y, Y, W, m, n, ň, r, ĺ, l, l’y, y, w/. Glottalized consonants and voiceless sonorants as well as /l/, /h/ can occur both in syllable-initial and syllable-final position. They also occur as a member of word medial triconsonantal clusters such as nk’m, nk’l, nk’w, nk’p, ylt’y. This suggests that the laryngeal constraint is not active in this language.

As seen above, in these languages, laryngeal features do not obey any specific constraint on distribution. Therefore, the constraint MAX-IO dominates Align-Left (Lar, σ) in this type of language so that Align-Left (Lar, σ) does not have any effect. This constraint ranking is opposite to the one in languages that
show the laryngeal neutralization effect. The following illustrates the constraint interaction which results in the appearance of the optimal output:

(8) Mayan Chontal: MAX-IO >> Align Left (Lar, σ)

<table>
<thead>
<tr>
<th>/yu?/ 'kind of nut'</th>
<th>MAX-IO</th>
<th>Align-Left (Lar, σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-----&gt; a. yu?</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. yu</td>
<td></td>
<td>!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>/nok'/ 'cloth'</th>
<th>MAX-IO</th>
<th>Align-Left (Lar, σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-----&gt; a. nok'</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. nok</td>
<td></td>
<td>!</td>
</tr>
</tbody>
</table>

With the higher ranking of MAX-IO, the first candidates in (8a) and (8b) which have a laryngeal node on the right edge of a syllable are optimal, although they violate the constraint Align-Left.

2. 3. Laryngeals without a laryngeal node

There are languages in which /l/, /h/ show a different pattern of distribution than that of laryngeally-marked consonants. That is, in some languages /l/, /h/ occur in syllable-final position, while aspirated and glottalized consonants do not. The examples are Washo, Tolowa (Smith River Athapaskan), Tewa (Santa Clara dialect), Kiowa-Apache, Navaho, Slave, Siona and Tututni (Oregon Athapaskan).

Washo (Jacobsen 1958) has the following consonant inventory: /p, t, k, b, d, g, p', t', k', s, š, h, m, n, ŋ, M, N, Ń, w, l, y, W, L, Y/. Syllable-finally, the following consonants may occur: /p, t, k, ?, s, š, h, m, n, ŋ, w, l, y/. That is, voiced and glottalized obstruents and voiceless sonorants, which I assume to be underlyingly aspirated following Mester and Ito (1989), do not occur syllable-finally. All consonants excluded from syllable-final position are laryngeally-marked consonants. On the other hand, /l/, /h/ occur in syllable-final position. This is a case where the laryngeal feature of the glottal stop or /h/ shows a different pattern of distribution than that of laryngeally-marked consonants.

Tututni (Golla 1976) has the following consonant inventory: /t, č, b, d, ž, g, gʷ, ?, t', ʰ, c', c'ʷ, ć', k', kʷ, ć, s, s', š, x, xʷ, h, m, n, l, y, y, yʷ/. Syllables are of three types: open, closed by a non-laryngeal consonant, closed by a laryngeal consonant (?), or by a cluster that includes a laryngeal. Non-laryngeal consonants found in syllable-final position include, /m, d, n, t, s, š, g/, and /gʷ/. Clusters such as /t/i, ň, ňi, ʰ, g/, ʰg, ňl, ʰl, /l/ as well as the single segments /i/ and /h/ occur in syllable-final position. On the other hand, glottalized consonants (t', ʰ, c', c'ʷ, ć', k', kʷ) and aspirated consonants (t, č) do not occur in syllable-final position, which suggests that the laryngeal constraint is active.

In Navaho (Sapir and Hoijer 1967), there is a three-way contrast of plain voiceless, voiceless aspirated and glottalized stops and affricates. Glottalized sonorants /m', n', y'/ also occur. Syllable-finally, only plain voiceless consonants /d, g/ and /s, z, š, ž, l, n, ?, h/ are allowed. That is, laryngeally-marked consonants occur only in syllable-initial position. However, /l/, /h/ may occur in
syllable-final position. This is also true in Kiowa-Apache (Bittle 1963). In Kiowa-
Apache, although there is a three-way contrast among plain voiceless, voiceless
aspirated and glottalized stops syllable-initially, only plain voiceless stops occur in
syllable-final position. In addition, /n/, /h/ are allowed in syllable-final position.

In Tewa (Hoijer and Dozier 1949), the following consonants occur: /b, d, r,
g, p, t, t’, k, k’, p’, t’, k’, x’, x’/, m, n, n’, v, f, e, s, ʃ, x, x’, w, y, h, h’/.
Syllable-finally, only /n/, /h/ and /n/ are allowed. This language shows not only that
/n/, /h/ show a different pattern of distribution than laryngeally-marked consonants,
but that they are uniquely allowed in coda position excluding other consonants.
In this language, a special condition for the coda consonant seems to be required.
Slave (Rice 1989) and Siona (Wheeler and Wheeler 1962) are also the cases where
only /n/ (and /h/) is (are) allowed in coda position. The special occurrence of
laryngeals as coda consonant will be discussed again in section 3.

All of these languages show that laryngeals behave differently than
laryngeally-marked segments with respect to the laryngeal neutralization. Lombardi
(1991) argues that the laryngeal constraint can be further restricted in some
languages so that it applies to the specific class of segments such as obstruents.
For example, in Tolowa, glottalized obstruents are restricted to syllable-initial
position, whereas glottalized nasals (/m’, n’/) and /n/, /h/ occur in syllable-final
position. In order to account for this, she suggests that the laryngeal constraint
applies only to obstruents, assuming that /n/, /h/ are sonorants in this language.
However, whether /n/, /h/ act as sonorants in this language should be considered.
In addition, her proposal still cannot account for languages such as Washo and
Navaho. As seen above, in Washo and Navaho, both laryngeally-marked
obstruents and laryngeally-marked sonorants are not allowed in syllable-final
position.

If laryngeals are represented with a laryngeal node, it cannot be explained
that laryngeals are not restricted to syllable-initial position in these languages.
Therefore, I propose that laryngeals are represented without a laryngeal node in
these languages as in (4), repeated in the following:

\[(9) \]
\[
\begin{array}{c}
\text{+/n/} \\
\quad \text{(+cont)} \\
\quad \text{(+son)} \\
\quad \text{(+cons)} \\
\end{array}
\quad \begin{array}{c}
\text{+/h/} \\
\quad \text{(+cont)} \\
\quad \text{(+son)} \\
\quad \text{(+cons)} \\
\end{array}
\]

If laryngeals are represented without a laryngeal node feature as in (9), they are not
subject to the laryngeal constraint. In other words, their occurrence in syllable-final
position does not violate the constraint Align-Left (Laryngeal Node, Syllable).
Therefore, the fact that they are allowed in syllable-final position can be explained.
This suggests that laryngeals are represented without a laryngeal node even when
phonation features are used in the language.

To summarize the discussion so far, I have shown that representing
laryngeals with a laryngeal node may give a wrong prediction on the distributional
pattern of laryngeals. Therefore, I have proposed that laryngeals are represented
without a laryngeal node in some languages. This suggests that the proper
representations of laryngeals should be based on their phonological behaviors in the
language.
3. The distribution of /l/, /h/ with respect to syllable structure

In this section, I will examine the distribution of laryngeals in syllable position in languages which have both /l/ and /h/, but not laryngeally-marked consonants. From the observation of the distribution of these segments, the following generalizations are obtained: first, laryngeals are preferred as a coda consonant in some languages; second, /h/ tends to be restricted to syllable-initial position. I propose that the Coda Condition (Ito and Mester 1994), which is motivated by facts of syllable structure conditions in many other languages, can account for the special occurrence of laryngeals in coda position, together with the assumption that laryngeals are placeless.

3.1. Special coda

Laryngeal neutralization, which Lombardi (1991) argues to be a result of a positive well-formedness constraint, the Laryngeal Constraint (a laryngeal node is only licensed in a particular syllabic configuration) would predict that /l/, /h/ along with glottalized and aspirated segments tend to be restricted to syllable-initial position. In section 2, I have suggested that laryngeals are represented without laryngeal node features in some languages. However, if the laryngeal constraint reflects phonetics, it may be predicted that laryngeals also tend to be restricted to syllable-initial position as other laryngeally-marked consonants. The following table shows the (non-) occurrences of laryngeals in syllable-initial and syllable-final position:

(10) Table 1: distribution of /l/, /h/ in terms of position in syllable

<table>
<thead>
<tr>
<th>Language</th>
<th>syllable- initial</th>
<th>syllable- final</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>/l/</td>
<td>/h/</td>
</tr>
<tr>
<td>Huichol</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Cuicateco</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Keresan</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Amahuaca</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Arapaho</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Usila Chinantec</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Zoque</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Slave</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Pame (Otomí)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Cheyenne</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Cofan</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Siona</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Tenango Otomi</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

With the exception of Tenango Otomi (Blight and Pike 1976), which has only open syllables, in all languages, /l/ occurs both in syllable-initial and syllable-final position. In addition, a closer look at the distribution of other consonants in these languages will tell us that /l/ (and /h/) tend(s) to be preferred over other
consonants in coda position. In other words, there are languages where /l/ (and /h/) is (are) the only segment(s) that occur(s) in syllable-final position. Cuicateco, Cheyenne, Tewa, Slave, Siona and Cofan belong to this type.

In Cheyenne, only /l/ and /h/ occur syllable-finally among other consonants. In Cuicateco, in slow speech, /l/ is the only consonant that occurs finally in the utterance. In this language, all the syllables are open or end in /l/. In Tewa (Santa Clara dialect), only /l/, /h/ and /h/ occur in syllable-final position. The allophones of /h/ in syllable-final position are: [m] when followed by a bilabial, [n] when followed by an alveolar, and [η] when followed by any other consonants. This suggests that /h/ is not specified with place (placeless) or place-linked with the following consonant. In Slave, only /l/, /h/ and /h/ can occur in syllable-final position. In Siona and Cofan (Borman 1962), only /l/ occurs as a coda consonant.

This special occurrence of /l/ or /h/ in syllable-final position in these languages can be dealt with by means of the Coda Condition. Ito and Mester (1994) suggest that the Coda Condition can be formalized as an alignment constraint requiring consonants to be left-aligned with syllables as follows:

(11) Align-C: Align-Left (CPlace, σ)

I propose that these Special coda type languages can be considered to have the Coda Condition. I also assume that laryngeals are placeless. The Coda Condition dominates MAX-IO in this type of language where only placeless consonants are allowed in coda position.

(12) Align-C: Align-Left (CPlace, σ) >> MAX-IO

<table>
<thead>
<tr>
<th>Tewa: /but/ 'town'</th>
<th>Align-C: Align-Left (CPlace, σ)</th>
<th>MAX-IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>----&gt; bu?</td>
<td>bu</td>
<td>*!</td>
</tr>
</tbody>
</table>

Since /l/ and /h/ are assumed to be placeless, their appearance in syllable-final position does not violate this Align-C constraint. However, the output candidates which have other consonants in syllable-final position get marks (*). That is, the Coda Condition, which is motivated by facts of syllable structure condition in many other languages, can account for the special occurrence of laryngeals in coda position, together with the assumption that laryngeals are placeless.

To summarize, the comparison of the occurrence of other consonants in coda position with that of /l/ shows that /l/ has a special property as a syllable-final element. That is, /l/ tends to be preferred to other consonants as a syllable-final consonant. This special coda type can be explained in terms of the Coda Condition.

However, the comparison of the distribution of /l/ in syllable position with that of /h/ shows that /h/ is more restricted in occurrence with regard to the position in the syllable. In Keresan (Spencer 1946), all consonants, with the exception of /h/, occur regularly in word initial, medial, and final position. This means that all consonants occur in syllable initial and final position and that only /h/ is excluded in syllable-final position, since all final syllables are closed in this language. In Amahuaca (Osborn 1948), /l/ and all fricatives except /h/ occur in syllable-final position. /h/ does not pattern with other fricatives in that it does not occur syllable-finally. In Huichol (McIntosh 1945) and Pame Otomi (Gibson 1956), /h/ is
uniquely excluded in syllable-final position, while /h/ is allowed. Therefore, a more specific constraint which applies only to /h/, for example, the following constraint which requires that /h/ be left-aligned with a syllable, is needed in these languages:

(13) Align-Left (h, σ)

This constraint is ranked above MAX-IO in these languages where /h/ is not allowed in syllable-final position. The limited occurrence of /h/ might be due to its phonetics such that it is perceptually weak in syllable-final position. This calls for further research.

4. Conclusion

In this paper, I have examined the distribution of laryngeals and accounted for their patterns of distribution by referring to their representations. I have shown that representing laryngeals with laryngeal node features is misleading in that it would give a wrong prediction for their patterns of distribution. Therefore, I have proposed that laryngeals should be represented without laryngeal features in some languages. This may suggest that the laryngeal features that laryngeals are assumed to have are different from those which laryngeally-marked consonants have (i.e. phonation features). That is, the larynx may work as a place of articulation in /h/, while it works as the source of phonation. However, in order to provide their proper representation, more studies on their phonetic properties and various phonological behaviors are required.

The other thing that needs further research regarding laryngeals and laryngeal features is the relationship of the laryngeal features that laryngeally-marked obstruents have and those which laryngeally-marked sonorants have. That is, the different behaviors that laryngeally-marked obstruents and sonorants with respect to the laryngeal constraint as seen in the case of Tolowa, suggest that phonation features have different effects according to which class of segments they are realized on. This may be related to phonetics. The study of laryngeals in this paper suggests that the incorporation of phonetic aspects into phonological rules (constraints) is necessary in order to provide a proper explanation for the distributional pattern of laryngeals and laryngeal features.

Notes

* I am grateful to Nicola Bessell, Scott Myers and Jabier Elorrieta for their comments and suggestions on the earlier version of this paper. All the remaining errors are, of course, mine.
1. There has been disagreement regarding the specification of major class features. However, I will not go into detail about this in this paper. For the detailed discussion of this issue, see Bessell (1993).
2. Following Lombardi (1991) I assume that plain voiceless obstruents and voiced sonorants are the segments laryngeally unmarked. Therefore, voiced/glottalized/aspirated obstruents and glottalized/voiceless sonorants belong to the class of laryngeally-marked segments.
3. Even if, /h/ cannot be syllable-final within a word, it can be syllable-final at the edge of a word. Lombardi (1994) provides an analysis for languages that show word-final exceptionality.
4. There is no closed syllable in this language.
5. In this language, glottalized sonorants are allowed in syllable-final position, whereas glottalized obstruents are not allowed.
6. I assume that /l/ is represented with a laryngeal node in this language, since the laryngeal feature [constricted glottis] is otherwise used for inventory contrast. However, this does not affect the analysis, because the laryngeal constraint is not active in this language.
7. In this language, /t/, /č/ are voiceless aspirated and /b, d, ŋ, g, gʷ/ are voiceless unaspirated.
8. The other stops do not occur in syllable-final position. Only fricatives (except /h/) occur syllable-finally. /l/ does not pattern with other stops in that it does occur syllable-finally.
9. /h/ does not pattern with other fricatives in that it does not occur syllable-finally.
10. Only /l/ can occur syllable-finally. Skinner (1962) analyzes it as the final member of complex peak.
11. Only /l/ and /h/ can occur syllable-finally.
12. There is no closed syllable in this language.

References

Hoijer, H. and E. Dozier 1949. The phonemes of Tewa, Santa Clara dialect. IJAL 15: 139-144.
Spencer, R. 1946. The phonemes of Keresan. IJAL 12: 229-236.
Wonderly, W. 1951. Zoque II: phonemes and morphophonemics. IJAL 17: 105-123.
Sound Change and Grammaticalization in Japanese Verb Morphology
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University of California, Berkeley

Although Modern Japanese is agglutinative, and can have several suffixes attached to a verb, the possible combinations of suffixes are quite limited relative to older stages of the language. The purpose of this paper is to investigate reasons for the change from a more freely agglutinating system to the restricted system found in the modern language. The three factors considered are 1) opacity of the older morphological system due to sound change, 2) a tendency for suffixes to shift to a suffix type which can only appear at the end of the verb, and 3) new semantic overlaps created by grammaticalization of some suffixes.

Classical Japanese, by which I mean approximately 8th to 13th century Japanese, had a complex system of verbal morphology involving three types of suffixes. I will call the three types derivational, connecting, and ba-type suffixes. A verb root or a derivational suffix must be followed by one of the six connecting suffixes, and a verb root or derivational suffix plus a connecting suffix forms a stem. Derivational suffixes subcategorize for a particular stem before them, so a connecting suffix must occur between other morphemes of the verb. No verb root or connecting suffix can appear in the root form, since any following morpheme requires a particular stem to attach to, and the syntax of the sentence also requires a particular stem for the end of the verb. The possible arrangements of suffixes are shown in 1.

1. stem-connecting
   stem-connecting-derivational-connecting
   stem-connecting-derivational-connecting-derivational-connecting
   stem-connecting-ba-type
   stem-connecting-derivational-connecting-ba type

The ba-type suffixes (named after their most common member) behave like the derivational suffixes in that they require a particular stem (with connecting suffix) to their left, but they cannot be followed by a connecting suffix, and thus do not form the six stems that derivational suffixes do. Therefore, they can only appear at the end of a verb, since they cannot provide the appropriate stem for a further derivational suffix to attach to.

When connecting suffixes appear at the end of a verb, they serve as grammatical formatives. They mark the right edge of a major constituent, such as the main verb of the sentence or the verb of a relative clause. However, when connecting suffixes appear inside the verb, they have no grammatical meaning, and simply serve as the "glue" (Quinn, 1987) between the other morphemes. Examples of verbs with derivational suffixes are shown in 2. I have adopted Quinn's (1987) convention of writing connecting suffixes in capital letters.

2. todomar-I tar-U
   stop cont.-completive attrib.
   "having stopped"

(Hoojooki, 23)
be[incompl.-neg_cont.-past_cond.-provisional  
"since it was not"

In /todomaritaru/, the continuative stem, /todomar-i-/ is required by the derivational suffix /-tar-/. The attributive stem of the derivational suffix, /tar-u/, is used because this verb is in a relative clause. In /arazarikereba/, the incompletive stem /ar-a-/ is required by the derivational suffix /-zar-/, the continuative stem /zar-i-/ is required by the derivational suffix /-ker-/, and the conditional stem /ker-e-/ is required by the ba-type suffix /-ba/. /-ba/ must be the end of the verb, since, as a ba-type suffix, it cannot be followed by a connecting suffix.

I refer to this system of verbal morphology as a "layering" system because a connecting suffix is "layered" between all the other morphemes of the verb. This system can be analyzed conveniently in a well articulated theory of stem morphology (such as in Aronoff (1994)), as has been done in the description above. This is very similar to the traditional, philological Japanese analysis, in which a verb plus its connecting suffix (here, a stem) is considered a unit, although one important motivation for using that analysis in Japan is that these verb stems can be written in the strictly CV Japanese orthography, while verb roots cannot. The preferred linguistic analysis of Modern Japanese makes the connecting suffix into part of the following derivational suffix, not a part of the preceding verb, but there are both formal and functional reasons (which will not be discussed here) against applying that analysis to Classical Japanese.

Classical Japanese had a large number of both derivational and ba-type suffixes, although membership in these groups changed over time. In Hoojooki, a Buddhist essay which was written in 1212 (the Kamakura Period), there are 15 different derivational suffixes and 5 ba-type suffixes. Manyooshuu, composed around the eighth century, uses approximately the same number, although several are different suffixes. Even though not every two suffixes could be combined in the same verb, there were many possible combinations yielding verbs with two or three derivational and/or ba-type suffixes. In this paper, I will present numerical data on suffix occurrences from several time periods. All of the numerical data is summarized in 3.

Hoojooki contains 483 verbs with at least one derivational or ba-type suffix, of which 44 have two suffixes and 4 have three. These 48 verbs can be divided into three categories: those ending with a ba-type suffix (exemplified in 4), those with the causative or passive as the first derivational suffix (shown in 5), and other combinations of two derivational suffixes (shown in 6). The reason for this classification will become clear when compared with Modern Japanese.
3. Number of occurrences of various combinations for different time periods

<table>
<thead>
<tr>
<th>text/time period</th>
<th>no. of verbs examined</th>
<th>total verbs with 2+ suffixes</th>
<th>no. ending in a ba-type suffix</th>
<th>no. with caus., pass., or potential (MJ) as first suffix</th>
<th>other combinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoojooky (1212)</td>
<td>483</td>
<td>48 (4 w/ 3 suffs.)</td>
<td>23</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>Saikaku (17th century)</td>
<td>577</td>
<td>44 (2 w/ 3 suffs.)</td>
<td>20</td>
<td>23</td>
<td>4</td>
</tr>
<tr>
<td>Modern Japanese</td>
<td>400</td>
<td>40 (1 w/ 3 suffs.)</td>
<td>32</td>
<td>27</td>
<td>1</td>
</tr>
</tbody>
</table>

Numbers do not add up to the total because occurrences with both the passive or causative and a ba-type suffix are counted in both categories, and verbs with three suffixes are counted once for the first and second suffix and once for the second and third.

4. 2-suffix verbs ending in a ba-type suffix

- sirA-nE-ba (Hoojooky, 30)
  know_incompl._neg._cond._provisional
  'since (we) did not know'

- miE-slKA-do (Hoojooky, 33)
  seem_cont._past_cond._concessive
  'even though it seemed'

5. 2-suffix verbs with passive or causative as the first suffix

- kobotA-rE-tE (Hoojooky, 27)
  dismantle_incompl._pass_cont._assertive_cont.
  'were definitely dismantled'

- yorokobA-simE-mU (Hoojooky, 38)
  rejoice_incompl._caus_incompl._conjecture_concl.
  'intend to cause to rejoice'

6. Other combinations

- nI-tarl-kerU (Hoojooky, 23)
  resemble_cont._completive_cont._past_attr.
  'resembled'

- sirE-rI-sl (Hoojooky, 24)
  know_imp._completive_cont._past_attr.
  'knew, came to know'
sirI-nU-besI (Hoojooki, 29)
know_cont-.assertive acclaimed potential concl.
'can certainly know'

/-zarI-kI/ neg.-past
/-zarI-kerI/ neg.-storytelling past
/-nl-kI/ assertive-past
/-nl-kerI/ assertive-storytelling past
/-tarI-tU/ complete-assertive
/-tU-besI/ assertive-potential

In Hoojooki, 9 verbs with two or more suffixes use the causative or passive (the category in 5), 23 end in a ba-type suffix (the category in 4), and 21 have other combinations (the category in 6). The data in 6 shows that, at the time of Hoojooki, there were many possible combinations of suffixes which neither end with a ba-type suffix nor contain the causative or passive.

In Manyooshuu, which is quite long and therefore contains more suffixed verbs, there are many more possibilities for the "other combinations" category. These combinations are shown in 7.

7. Additional "other combinations" in Manyooshuu
/-tE-kI/ assertive-past
/-tE-kemU/ assertive-past conjecture
/-tE-mU/ assertive-conjecture
/-tE-masI/ assertive-conjecture
/-tE-kerI/ assertive-storytelling past
/-zU-tU/ negative-assertive
/-zU-kI/ negative-past
/-zU-kemU/ negative-past conjecture
/-zU-kerI/ negative-storytelling past
/-zarA-mU/ negative-conjecture
/-zarA-masI/ negative-conjecture
/-tarE-rI/ complete-assertive
/-tarI-kI/ complete-past
/-tarA-mU/ complete-conjecture
/-rI-kemU/ complete-past conjecture
/-rI-kerI/ complete-storytelling past
/-rA-mU/ complete-conjecture
/-rA-masI/ complete-conjecture
/-kerA-zU/ storytelling past-negative

Some of these combinations might have occurred in the later Hoojooki if the text had been longer, others were probably not possible by that time. For example, in Hoojooki /-zU/ (negative) combines only with the passive or the ba-type suffixes
/-ba, -do/, and there is no reason to believe it could appear with anything else. The combinations /-kerA-zU/ and /-zU-kerI/, which occur in Manyooshuu (Yokoyama 1950), were not possible in Genji Monogatari (written two centuries after Manyooshuu), although Genji also provides a very large corpus. However, it is clear that a great variety of suffix combinations in the "other combinations" category were possible at the time of Manyooshuu, and many of them were still available in Hoojooki four centuries later.

Turning to Modern Japanese, we find a very different system of verbal morphology. The layering system is nearly or completely gone. Most linguistic analyses of Modern Japanese inflection (Vance 1987:184, 189) make what is left of the old word-internal connecting suffixes into part of the following derivational suffix, with the vowel dropped after a vowel-final verb stem. Simplifications of the Classical paradigm have removed the obstacles which made it difficult to accept this analysis for Classical Japanese.

Modern Japanese is also quite different from Classical in the way it combines multiple suffixes. Verbs with multiple suffixes are still possible in Modern Japanese, as in 8-10, and it is still known as an agglutinative language.

8. ik-ase-rare-mas-ita
   go-caus.-pass.-polite-past
   'was caused to go'

9. i-rare-nakat-ta
   be-potential-neg.-past
   'could not be'
   (Umeda et al, 1987:113)

10. donar-are-te
    shout-pass.-gerund
    'was shouted at and'
    (Umeda et al, 1987:113)

However, the number of possible suffix combinations has decreased greatly. Classical Japanese had multiple-suffix verbs in three categories: those ending in a ba-type suffix, those with the causative or passive as the first suffix, but also those with a variety of other combinations. In Modern Japanese, almost all verbs fall into the first two categories: they either end with a ba-type suffix or have the causative, passive, or potential as their first suffix. (The potential developed out of the passive, and thus is included in this group for Modern Japanese.)

For Modern Japanese, I collected 400 verbs with at least one suffix from three sources, the novel Tugumi (Yoshimoto, 1992) and two essays from a Japanese high school textbook (Umeda et al, 1987). 39 verbs had two suffixes, one had three suffixes. 32 ended with a ba-type suffix, usually either /-tel/ or /-tal/. 27 verbs used the causative, potential, or passive, as in 10 and 11. (Numerical data is summarized in 3 above.)

11. ik-e-nai
    go-potential-neg.
    'can't go' (Umeda et al, 1987:87)

12. sir-e-nai
    know-potential-neg.
    'can't know' (Umeda et al, 1987:87)
Only one verb occurrence, shown in 12, falls into the "other combinations" category.

12. s-ita-garu do-desider.-GARU 'wants to do (3rd pers.)'
(Umeda et al, 1987:114)

/-garu/ is a suffix which indicates emotions of someone other than the speaker, and can follow only the desiderative suffix, as here, or a small class of adjectives of emotion. The one verb with three suffixes, shown in 9, contains both the potential and a ba-type suffix.

This data confirms that verbs with two suffixes in Modern Japanese almost always either end in a ba-type suffix or have the potential, passive, or causative as the first suffix. The wide variety of other combinations which were possible in Classical Japanese (those shown in 6 and 7) are almost completely gone. In Modern Japanese, the number of combinable suffixes has been so far reduced that among 400 suffixed verbs, the only one which does not fit into the two categories described above is the rather unproductive pattern /-ta-garu/ in 12. Thus, it is not that Modern Japanese is not agglutinative, but that the possibilities for agglutination have been severely restricted.

In order to include a stage between Classical and Modern Japanese, I collected 577 verbs with at least one derivational or ba-type suffix from two seventeenth century texts, both by Ihara Saikaku. I chose stories which described events contemporary to the time the stories were written, hoping that descriptions of contemporary events would use less archaic language than descriptions of events that happened several centuries earlier. 44 verbs had two or more suffixes, of which 23 involved the causative or passive as the first suffix, and 20 ended in a ba-type suffix. This data is again summarized in 3 above. In the "other combinations" category, there are only four verbs, those shown in 13.

13. Suffix combinations in the "other combinations" category in seventeenth century data (one occurrence of each)

/-tarA-zU/ complete-negative
/-nU-bekI/ assertive-conjecture
/-zarI-sI/ negative-past
/-rE-tE-kerI/ passive-assertive-storytelling past

In Hoojooki, which is a somewhat smaller corpus, there are 21 occurrences of combinations like these. The fact that combinations outside of the two categories possible for Modern Japanese occur only four times in the seventeenth century corpus shows that combinations of suffixes had been considerably restricted by this time.

Now I would like to discuss possible reasons for the change between the Classical and Modern Japanese systems, especially for the restriction of suffix combinability. I believe there are three inter-related factors which were involved: 1) re-analysis of the morphological system due to the onbin sound changes, 2) a shift of several previously derivational suffixes to ba-type suffixes, and 3) grammaticalization of the derivational suffixes.
Shortly after the time of Hoojooki, the last Classical Japanese data examined, a group of sound changes called onbin took place. The term onbin is actually a "catch-all category" (Martin 1987:125), including several changes of syncope, elision, and crisis, which Martin says were caused partly by loss of juncture (1987:37-38, 125). The four traditional types of onbin are 1) elision of /k/ or /g/, as /naki-te/>/nai-te/ 'cry-TE'; 2) elision and crisis of /NCi/ to /l/, as /lomohi-te/>/lomou-te/ 'think-TE'; 3) development of the mora nasal, as /lyobi-te/>/yon-de/ 'read-TE'; and 4) simplification to geminates, as /lakite/>/kat-te/ 'win-TE' (all examples from McCullough (1988:76-78)). I will use the term onbin in its traditional sense as a cover term for the changes which affected the verb paradigms, especially before certain suffixes such as /-tarI/ and /-tUI/, as shown in 14. (The pre-onbin forms are actually Kyoto dialect, while the Modern standard forms are Tokyo dialect, but modern Kyoto dialect shows equivalent changes.)

14. Effects of onbin before the suffix /-tal/ (</-tarI/)

<table>
<thead>
<tr>
<th>pre-onbin form</th>
<th>Modern form</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>sak-I-tar-I</td>
<td>sai-ta</td>
<td>'bloomed'</td>
</tr>
<tr>
<td>oyog-I-tar-I</td>
<td>oyo-i-da</td>
<td>'swam'</td>
</tr>
<tr>
<td>kaw-I-tar-I</td>
<td>kat-ta</td>
<td>'bought'</td>
</tr>
<tr>
<td>os-I-tar-I</td>
<td>osi-ta</td>
<td>'pushed'</td>
</tr>
<tr>
<td>nor-I-tar-I</td>
<td>not-ta</td>
<td>'rode'</td>
</tr>
<tr>
<td>tob-I-tar-I</td>
<td>ton-da</td>
<td>'flew'</td>
</tr>
<tr>
<td>nom-I-tar-I</td>
<td>non-da</td>
<td>'drank'</td>
</tr>
<tr>
<td>sin-I-tar-I</td>
<td>sin-da</td>
<td>'died'</td>
</tr>
<tr>
<td>m-I-tar-I</td>
<td>mi-ta</td>
<td>'saw'</td>
</tr>
<tr>
<td>tab-E-tar-I</td>
<td>tabe-ta</td>
<td>'ate'</td>
</tr>
<tr>
<td>root-contr.-tar-concl.</td>
<td>stem-ta</td>
<td></td>
</tr>
</tbody>
</table>

Before onbin, all of these verb forms consisted of the continuative stem (/sak-i-, oyog-i-/ etc.) plus the conclusive stem /-tar-i/ of the suffix /tar-/ (the use of the conclusive stem for the final suffix of the verb is arbitrary, chosen here because the conclusive is the citation form for inflecting Japanese words). The continuative stem itself consisted of a verb root and the vowel of the continuative, which looks much like a theme vowel, since it also shows which conjugation class the verb belongs to. The vowel of the continuative was clearly segmentable from the verb root, and all verbs formed their continuative stems by adding a vowel to their root.

In Modern Japanese, the suffix /-tal/ still attaches to a stem of the verb (/sai-, oyo-i-, kat-/ etc.), which could perhaps be called the T-stem, since it is used for the suffixes /-ta, -te, -tari/. However, this unanalyzable stem cannot be segmented into the verb root and a stem-forming suffix, the form of the T-stem varies widely among different verbs, and there are no connecting suffixes. Sound changes often make paradigms opaque, and the onbin made the old connecting suffixes opaque, since the changes left no visible connecting suffix in many forms, such as /kat-ta, ton-da/, etc. This loss of connecting suffixes brought about a re-analysis from the old layered morphology, in which continuative and other stems were analyzable, to the Modern system, with its unanalyzable stems. That is, onbin caused the loss of the layering system.
I believe this weakening of the layering system was one factor in the restriction of suffix combinations, as well. Before onbin, each verb and each derivational suffix could appear in any of the six stems, and the following derivational suffix determined which stem was used. The six stems were formed in almost the same way for any verb, with differences based on conjugation class. All of the derivational suffixes followed the same rules for attaching to a preceding verb, and also for allowing another derivational suffix to follow them. After onbin, those six stems did not exist anymore, and different verbs which had belonged to the same conjugation class formed their new stems in different ways, depending on the final consonant of the root. After the onbin, different derivational suffixes attached to a wide variety of verb stem allomorphs, and some suffixes even attached to the bare verb stem, as in 15.

15. ik-oo go-hortative 'let's go'

This was not possible in Classical Japanese, and shows the extent to which the layering system had been lost. Recursive suffixation depended on the fact that each derivational suffix required a particular stem before it, and could appear in any of the stem forms itself. Although all verbs acquired a new stem, the T-stem, through re-analysis, many of the derivational suffixes did not acquire this new stem. This meant that other derivational suffixes which might require that stem could not follow them, and therefore that some previously possible suffix combinations were ruled out.

The second factor which helped restrict the combinatoriality of suffixes was a shift in suffix types: several suffixes which were derivational in Classical Japanese, and therefore could potentially be followed by another suffix, became ba-type suffixes in Modern Japanese. Ba-type suffixes are defined by having just one invariant form; they lack the six stems of derivational suffixes. This means they cannot be followed by any other suffix, so the tendency of derivational suffixes to become ba-type naturally limited the number of possible combinations. For example, the derivational /-t-U/ could be followed by any of the connecting suffixes in Classical Japanese, forming a full paradigm of stems, as shown in 16. Its stems could also be followed by other derivational suffixes, as in the combination /-tU-besi/.

16. Change of suffixes to ba-type

<table>
<thead>
<tr>
<th>Classical Japanese paradigm for suffix /-tU/ (assertive, completive)</th>
<th>Surviving Modern form (gerund)</th>
</tr>
</thead>
<tbody>
<tr>
<td>incompleteive</td>
<td>-tE</td>
</tr>
<tr>
<td>continuative</td>
<td>-tE</td>
</tr>
<tr>
<td>conclusive</td>
<td>-tU</td>
</tr>
<tr>
<td>attributive</td>
<td>-tURU</td>
</tr>
<tr>
<td>conditional</td>
<td>-tURE</td>
</tr>
<tr>
<td>imperative</td>
<td>-tE</td>
</tr>
</tbody>
</table>

In Modern Japanese, however, it survives as /-te/, which has no other forms, and occurs only at the end of a word. Thus, /-te/ is now a ba-type suffix. The Modern
ba-type suffixes /-tal/ (past), /-tari/ (alternative action), /-zu/ (archaic negative), /-beki/ (obligation), and /-oo/ (hortative) also developed from older derivational suffixes. All of these suffixes appear in Classical Japanese in a variety of stems and with other derivational or ba-type suffixes following them, but in Modern Japanese have only one form and can occur only at the end of a verb. This clearly had an effect on the number of possible suffix combinations.

This loss of a paradigm and simplification to one invariant form is another case of re-analysis, since Classical forms like /-beki/ and /-tari/ consisted of a suffix root plus a connecting suffix, while the segmentally identical Modern forms are unanalyzable. This change may be related to onbin, even though the onbin sound changes had no effect on the forms /-beki/ and /-tari/ themselves: onbin caused the loss of some connecting suffix vowels, as discussed above, and the remaining medial connecting suffixes were re-analyzed as part of the following suffix, no longer an entity of their own. This may have encouraged the re-analysis of /-beki/ to /-beki/. The development of the new ba-type suffix /-oo/ is more directly related to onbin, since the sound changes produced it from the old derivational sequence /-a-mu/.

One might think that the conversion of derivational suffixes to ba-type, along with the outright loss of several Classical suffixes, would completely account for the lesser combinability of suffixes in Modern Japanese. However, the data from the seventeenth century shows that this factor is not the only one involved. At that stage, suffixes such as /-zarI, -nU, -tU, -tarI, -kerI, -rL/, which could combine with each other in Classical Japanese (the "other combinations" category), were still in frequent use, but rarely combined with each other. These suffixes had not been converted to ba-type suffixes, since they could still be followed by ba-type suffixes themselves, as in the attested combinations listed in 17.

17. Suffixes followed by a ba-type suffix in 17th century Japanese

/-zarE-ba/ negative-provisional
/-nurE-ba/ assertive-provisional
/-nurE-do/ assertive-concessive
/-kerE-ba/ storytelling past-provisional
/-tarE-ba/ completive-provisional

However, the ability of these suffixes to combine with each other had already been severely restricted by the seventeenth century, as is shown by the fact that only four verbs in the corpus fell into the "other combinations" category, as in 13 above. This shows that conversion of derivational suffixes to ba-type is not the only reason for the restriction of agglutination.

The third reason for the restriction on combination of suffixes involves grammaticalization. The Modern past tense suffix, /-ta/, is a reduction of the Classical suffix /-tarI/, which meant "completion of an act or process," "continuation of the result of a completed act or state," or "continuation of an act or state" (McCullough, 1988:13). The change from a complex meaning of continuation or completion, /-tarI/, to a relatively clear-cut past tense marker, /-ta/ (Yoshida, 1971:226), is a case of grammaticalization, since past tense is a more grammatical morpheme. Other characteristics of grammaticalization (Bybee et. al.,
1994:8, 20), such as phonological reduction and more fusional morphology (as demonstrated in 14 above, again related to onbin), are also present.

Classical /tarI/ itself developed from an older form /tE arI/, the continuative stem of the suffix /-tU/ followed by the verb "to exist" (Yoshida, 1973:602).

18.  -tE arI > -tarI > -ta
assertive be    > completive    > past

This development fits very well in the verbal grammaticalization cline:

19.  full verb > auxiliary > clitic > affix  (Hopper and Traugott, 1993:108)
arI         tE arI         -tarI, -ta

(Heine and Reh mention the difficulty of establishing a stage of cliticization separate from affixation in many non-Indo-European languages (1984:33-34), and this seems to be the case here as well.) The development from /-tE arI/ through /-tarI/ to /-ta/ matches what Bybee et al (1994:105) and Heine and Reh (1984:130) found for the origins of past tense morphemes in many languages. Starting with a verb meaning 'be,' /arI/, the meaning becomes resultative, as in the meaning 'continuation of the result of an act or state.' It finally becomes simply past, as in /-ta/.

In Classical Japanese, there were five suffixes with meanings such as completive, continuative, assertive, or perfective: /-tU/, -tarI, -rI, -kI, -kerI/. These suffixes all had distinct semantics (McCullough, 1988:12-16), and most of them could be combined with each other, as discussed above. However, as /-tarI/ was grammaticalized to the simpler meaning of "past," it would have developed new semantic overlaps with other suffixes. Yoshida mentions it possibly expanding to cover the meanings of the others (1971:226). Classical Japanese did not allow combination of suffixes when there was too much semantic overlap, as shown for example by the failure of /-ki/ and /-kerI/, both of which usually indicate a past event, to appear together. The increasing semantic generality of /-ta/ must have reduced the number of possible suffix combinations. This is consistent with Bybee's finding (1994:8) that during grammaticalization, a morpheme undergoes semantic generalization and replaces other members of its class. Some other members of its class are often lost, as /-rI, -kI, -kerI/ have been lost in this case. Thus, grammaticalization of /-tarI/ helped restrict the possible combinations of suffixes by creating new semantic overlaps between /-ta/ and other suffixes.

In conclusion, Classical Japanese allowed more productive combination of its suffixes than Modern Japanese does. While verbs with two suffixes in Modern Japanese almost always either end in a ba-type suffix or use the passive, causative, or potential, Classical Japanese also had a large group of other suffix combinations. I have discussed three reasons for this reduction in productivity of agglutination: 1) sound changes made the layered morphology of Classical Japanese opaque and left some suffixes without the necessary stems; 2) several derivational suffixes became ba-type suffixes, and thus could not be followed by other suffixes anymore; and 3) grammaticalization of suffixes created new semantic overlaps, and rendered some previously used combinations impossible.
References


Genji Monogatari. Machine readable text created by Eric Long. The version of Genji used is the Shogakka Nihon Koten Zenshuu.


Intonational Structures of Mandarin Discourse*

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Introduction

Natural discourse is a very diverse and complex process. In discourse, we not only communicate ideas and feelings about events, people, and concepts, but we also accommodate and interact with other participants to mutually work out development of the conversation. To ensure the success of the communication, speakers often use various discourse strategies to maintain interest and to probe the state of the other participant. Relationships among participants and emotions and attitudes toward subject matter are intertwined with hierarchical organization of topic development and discourse flow. Intonation plays a crucial role in communicating these complex layers of meaning.

Data and Methodology

The goal of my research is to investigate the prosodic system of Mandarin Chinese by analyzing natural discourse data to bring out the essential rules and principles governing prosody. My research differs from previous research in that it takes an integrated and multidisciplinary approach of analyzing intonation within a broader theoretical framework of discourse structure and cognitive elements. By doing this, I hope to provide a more unified account of prosodic functions as they interact within natural discourse.

For this research, I recorded four spontaneous conversations, two dialogues and two multi-party conversations in a mixed group in home settings. I was a participant (speaker B) in all of the conversations. The informants are all native speakers of Chinese. To ensure that the conversation would occur naturally, no topics were provided or suggested, and no elicitation nor control was attempted.

All the conversations were recorded on high quality Maxell XL cassette tapes using a Marantz 430 professional tape recorder with a Sony ECM-909 directional microphone attached. Each conversation typically lasted about 3 hours over the dinner table, and altogether the corpus consists of about 12 hours of speech.

From the total corpus two types of data were selected. The first type consists of speech utterance samples selected in different situations from the total corpus to obtain a wide and more varied sampling of the data. By taking slices of the conversation at many different points we can encounter many different contexts and obtain multiple comparisons. The second type consists of complete and continuous extended subsections of the dialogues, so that every utterance within a continuous extended section of the conversation could be examined with respect to development, continuity and the interconnectedness of the discourses.

The speech utterances from both types of data were acoustically and perceptually analyzed. I used both perceptual and acoustic analysis, because these two methods complement each other very well. Acoustic analysis gives a more objective record, and speech events can be examined in great detail. Perceptual analysis is also critical, since it is through human perception that meaningful
distinctions are made. This dual approach is especially suited for this study because my goal is to relate the acoustic signals with their functions in language by a detailed analysis of a large discourse corpus.

For the perceptual analysis, the data were analyzed to identify the cognitive and emotional states present, as well as the discourse processes at work, and these were correlated with the specific intonational forms. The results of the perceptual analysis were confirmed through both an independent perceptual experiment and by the original participants (see Yang, 1995b). For the acoustic analysis, approximately 90 minutes of the speech data, including both sample utterances from various parts of the conversations and a 20-minute continuous subsection, were digitized at a 16 kHz sampling rate using the ESPS Waves+ program at the Phonetics Lab of Stanford University. Measurements of pitch and duration were calculated automatically, and pitch tracks were made for all of the digitized speech data. This process resulted in approximately 1,500 pitch tracks.

Cognitive-Affective States and Shapes of Intonation

The variations of intonational shapes in discourse are a forceful expression of the continual changes in the cognitive and emotional states of speakers. These shapes are of key significance in communicating the emotional, relational, and judgmental meaning which accompanies the presentation of semantic content. Intonational shapes are comprised of variations in pitch level, pitch range, pitch slope, pitch movement, as well as amplitude, duration, rhythm, and voice quality. Each of these plays a part in communicating the specific state, and work together to present an ongoing representation of the complex meaning which intonation conveys. The variability of intonational forms reflects the great capability of intonation in expressing the critical distinctions among finely differentiated meanings.

The intensity of a particular state forms an integral part of its expressive meaning. In Chinese, the need to express emotional and attitudinal meaning through intonation occurs in the presence of the lexical tones. The intensity of intonational expression is a principal element in the mutual realization of tonal and intonational contour.

In Figures 1 to 6, we can see how variations in pitch shape and intensity of the same expression can give rise to different perceptions of cognitive state. In Figure 1, speaker B expresses her opinion, "ni2mu4 ding4 le0 zui4 hao3 bu2 yao4 zai4 gai3 ‘Once the topic is decided, it’s best not to change it’, and this expression is characterized by a clear downdrifting pattern. Upon hearing speaker B’s remark, speaker A immediately responds with a strong expression of agreement dui4 ‘right’, signalled by the large pitch range of dui of about 120 Hz. The combination of the steep drop in both amplitude and pitch contributes to a more definite and emphatic impression. By contrast, the following echoing and supportive dui of speaker B is much softer. The gentle soft agreement is reflected in a much smaller pitch range of only about 20 Hz and a much lighter amplitude.

Concavity and convexity of pitch slope are very important features in distinguishing the perceived harshness or softness of an utterance. In Figure 2, speaker B is describing the shopping situation, "dian4 shen2me0 dou1 hen3 zao3"
dou1 guan1 ‘The shops and everything all close up very early’, and speaker C responds with an eager but soft agreement. Speaker C’s 4th tone dui here has a gradual pitch slope with a convex shape, giving an impression of gentle, eager and prolonged agreement with the main speaker. The amplitude contour here also falls more gradually. Both the convexity of pitch shape and the more gradual decline in amplitude contour combine to give a more soothing quality in this case.

The fact that pitch range variation is often correlated with the degree of emotional intensity is further demonstrated in Figure 3:

In this example, speaker B continues the topic by saying, yin1wei4 zha04 xue2xiao4 ne4ge0 biao3ge2 zhi3you3 y1dian3dian3 ‘Because according to the form they have at the school, you only have a little bit of space’, and speaker A responds with an exaggerated and emphatic expression of agreement, DUI!. The dramatic drop in pitch from a very high 410 Hz to a low point of 160 Hz, a change of 240 Hz, forcefully signals the intensity of agreement.
In Chinese, there is an intricate ongoing interplay between the lexical tone shapes and the shape associated with cognitive and emotional intonation. Adherence or conformity to the tonal shape plays an intonationally significant role, and is not merely something that occurs in the absence of an emotional state. In spontaneous speech the nature of the specific state and the strength of the emotion are critical elements of the realized intonational form.

In Figure 4, speaker A is saying mu4qian2 hao3xiang4 you3 hen3 duo1 - 'Right now there seems to be a lot' - with an emphasis on duo. Both the fall-rise 3rd tone hen 'very' and 1st tone duo 'many' have a level shape here, but they differ in that hen is lower and shorter, while duo is higher and longer. The focus on duo is accomplished by both the lengthened duration of about .35 seconds, and by the sustained sound quality, and is enhanced greatly by keeping the shape at an unusually uniform pitch level. By emphasizing and exaggerating the specific distinguishing characteristics of the tones, prominence is achieved.

Figure 5 you3 o0 hao3 duo1 o0 'There are! A whole lot!' shows how the intonational manifestation of a dramatic exaggerated expression can differ from a more identification or informational type of emphasis. Comparing with the previous example, it is evident that speaker A here is undergoing an emotionally excited and involved state. This excited state is most clearly indicated by the large curved pitch movements seen on this chart.

![Figure 5](image1)

![Figure 6](image2)

A: you3 o0 hao3 duo1 o0

C: ran2hou4 nei4yi4tian1 yin1wei4 mei3guo2 ren2 hen3 duo1

In this example, 3rd tone hao is still mostly level and low, but 1st level tone duo is greatly modified and has a dramatic rise-fall arch shape instead, due to the exaggerated and persuading emphasis of the speaker, which is also signalled by the emphatic marker o. This example illustrates how tones can accommodate to the intonation forces, even to the extent of greatly distorting the defined tone shape.

Figure 6 shows how tones can take a drastically different pitch direction in the presence of a strong intonational force. In the utterance ran2hou4 nei4 yi4 tian1 yin1wei4 mei3 quo2 ren2 hen3 duo1 'Then that day because there were many Americans', speaker C is emphasizing hen duo with a negative emotion, expressing her disapproval of 'too many'. The fact that hen here is emphasized is evidenced in the sharp pitch drop, as well as in the large pitch range it has. The perceptible pause of .19 sec between hen and duo is an effective way to convey
deliberate emphasis, and this enhances considerably the expression of disapproval present in this example.

The next two examples show how a speaker’s different levels of intensity can lead to significant differences in pitch shape. In Figure 7 Mei2you3 mei2you3 bi3 zhe4 geng4 pian2yi2 de0 a0 ‘There wasn’t there wasn’t anything cheaper than this?!’ we can see the expression of surprise, expressed by the high pitch level and sharp pitch rise of F0 in both meiyous. Speaker B starts at a moderately high pitch level of about 280 Hz, but immediately rises to a very dramatic high peak at 495 Hz, at the upper extreme of her range, and then descends to the bottom of her pitch range at 170 Hz. The extreme high pitch level gives the expression a very intense and forceful character, and the large pitch movement from very high to very low contributes greatly to the impression of disbelief and astonishment.

![Figure 7](image1.png)

Figure 7

B: mei2you3 mei2you3 bi3 zhe4 geng4 pian2yi2 de0 a0

B: zhen1de0 a0
C: mei2you3 ta1 shuo1

The high degree of surprise is not only indicated by the unusually high pitch level, but is also present in the steep rising slope of the two meiyous. The extent of the rise is highly expressive and reflects the high degree of the abrupt, urgent, unexpected doubt present. By contrast, the same meiyou in Figure 8 zhen1de0 a0 ? mei2you3 ta1 shuo1... ‘Really? There wasn’t, she said...’ is much milder, and this less intensified state is expressed in the much lower pitch level and the flatter pitch contour of this utterance.

### Intonation and the Coherence of Topic Organization

In the above examples we have seen how significantly cognitive and affective states can affect intonational contours. Such expressive changes in intonation are very important as they constitute a fundamental level of intonational composition at the local syllable and phrase levels, and contribute greatly to the overall discourse interpretation. However, discourse is a dynamic and continuous process, and in order to understand intonation in discourse fully, it is crucial to look at discourse as a sequence. That is, we need to broaden the scope of analysis to a more global level, investigating the nature of intonation in bringing about overall discourse coherence through examination of the pitch level structuring of phrases.
The hierarchical topic organization and the dynamics of participant interaction are interrelated in discourse. To capture the nature of these relationships, a complete subsection of 600 utterances, about 20 minutes of continuous conversation, was digitized and analyzed for the highest pitch points for both speakers in the conversation, and the peak pitch points for the initial section of discourse are plotted in the following chart (see Figure 9). Peak pitch points are widely regarded as being more salient and carrying more information by researchers in intonation because of their prominence and contrastive capabilities. They also function as an indicator of the general pitch level for each phrase.

![Figure 9. Plot of Pitch Peaks of 90 Utterances](image)

* Speaker A: ○ Speaker B: ●

Encapsulating the relative pitch heights of entire phrases as single points allows us to visualize important discourse phenomena over an extended period of time. On this chart, the general hierarchical structure, discourse development, and changing participant relationships are represented. The connected sequences of points represent utterances within topics and subtopics, and we can see the pattern of a generally high start and low pitch ending for topics.

Discourse seems to go through different phases, sometimes more fragmented, sometimes more structured. For example, we can see the initial negotiation period to settle on a topic from Utterances 1 (U1) to 31 (U31). This period is characterized by higher pitch levels, and frequent turn-taking and interruptions. This is indicated by the roughly equal numbers of dots that both speakers have at both high and low points. By contrast, from U31 on, speaker B has many dots at high, low and intermediate levels, while speaker A's relatively fewer dots are mostly at low pitch levels. This indicates that speaker B is the main speaker and has entered a narration phase, and her narration is supported by the series of low pitch level utterances of speaker A, which are mostly feedback words.
Downstepping and Topic Development

The hierarchical intonational structure of discourse frequently appears as downstepping in pitch between phrases. Downstepping in pitch commonly parallels movement from a more uncertain or unresolved start that works towards a gradual resolution over a series of phrases, as seen in (1) (Intonational phrases are marked by || and intermediate phrases by | in the transcripts. ‘s’ means soft, ‘f’ means fast):

(1)

21 B: Oh women haoxiang sibai wushi
    kuai ho? (soft) ||
22 (s) hai yao jia shui, | 22 (s) then you have to add tax,
23 (s) ranhou jia qilai | 23 (s) then altogether
   (s) jiangjin wubai. || (s) it was close to five hundred.
24 B: Umhum.

In the sequence of utterances U21-U24 (see Figure 9), there is a progressive downstepping as speaker B works from a position of initial uncertainty over the price towards a satisfactory resolution of what the price actually had been. This progression from high pitch to low pitch during elaboration is associated with the growing level of confidence and certainty.

Regular Stepping in More Uniform Development

The specific size and uniformity of step size also reflect the stability of cognitive state. More uniform step sizes may be associated with more stable cognitive progression:

(2)

32 B: Na | wo cengjing |
33 yongguo biede xuexiao de nage jiqi
de shihou ho, | 33 B: Then - I once before
   Used the facilities of another school -
34 (f) Nage shihou wo ye bu zhidao shi
    zenne me nong de. | 34 (f) At that time I didn't know how
   (f) Fanzheng tamen dou shi yiqie dou
    computerized, | 35 (f) anyway everything there was
   (f) tamen bang women nong le. | 36 (f) they did it for us.
36 A: Um.

In this section, speaker B first introduces the topic in U32. But then a cognitive shift occurs because the information is not immediately retrievable, and therefore the speaker adds on successive qualifying expressions in U34-U36; each qualifying expression drops by about 15 to 20 Hz, as seen in the smaller step sizes. The proportional downstepping here contrasts significantly with the larger and variable step sizes in the previous example. In this example, the sequence is more
narrative and descriptive, and the smaller and uniform step sizes reflect the relative stability and constancy of the speaker’s state during this short segment.

**Upstepping as Cognitive Uncertainty**

Although topics often start high, this does not always have to be the case. When discourse enters a more structured or narrative phase, topic initiation phrases often start at a more intermediate level and develop in an upstepping pattern.

(3)

<table>
<thead>
<tr>
<th></th>
<th>B: jiu shi nayang.</th>
<th>62</th>
<th>B: It’s just like that.</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>Ranhou women jiu</td>
<td>63</td>
<td>Then we just asked people</td>
</tr>
<tr>
<td></td>
<td>qing ren lai lu yin ma.</td>
<td>64</td>
<td>to come in to record.</td>
</tr>
<tr>
<td>64</td>
<td>ranhou lu yin le yihou</td>
<td>65</td>
<td>Then after the recording</td>
</tr>
<tr>
<td>65</td>
<td>ranhou jiu ba nege luyindai --</td>
<td>66</td>
<td>then we just took that tape</td>
</tr>
<tr>
<td>66</td>
<td>Oh,</td>
<td>67</td>
<td>Oh,</td>
</tr>
<tr>
<td></td>
<td>wo xiangxiang kan</td>
<td>68</td>
<td>let me think</td>
</tr>
<tr>
<td></td>
<td>ta shi shi zenmeyang?</td>
<td>69</td>
<td>what happened then?</td>
</tr>
<tr>
<td>67</td>
<td>Fanzheng fangzheng ---</td>
<td>70</td>
<td>In any case, in any case ---</td>
</tr>
<tr>
<td>68</td>
<td>wo wang le zenmeyang,</td>
<td>71</td>
<td>I forget what happened,</td>
</tr>
<tr>
<td></td>
<td>fanzheng jiu shi</td>
<td>72</td>
<td>anyway it’s just</td>
</tr>
<tr>
<td>69</td>
<td>tamen jiu ba nage luyin</td>
<td>73</td>
<td>they just took that tape,</td>
</tr>
<tr>
<td>70</td>
<td>nage yin ho.</td>
<td>74</td>
<td>that sound, huh,</td>
</tr>
<tr>
<td>71</td>
<td>ba ta shu song dao diannao limian qu.</td>
<td>75</td>
<td>and put it into the computer.</td>
</tr>
<tr>
<td></td>
<td>A: umhum</td>
<td></td>
<td>A: umhum</td>
</tr>
</tbody>
</table>

Language often reveals the cognitive process. In U63, the speaker has just finished the previous topic, and is starting another topic. This topic completion is signalled lexically by the concluding phrase in U62. The speaker starts low at U63, but then becomes uncertain and steps out of the topic to recall some information at U66, and this results in an upstepping pattern. At U67, the speaker reaches a cognitive turning point and decides to move on and return to the main topic, as signalled by the phrase *fanzheng ‘in any case’*. From this point on, the speaker becomes more certain, and this more certain state is reflected in the downstepping pattern in U68-U71.

**Topic, Planning and Cognitive States**

The complexity of topic structure increases as discourse gets more involved and more complicated. One characteristic of discourse is that speakers may have a general idea of where they are going in the conversation, but often do not have a definite plan or have all the details of the topic worked out ahead of time. In this type of situation, the topic will be constructed one step at a time, and the main topic may not be identifiable until that section of the conversation is complete. Throughout this process, interactional elements communicating the current understanding and interests of participants can cause topics to move in and out of
the conversation, or turn in a different direction. Moreover, a speaker may try to follow a general plan for topic, but then unexpectedly finds that relevant information cannot be readily recalled from memory, and thereby is forced to modify the direction of the topic or turn to a new topic completely. Speakers may also change their minds in the middle of developing a topic to elaborate on a particular point, or may be reluctant to continue the current line of development. The fact that conversation is dynamic and the topic direction is often dynamically determined in this fuzzy way is a reflection of the cognitive process. The cognitive state is revealed and signalled in the intonational patterns.

Let's examine an extended section of the discourse in the light of these considerations:

(4)

1st account

42  B: (fast) tamen youge luyinji,  42  B: (fast) They've got a tape
    dui bu dui. | recorder, right?
43  [A: M.]  43  [A: M.]
    dou you shebei hai  B: Everything. Their facilities are
    hen hao ho. | really good.
    ranhou nage | B: Then that
45  jiu shi - | yuyin shiyanshi ma | it's just a phonetics lab, right?
46  [A: um]  46  [A: um]
    ranhou | hai you yige | B: then they also got
    nezhong boli men. | that type of glass door,
47  (fast) jiu shuo ni zai waimian | (fast) it's just like from outside
    keyi kandao | you can see
    limian ren zai zuo sheme a, | what the people inside are doing,
    deng deng de | things like that
48  jiu shi shuo bijiao zhengshi, | 48  jiu shi shuo bijiao zhengshi, | it's just more formal
49  buxiang women xuexiao nege | 49  buxiang women xuexiao nege |
    jushi ----- | [both laugh]
    [both laugh]  50  When you open the door
50  Tui men jinqu | 50  if people are in there doing
51  renjia zai zuo | experiments
    shiyan de hua, | you've already disturbed them
    yijing chao dao renjia le. | A: Exactly!
A: Shi ah! |

2nd account

52  B: Tamen jiu shi  52  B: Theirs is
    [hen da ho. [A: Mm]  really big [A: Mm]
53  Ranhou zhebian nabian, | Then here there,
    | then for example
54  ranhou biru shuo | it's like this
54  xiang zheyang | here's a glass door
55  zhebian shi yige boli de, | [A: Umhum]
55  [A: Umhum]  then the people inside
56  ranhou limian de ren |
zai limian luyin, | are recording in there,
jiushi xiang yige luyinpeng, | it's just like a recording studio,
dui bu dui? | right?
[A: Mm] nayangzi ho. | [A: Mm] Just like that. [A: Mm]
[A: Mm] ranhou ni qita de ren zai waimian
Then the other people outside
can also monitor,
hai keyi caozong a, | adjust this,
61 gei ni tiao zhege, | adjust that,
tiao nage, | things like that,
dengdeng de. | It's just like that.
62 jiu shi nayang. |
degree of cognitive planning appears as one of the most significant determinants of phrase to phrase intonational structure. Planning comes from organized knowledge and a confidence in what is going to come up next in the topic development. When a speaker has one simple idea, and can express it in a short sequence of phrases, or has a well-organized idea in his or her head, then the speaker can have a well-integrated plan to produce the utterances in a unified manner. When there is a more extended topic idea or experience, it is more difficult to plan everything out. When discourse is more interactively oriented, there often will be less of a complete plan, and there will tend to be more disruptions of the initial plan through side interests and being lead astray. Unexpected events also destroy the nice organization and planning the speaker may have. Under constraints of unexpected events and problems with recalling, it is difficult to plan very far ahead and we have to move step by step. The way topic is intonationally organized really reflects the cognitive judgement on the relations between phrases.

How do these issues of memory, interaction and planning affect the intonational manifestation here? In the beginning part of this segment, the speaker is building up the topic, and at the same time has to struggle with all these cognitive and discourse elements to keep the conversation going. Each phrase functions to add new information as a way to overcome the previous phrase, therefore each step is higher than the other, until the speaker finally comes to the climax - a high point - in the story. The upstepping pattern is just such an expression and representation of these elements in the speaker's mind. In the subsequent section, the speaker has already organized the essential points in her head, has also established the appropriate common background, so is free of disruptions, and can concentrate more on the topic structure, i.e. the elements of the story, itself. Therefore her account here is smoother and more certain, as signalled by the gradually descending anti-climactic downslope. The essential point is that the planning in these two versions differs: the upstepping section, the 1st version, is less planned, whereas the downstepping section, the 2nd version, is more planned. This example is evidence that discourse is not always pre-planned, and the intonational structure and topic development reflect the degree of planning involved.

**Intonation and Discourse Interaction**

My data also show that discourse is interactionally and cooperatively organized. In discourse, participants accommodate and interact frequently to mutually work out development and resolution of the conversation. The cooperative nature of discourse is manifested in intonation.

If we look at the hearer's responses in U41-U62, we can see that, on the whole, speaker A's pitch movements are mirroring exactly the pitch movements of speaker B, and the two speakers are moving together in an emotionally synchronized manner. At phrases in which speaker B continues the further elaboration of topic, the two speakers' step movements are parallel, i.e. they
converge, and this convergence signals that both speakers are in agreement on the topic development.

**Conclusion**

Based on my analysis of the data, I propose that intonation in discourse includes three concurrent and interrelated determinants: topic organization, discourse interactional organization, and cognitive-emotional organization, each of which entails specific intonational patterns and scope of influence. Topic organization generally affects the relative pitch height of phrases, while emotion and cognitive relationships often affect both the pitch height and the shape of syllables, words and phrases. Interactional elements also systematically affect the overall intonational structure. Intonation is a critical element in the expression of cognitive states, and discourse structure is inseparably linked to intonation through emotion, planning, and the sympathetic accommodation of the states of discourse participants.

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**References**


PARASESSION:
THE ROLE OF LEARNABILITY
IN GRAMMATICAL THEORY
ARGUMENT STRUCTURE AND LEARNABILITY: IS A SOLUTION IN SIGHT?

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1. Introduction
Verbs that are similar in meaning are often similar in their syntax as well; that is, they share the set of syntactic frames they can appear in. But these regularities are not fully predictable—for any particular pattern, there are often "good candidate" verbs that behave exceptionally. A classic example is *donate*, which resists appearing in the double object construction despite its semantic and syntactic similarity to verbs that do allow it:

(1) a. John gave/sent/bequeathed/donated all his books to the charity.
b. John gave/sent/bequeathed/*donated the charity all his books.

These exceptions create an intriguing learning problem for young children. In the course of language acquisition, learners clearly become sensitive to the syntactic frame patterns shared by sets of verbs, and they overgeneralize, producing combinations of verb and frame that adults find peculiar, for example:1

(2) **Dative Alternation** (cf. give Mary a book/give a book to Mary; bake a cake for John/bake John a cake)
a. C 3;1 I said her no. (Age shown in years; months)
b. C 3;4 Button me the rest. (Wants remaining snaps on pyjamas fastened.)

(3) **Locative Alternation** (cf. spray paint on the wall/spray the wall with paint)
a. E 5;0 Can I fill some salt into the bear? (=bear-shaped salt shaker.)
b. E 4;5 I'm gonna cover a screen over me.

(4) **Causative Alternation** (cf. the stick broke/John broke the stick)
a. E 3;10 You staggered me. (After M pulls on E's arm when E stumbles.)
b. C 4;8 I saw a witch and she disappeared them. (Pretending some blankets have disappeared.)
c. C 12;3 Salt clings it together. (As C mixes playdough.)

When children make such errors, they receive little or no corrective feedback from adults (for discussion of this so-called “no negative evidence” problem, see Bowerman 1988 and Pinker 1989). Why then do they eventually stop?

This question has preoccupied researchers for more than a decade, and by now a number of solutions has been proposed. Several of these have been critiqued in previous works (Bowerman 1988, Pinker 1989) and I will not repeat these arguments here. Instead I want to explore the two lines of solution that at present seem to me to be the most promising. These are (1) Pinker's (1989) 'thematic core' approach, and (2) a cluster of usage-based mechanisms such as competition among forms, activation, strengthening, graded productivity, and category induction. I will examine certain key predictions of these approaches with the help of longitudinal spontaneous speech records from my two daughters, C and E, whose
argument structure overgeneralizations, such as those shown in (2)-(4), have formed the basis for much of the discussion in the literature. I will focus on novel causatives ((4) above), since the Causative is the argument structure alternation that gave rise to the largest number of errors over the longest period of time in C’s and E’s speech.

2. Pinker’s (1989) ‘thematic core’ approach
2.1. The theory. According to Pinker (1984, 1989), errors like those in (2)-(4) reflect lexical rules that learners have formulated for converting verbs of one kind into verbs of another kind. To explain how children distinguish between verbs that do and don’t undergo a particular argument structure alternation, Pinker depends critically on the observation that the sets of verbs that participate in a given alternation are not random—they share semantic and sometimes morphophonological properties as well.

In an early crack at the problem, Pinker (1984) proposed that the learner’s rule that converts, say, the prepositional object construction *give NP₁ to NP₂* into the double object construction *give NP₂ NP₁*, or the intransitive *NP₁ break* into the transitive causative *NP₂ break NP₁*, is initially insensitive to the semantic and morphophonological properties of candidate verbs, so the rule is applied too broadly. Over time, however, the rule is annotated for various criteria the verb must satisfy and errors die out. For example, the rule for the Dative Alternation is annotated to restrict the double-object construction to verbs whose Goal argument specifies a “prospective possessor” of the Theme argument. The rule for the Causative Alternation is annotated to limit derived causatives to events of “direct” and “stereotypical” causation.

For reasons discussed in Pinker (1989) and Bowerman (1988) (the existence of verbs that satisfy the proposed criteria but still do not undergo the alternation; the seeming arbitrariness of the relationship between the rule and its associated semantic criteria; the puzzle of why a child would bother to further annotate an already adequately functioning rule), Pinker (1989) later rejected this hypothesis in favor of a more radical one: that lexical rules do not simply rearrange the arguments of a verb syntactically, but instead fundamentally change the verb’s semantic structure. The new meaning automatically gives rise to a new syntactic structure via the application of simple and quite general linking rules (i.e., rules for linking arguments to syntactic positions), which Pinker proposes are innate. To explain how children end up with rules that are properly constrained, Pinker makes a crucial distinction between *broad-range* and *narrow-range* lexical rules. The *broad-range rule* for a particular alternation captures what all the verbs that undergo the alternation have in common. It relates two “thematic cores”—conflations of semantic elements that define a kind of possible verb meaning. For example, for the Causative Alternation, the (bidirectional) broad-range rule looks
like this (Pinker 1989:223) (lexical content is added for readability):

(5) 

\[ \text{EVENT} \]

\[ \langle +\text{DYNAMIC}\rangle (=\text{ACT}, \text{GO}) \text{ THING} \]

\[ \text{(break)} \]

\[ \text{(stick)} \]

(b) 

\[ \text{EVENT} \]

\[ \text{ACT} \]

\[ \text{THING} \] (John)

\[ \text{THING} \] (stick)

\[ \text{effect} \]

\[ \langle +\text{dynamic}\rangle \]

\[ \text{(break)} \]

\[ \text{THING} \] (stick)

The thematic core in (5a) can be paraphrased as “Y acts/ goes”, e.g., The stick broke. The situation is stipulated to be a \langle +\text{dynamic}\rangle event to capture the generalization that no verbs with BE or HAVE in their semantic representations causativize (Pinker 1989:223); causativization is thus ruled out for verbs of “existing and being in a place” like be, exist, stay, wait, and have. The thematic core in (5b) can be paraphrased as “X acts on Y, thereby causing Y to act/ go”; e.g., “John acted on the stick, causing it to break”, or John broke the stick. In this construction the first argument of ACT links to subject position and the second argument to direct object position. This thematic core is responsible for the reading of “direct” or “unmediated” causation associated with lexical causatives: “direct” is the default interpretation of ACT, postulates Pinker.

But the broad-range rule by itself is not enough: it provides the NECESSARY conditions for a verb to alternate (the verb must be representable in terms of both thematic cores), but many verbs that satisfy its requirements still do not alternate. To account for this, Pinker invokes narrow-range rules: these are semantically more specific versions of a given broad range rule, and they pick out—from among all the verbs that satisfy the broad-range rule—semantically coherent subclasses of verbs that in fact actually do undergo the alternation. The narrow-range rules thus provide the SUFFICIENT conditions for a verb to alternate. For the Causative, there are two classes of verbs with an associated narrow-range rule:

a. Verbs of externally-caused change of physical state (melt, open, break...)

b. Verbs of motion taking place in a particular manner (slide, skid, float, roll...)

Classes that lack a narrow-range rule and so do not causativize include:

c. Verbs of motion in a lexically specified direction (go, come, rise, fall, enter, exit, leave, arrive...)

d. Verbs of coming into or going out of existence (die, appear, disappear...)

e. Most verbs of emission of lights, sounds, substances, and smells (glow, glisten, sparkle, blaze, shriek, buzz, bubble, leak, ooze, bleed, smell...)
f. Verbs of internally-caused state change (grow, bloom, blossom...)
g. Verbs of volitionally or internally caused actions (e.g. jump, walk, talk, climb, eat, drink, sing) (seeming exceptions like gallop a horse belong to a different alternation, according to Levin & Rappaport Hovav 1995)
h. Verbs of psychological activity (remember, watch, guess, ache...)
i. Most verbs of emotional expression (smile, cry, laugh, frown, blink...)

Many of these verbs—particularly those in classes e-i—probably do not causativize because they specify internally-caused events, so they resist the "directness" interpretation required by the broad-range rule (Levin & Rappaport Hovav 1995, Pinker 1989:133). But whether a verb specifies an internally-caused event is often not obvious a priori, and in ambiguous cases—e.g. especially classes e and f—different languages may take different stances on this (Pinker 1989:302).

For any particular alternation, the subclasses of verbs with an associated narrow-range rule are to some extent arbitrary. How then do learners identify them? Pinker hypothesizes that children build these subclasses from the ground up. That is, from the beginning, they generalize the privilege of alternating only to verbs that are closely similar in meaning to—i.e., are members of the same subclasses as—verbs they have already heard alternating (see Pinker 1989:273-80 for discussion of the mechanisms that ensure this.) Narrow- and broad-range rules develop in tandem, the former through a bottom-up process of generalizing to the boundaries of each narrow-range class, and the latter through a top-down process of abstraction over narrow-range verb sets displaying the same alternation. There is, then, no period in which the broad-range rule operates without being constrained by the narrow-range rules—the child’s rules are correct from the start.

But why then do children make errors like (2)-(4)? For two reasons, proposes Pinker (1989:292ff, 350): 1. One-shot innovations. Speakers of all ages sometimes use broad-range rules creatively on-line to produce forms that are not licensed by any of the narrow-range rules associated with them. This may occur in children more often than in adults for a variety of reasons; e.g. children may innovate to extend their communicative resources when they don’t yet know the more appropriate verb an adult would use, or cannot access it at the moment. One-shot innovations are not actually licensed by the speaker’s grammar, so they do not require any specific unlearning. (See also Braine & Brooks 1995 for a similar proposal.) 2. Incorrect verb meanings. Some errors are due to the child’s assigning an incorrect meaning to a verb, either temporarily or stably over time, in a way that causes it to be paired with an incorrect argument structure. When the child fine-tunes the verb’s semantic representation, errors will automatically cease.

2.2 Evaluating the ‘thematic core’ theory

Pinker’s theory is admirably explicit, closely argued, and undergirded with a well-developed theory of lexicosemantic structure. But is it true that learners’ lexical rules are appropriately constrained from the very beginning, so that no after-the-fact pruning and correction—the process that has been so hard to explain in light of the “no negative evidence” problem—is needed?

The success of the theory depends on the accuracy of many interacting assumptions. Several of these are controversial. For example, the theory requires children to have innate access to linking rules, but explicit tests of this hypothesis
have found no evidence for such knowledge in very young children; the data suggest instead that knowledge of linking is acquired over time on the basis of linguistic experience (Bowerman 1990, Brinkmann 1993, in press). The theory also requires children to be sensitive to syntactically relevant semantic subclasses of verbs from the start, since they must never generalize beyond these, but explicit tests of this hypothesis have also proved negative (Braine & Brooks 1995; Pye & Loeb 1995; see also Ingham 1992). These negative results do not disconfirm the theory, but they do tend to undermine it.

In this paper I want to question another aspect of the theory: can children’s errors like those in (2)-(4) really be “explained away”—as the theory requires—either as one-shot innovations licensed by the broad-range rule or as a consequence of incorrect verb meanings? Or do they instead indicate—just as researchers had originally assumed—that the child’s grammar is overly general, sanctioning constructions beyond those that the adult grammar allows? Let us examine how well Pinker’s hypotheses can account for the novel causatives produced by our two language learners, C and E.

Novel causatives followed a very similar course in the children’s speech: they appeared around age two, flourished—especially for C—between about three and five, and then continued at a lower level until about age twelve, after which they ceased (total number of recorded errors: C: 225 tokens, 79 types; E 92 tokens, 54 types). The children made many errors with verbs from all the noncausativizable classes listed above, and they also erroneously causativized verbs and adjectives used to express “externally-caused changes of physical state”, a class for which there is a narrow-range rule. Their errors are summarized in the Appendix.

The very quantity, variety, and persistence over time of these novel causatives seems rather at odds with Pinker’s theory—is this profusion of errors really compatible with the view that the learners’ grammars were perfectly adult-like? The presence of multiple errors in the “externally-caused change of physical state” class is also troubling: this class is supposed to causativize, so how can the child figure out that intransitive verbs like overflow do not? (cf. You’re gonna overflow the spoon with medicine, C 6;7). (See also Braine & Brooks 1995 for a more general discussion of negative exceptions to Pinker’s causativizable subclasses.) Most of the errors listed in this category involve adjectives, which are not in themselves state-change predicates; they are static, i.e. &dynamic>, and so do not qualify directly for the broad-range rule. But of course many adjectives do have a corresponding causative verb (The milk is warm; Mary warmed the milk). If they do, they also have an intransitive state-change counterpart (The milk warmed slowly), and it may be this that serves as the base for the transitive, at least in adult grammars. In any event, Pinker gives no account of how children determine which adjectives can be used to express a caused state-change and which cannot.

Although Pinker hints that incorrect word meanings could explain at least some of children’s novel causatives (1989:325), he makes no concrete suggestions about this (most of his evidence for this process revolves around the Locative Alternation). It is indeed not clear what could be wrong with the meaning of most of the words shown in the Appendix that would make them susceptible to causativization. Especially resistant to this interpretation are errors with frequent verbs like come, go, disappear, and stay, which occurred over a long period of
time. This puts the major burden of explanation for novel causatives on Pinker's
"one-shot innovation" hypothesis—the idea that the errors result from the creative
on-line use of the broad-range rule, perhaps especially under communicative
pressure when the child doesn't know or can't remember a better verb. But the
perseverence of many of the errors also argues against this explanation: e.g. C
causativized stay (e.g., *stay the door open*) at least 43 times between the ages of
2;4 and 10;4, long after she knew—and usually used—the more appropriate verbs
keep and leave; and she causativized go at least 28 times between the ages of 2;8
and 7;11, long after she knew verbs like take and send. Sometimes the erroneous
causativization of a verb did not set in until well after the correct form had already
been established in the child's speech; even so, the novel form was in a few cases
powerful enough to temporarily almost supplant the correct form (Bowerman
1974).

A second critical problem for the "one-shot innovation" hypothesis is that
many errors fall outside the scope of the broad-range rule that is supposed to
govern them. Recall that Pinker's basic strategy for solving the learnability
problem associated with argument structure alternations is to insure that the child
ever generalizes too broadly to begin with, and so has nothing to repair later. In
pursuit of this goal, Pinker formulated the broad-range rule for the Causative
Alternation ((5) above) as restrictively as the facts of adult English will allow.
First, the caused event must be <+-dynamic> (i.e., the verb must have ACT
or GO in its semantic representation); second, the causing event must involve
an ACT whereby an agent impinges on a patient; third, this act must bring about
the caused event "directly". C and E repeatedly violated all three constraints: they
often causativized <+-dynamic> verbs (examples 6a-e below and 4c above); they
causativized when the causing situation cannot be conceptualized as an "act" by any
stretch of the imagination, not even the metaphorical impingement of an actor on a
patient (examples 6b,c,f); and they causativized when the causation was clearly
indirect; i.e., when a physically or psychologically active animate causee mediated
between the agent's act and the resulting event (examples 6g-k).

(6) Violations of the broad-range rule for causativization
a. C 5;5 *I meant to be it like this.* (=have it be. Showing with her hand how she
had intended an unsuccessful styrofoam Christmas tree to turn out.)
b. C 4;5 (Making a drawings to bind as a book; upset with a poor picture.) *This
one is yukky! Be it for a picture.* (=let/have it be [only] a picture) (M: *Hmm?*) C:
*Be it for a picture, I don't need a book.*
c. E 7;11 *I was used to turning it [TV] on a channel and being it on a channel.
(=keeping it, letting it continue to be...*)
d. C 2;11 *Maybe they had a cold and the cold stayed them awake.* (=kept.)
e. E 6;7 *Now I'm going to have you a lesson.* (=give.)
f. C 3;1 *Is this to climb her up?* (=enable her to climb up. C looking at picture of a
hippo at the bottom of a ramp leading into a truck, pointing to the ramp.)
g. E 3;3 *Will you climb me up there and hold me?* (Wants help climbing a pole.)
h. C 10;5 (C doing a trick; explains that the magician must first make everyone feel
a marble hidden under a scarf.) *First you have it, and you feel it to everybody.
(=make/ have everybody feel it.)
i. C 4;3 *Andrea, I want to watch you this book!* (Trying to get a friend to look at a
book she is holding.)
Causatives like (6g-k) were relatively infrequent—most errors with verbs of volitional or semivolitional action, like climb, walk, swim, eat, and cry, involved dolls and other toys that could not really carry out the action independently. Noting this, Pinker (1989:302ff) argues that this shows that children ARE sensitive to the “directness” constraint: if they were not, they should produce many more of these errors than they do, given the pervasive role of forcing, urging, threatening, and persuading in parent-child interactions. But Pinker’s argument is only valid if children do in fact talk frequently about such events. If they seldom do, even using periphrastic causatives (e.g. She made me laugh), then the relatively low numbers of novel lexical causatives like She laughed me would reflect only the low number of opportunities to make such errors, and would tell us nothing about children’s sensitivity to “directness” in lexical causatives.

To explore this issue, I compared the number of novel lexical causatives in C’s and E’s corpora to the number of opportunities to produce them (calculated as the sum of novel lexical causatives plus the sum of periphrastic causatives with make, get, or occasionally let where let seemed to mean make) for noncausativizable verbs of three different types: 1) volitional and semivolitional actions (e.g. climb, crawl, jump; laugh, giggle, cry), taking into account ONLY utterances referring to events with a truly animate, active causee (i.e. not a doll or other inanimate, 2) verbs of motion in a lexically specified direction (e.g. go, come, fall, rise), and 3) verbs of coming into/going out of existence (e.g. disappear, vanish, die). If Pinker’s argument is correct, the proportion of lexical causatives to all causatives should be significantly lower for verbs in the first class than for verbs in the second and third classes, since the first seriously violates Pinker’s “directness” constraint, while the second and third do not. The results are shown in (7):

(7) Proportion of novel lexical causatives out of all causatives (novel lexical plus periphrastic) belonging to that class in the data base

C: 1. Volitional and semivolitional actions: 70% 14/20
2. Motion in a lexically specified direction: 74% 45/61
3. Coming into-going out of existence: 58% 14/24

E: 1. Volitional and semivolitional actions: 55% 6/11
2. Motion in a lexically specified direction: 76% 26/34
3. Coming into-going out of existence: 63% 5/8

The children talked infrequently about the causation of volitional and semivolitional actions. But when they did, they used novel lexical causatives no less often (C) or only slightly less often (E) than when they talked about events that do not violate “directness”. Consistent with this, Pye & Loeb (1995) found that children in an elicited production study were just as willing to causativize volitional action verbs as change of state verbs and verbs of motion in a lexically specified direction. Contrary to Pinker, then, children’s rule for causativization does not seem to be restricted to events involving “direct” causation.
To summarize, children do not abide by the constraints of Pinker’s proposed broad-range rule for the Causative Alternation. For learners, causativizing an intransitive predicate seems to require little more than that the predicate describe a situation that can be conceptualized as being “caused” (see also Bowerman 1974, 1982a, Gergely & Bever 1986). But if this is true, then accounting for why children eventually stop producing novel causatives will, after all, require—counter to Pinker’s (1989) approach—explaining how they ‘cut back’ on a causativizing operation that is overly general.

3. Cutting back on novel causatives.

3.1. Usage-based mechanisms. Among researchers who have assumed that recovering from argument structure errors involves cutting back, attention has often focused on usage-based factors like competition among forms and the induction of schemas or categories. Three mechanisms of special interest are the following:

- Preemption by competing forms. Through processes of strengthening or blocking, kill will come to preempt causative die, bring will preempt causative come, and so on (Clark 1987, MacWhinney 1987, Pinker 1984, Pye & Loeb 1995). (Pinker 1989:290-293 also assigns preemption an important role: once forms like kill and bring have been strengthened enough, there will be no need for the child to make one-shot innovations to plug the gaps associated with their absence.) Of course, not all noncausativizable verbs have a suppletive causative counterpart—cf. disappear. For these verbs, it has been proposed that the child’s causative might be preempted by the corresponding periphrastic causative, e.g. make disappear. But the extension of preemption to these cases seems somewhat dubious (Bowerman 1988): lexical and periphrastic causatives are, as constructions, systematically associated with different meanings, so a child should not readily allow one to be supplanted by the other.

- Induction of the relevant semantic subclasses of verbs. Some researchers have proposed that semantic subclasses indeed play a role in restricting children’s errors, but that—contrary to Pinker (1989)—they are not the immediate outcome of initial generalization; rather, they are learned inductively over time (e.g. Goldberg 1993). Although Pinker embraced this idea in his 1984 book, he later discarded it as unfeasible. But the mechanism takes on renewed plausibility with rising interest in construction grammar (e.g. Goldberg 1995) and network-style theoretical approaches to morphology (Bybee 1985, 1988), and with the success of recent connectionist simulations of category induction (see Schütze 1994 and Ping & MacWhinney 1996 for studies relevant to verb syntax and morphology).

- Repeated exposure to a verb only in its appropriate syntactic frame(s). The idea here is straightforward: repeated exposure to the appropriate frame(s) for a verb strengthens the association between verb and frame to the point where the correct frame consistently wins out over the incorrect frame generated by the child’s too-broad schema (Braine 1971, Braine & Brooks 1995, MacWhinney 1987). This mechanism leaves the schema itself intact, so it can still be applied productively to novel verbs.

In work in progress, William Croft (University of Manchester) and I have drawn on these and other ingredients to construct and begin testing a possible
scenario for the acquisition of the Causative Alternation: 1) First, individual verbs are learned with (a subset of) their correct argument structures (transitive, intransitive, or both (Bowerman 1982a). 2) Next, the lexical causative is overgeneralized across a wide range of forms and semantic classes. (The child has observed a high enough type frequency of low enough token frequency forms that alternate to merit building a schema for the alternation. This schema—which varies in strength (i.e. productivity) across children (Maratosos et al. 1987)—is broader than Pinker’s 1989 broad-range rule for the Causative Alternation, since it has to encompass utterances like those in (6) above.) 3) Errors abate or cease with verbs with high frequency suppletive causative forms (e.g., kill for die). (Frequency in the input strengthens entrenchment. The removal of specific forms from the schema “bleeds” (weakens) the more abstract schema for causativization.) 4) Semantic constraints are acquired, so that fewer and fewer errors occur outside semantic subclasses whose members mostly causativize. (The input has begun to more densely populate narrowly semantically specified areas of semantic space. Within those areas, lower-level subschemas become entrenched, which also “bleeds” the more abstract schema.) Somewhere around this time, less-frequent suppletive causatives become entrenched, e.g. remind replaces causative remember. 5) The last errors to fade out involve noncausativizable predicates that are in the right semantic ballpark and have no suppletive counterparts (e.g. disappear, small). These are the last to go because the only mechanisms working against them are a) the overall weakening of the abstract schema through “bleeding” (see 3, 4) and b) the strengthening of the association between the verb and the intransitive frame through repeated exposure.

3.2. Testing these mechanisms. Is it indeed true—as virtually everyone has assumed—that errors abate earlier for verbs with suppletive causative counterparts than for verbs without them? And do they fade out earlier for verbs that are semantically distant from the core classes of causativizable verbs than for those that are semantically closer? In preliminary work, Croft and I have tested these two predictions using the speech corpora from C and E. Surprisingly, there is relatively little support for either prediction!

Role of suppletives: Figures 1 and 2 show the frequency over time of novel lexical causatives with and without suppletive counterparts in the children’s speech. If the existence of a suppletive works to suppress a child’s tendency to erroneously causativize an intransitive verb, the line representing errors with verbs that have suppletives should decline more rapidly than the line representing forms that do not. This is roughly true for E (in fact, she simply made fewer errors at all on verbs with suppletives), but not at all for C: for this child, forms with and without suppletive counterparts declined largely in parallel.

Role of semantic classes: Figures 3 and 4 show the frequency over time of novel causatives in each of several different semantic classes (certain classes shown in the Appendix are collapsed here). The first three bars at each time period represent predicate classes that are semantically close to the core causativizable verbs classes. The first bar in fact represents idiosyncratically noncausativizable members of the two core class: externally-caused state change and manner of motion. The second and third bars represent verbs of motion in a lexically specified direction and verbs of coming into/going out of existence; existing, being in a place/state: verbs in these two classes are similar to core causativizable verbs like
break in that they all are unaccusative (Levin & Rappaport 1985). The last two bars at each time period represent verbs that are semantically distant from the core classes: verbs of emission and internally-caused state-change, and verbs of volitional (agentive) action and of emotional expression and psychological events (for this calculation, references to events with both animate causees and dolls, etc., are included). If the induction of semantic categories is important in children’s retreat from causative overgeneralizations, the last two bars (semantically distant) should decline faster than the first three bars (semantically close). But the results are at best equivocal: verbs of emission and internally-caused state-change (fourth bar) do tend to fade out early, though they are never very frequent to begin with, but errors with verbs of volitional action, emotional expression, and psychological events (fifth bar)—the classes that violate the directness constraint most egregiously—hold their own over time against the first three classes remarkably well.

4. Implications

Our failure to find crucial evidence for the power of preemption by suppletive forms is perplexing, given the starring role this mechanism been assigned in most treatments. And if preemption by suppletives is not very potent, then preemption by periphrastic causatives (make disappear for disappear) is likely to be even less effective, given the poorer semantic match between the two forms. All would be well if our second candidate mechanism for suppressing errors were to fill up the void, but induction of semantic categories seems to offer only feeble assistance at best. The main mechanism left to turn to is the one that remains when preemption and semantic category induction are set aside: the repeated registration of noncausativizable verbs only in an intransitive syntactic frame, until the association between verb and frame becomes so strong that it consistently prevails over the tendency to causativize. In Croft’s and my proposed model this mechanism played a relatively humble role, serving mostly to clean up stragglers left over after preemption and semantic category induction have done their job. But it may, after all, turn out to be the most powerful force working to eliminate errors with the Causative and perhaps other argument structure alternations.

It is important to recognize, however, that this mechanism cannot be the sole solution to argument structure errors: this is because there are several genres of overgeneralization against which it is helpless. Consider, for example, the utterances in (8):

(8) Odd combinations of verb and result complement (Bowerman 1982b)
a. C 3;8 I pulled it unstapled. (After pulling stapled booklet apart.)
b. C 4;0 I’m patting her wet. (Patting sister’s arm with a wet hand.)
c. C 6;2 ...whenever I breathe, I breathe them down. (Trying to set up a village of paper houses.)
d. C 3;10 Untie it off. (Wants M to take piece of yarn off her tricycle.)
e. E 2;0 Catch me in. (Wants M to scoop her up between two boxes.)
f. E 3;11 She jumped it off for Jennifer and Christy. (Adult has jumped up to pull an icicle off the eaves.)

These utterances are modeled on adult English constructions with result-complement adjectives and particles, e.g. pat smooth, rub dry, wipe clean, chop down, pull up, throw in, and tie on. But they sound distinctly peculiar to adults.
Note that there can be no help here from preemption. Do children then eliminate such errors simply by repeatedly registering which complements have been heard with each verb (analogous to registering which syntactic frames a verb like *come* has been heard in)? This mechanism cannot be the right solution: eventually it would lead to the complete shutdown of productivity, but the combination of verbs with novel result complements is highly productive in English (see Goldberg 1995): cf. *They yelled themselves hoarse* and *I sneezed the napkin off* (*the table*).

It is likely that to end up as an adult who can innovate, but who no longer produces constructions like those in (8), the child must discover subtle semantic and morphological constraints governing the combination of verb and complement. And this suggests an interesting possible relationship between the semantic/morphological properties of predicates and their syntactic behavior. Patterns for which children can in principle unlearn errors simply by repeatedly hearing the pairing of verb and appropriate argument structure, such as the Causative Alternation, can tolerate many exceptions to the semantic and morphological categories associated with them (recall, for instance, that there are state-change and manner-of-motion predicates that do not causativize). But patterns for which this mechanism will not work, like the combination of verb and result complement, must be constrained more consistently by semantic or other properties. This is because children require such consistency in these cases, since otherwise they have no way to stop making errors without sacrificing productivity altogether.

**NOTES**

1. From Bowerman 1974,1982a,b and unpublished records; see also Pinker 1989.

**REFERENCES**


_____. 1982a. Evaluating competing linguistic models with language acquisition data: Implications of developmental errors with causative verbs. Quaderni di Semantica 3.5-66.

_____. 1982b. Reorganizational processes in lexical and syntactic development.


BRAINE, MARTIN D.S. and PATRICIA J. BROOKS. 1995. Verb argument structure and the problem of an overgeneral grammar. In Beyond names for things:


Appendix: Verbs and adjectives used by C and E as novel lexical causatives

1. EXTERNALLY-CAUSED STATE-CHANGE/ MANNER OF MOTION
C (37 errors, age 2;0 - 10;3) full (6), flat, dirty, stuck [=make clogged], unstuck [=make unclogged] (2), sharp, straight, unstraight, stable, round (5), yellow, stick [=make stuck, jammed], fasten [=make go fast] (2), bigger, smaller, smallen, largen, longen, sour, colder, separate (adj. pronunciation), face, overflow (2), slip [=make someone slip] (2)
E (11 errors, age 2;3 - 7;8) tight, untight, broken, full (2), round (2), bumpy, hot, smallen, largen

2. MOTION IN A LEXICALLY SPECIFIED DIRECTION
C (45 errors, age 2;0 - 9;8) go (28), come (7), fall (5), rise, cross (3), higher
E (26 errors, age 1;10 - 7;8) go (12), come (4), fall (7), cross (2), higher

3. COMING INTO OR GOING OUT OF EXISTENCE
C (13 errors, age 2;8 - 12;4) peek out, spell [make letters on a spelling toy spell __], die (2), disappear (6), vanish (2), lose turn
E (6 errors, age 3;7 - 11;11) spell [cf. above], dead, disappear (2), subside (2)

4. EXISTING, BEING IN A PLACE OR STATE
C (59 errors, age 2;1-11;3) be (9), have (5), stay (43), take too long, lie around
E (8 errors, age 3;7-11;7) be (2), stay (3), have, wait, lie around

5. EMISSION
C (10 errors, age 3;0-6;7) bleed, sweat (3), sing [of music box] (2), squeak, squeaky, whistle (2)
E (9 errors, age 2;11-10;2) bleed (2), water [eyes], sing [of musical instruments] (2), talk [of music box], grow, bubble, leak

6. INTERNALLY CAUSED STATE-CHANGE, SITUATION (cf. Levin & Rappaport 1985)
C (5 errors, age 3;6-12;3) bloom (2), grow [feet], cling together, soak in
E (1 error, age 3;8) stick [=make adhere]

7. VOLITIONAL (AGENTIVE) ACTION, EMOTIONAL EXPRESSION, AND PSYCHOLOGICAL EVENT
C (57 errors, age 2;3-11;3) climb, crawl, jump (8), skate, ride (3), walk, drink (2), eat (3), guess, laugh, learn, play [=make act a part], remember (4), watch, feel, touch (2), turn a somersault (3), do a trick, take a bath, take little bites, take a ride (3), take a quiet time, take a walk, get [=cause to receive] (2), lie down (3), sit (3), itch, feel better (4)
E (32 errors, age 1;11-10;11) ride, swim, climb, stagger, cry (3), drink, giggle, talk (4), walk, watch, take a ride, take a walk (2), lag, bow down, sit down, perform, remember, recognize, learn, itch, ache (2), sore, happy, comfy
Figure 3. Frequency (in tokens) over time of novel lexical causatives in different semantic classes in C's speech

Figure 4. Frequency (in tokens) over time of novel lexical causatives in different semantic classes in E's speech

- Externally-caused state-change, manner of motion
- Motion in a lexically specified direction
- Coming into or going out of existence, existing, being in a place/state
- Emission and internally-caused state-change
- Volitional (agentive) action, emotional expression, and psychological events
Figure 1. Frequency (in tokens) over time of novel lexical causatives with and without suppletive counterparts in C’s speech

Note: Excluded from Figures 1 and 2 are causative uses of go where adults would use various manner of motion or state-change verbs (e.g., you go it in [request for mother to push chair in at table]). These seem to occupy an ambiguous middle ground between having and not having a suppletive counterpart (i.e. there are lexical alternatives to the child’s causative go, but they do not have a consistent one-to-one or even few-to-one relationship with it).

Figure 2. Frequency (in tokens) over time of novel lexical causatives with and without suppletive counterparts in E’s speech
Learnability in the acquisition of multiple senses: SOURCE reconsidered
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1. Introduction

This paper explores a novel connection between learnability theory and semantic acquisition, with a focus on the issue of polysemy. It argues that the Subset Principle (Berwick 1985), along with certain empirical observations about sense extensions by children, supports a view of the acquisition of polysemy called the Conflation Hypothesis (Johnson to appear). According to this view, some polysemous forms are initially associated by children with representations of prototypical scenes that combine or conflate notions relevant to more than one adult sense, and these conflated representations serve as the basis for the learning of the distinct adult senses.

The Conflation Hypothesis is briefly illustrated with data from Johnson (to appear), and its relation to learnability issues is examined with reference to Clark and Carpenter 1991 (hereafter C&C), which contains important observations about the preposition from, the range of senses exhibited by it in English (and by similar forms crosslinguistically), and the novel uses to which children put it. Besides what C&C call its Locative sense, as in He knocked the butter from the table, from also has a Temporal sense, as in from now until four o’clock, a Causal sense, as in to collapse from a heart attack, and a number of other senses in adult usage. In addition to these, children sometimes produce novel uses of from with an apparent Agentive sense, as in He isn’t going to get hurt from those bad guys, with a Comparative sense, as in Herb’s the tallest from me, and with a few other senses that do not occur in adult usage. C&C suggest that these facts point to an emergent category, which they call SOURCE, that subsumes the conventional senses of from and the child’s novel uses, either as a superordinate category to them, a feature shared by all of them, or a feature of the Locative sense that is metaphorically extended to all the others.

I argue that learnability considerations, as well as empirical ones, suggest a different story. The syntactic novelty of certain early child uses of from makes them seem semantically novel as well. However, the situations described by these uses share a number of properties with those described by certain Locative uses. These properties are all potential aspects of the meaning associated with from by children, and some happen to correspond to adult senses of from. Perhaps, then, the novel uses and certain adult senses are based on a single conflated prototype.

If indeed the child first learns a conflated prototype as the meaning of from, it may be that the more physical aspects of the meaning—those corresponding to perceptible facts—assist the child in learning the more abstract aspects of meaning that are correlated with them. Such exploitation of correlations resembles semantic bootstrapping (see Grimshaw 1981, Pinker 1984), though the categories that the child learns as a result are semantic rather than syntactic ones. This learning strategy, based on correlations of potential semantic dimensions which are encoded as separate senses in adult language, conforms to the Subset Principle, because the resulting hypotheses about semantic representations are always extensionally more restricted than the target semantic representations. The implied learning strategy in C&C’s proposal, on the other hand, does not conform to the Subset Principle.
2. Learnability theory

Many discussions of learnability focus on syntactic principles stated in terms of categories which are assumed to be innately specified by Universal Grammar. This paper, which is concerned with the acquisition of semantic representations, adopts a more general view of learnability theory like this one, expressed in Pinker 1989:

This approach [i.e. the learnability approach] focuses on the logical nature of the task facing the child as he or she tries to learn a language and on the mental representations and processes that make such learning successful. p. 1-2

Two ideas from learnability theory can be usefully applied to semantic acquisition. These are the Subset Principle and semantic bootstrapping.

2.1 The Subset Principle

This is a principle, discussed in Berwick 1985 and many subsequent works, about the optimal way to learn a grammar. It is inspired by the generally accepted observation that children do not rely heavily on negative evidence when learning a language—i.e., they are not explicitly told which sentences are ungrammatical. If this is true, it must be the case that the child’s hypotheses are constrained in such a way that positive evidence—examples of grammatical sentences—will suffice to disprove them if they are wrong. This is guaranteed if the child always hypothesizes a grammar that is a subset of the target grammar, i.e. one that licenses a subset of the grammatical expressions of the target grammar (represented in A).

![Diagram A and B](image)

If this strategy is followed, then there are numerous expressions (represented by the x’s in A) the child can hear which belong to the target grammar but not the hypothesized grammar, and each of these provides evidence that the hypothesized grammar must be modified. Compare this to the case where the child hypothesizes a superset of the target grammar (as in B). In this case there is no positive evidence that will disprove the child’s hypothesis; every expression that the child encounters (represented by the x’s in B) is in the hypothesized grammar as well as the target grammar and therefore does not help the child decide between them.

2.2 Semantic bootstrapping

Bootstrapping proposals (see Pinker 1984) address the question of how children are able to make generalizations about the relatively abstract categories (grammatical functions, lexical classes, etc.) that are relevant to grammatical principles. For example, in order to make generalizations about the possible linear position of the Subject of a sentence, a child must be able to recognize tokens of the category Subject. However, since Subjects are often not marked in any overt way, the child would seem to have to use the structural knowledge that he or she is trying to learn
in order to identify instances of the category. Such categories therefore pose a learning paradox, requiring children to "pull themselves up by their own bootstraps." Bootstrapping proposals offer possible solutions to this paradox.

The strategy of all bootstrapping proposals is to attribute to the child an assumed correlation between the relatively abstract grammatical category and another category which is less abstract. Since instances of the latter are easier to recognize, they may help the child recognize instances of the former. Prosodic bootstrapping proposals (see Pinker 1984) claim that grammatical categories are marked by prosodic features of the child's input. Semantic bootstrapping proposals claim that grammatical categories are assumed by the child to be correlated with semantic categories.

In the first explicit semantic bootstrapping proposal, Grimshaw (1981) suggests that children learn lexical classes by exploiting their canonical associations with general ontological categories like "object" and "action." She argues that an innately-specified language acquisition device (LAD) contains principles like the following: Assume any expression denoting an object is a noun, and any expression denoting an action is a verb. If the child follows such a strategy, he or she will be correct often enough to make useful initial observations and hypotheses about the true distributional definitions of these lexical categories. Grimshaw refers to this idea as Canonical Structural Realization.

As Berwick (1985) points out, bootstrapping guarantees a type of adherence to the Subset Principle. Whenever the child assumes a strict correlation between categories where in the adult language there is only a loose one, the child's grammar will be more restricted with respect to that correlation than the adult's grammar is. For example, consider the proposal that the grammatical function of Subject is bootstrapped by the semantic/thematic category Agent, i.e., that the child assumes that any expression denoting an Agent must be a Subject. The grammar based on this hypothesis, which would have a unique mapping of the Agent role onto a particular means of expression, would, all else being equal, license a subset of the expressions that are licensed by adult English, which also allows oblique Agents in passives.

3. How does bootstrapping relate to semantic acquisition?

I argue that bootstrapping, understood as the exploitation by the learner of correlations between categories whose instances are accessible to different degrees, is relevant to the acquisition not only of syntactic categories, but also of relatively abstract semantic categories. That is, I argue for something that might be called semantic bootstrapping of semantics.

This presupposes that the task the child faces of mapping forms onto meanings is non-trivial (see Clark 1993, etc.). Following Bowerman 1993, I assume that the child often must attend to rather subtle aspects of the contexts in which forms are used in order to infer their meanings, and that the meanings of forms do not necessarily correspond to individual and clearly delimited conceptual categories that the child brings to the learning task. I do not summarize arguments for this position here, but I believe that the phenomena that I discuss offer support for it.

One thing that may complicate the mapping problem for the child is the correct delimitation of senses. ² When a child hears a form used to describe a particular situation, the child may not know which aspects of the situation are expressed by it. If the situation belongs to a regularly recurring situation-type which frequently serves as a learning context for that form, the problem may become more general:
The child may not know which aspects of the situation-type to associate with the semantic representation of the form. Even if the child correctly recognizes some dimension(s) of a situation-type as relevant to a particular sense, she or he may not know which others are relevant, and may include too few or too many in the initial hypothesized representation of the sense.

Some learning tasks pose less of a delimitation problem than others. For example, the first words for physical objects learned by the child almost always refer to individual whole objects (Markman 1989). If the child operates under a whole object constraint, as Markman proposes, the delimitation of certain early noun senses can be attributed to the general perceptual and motor abilities that allow the child to individuate objects. For other kinds of meaning the matter is more complex, though. As Tomasello (1992) points out, "in the case of verbs it is much more uncertain what aspects of a situation are relevant for its meaning" (pp. 17-18).

Polysemy introduces another twist to the mapping problem which is closely related to delimitation. This is the problem of the differentiation of senses. Given a number of perhaps closely related senses associated with a single form in the child's input, how does the child tell them all apart? A failure to delimit a sense correctly might make it difficult for the child to distinguish that sense from others. In the next section we will see how the delimitation and differentiation problems may interact to create what I call a conflated representation. This type of representation, though incorrect from an adult point of view, may ultimately assist the child in learning the multiple senses of some polysemous forms through a process resembling semantic bootstrapping.

4. See and the semantic bootstrapping of semantics

To illustrate conflation, I will refer to data and analysis from previous work (Johnson to appear) on the acquisition of the polysemous verb see.

It has been assumed (e.g. in Lakoff & Johnson 1980, Sweetser 1990, Pinker 1994) that non-visual, mental uses of see such as I see what you mean are metaphorical. In Lakoff and Johnson 1980 and subsequent work in the same vein, a metaphorical sense like this is accounted for by a mapping from elements of one conceptual representation onto elements of a distinct representation belonging to a different conceptual domain. Lakoff and Johnson argue that correlations between phenomena in experience may serve as initial motivations for the child to construct mappings of this kind, but they do not discuss how such correlations might relate to the process of learning individual word senses.

In Johnson (to appear) I argue that correlations of phenomena in experience may figure more prominently in the learning of the mental sense of see than this metaphorical view has suggested. I argue that these correlations initially affect the mapping problem for the child. The result is that the child conflates what adults consider different senses of see. Ultimately, however, this conflation helps the child learn the appropriate non-visual sense. Data from Clark's Shem corpus, from the CHILDES archive (see MacWhinney 1995 and Clark 1982), provide support for this argument.

In the data, adult input does not consist mainly of "purely visual" uses of see. By far the most frequent uses of see to the child are demonstrative ones in which the child's attention is being called to some object or situation, e.g. See, here's a bicycle. On the basis of this we might hypothesize that the child associates see not just with vision in the limited sense but with situations in which vision results in becoming aware of things and situations.
In addition, adults use tokens of many use-types to the child, and the child produces tokens of most of these types, including those that are not typically visual for adults (e.g. see followed by a wh-complement). Yet the child's uses almost without exception describe situations that involve vision. This seems to indicate that what could be non-visual uses for adults are assimilated by the child to a prototypical meaning that involves vision. This is not unlikely, because many of the adult-to-child utterances of primarily non-visual use types exhibit a kind of ambiguity due to the activities that adults and children tend to do together and talk about. Consider the following examples of adult uses of see to the child:

1. can you see what's in here? (Showing child the little window on a tape-recorder)³
2. oh, I see what you wanted (In response to child's request to go get a toy)
3. [looking at a book together]
   Adult: who's that?
   Child: uh man(d)s taking uh purse to <uh> [/] back to the bunny # and taking uh purse xxx she's mad.
   Adult: yeah I can see why.
4. now you push that and see what happens
5. (Child is looking out of the window at a little balcony opposite)
   Child: yeah # yeah.
   Adult: oh # I see where you wanna go # okay.
   Child: yeah # measure +...
   Adult: she's seeing how long he is.
7. Child: dat?
   Adult: what is this thing?
   Child: you put pennies in it # an(d) it goes like dat.
   Adult: oh # maybe i have some pennies we can put in and see how it works.
8. (looking at a picture book):
   Let's turn the page and see what happens.
9. (doorbell rings)
   oh # let's see who's there.
10. Adult: well # do you want this to close or to open?
    Child: tape it to there # right there.
    Adult: oh # i see what you mean! So you want this to go like this.
    Child: yeah # dat's <right> [?].
11. Adult: but if you take that tape off # then the top will fall apart # it won't be like a little roof anymore # see what i mean?
    Child: dere # it stays together.

These utterances, representative of adult-to-child uses of see + wh-complement in the Shem corpus, exhibit an ambiguity similar to the kind Benveniste (1966), Traugott (1988) and others have argued can lead to historical semantic change. ⁴ The meaning of each one in context can be described in two ways, one of which makes reference to a visual experience and the other of which does not. E.g., (1) might mean 'Can you see the object that is in here?' or 'Can you tell what is in here?', and
(8) might mean ‘Let’s turn the page and see the next picture in the story,’ or ‘Let’s turn the page and find out what happens.’ Though (10) involves one of the parade examples of a metaphorical use of see (I see what you mean), it fits in with this pattern. It could mean ‘I see what you are demonstrating to me’ or ‘I now understand what you are trying to tell me.’ From an adult point of view we know that these “paraphrases” are not semantically equivalent, but there seems to be little reason why the child would need to distinguish the possible interpretations.

These data suggest the following analysis. Given the strong correlation between visual experience and the achievement and maintenance of states of awareness, and given the preponderance in the adult’s speech of demonstrative uses, which highlight this correlation, it is very likely that the child does not delimit the meaning of see the way adults do.5 That is, it seems unlikely that the child believes that see only indicates the more physical part of visual experiences and not the attendant mental dimension, which typically involves a change in awareness or knowledge. If it is true that the problem of delimitation comes up in this way, it is also likely that the child does not recognize uses like (11) as exemplifying a distinct sense of see. Since almost all the child’s uses of see are anchored in situations involving vision, but these uses include some that would seem to belong to primarily non-visual use types (e.g. turn on and see how works), it seems very likely that the child assimilates different adult uses of see to a single meaning that involves vision as well as the mental experience that goes along with it. That is, I believe that the delimitation and differentiation problems lead the child to have a conflated representation—one that subsumes use-types that are distinct for adults.

Under this view, the relation between the visual and mental senses of see in adult language is similar to the relation between the two uses of climb illustrated by the sentences Kim climbed out on the ledge and The airplane climbed to 5000 feet (see Fillmore 1982). In the first sentence climb refers to clambering with no upward motion, while in the second it refers to upward motion with no clambering. These are related by a prototypical use in which both dimensions are present. The polysemy structure of see may therefore be thought of as a special kind of radial category (see Lakoff 1987). What makes it special is the fact that the prototypical use is more strongly associated with child language than with adult language.

Of course, equally compatible with the data above is the hypothesis that the child has learned a meaning of see that is identical to the “literal” adult meaning, and mistakenly attributes this meaning to uses like Let’s see how it works. While this may seem to be the simpler hypothesis, it does not address the issue of how the child learns the non-visual meaning. When this question is taken seriously, I believe that learnability considerations support the perhaps less intuitive hypothesis that the child starts with a conflated representation. Under this hypothesis we may predict that visual experience helps the child acquire the non-visual, mental sense of see. This is because the experiences that exemplify vision for the child, and that are associated with the form see, also exemplify changes in awareness and knowledge. That is, in many cases the child is being ostensively taught the mental meaning by reference to visual situations. It would be more difficult for the child to learn the mental meaning in isolation, because mental experiences as such are not as easy for adults to identify and refer to for the child.

On this account, the visual meaning of see is used to “bootstrap” the mental meaning. The parallels to the bootstrapping of syntax are quite strong. In both cases there is a relatively abstract category that needs to be associated with a form in the child’s input. This task is simplified by a correlation between the abstract category
and another one, associated with the same form, that is less abstract and whose instances are therefore easier to identify.\textsuperscript{6}

5. The acquisition of from

Let us consider the possible role of correlations in the acquisition of non-spatial senses of from, including the temporary acquisition of novel uses by the child. Recall some of the uses discussed by C&C, not all of which correspond to conventional adult senses in English:

- **Location**
  - e.g., *I'll get something from my Lego box*

- **Time**
  - e.g., *back from fishing*

- **Agent** (child only)
  - e.g., *He isn’t going to get hurt from those bad guys*

- **Cause**
  - e.g., *Who gets sick from eating seeds?*

- **Possessor** (child only)
  - e.g., *That’s a finger from him*

- **Standard of Comparison** (child only)
  - e.g., *This ear is longer from the other ear*

- **Prior Event**
  - e.g., *They prevented the dogs from getting out*

C&C observe tendencies in the order in which children acquire these uses of from. Most notably, the Locative use always precedes all the other uses.

C&C suggest that there is a single category, which they call SOURCE, that relates all the other categories. They suggest three views of how the category SOURCE might be represented. One view, which they call the *taxonomic view*, treats SOURCE as a category with all the other more specific categories subordinate to it:

\[
\text{SOURCE} \quad \text{Location} \quad \text{Time} \quad \text{Agent} \quad \text{Cause} \quad \text{Possessor} \quad \text{Standard of Comparison} \quad \text{Prior Event}
\]

Another view, which they call the *property view*, treats SOURCE as a property that all the more specific categories have in common. This might be represented by making SOURCE a feature in a decomposition of each of the more specific categories, e.g.,

- **Location** = (+ SOURCE, + SPATIAL, etc.)
- **Time** = (+ SOURCE, + TEMPORAL, etc.)
- **Agent** = (+ SOURCE, + ANIMATE, etc.)
  etc.
Yet another view is the *metaphorical view*. Like the property view, this view treats SOURCE as a property of the Locative use. In this view, however, SOURCE is not shared by all the other uses, but is metaphorically extended to them.

6. Learnability and Damon's data

Let's consider how learning might work with C&C's taxonomic and property proposals. Suppose the child first associates *from* with Location. When the child encounters a Cause use of *from*, one of two things might happen. The child might correctly recognize that the utterance describes a situation exemplifying Cause as well as a number of other concepts, and notice that Causes and Locations are both types of SOURCE (or that they both have the feature + SOURCE). This perceived similarity between Cause and Location, which is already associated with *from*, might help the child identify the former as the correct meaning to associate with *from* in this use.

The problem with this scenario is that it provides no explanation for why the Location use of *from* should be learned first. If Causes are transparently recognizable as such, we might predict that Cause uses of *from* are learned as early as Location uses, which they are not.

The other thing that might happen when the child encounters a Cause use of *from* is this: He or she does not recognize the situation as exemplifying Cause, but tries to infer the meaning from the Location sense of *from*. In this case the child might conclude that the meaning is subsumed under the superordinate category SOURCE, but would have no evidence for which of the more specific SOURCE categories it was. Here the Subset Principle comes into play: Extensionally the meaning SOURCE is a superset of all the other categories (Location, Agent, etc.). If the child hypothesizes this general category as the meaning of *from*, then the contexts of the specific uses will not be of much help in deciding on a more specific meaning, since they all exemplify SOURCE.

The problem with the taxonomic and property views, then, is that they treat SOURCE as an abstract category to which the other categories belong. The metaphorical view, as C&C describe it, does not explain why the property SOURCE is metaphorically extended from the Locative sense to the other senses.

I argue against the idea that all the senses of *from* listed above are related by a single abstract category SOURCE. Instead I argue that the Location, Agent and Cause uses are related the same way the visual and non-visual senses of *see* are, i.e., by being exemplified together in the child’s learning contexts. This understanding of the relation between these senses of *from* gives the child a learning advantage in the acquisition of the Cause use. Other uses, such as the Temporal and Comparative ones, seem to have different probable acquisitional explanations that will not be discussed here.

The first novel uses of Damon, as reported in C&C, offer evidence that the Location use may bootstrap the Cause use, with the Agent use as a kind of intermediate stage the child goes through.

Damon’s first novel use mentioned in C&C, from age 2;2,3, is *These fall down from me*, uttered after he had pushed some pieces of sandwich off a plate. C&C code this as an Agentive use, but notice that it could be coded as either a Location use or as a Cause use. Physically the sandwich moved away from Damon (or at least from Damon’s hand), Damon was the Cause of it moving and falling, and Damon was an Agent. This use is evidence for a prototype representation that conflates the three semantic dimensions in question. At age 2;5,10 Damon said
They scared from me after he had rushed at some birds and they had, presumably, flown away. Again, this is coded by C&C as an Agentive use, but it could be coded as a Location use or as a Cause use. These uses, though novel, have the same potential semantic dimensions as uses of from involving transfer of an object from a person (e.g. I got this from Mommy). We might hypothesize that Damon’s uses of from at this stage are based on such prototypical uses, with the clause nucleus expressing a resultant state, and the PP headed by from expressing something that is a Location (i.e. an origin of motion), a Cause and an Agent.

At 2;7,11 Damon said he isn’t going to get hurt from those bad guys, in which the from phrase expresses something that is a Cause and an Agent but not a Location in any direct or literal sense. At 2;8,3 Damon utters That’s from I put a thing on it, and at age 2;10,23 he utters If I talk too much, I be tired from doing that, which resembles the adult Cause use of from. In these uses from marks a Cause that is neither an Agent nor a Location.

The following table summarizes these observations about Damon’s early novel uses of from:

<table>
<thead>
<tr>
<th>age</th>
<th>child utterance</th>
<th>semantic dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2;2,3</td>
<td>This fall down from me</td>
<td>Location, Agent, Cause</td>
</tr>
<tr>
<td>2;5,10</td>
<td>They scared from me</td>
<td>Location, Agent, Cause</td>
</tr>
<tr>
<td>2;7,11</td>
<td>He isn’t going to get hurt from those bad guys</td>
<td>Agent, Cause</td>
</tr>
<tr>
<td>2;8,3</td>
<td>That’s from I put a thing on it</td>
<td>Cause</td>
</tr>
<tr>
<td>2;10,23</td>
<td>I be tired from doing that</td>
<td>Cause</td>
</tr>
</tbody>
</table>

The sequence of Damon’s early novel utterances suggests that he begins with a meaning of from that includes the semantic dimensions Location, Agent and Cause. This meaning may then be altered in the following way: When Damon encounters a use of from in which one of the dimensions is clearly missing, he assumes that the other dimensions are still present. For example, You got this from Grandma, uttered when Grandma is not present and there is no perceptible motion of the object in question, may lead the child to conclude that there is a use of from for which only the Agent and Cause dimensions are relevant. At this stage, a use like I have a headache from the noise could lead the child to infer that there is a use for which the Agent dimension is not relevant but the Cause dimension is.

This account of Damon’s acquisition of the Cause sense of from, in which it is bootstrapped by prototypical uses of the Location sense, better matches the optimal learning strategy represented by the Subset Principle than do any of the representations proposed by C&C. Since the proposed prototype meaning contains the three semantic dimensions of Location, Agent and Cause, it is more specific than any of the individual concepts. That is, it is extensionally a subset of the target meaning (Cause). Under this account, the adult Cause use of from can be derived in a straightforward way from the proposed prototypical use of from on the basis of positive evidence.
7. What sort of thing is a “conflated” meaning?

Though it appears that the labels “Location,” “Agent,” etc. are being used above as semantic features, I don’t quite intend them that way. They are meant to stand for target senses that are exemplified by particular situation types. That is, the lists of labels next to Damon’s first novel uses are meant to stand for representations of experience-types that exemplify those notions, not for Damon’s actual concepts. What is important is the idea that multiple target senses can be exemplified by the same experience-type, though the experience-type may have a unity for the child that makes it more basic than the senses that it gives rise to.

This characterization of the early meaning of from as something relatively undifferentiated from which adult senses emerge resembles Slobin’s (1985) claim that children first associate grammatical functors with prototypical scenes that are unanalyzed relative to the eventual meanings associated with those functors in adult language. It differs from Slobin’s proposal in two ways, though. First, it claims that multiple senses may emerge from the same prototypical scene, and that this is in fact an acquisitional source of polysemy. Second, it accounts for the acquisition of from in terms of a phenomenon that is not limited to grammatical functors, since it is also argued to underlie the acquisition of the lexical verb see. Therefore the general proposal made here is in line with more recent work by Slobin (in press) in which he expresses doubts about the primitive distinction between grammatical and lexical items in acquisition.

It may be that the conflated meanings proposed above reflect early stages of the child’s conceptual development. In this case they would reflect undifferentiated concepts as discussed in Smith, Carey and Wiser 1985. The development of the distinct adult senses might then depend upon the emergence of theories of the appropriate domains (see Carey 1985, Keil 1989). For example, the achievement of the “literal” visual meaning of see might depend upon the emergence of a general theory of perception, which would require the child to generalize over the different sense modalities.

This work also relates to Ervin and Foster 1960, where it is argued that “what remains as a metaphorical, connotative relationship in adults may in many cases start as denotive non-differentiation” (p. 275). However, they focus on children’s interchangeable use of terms for highly correlated attributes, and claim that relatively perceptible attributes are less likely to be confused with others than are less easily-identified ones. The claim made here is that children exploit salient and perceptible aspects of experiences associated with linguistic forms in order to identify instances of more abstract categories for the purpose of learning.

8. Conclusion

I have argued that children use a strategy resembling semantic bootstrapping to learn the relatively abstract senses of some polysemous forms. This strategy exploits the correlations, adhering in prototypical uses of those forms, between more perceptible, intersubjective aspects of experience and more abstract, subjective ones in order to associate the latter with the forms. Evidence for this strategy comes from patterns of adult input and child production. In addition, the viability of the strategy is supported by theoretical considerations of learnability. Possible alternative accounts of the acquisition of the senses discussed here either fail to predict the order in which the senses are learned, or are less sound from a learnability point-of-view.
The proposed parallel between bootstrapping and semantic acquisition has important theoretical implications. Bootstrapping proposals are designed to address the problem of how children break into a system of purely formal categories. Typically it is assumed that these categories are innate, but that children are unable to recognize instances of them in their experience. However, the semantic categories whose acquisition is discussed here are not assumed to be innate. Rather, the proposed strategy provides a way for the child to identify classes of experience to serve as the basis for the construction of the categories. An interesting direction for future research will be to examine the relevance of this approach to work that attempts to recast semantic bootstrapping proposals so that they do not make reference to innate syntactic categories (e.g. Schlesinger 1988, Braine 1992).

Notes

1 In this paper the terms “Location” and “Locative” are applied, as in C&C’s paper, to all uses of from that describe spatial origins of motion.
2 I believe this is what Tomasello (1992) refers to as the “packaging problem” (p. 17).
3 Comments in parentheses are from the transcriber. Comments in brackets are my own.
4 The ambiguity corresponds roughly to the possibility of either a headless relative or an embedded interrogative reading of the wh-complement. This observation, though intriguing, will not be pursued in this paper.
5 It has been argued (Goldberg 1990) that even the adult visual use of see usually involves a mental dimension. The truth of this claim would not change my argument—in fact, it would provide additional evidence for it.
6 An additional parallel is the asymmetry of the correlation. Vision implies mental experience while the reverse is not true. In bootstrapping, a semantic category implies a syntactic category, while the reverse need not be true.
7 The child’s novel Comparative use, e.g. Herb’s the tallest from me, is probably based on adult uses like They are different from you, which C&C mention. The child may assume from is a general Comparative marker when exposed to such sentences, and only later learn that it is idiosyncratically selected by different in this context.

References


EVIDENCE CHILDREN USE: LEARNABILITY AND THE ACQUISITION OF
GRAMMATICAL MORPHEMES*

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The learnability idea was a great insight: Whatever Language is, it must be
something that people can learn, and whatever people are, they must be the kind of
organism that can learn language. But there's a problem with using this insight: we
don't know enough about either what Language is or what Learning is to make
dramatic leaps based on such reasoning. At present, the state of the art is more like
having two climbers roped together, both holding on with rather inadequate
equipment. Better to inch up in parallel, and keep testing how well the theories on
both sides are anchored in data.

Human language learnability, first of all, is not a purely mathematical issue. A
model, mathematical or otherwise, has consequences for the real world ONLY to the
extent that it is a 'good enough' model of the world; that is, only to the extent that
its assumptions match (empirical) facts. (For example, Euclidean plane geometry
matches the shape of the world well enough for local navigation on our spheroidal
planet, but it won't describe the air route to Japan.) A basic type of learnability
argument runs like this: Assume that Language is a system of type T, and that the
learner hears it under conditions C. If learners don't have property P—for example,
access to an innate grammar—then they will make errors from which they cannot
recover. Therefore, P must be a property of the learner.

Yes—if the assumptions match reality: that is, if language is indeed of type T
AND the conditions really are C, AND the learner doesn't have some other property
P' that will enable it to recover from these errors. Whether the assumptions of an
argument are a close enough match to reality, however, is always an empirical
matter. Morgan (1989:352) has a useful statement: 'Learnability results utilizing
Gold's (1967) framework incorporate assumptions about three components: the
amount of information available in language input, the extent of constraints on
grammatical hypotheses that the learner may entertain (i.e. the richness of Universal
Grammar), and the nature of the psychological mechanisms by which a specific
grammar is acquired upon exposure to input.'

I argue in this paper that the assumptions of well known learnability arguments
do not give a 'good enough' fit to the real world to help us in understanding either
Language or its acquisition, because they do not take proper account of a great deal
of the evidence actually available to and used by children (i.e. the conditions are in
fact not C), and because they also ignore indications that the learner indeed has
other properties which permit recovery from error, among which are psychological
mechanisms sensitive to frequency item occurrence. (Doug Roland has further
pointed out to me that the implications of the Gold mathematical results themselves
are typically overstated, but that's a matter for another paper.)

On the other hand, I must also argue that most studies claiming to show that
there is enough evidence in the input for children to learn language 'bottom up', that
is, without drawing on an innate grammar, such as those of Moerk (e.g. 1991) or
of Bohannon, MacWhinney & Snow (1989), seriously minimize the ambiguity of
the information available to the child. Although I disagree with some of his views,
Marcus (1993) is correct about that. Confronting that ambiguity and its implications
will, I claim, actually strengthen the bottom-up 'language can be learned without an
innate grammar' arguments.
I think the data that I present on how two children recover from certain of their errors support the following conclusions:

(a) They recover from these errors on the basis of evidence available in the language rather than because of the maturation of some aspect of the grammar;

(b) In order to use this evidence, they must possess a powerful but fairly general instance-based abstracting capacity, a Language-Making Capacity, of the general type envisioned by Slobin 1985, Bybee 1995, or Bates & MacWhinney 1987 (see also Bowerman, this volume).

Before going on, we should consider use of the terms ‘negative’ vs. ‘positive’ evidence in learnability theory, because this terminology creates damaging misunderstandings. ‘Negative (syntactic) evidence’, in the strict mathematical sense, is evidence that a particular string is ungrammatical, i.e. syntactically illegal, not allowed in the language. But information that leads to the same conclusion gradually—information ends up cumulatively telling the child that a form she has been using is not part of the language—may not contain any single element that can in itself be called ‘negative’. This is because ‘positive’ evidence, which means evidence as to what people DO say, i.e. examples of syntactically legal strings (paired with their meanings), is capable of giving rise to negative feedback, feedback as to what people DON’T say (to express those meanings). For example, continued parental use of I did it in contexts where the child would have said Me did it gradually makes it clear that Me did it is strongly dispreferred. Chomsky (1981:9, quoted in Lightfoot 1989) acknowledges this by referring to the accumulation of positive evidence as ‘a kind of negative evidence’. Such cumulated positive evidence is generally called ‘indirect negative evidence’, and no one disputes its availability to the child.

Marcus (1993:55, fn.) points out that indirect negative evidence ‘depends on reanalysis of positive evidence based on mechanisms INTERNAL to the child, rather than input external to the child’ (emphasis added), and so in this way it is like positive evidence. Further confusion arises from our common-sense feeling that the overt corrections and revisions like No, say ‘I did it’—however rare they may be—are negative in the ordinary language sense of that word—that is, they must tell the child that something about what she said was WRONG. Certainly, they do. But they do not, in themselves, tell the child that what she said was UNGRAMMATICAL. Therefore, I agree with Marcus that such corrections are still more akin to ‘indirect negative evidence’ than they are to negative evidence in the mathematical sense. However, to reiterate the plan of this paper, I claim that two aspects of indirect negative evidence are systematically neglected: those who wish to argue for the need for innate grammar do not sufficiently credit the power of indirect negative evidence, and those who argue for a bottom-up low-innateness approach to language acquisition generally fail to consider the seriousness of the challenges that children face in utilizing indirect negative evidence. I will try to clarify both of these issues, and I will argue, along with such theorists as MacWhinney and Bates (e.g. Bates & MacWhinney 1987), that indirect negative evidence is a central factor in enabling the child to learn what is not in the language.

I should also clarify the sense in which I use the phrase ‘to learn language’. I mean ‘to induce the grammar, phonology, lexicon, and pragmatics of a language from data available in the environment via unconscious processing and storage mechanisms.’ These mechanisms are unavailable to introspection and bear little or no resemblance to metalinguistic abilities, such as explicit verbatim memorization. I assume that these processing and storage mechanisms may be quite strongly biased to extract certain kinds of structures, but this bias does not constitute access to some
universal innate (therefore unlearned) grammar which contains such structures. One source of such biases is surely the human infant’s conceptual architecture—for whether one is more concerned with language as a vehicle for communication or for representation, Braine’s (1992) position that language is a rough reflection of ‘the language of thought’ (or, I would say, of some portion of it having to do with actual and potential states of affairs) seems reasonable, as does his contention that this conceptual architecture (to which I would add a number of affective and social categories) provides a basis for initial categorizations of words and structures in the ambient language. Having such a semantic first approximation to the kinds of things people mean with language reduces the labor of the Language Making Capacity, and should immensely increase the rate of its convergence on a ‘good enough’ grammar.

Most of the data for this paper were published in Peters & Menn 1993: longitudinal studies of Seth and Daniel, two-year-old English-acquiring boys, focusing on the emergence of morphosyntax; the remainder are from unpublished materials on the same two children, who showed very different patterns of the emergence of English ‘grammatical morphemes’.

I will first examine some rules that must have been learned from evidence because they are specific to English. Then I will examine data from conversations with both children which illustrate the ambiguity of any particular instance of the feedback information available to them: nothing tells them explicitly when it’s their grammar which is at fault, let alone how to repair it. I then will argue that it takes impressive data recording and statistical processing abilities to extract rules from data like these. Therefore, we can assume that those learning abilities are present in all normal children. By Occam’s razor, unless we have evidence to the contrary, we should further assume that everything that COULD be learned from evidence by using those abilities IS in fact learned in that way. In summary, we should not claim that an article of knowledge—such as a language’s preferred word order—is innate or dependent on setting innate grammatical parameters until we have demonstrated that it CANNOT be learned by these powerful abilities, which must be present just to handle the sort of language particular information that everyone agrees has to be learned.

What evidence do we have from children’s behavior that they use evidence from the ambient language? At the level of the instantiation of words, more generally morphemes, there is no disagreement: morphemes—or at least morphs!—are learned, because these are language particular. However, what keeps children from assuming that, say, the *feet* that they say and the *feet* that they hear are equally good options? It can’t be utterly impossible for this to be the case—consider American English alternate past tenses *dived* and *dove*—but it is extremely rare. Some researchers hold that innate uniqueness constraints on morphs, such as those suggested by Eve Clark (1987), are necessary; others (e.g. Bates & MacWhinney 1987) hold that the competition inherent in a connectionist learning mechanism will be adequate to give the ‘uniqueness’ that generally holds. Regardless of the outcome of that debate, my aim here is to review the problem of obligatoriness vs. optionality, because the idea that children can’t use evidence to LEARN that something is obligatory motivates many innateness arguments, including the argument for the ‘pro-drop’ parameter.

The argument for setting a ‘pro-drop’ parameter goes like this: Children can’t simply learn from positive evidence that English and similar languages require overt grammatical subjects (in the overwhelming majority of contexts), because positive evidence can only tell the hearer that subjects are optional, not that they are
obligatory. This is logically correct; but the fact is that people don’t behave according to such Aristotelian logic. As philosophers have pointed out for centuries, people typically behave as though they possess categorial, certain knowledge about the world in many areas, from science to politics, even though any evidence that they can have collected cannot justify such behavior within a True/False logic. HUMANS MAKE CATEGORIAL JUDGEMENTS (e.g. right vs. wrong, your theory vs. my theory)—throughout cognition, not just in language—ON THE BASIS OF PROBABILISTIC INFORMATION, even though this is not in accordance with classical logic.

Why do people act in this way? The reason must lie in the properties of the mind. And the difference between an Innate Universal Grammar approach and a Language-Making Capacity approach to explaining how OBSERVED PROBABILITIES about language use become BEHAVIORAL CERTAINTIES about grammar lies in what KINDS of ‘mental properties’ are postulated to explain the subjective certainty that we experience in making (a large class of) grammaticality judgements.

My principal thesis in this paper, then, is that these ‘mental properties’ include powerful statistical and structure building information processing capacities (which are probably general cognitive properties). Such capacities must be ascribed to the Language-Making Capacity just in order for children to acquire language particular information. Now since language particular information is necessarily learned on the basis of evidence from the ambient language, if such processing capacities characterize the learning of language particular information, nothing prevents us from supposing that they apply in all aspects of language learning. And if they do, then the need to appeal to innate grammar is clearly reduced, and may well be entirely unnecessary.3

If one wants to make an argument that a child is using evidence, merely demonstrating the change of his or her rule toward the corresponding adult rule is not enough—perhaps, it could be argued back, the change is due to maturation, or new access to some aspect of innate knowledge. To have a valid argument that a child has used evidence in making a rule change, one must show that the change in question cannot be due to innate factors alone. Not only must the adult model pattern in question be language particular, but the child’s earlier pattern should be similar to patterns found in some known adult language, so that it is compatible with a possible grammar, and so that moving away from the earlier version can’t be explained by appealing to the maturation of a constraint. Let’s consider Daniel, focusing on his several recoveries from incorrect rules for the use of plural and possessive markers, originally presented by Peters & Menn (1993).

I will show that Daniel revised and re-revised the details of the English plural marking rule. He must have made these revisions on the basis of evidence, and he appeared to be moving from one OBLIGATORY version of the rule to another. He did not maintain ‘optionality’ as a possibility. Since the change in his grammar was reversed, maturation from a less marked to a more marked version of ‘UG’ can’t be invoked. The only way that such a sequence of events could take place within a strong innate grammar approach would be some sort of evidence dependent reversal of parameter setting, and at that point I think we would have a notational rather than an empirical difference between a Slobin-type Language-Making Capacity theory and a Grammar Maturation theory.

Daniel had had an idiosyncratic early rule from about 2 years to 2 years 3 months: a very ‘soft’, probabilistic rule, based on the pattern of certain appearances of the several [Z] morphemes in his experience, that word final [s ~ z] is
phonologically conditioned in English (Menn 1971, Menn & Matthei 1992). Then he unlearned this rule between 2;3 and 2;6. By 2 years 6 months, he showed evidence of productive knowledge of the regular plural and the possessive in English, which were supplied correctly for about a month and a half. Then he began to omit plurals, at first at random: sleeve down, two prune, two ball, both blue car, blue socks, two blacks, lots sticks, lots boats.

From 2;6.15 to 2;7.0, Daniel was more systematic, omitting the plurals after modifiers in spontaneous utterances. Table 1 lists all the modifier + plural contexts in the left column, and the naked plural contexts in the right column; note that the pattern appears to be a clean syntactic rule for about a week starting at 2;6.18, although the omissions were always correctable in imitation. This context-sensitive pluralization rule was a somewhat gradual change away from his earlier correct plural rule. The last item for 2;6.23 (two eyes) shows the correct rule being reinternalized—or maybe we should say reexternalized. Overgeneralizations of plurals (mans) continued during this period.

<table>
<thead>
<tr>
<th>AFTER MODIFIER</th>
<th>UNMODIFIED (except both)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2;6.0</td>
<td>D: two blacks (looking for a second black block)</td>
</tr>
<tr>
<td>2;6.0</td>
<td>lots sticks out</td>
</tr>
<tr>
<td>2;6.0</td>
<td>two blacks?</td>
</tr>
<tr>
<td>2;6.0</td>
<td>more/other blacks?</td>
</tr>
<tr>
<td>2;6.0</td>
<td>more/other black?</td>
</tr>
<tr>
<td>2;6.17</td>
<td></td>
</tr>
<tr>
<td>2;6.18</td>
<td>D: two, two, two.</td>
</tr>
<tr>
<td></td>
<td>L: Two what, Danny?</td>
</tr>
<tr>
<td></td>
<td>D: [in:o]</td>
</tr>
<tr>
<td></td>
<td>L: Two windows.</td>
</tr>
<tr>
<td></td>
<td>D: [in:oz]</td>
</tr>
<tr>
<td>2;6.18</td>
<td>two window</td>
</tr>
<tr>
<td>2;6.18</td>
<td>[wivi] (Stevie) hold hands</td>
</tr>
<tr>
<td>2;6.21</td>
<td>more truck</td>
</tr>
<tr>
<td>2;6.21</td>
<td>(ladies no beard (don't have...))</td>
</tr>
<tr>
<td>2;6.21</td>
<td>both mans</td>
</tr>
<tr>
<td>2;6.21</td>
<td>buttons</td>
</tr>
<tr>
<td>2;6.23</td>
<td>two car, red car (there were two cars, both red)</td>
</tr>
<tr>
<td>2;6.23</td>
<td>(imit.) four mats</td>
</tr>
<tr>
<td>2;6.23</td>
<td>D: two (wr)ench</td>
</tr>
<tr>
<td>2;6.23</td>
<td>L: Two wrenches.</td>
</tr>
<tr>
<td>2;6.23</td>
<td>D: two (wr)enches</td>
</tr>
<tr>
<td>2;6.23</td>
<td>[uz] hands, not (f)ork (formula)</td>
</tr>
<tr>
<td>2;6.23</td>
<td>tea [gægz] (bags)</td>
</tr>
<tr>
<td>2;6.23</td>
<td>D: two (f)oot</td>
</tr>
<tr>
<td>2;6.23</td>
<td>L: Two feet.</td>
</tr>
<tr>
<td>2;6.26</td>
<td>D: two (f)eet</td>
</tr>
<tr>
<td>2;6.26</td>
<td>D: two (f)eet too? (of another toy)</td>
</tr>
<tr>
<td>2;6.26</td>
<td>D: two eyes (Note that this dialog did not model the regular allomorph)</td>
</tr>
<tr>
<td>2;6.26</td>
<td>bought pears?</td>
</tr>
<tr>
<td>2;6.26</td>
<td>two pin</td>
</tr>
<tr>
<td>2;6.26</td>
<td>two [paps] (tops)</td>
</tr>
</tbody>
</table>

Table 1. Plural markers, Daniel. Adapted from Peters & Menn 1993:759, Table 2. Cf. the adjective marking alternation in the adult model: two blues / two blue blocks.
Now consider the possessive, as shown in Table 2. By 2;6, the possessive 's had apparently been mastered: as Table 1 indicates, between 2;5.25 and 2;6.10, 4 of 4 required attributive possessive markers were supplied, as well as 2 of 2 predicative possessives. The possessive, like the plural, then underwent a reanalysis between 2;6.18 and 2;7.12. The revision, like that of the plural rule, involved the omission of the {Z} in phrasal contexts:

2;6.24 Mommy car vs. 2;6.21 That Mommy's and Mike's.

This distribution is the same as the attributive/pronominal distribution of the possessives my/mine, your/yours, her/hers etc., being learned during the same period:

2;2.19 mine cookie?
2;6.23 mine bib (corrected in imitation to my bib)
2;6.24 my chair

So Daniel also 'learned' that {Z} marks possessive except in attributive N's+N constructions.

The possessive alternation started to break down about three weeks after it first appeared:

2;7.12 [bivz] (Steve’s) pen; Mommy’s pen

<table>
<thead>
<tr>
<th>ATTRIBUTIVE</th>
<th>PRONOUNS</th>
<th>PREDICATIVE/PRONOMINAL</th>
<th>PRONOUNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOUNS</td>
<td>PRONOUNS</td>
<td>NOUNS</td>
<td>PRONOUNS</td>
</tr>
<tr>
<td>1. Apparent mastery of possessive suffix, 2;6.1–10</td>
<td>4/4 with 's</td>
<td>none</td>
<td>2/2 with 's</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1/1 mine</td>
</tr>
<tr>
<td>e.g. Danny's pa(cifi)er</td>
<td>Cake—Jean's.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mine.</td>
</tr>
<tr>
<td>(2;5.15–30, four instances of attributive mine; e.g. mine egg all gone)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Absence of possessive marker in attributive use; beginning of acquisition of my/mine, 2;6.18–23</td>
<td>4/4 without 's</td>
<td>2/2 mine</td>
<td>9/9 with 's</td>
</tr>
<tr>
<td>e.g. Daddy pen</td>
<td>mine bib</td>
<td>Daddy's?</td>
<td>Mine?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Mine bib correctable on imitation to my bib, 2;6.23)</td>
<td></td>
</tr>
<tr>
<td>3. Absence of possessive marker in attributive use; acquisition of my/mine,your/yours, 2;6.24–2;7.9</td>
<td>5/5 without 's</td>
<td>5/5 my</td>
<td>4/4 with s</td>
</tr>
<tr>
<td>e.g. Wevie (c)er(eal) ... My egg ...</td>
<td>Weve's</td>
<td>(L)eave mine on?</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 2. Possessive markers, Daniel. Adapted from Peters & Menn 1993:761, Table 3.

However, it persisted variably for several months, much longer than the incorrect plural rule did; possibly it had reinforcement from the pattern of the possessive pronouns.

Regardless of how Daniel came up with these patterns, he learned NOT TO mark something which he had previously marked. Both his incorrect pattern and the correct pattern are possible rules of language. And then, of course, he did eventually learn English—that is, he changed his rules again on the basis of what he was hearing around him, instead of regarding his rule and the ambient rule as alternatives.
Now let's turn to Seth, and the evidence that he gives us against a 'pro-drop' parameter. This is an argument of a different sort: Where Daniel looks like he 'considered' optional [Z] morphemes only briefly, Seth—in production—really does look like he progressed from optionality to obligation in his use of subjects and—for appropriate verbs—objects (as detailed in Peters & Menn 1993, and as Peters 1996 is continuing to document). But the change in no way resembles the sort of discrete event that is called to mind by the phrase 'to trigger a parameter setting'.

Seth's development of grammatical morphemes can be characterized as 'Prosody first, sounds next, functions and meaning later'—making use of what were called 'phonological toeholds' by Peters & Menn (746). Specifically (quoting Peters & Menn, 749–50):

'(a) Distributionally, early production of protomorphemic fillers in each specific position begins sporadically, with slots being filled more and more often, first by filler syllables and then by increasingly accurate renditions. The variability cannot be accounted for by rules at any linguistic level.

'(b) Each slot is filled by distinctive phonological alternation sets. Therefore, Seth has some phonological information about what goes where, but it is only partial and only applied probabilistically.

'(c) Distributional and phonological development interact. We find different developmental histories for subject vs. object pronouns, and for prepositions as opposed to particles.'

Seth seemed simultaneously to have developed two co-occurring preverbal slots: Subject, plus another slot for some sort of 'helping verb'. This latter slot Peters & Menn called 'Protomodal'; it contains catenatives such as wanna and gonna, modals (can), and auxiliaries (did, do, are, shall). The fillers for the Subject slot are primarily vowels, while those for the Protomodal slot are nasals. Examples:

```
1;10.0 /n fwo a kap/ /š ge a kap/? /N throw a cup/
/N get a cup/ 1;10.15 /m pik a fawis/? /n si a bak/? /N pick a flowers/ /N see a bark?/ (of tree)
/N talk?/ 1;11.0 /š tak/? /wā tak/? /‘wan’ talk?/ /m braš a tif/? /a braš a tif/? /N brush a teeth/ /‘brush a teeth?’
/n tük a bæf/? /N take a bath?/ /n šiši i a padi/? /N shishi in a potty/```
Recognizable subject pronouns were infrequent until 2;0.2, and there were very few recognizable subject nouns until 2;3.1, when the noun Daddy suddenly occupied nearly 25% of the subject slots, being used in preference to you (e.g. Let Daddy throw it, Wan' Daddy ta bat it). Attempts to fill both preverbal slots simultaneously were found as early as 1;11.0, but they were rare and at first consisted only of a vowel followed by a nasal (e.g. an take a off). At 2;1.2 Seth produced a few disyllabic preverbal items such as na ga take a off (= 'I? go(nna) take it? off') or aw a go get it. Finally, at 2;3.1 Seth seemed to be able to make use of both pre-verbal slots, producing constructions such as Let Daddy kiss it or I can throw again (see Peters & Menn, 751–52).

This long drawn out variation has none of the crispness suggested by the term 'parameter setting'. I think it supports a Language-Making Capacity approach; but it also requires us to ascribe some serious power to the LMC, and I suggest that a lot of work is still needed to determine exactly what kind of power this must be. The extensive and impressive years of work of the crosslinguistic comparison group led by Slobin give us a pretty good idea of what children learn about grammatical morphemes, and on what time scale; and the differential sensitivities of the psycholinguistic LMC have been made quite explicit over the last 25 years. But the question of how this operates in the communicative environment has barely been broached. That's probably the main thing that the study of language acquisition should be doing for the next 25 years.

Why is it essential to study the acquisition of morphology and syntax 'in the communicative environment'? Let's consider some bits of conversation which show their parents responding to Daniel and Seth by recasting their utterances in different words. These examples will support the statement I made earlier
concerning the ambiguity of the ‘correction’ that children get—ambiguity from the child’s point of view, which is what is important. This ambiguity is in fact just as problematic for ANY instance in which children hear forms different from they have just used or would have used—that is, not just when they hear corrections and recasts, but also when they hear any input speech that they can at least partially understand. Children certainly do learn from language that is not addressed to them directly (‘Little pitchers have big ears’—consider the research on children’s roleplaying!, e.g. Andersen 1990)—and from the language that is addressed to them which is not a rephrasing of something they have said.

The issue is this: How does the child know when a recasting of what s/he has said is a CORRECTION, and when it’s ANOTHER OPTION? If you say Here book and your father recasts it as Here's the bunny book, how do you distinguish the obligatory grammatical additions from the optional content additions? Although the critics of the bottom-up school of thought have talked about this for a long time (cf. Grimshaw & Pinker 1989), the issue of identifying what is a correction has been a problem that is gravely underacknowledged by bottom-up proponents (e.g. Moerk, Bohannon)—although some of them, e.g. Bohannon, MacWhinney, and Snow (1990), have touched on it a bit.

A very clear statement of the point of view that I share is in Morgan, Bonamo, and Travis (1995:181): ‘Child-internal processes of DISCRIMINATION, INTERPRETATION, and RE-EVALUATION must be involved in utilizing corrective feedback, and none of these is trivially accomplished’ (emphasis original). Logically, a child must first ascertain what the difference is—in both form and function—between what s/he has said and what the adult has said. The words used by the adult have to be noticed, parsed, and interpreted semantically and pragmatically, or the input is just going to be a string of sounds. Consider the following exchange at 2;7.9 (Menn, unpublished diary data):

D: Daddy have book [describing picture]
L: The Daddy has a book.
D: Daddy have book.
L: The Daddy has a book.
D: Daddy haveg book.

Daniel repairs one morpheme at a time: note the evidence this provides for his being able to parse what I have said, and to compare at least part of it with what he has said. This parsing ability is evident throughout his responses to recasts (when they have any audible effect), and it’s what also happened in Brown’s Adam’s notorious Nobody don’t likes me response (McNeill 1966), (Moerk 1991:232, Table 5, gives many more examples of both successes and failures at picking up on parentally-added grammatical morphemes.)

Now consider the following from Daniel at 2;7.11:

D: Me get down.
L: Say: I’m getting down.
D: Me get down.
L: I’m getting down.
D: I get down.

How does Daniel know, in any of these cases, whether my changed form is a grammatical correction, a formality correction, a politeness correction, a semantic correction? It is no wonder that the immediate effect does not translate into a change in the child’s grammar; we are not seeing a system that is IMPERVIOUS to
correction, but rather a system that is (appropriately) CONSERVATIVE in its response. It waits, as it must, to gather a considerable amount of information about why the adult has made a recast before making a change in its morphosyntax, its lexicon, or some part of its pragmatic system, as may turn out to be appropriate. On 2:7.16 we find the following failure to incorporate my correction of five days earlier, just as the literature leads us to expect:

D: Me diit.
L: I did it.
D: I diit.

But Daniel had a lot of work yet to do in order to determine when I is preferred to me—certainly a wholesale replacement of me by I in all environments would have been inconsistent with what he had been hearing his elders say.

Four days later (2:7.20), Daniel's grammar indeed starts to change, but the new form is 'optional'—that is, we cannot tell what his unconscious hypothesis might have been as to when it should be used. All we know is that he now spontaneously produced both forms:

D: I diit.
D: Me diit.

My attempt to correct this Me diit by modeling I did it resulted in the following dialog, which shows again how hard it is for the child to determine the purpose of an adult's response:

D: Me diit.
L: I did it.
D: You do it too?
D: You did it?
L: (weakly) I helped.

More dramatic illustrations of the problems of interpretation of adult responses come from Seth, who is visually impaired, and has the blind child's typical prolongation of problems with working out first second person pronominal reference (Dunlea 1989). This compounds his difficulties in finding out what his father is attempting to accomplish with his recasts and responses in the following conversations. The following are interchanges between Seth (S) and his father Bob Wilson (B), at age 2:5 (from Peters 1966:6–7):

(a) S: I-I-I wanna get i' really high, Dad.
   B: You want Daddy ta help you?
   S: Wan' Daddy to help you, Dad.
   B: Say, 'Help me, Dad.'
   S: Help me, Dad.
(b) S: I don' wanna – [crying] wanna build dat [crying]
   B: D'you want Daddy ta help you build-tower?
   S: Wan' Daddy ta help myou build-tower.
   B: OK, let's build one more.
(c) S: Wan' Daddy ta pick you up?
   B: Y' want me ta pick you up?
   B: D'ya wanna git outa your high chair?

How is Seth to know how these forms from his father relate to each other and to his own forms syntactically, semantically, and pragmatically? Which are corrections of incorrect forms? Which are examples of pragmatically preferred alternatives?
I think these data illustrate several important points. First, recasts probably do not have much of a privileged position in helping children learn, regardless of what parents think. Yes, parental models are important, but as many of us (notably MacWhinney and Bates) have long held, and as Morgan et al. (1995:194) observed in their statistical study of recasts in the Brown corpus, ‘errors could ... also be revealed by covert comparisons between parental utterances and how the children themselves would have said the same sentences. On this latter view, any positive exemplar could instigate comparable insight. Note that recasts provide mere fractions of the total input for any particular construction ...’ (In some of the Roger Brown corpora, Morgan et al., p. 194, found that recasts provided only about 5% of the article models, and 3% of the WhQ+aux models that were actually present in the data.) The key point is that, quoting again (194): ‘no recast provides information about why an error is an error ... Children must first guess the nature of the problem—whether it is syntactic, semantic, morphological, phonological, or pragmatic—and must then guess the generality of the required repair.’ The child’s LMC bears an enormous burden: figuring out WHY the adult has provided a particular recast or model in a particular situation.

Marcus (1993:77) makes the same point, but goes too far beyond it: ‘Recasts and expansions may serve as ideal positive evidence, but they do not tell children what is not in the language.’ His second clause is true only in the INSTANCE, not in the AGGREGATE. This is because children are not restricted to making grammar decisions one string at a time; instead, they accumulate evidence, as years of documentation of frequency effects tell us. A good statement is made by Snow & Tomasello (1989:357–58): ‘A close look at children acquiring particular structures (e.g. the use of prepositions or the past tense of regular verbs) often reveals days, weeks, or even months during which they hear and struggle to comprehend dozens or even hundreds of relevant adult examples, and during which they struggle, on numerous occasions, interspersing both successes and failures, to produce the correct form themselves.’ (For other statements and supporting data, see MacWhinney 1987, passim.) While no individual response that children hear could be interpreted by them as the equivalent of ‘string not in language’, they can cumulatively compare what they hear to what they would have said—and also, as Ann Peters points out (p.c., 1996), responses that they actually get to the responses they expected to get.

In summary: it must be the case that children can in fact learn what is a matter of grammar, what is a matter of politeness, and what is a matter of additional information. But deciding that ‘evidence’ about what people say is actually ‘negative’—something tantamount to a call of ‘ungrammaticality’—takes a while: and this had better be the case! (Cf. Marcus 1993:77: ‘Children who changed their grammars every time the parent said something different would radically damage their languages.’) The so called demonstrations that children do not use negative evidence even when it is present are better seen as demonstrations of how a conservative system deals with the multiple possible functions that a recast might have.

What processing capacity is needed to determine what items are obligatory IN CONTEXT—where ‘context’ includes meaning and setting? Statistically based processing must be taking place—that is, recurrent pairings of parsed, interpreted strings with a long list of semantic and pragmatic variables. Crucially, the LMC must be capable of constructing categories and of labeling them—the kind of issue on which Maratsos (e.g. 1982) has especially focused—and it must be responsive to the uses of constructions as well.
As regards children’s ability to respond to some aspects of form and meaning in advance of their abilities to produce them, we can invoke the findings of Golinkoff & Hirsh-Pasek (e.g. 1987), who have shown that a significant degree of comprehension of the argument structure carried by basic SVO word order for common action verbs is present in the early one word stage. We can also look to Tomasello & Barton (1994), who have shown that social-pragmatic cues are attended to differentially by two year olds in both noun learning and verb learning; to the findings of Gerken and colleagues (e.g. 1989, 1991), who have shown that identification of grammatical morphemes precedes contrastive use in production, typically by many months; and to Bloom, Hood & Lightbown for the evidence that children who imitate adult models ‘imitated only word and structures in the speech that they heard which they appeared to be in the process of learning’ (1974:416), so that ‘When a child imitated an adult utterance he must have already processed it to the extent that he recognized that some aspect of the utterance was in that gray area ... it was not entirely new to him nor already in his productive competence ... [T]his level of processing ... involved recognition of partial relationships among an aspect of utterance form, an aspect of the situation, and some information about form and content already in cognitive memory’ (1974:417).

A nice example showing this ‘leading edge’ character of children’s choices of forms to imitate is the following, where Daniel (2:8.9) took a verification question as an occasion to incorporate the modeled form in his response:

D: Not fits.
L: It doesn’t fit?
D: [nas] fit.

So we see that the child who is hearing a typical recast of her speech is likely to find some of it within her zone of proximal development: that is, she can probably identify the ‘extra’ grammatical morphemes as such, map out the most frequent SVO action structure, and spot the content words that the adult is putting in. Those abilities are essential to executing the parsing that is needed for the correlational analysis discussed above. And again, this much power is needed just for language specific learning, which by definition cannot depend on an innate grammar.

Returning, finally, to the issue of the categoriality of children’s rule changes: Daniel, retreating from his rule forbidding plural marking inside X+N phrases, must have been able to (subconsciously) decide that two blocks was correct, and two block incorrect. He had to do this on the basis of hearing adults say two blocks. But why didn’t he conclude that two blocks was simply an alternative form? Why abandon his rule-governed two block form? There is no escaping the conclusion that he came to a categorial conclusion on the—necessarily probabilistic—basis of the sample of language that he heard up to the point at 2;7 when he stopped omitting the plural markers on the second elements of NP’s. This constitutes categorial retreat on the basis of evidence, which children are not supposed to be able to do, according to proponents of innate grammar.

If we contrast Daniel’s categorial behavior with Seth’s extremely slow and probabilistic progress towards the more complex matter of sorting out the whole pre-main-verb slot, and if we are willing to interpolate between these extreme cases, then we can form a preliminary notion that may bridge the large gap between them. Daniel, during the period we are studying, was collecting data about the distribution of two fully parsed {Z} affixes whose meanings he already understood (it had demonstrably taken months for him to get to this point: see Menn & Matthei 1992). Seth, by contrast, appeared to have as yet very little idea of the parsing or the
semantic and pragmatic factors governing this ‘slot’ he was working with—cf. the
blend myou in line 3 of ex. (a), above. He showed increasingly long strings which
more and more clearly consisted of grammatically sequenced pronouns and modals,
but the learning seemed to be very formulaic—indeed, almost lexical, with
continuing pronoun reversals and little or no evidence for semantic differentiation
(Peters & Menn 1993, Peters 1996). He must have been working on many fronts at
once: if these children were conscious scientists, we’d say that Daniel was checking
out a pair of simple well formed hypotheses, which didn’t take many samples to
yield significant results by simple t-tests, whereas Seth was on a fishing expedition
and had to carry out a gigantic factor analysis to get his results.

Now, that kind of statement is a fantasy. But the LMC must have mechanisms
which produce these fantastic results. If it turns out that, in general, categorial rule
making occurs when the search space is small, and gradual rule making when the
search space is large, then we’ll have another handle on the nature of the LMC
which we can use to constrain our modeling.

So I will put forward for test the following, which I will call the MENN-PETERS
CONJECTURE (formulated in discussion with Ann Peters): Quick ‘hard-edged’ rule
change will appear when the variables involved are few, and the LMC’s analysis of
the units involved is already adequate; protracted ‘soft’ probabilistic rule change
will appear when there are many variables involved, and the LMC’s analysis of the
units (e.g. placement of morpheme boundaries and identification of allomorphs) is
under way simultaneously.

Research to support, refine, or refute this conjecture requires sampling of
development that is temporally fine-grained enough to detect swift rule changes
(within one week) like Daniel’s plural and possessive rules, and extensive enough
(at least 90 minutes) at each sampling point to confirm the probabilistic quality of
protracted changes like Seth’s development of the pre-verbal slot.

Indeed, this relation between the number of variables being treated
simultaneously by the child and the cleanness of the rule change may not be
language specific behavior at all—it’s a good candidate for a general cognitive
property of the sort that would have profound consequences for language, so our
conjecture should be tested in other areas of cognitive development as well as for
language.

How can I argue that one should be willing to countenance all this data
processing power operating below the level of consciousness; doesn’t it seem
simpler to invoke innate knowledge of grammar, instead? Well, no. Making use of
an innate grammar will, I think, require the same kind of computational power that I
have just argued for. Consider the power required by the parameter setting
procedure proposed by Gibson. Or, if you review the discussion of parameter
setting in the commentaries on Lightfoot’s 1989 article in Brain and Behavioral
Sciences, you will see that several of the contributors who work in the Chomskyan
paradigm are worried about how a parameter could actually be set; they end up
saying that the learner must have a very rich analytical ability in order to be able to
do any such thing.

For example, Robin Clark (1989:337): ‘a parameterized (selective) theory may
still face some problems similar to those faced by inductive theories. Put briefly,
given a piece of input data, how does the learner know what parameter to set? The
learner must have some idea how the datum is relevant to the problem of arriving at
the correct adult state.’ And Yosef Grodzinsky (1989:342): ‘We do not know what
prevents a child from assigning a grammatical analysis to “noise”, which may lead
to wrong conclusions about the grammar of the ambient language.’ And Edward
Stabler (1989:360), who asks how it is possible that 'some grammatical strings that occur in a learner's environment could be made grammatical by adjusting the parameters, and yet the learner does not make the adjustment?' At the least, these arguments support O'Grady's concept of 'general nativism', which he characterizes (1989:354) as 'the view that inborn cognitive structures relevant to linguistic development are not specific to the language faculty.'

So I agree with Morgan (1986:196): 'In tandem with observations ... concerning the child's brief, limited exposure to language and the complexity and the abstractness of the grammatical system that the child acquires, these results argue strongly for the importance of properties of the mind in guiding the child's development of language.' And I propose that the 'properties of the mind' in question include a statistically very powerful Language-Making Capacity which can go on a fishing expedition and bring back a good, sometimes categorial catch.

NOTES

1 I am happy to acknowledge the substantial contributions of my colleagues; some for providing arguments, some for insisting that I be less confusing, and some for just getting me started, at last, on facing the some of the issues here: Giulia Bencini, Bill Bright, Tom Landauer, Stephen Menn, William O'Grady, Ann Peters, Doug Roland, Valerie Ross, and whoever the folks were at Berkeley that put me on the BLS 22 Learnability panel.

2 The Gold framework itself is over-restrictive and should be discarded: it crucially assumes arrival at a single correct grammar, rather than an asymptotic approach to any member of set of a number of undetectably different grammars (Feldman 1972). Doug Roland (p.c.) summarizes Feldman's mathematical learnability results this way: 'Using positive evidence only (sans statistics), you can include all of the sentences in the language, reject all incorrect grammars, and guess at the correct grammar for an infinite number of times, if you allow for intervening wrong guesses.'

3 Giulia Bencini (p.c.) points out to me that, in the special case where the apparent optionality is between presence and absence of a form, rather than between two competing forms, one can apply Paul Smolensky's 'principle of maximal missing information' (1986, based in turn on Claude Shannon's classical work on information theory): 'In guessing the probability distributions of certain patterns within the environment, you assume that the environment has no more dishomogeneity than what is needed to account for the given information.' In other words, a system adapted to robust learning through noise should be biased to assume that forms which are perceived as being present sporadically and randomly are in fact 'there' even when not heard. Behavior supporting this as a learning principle is already documented for some children (cf. Thieman 1975, Menn & Mattei 1992), and should be searched for in other studies.

4 Examples are two prunes; but books, lots boats, cars in, crash cars, too many trucks, slippers off, no seeds, hi guys, okay guys, get cars, no cars, ladies, boys, blue socks. For plural, overgeneralization indicated full productivity at 2;5.25: [Irz, Irzaz] 'scissors'.

5 The adjectives marked with plural s are used appropriately; they referred to plural colored blocks, sticks or cars.
...Children learned a novel noun for an object the adult was searching for, not ones she had rejected while searching’, and they learned modeled verbs for actions that appeared to be intentional, rather than accidental (i.e. followed by *Oops!*).

I may have been a bit pessimistic about the cues available in the input language. There may be prosodic cues that a child can learn to use in interpreting what an adult means by recasting his/her utterance; some errors that impede understanding by the adult appear to be clearly marked. Menn & Boyce (1982) showed that verification questions in parental speech to children (in Berko-Gleason’s laboratory playroom) were marked by extremely high pitch, as well as having clear corrective content.

Father: *And what’s on the door?* [referring to picture]
N: *xxx Sesame Street.*
F: *What’s from Sesame Street?*
    (falsetto) *Is that Sesame Street?*
F: *Is it?*
F: *Yeh, I didn’t think it was.*
F: *Yes, but it’s not.*
That’s not Sesame Street.

The existence of this semantic type of correction is generally acknowledged, so these examples are only mildly interesting in themselves. The question is: Are other types of corrections also suprasegmentally marked? Contour, tempo, and suprasegmentals in general are grossly undertranscribed, and CHILDES’ coding format (CHAT) is unfortunately not well adapted for suprasegmentals, so this is an area that needs technical development in order to be properly studied. To determine whether adults are giving children stress or pitch cues about the nature of the difference between the way the child has said something and the way the adult recasts it, suprasegmental information—at least impressionistic, preferably instrumental—must be available; it should be easy to enter and searchably represented in transcripts.

REFERENCES


Peters, Ann M. 1996. The emergence of catenatives from filler syllables. Linguistics Department, University of Hawai‘i, MS.

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The author and publishers of BLS 22 would like to thank the Linguistic Society of America for permission to reprint Figure 2 from "False Starts and Filler Syllables: Ways to Learn Grammatical Morphemes" (LANGUAGE 69: 752) as Figure 1 of this paper.
Learnability, Hyperlearning, and the Poverty of the Stimulus

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"People attain knowledge of the structure of their language for which no evidence is available in the data to which they are exposed as children." (Hornstein and Lightfoot 1981:9)

1. Stimulus poverty and hyperlearning. The quote above makes a striking claim: that some knowledge about language structure is acquired by children on a basis that does not involve evidence. Let me use the term hyperlearning to denote knowledge acquisition that meets this condition. That is, I will say that hyperlearning occurs whenever an agent acquires a piece of knowledge \( p \) during a time interval \( t \) without being exposed at any time during or before \( t \) to any evidence that could establish \( p \) by ordinary methods of learning from examples — the methods that are the object of study for formal learnability theory (Gold 1967, Osherson et al. 1986).²

Hornstein and Lightfoot's claim that hyperlearning occurs when children learn their first languages is important. It is the central empirical premise in what has come to be called the Argument from Poverty of the Stimulus (APS). The APS is widely held to be the most important contribution of linguistics to changing the agenda in neighbouring disciplines like philosophy and psychology. In this paper I question its soundness. I show that the most frequently cited piece of support for its empirical premise is untrustworthy, which leaves the premise itself sorely in need of reliable empirical support.

My first task, however, is to state the APS. Anyone who consults the literature will find that no explicit statement of it has been published so far. The argument is scarcely even sketched. Broad hints of it begin to appear in such works as Chomsky (1975), but not under the name APS. Chomsky (1980:31–4), after reviewing some generalities about learning being "better understood as the growth of cognitive structures along an internally directed course under the triggering and partially shaping effect of the environment," simply states that he is giving "a variant of a classical argument in the theory of knowledge, what we might call 'the argument from poverty of the stimulus'," as if the logic were self-explanatory. Hornstein and Lightfoot (1981) merely echo this language without analyzing it.

Philosophers like Stich (1979, 1981) and Garfield (1994) come a little closer to stating an explicit argument, but seem to miss the essential point: the point Lightfoot (1982b:428) stresses about the importance of "poverty of stimulus problems, i.e. where there are no data available to the child which will suffice to establish some rule or principle." They also tend to confuse it with very
different points (such as the problem of induction from a finite sample, the
underdetermination of theories by evidence, the presence of errors in the child’s
corpus, and so on). Though article after article is devoted to discussing it (see,
e.g., Demopoulos 1989, Matthews 1989, Wexler 1991), the APS never clearly
emerges. Wexler (1991), for example, introduces the APS as follows:

How does the child construct her grammar? In other words, why is the adult output grammar the one that it is? Chomsky’s answer notes that the attained grammar goes orders of magnitude beyond the information provided by the input data and concludes that much linguistic knowledge must therefore be innate.

(p. 253)

Having equated no less than four distinct questions — how grammars develop,
why grammars are the way they are, whether hyperlearning takes place, and
what is innate — Wexler adds (with no reference): “As Chomsky pointed out,
this is an application of the classic rationalist argument from the poverty of
the stimulus.” And that is all he says about the content of the APS.

To set out an explicit statement of the APS, I need to distinguish between
two ways in which an infant might in principle learn a language. The first I
will call data-driven learning. This is what that the APS aims to challenge. Its
defining characteristic is that it relies on attention to evidence, specifically, the
corpus of utterances to which the child is exposed when they happen to come
up in everyday contexts and are uttered in the child’s presence. The general
conditions on correct reasoning that are germane to learning anything else
from evidence samples are deployed in data-driven language acquisition, but
crucially, the learner is assumed not to be in prior possession of any information
about what languages are like.

Notice that if an infant could acquire a language $L$ by means of data-driven
learning after being exposed to nothing more than a corpus $C$ of observed
utterance tokens, then any rational being could in principle also learn $L$ if
merely given access to $C$. In other words, if this is the way first language
acquisition is accomplished, we will never see an instance of hyperlearning
in the first language acquisition domain. Everything the child learns will be
learnable from the evidence.

The second way in which languages might logically be learned, the one
that generativists have been concerned to defend and develop, involves the
learner being primed ab initio with special information about language, or
endowed with special internal mechanisms that make available such specific
information. Call language acquisition of this sort innately-primed learning.
By definition, innately-primed learning proceeds in a way that does not rely
soley on a corpus of observed utterance tokens.
Innately-primed learning is compatible with the existence of hyperlearning, because the corpus and the innate priming taken together might suffice to ensure acquisition even if the corpus alone would not have contained enough information. And the existence of hyperlearning is rather important epistemologically for those who believe in innate priming; if hyperlearning did not occur, so that all the learning that occurred was compatible with data-driven learning, it is not clear what kind of evidence for innate priming there could be.³

Some take it to be trivial that language learning must be either data-driven or innately primed, because they construe the issue as being simply about whether there is any innate priming or not. Others (like Stich (1979)) claim that a range of distinct positions lying between data-driven and innately-primed learning can be made out. As Garfield (1994:367) notes, ‘empiricism’ and ‘rationalism’ (the positions in traditional epistemology with which the two methods are often respectively associated) can be regarded as merely two regions in a continuum, so that there are indefinitely many alternative positions arrayed between the extremes. But for the sake of argument, I propose here simply to grant everything that advocates of the APS need: that data-driven learning and innately-primed learning are well-defined, distinguishable, mutually exclusive, and jointly exhaustive of the possibilities. That yields a disjunction that constitutes the initial premise of the APS, which I can now set out as in (1).

(1) **The Argument from Poverty of the Stimulus (APS)**

a. Human infants learn their first languages either by data-driven learning or by innately-primed learning. [Disjunctive premise.]
b. If human infants acquire their first languages via data-driven learning, then hyperlearning will never be observed in this domain. [Characterization of data-driven learning methods.]
c. Hyperlearning does in fact occur in the domain of first language acquisition by infants. [Empirical premise.]
d. Human infants do not learn their first languages by means of data-driven learning. [From (b) and (c) by modus tollens.]
e. Therefore human infants learn their first languages by means of innately-primed learning. [From (a) and (d) by disjunctive syllogism.]

This is an entirely valid argument. My concern will be with whether it is **sound** — specifically, whether premise (1c) is true. My strategy will be to examine the strongest and best-known piece of support for (1c) that advocates of the APS have put forward, to show that it will not bear the load assigned to it.

The claim I have in mind concerns auxiliary fronting in polar interrogatives (e.g., *Are you happy?*, the polar interrogative corresponding to declarative *You are happy*). The crucial point about it is the one stated in (2):
(2) The rule for initial auxiliary verb position in polar interrogatives (and a variety of other construction types) in such languages as English or Spanish is structure-dependent: it is based on structural relations (dominance among constituents), not just temporal sequence (precedence among words). Specifically, it is the main clause auxiliary verb that is assigned initial position, not, e.g., whatever is the leftmost auxiliary in the corresponding declarative clause.

One reason for regarding this case as the strongest potential support that has been offered for the APS is that — unlike most of the very few other cases that have been suggested in the literature — it depends purely on syntax. Other cases discussed in the literature are bound up with meaning in a way that makes their direct relevance to the APS much less clear. For example, Chomsky (1975:140–153) considers how the child might learn that Mary appealed to the men to like each other is well-formed while *Mary appeared to the men to like each other is not; but this is bound up with issues about the uses of reciprocals and the control patterns of verbs that are thoroughly semantic (see Pollard and Sag 1991). Once the learner has grasped the concepts of appealing, appearing, and reciprocal liking, it is not clear that any syntactic triggering will be needed to learn that the latter is linguistically deviant.

Similarly, in a number of works⁴ we find discussion of how the child can determine what are permissible antecedents for anaphoric one; but that topic is bound up with many questions about the contexts of use that provide the basis for learning the semantics and pragmatics of anaphors, as well as issues about whether the assumed anaphora generalization is in fact correct; see Wasow (1991:636) for a brief comment.

What makes the auxiliary fronting case so suitable for supporting the APS is that it involves a purely syntactic matter. Initial positioning of the auxiliary signals certain English sentence types, notably polar interrogatives. It would seem that under a data-driven account, learning how these sentence types are constructed can be done, and must be done, simply from evidence about permissible word positions. Identifying the generalization about which auxiliary must be fronted to make the yes/no question corresponding to a certain statement is not dependent on learning some concept or meaning.⁵ That makes it a lot easier to say exactly what a corpus of utterances would have to contain to provide necessary and sufficient evidence to permit the learning of the generalization.

In all his many discussions of the auxiliary-fronting example,⁶ Chomsky never offered evidence for the empirical claim that children do unerringly pick the right subject-auxiliary inversion generalization. He just took it to be intuitively obvious. However, Crain and Nakayama (1987) eventually did examine the matter experimentally, and their results do confirm the claim: children front the main clause auxiliary, not whichever auxiliary would be first in the
declarative sentence. I will assume that Crain and Nakayama’s subjects were
typical, and that children do indeed always perform correctly. But this is not
sufficient as a basis for the APS. No argument for innate priming can be de-
veloped merely from that fact that the generalization is structure-dependent and
the fact that children’s behavior conforms with it. This might be the result
of uniform pressures from the linguistic environment or other aspects of the
situation (most plausibly, species-invariant constraints on cognitive systems
that make only hierarchically structured systems feasibly learnable by beings
with tight limits on their ability to notice, store, and retrieve information).
What is critical to the argument from poverty of the stimulus is the additional
claim regarding stimulus poverty, and that is my focus here.

2. Stimulus poverty and auxiliary fronting. The claim about auxiliary
fronting that figures as support for an instance of the APS is the very specific
one that I set out in (3).

(3) The Stimulus Poverty claim about auxiliary fronting: The corpus of
evidence presented to children during their language learning is in-
sufficient to permit any data-driven learning method to accomplish
selection of the correct auxiliary fronting generalization and elimina-
tion of all the alternatives.

Chomsky asserts this claim in quite extreme terms. He claims not just fairly
low frequency for the crucial kinds of example that would distinguish structure-
dependent from structure-independent formulations of auxiliary fronting; par-
ticularly in the paper and discussions published in Piattelli-Palmarini (1980),
he makes much stronger claims:

(4) Chomsky on stimulus poverty

a. “A person might go through much or all of his life without ever having
been exposed to relevant evidence, but he will nevertheless unerringly
employ [the structure-dependent generalization], on the first relevant
occasion” (Chomsky, in Piattelli-Palmarini 1980: 40)

b. “the more complex cases that distinguish the hypotheses rarely arise;
you can easily live your whole life without ever producing a relevant
element to show that you are using one hypothesis rather than the
other one.” (Chomsky, in Piattelli-Palmarini 1980: 114–5)

c. “The examples cited are the only kind for which the hypotheses differ,
and you can go over a vast amount of data of experience without ever
finding such a case. Thus in many cases the Martian scientist could
not know by passive observation whether the subject is using the first
hypothesis or the second one.” (ibid.)
Note in passing that (4b), if true, would undercut (4a) and (4c). If people so rarely produce utterances that exhibit their grasp of the structure-dependent character of the auxiliary fronting generalization, then there could well be speakers around who have acquired an “incorrect” structure-independent generalization instead but who are never detected because of the rarity of the crucial situations in which they would give themselves away.

Setting aside this slight inconsistency of Chomsky’s claims and returning to the issue of their truth, we note that (as Freidin (1991, 618) remarks) they have never been established as true, or even seriously investigated by linguists. Few linguists seem to have paid much attention to them, in fact. However, one work, published by a linguist in a philosophy journal, has claimed that they are actually false. I refer to Sampson (1989).

Sampson cites only anecdotal evidence, but it is worth considering nonetheless. He notes that when he turned to the list of “wonder questions” in a children’s encyclopedia he found crucial examples of the relevant sort within the first few questions; and he points out that William Blake’s well-known poem ‘Tiger’ — which virtually every English speaker seems to encounter during schooling — contains the line Did He who made the lamb make thee?, also crucial positive evidence for the structure-dependent rule. It seems to me that these observations merit some sort of response from defenders of the APS. They have not received one.

A moment of reflection should suffice to raise some suspicions that Sampson is right. Surely it is implausible that one could expect to live one’s whole life as an English speaker, or even reach kindergarten, without running into any sentences of the sort illustrated in (5). (An underscore marks the position in each string where the main clause auxiliary would be if it were not fronted.)

(5) a. Will those who are coming — raise their hands?
   b. Can the people who are leaving early — please sit near the door?
   c. Is the boy who was hitting you — still here?
   d. Would anyone who is interested — see me later?
   e. Can a helicopter that has lost its tail rotor — still fly?
   f. Will the owner of the bicycle that is chained to the gate — please move it?
   g. Could the girl who has lost her ticket — come to the desk?
   h. Could a tyrannosaurus that was sick — kill a triceratops?

These examples have an auxiliary verb within the subject NP, and thus the auxiliary that appears initially would not be the first auxiliary in the declarative. But of course the extra auxiliary does not need to be in the subject NP in order for there to be a contrast between fronting the main clause auxiliary and fronting the first auxiliary. All that is needed, as Sampson recognizes,
is for any auxiliary to precede the main clause auxiliary. And that condition would be met in examples like the ones in (6) as well:

(6) a. If you don’t need this, can I have it?
   b. Since we’re here, can we get some coffee?
   c. When you’re done, could I borrow your pencil?
   d. Given that I’m not needed, can I go home?
   e. While you’re getting cigarettes, could you get some more milk?
   f. Though you won’t like me asking, did you brush your teeth?

For example, to make the polar interrogative word counterpart to the string if you don’t need this, I can’t have it, the seventh word has to be repositioned to precede the sixth; repositioning the third to precede the second, or anything to precede the first, is incorrect. That is crucial evidence confirming the structure-dependent generalization over any structure-independent one.

The range of relevant examples is yet wider once we notice that wh-movement questions in which the wh-phrase is a nonsubject always incorporate an auxiliary fronting construction. (We find, for example, strings of the form WX where W is a wh-word and X is a string of the sort that instantiates auxiliary fronting.) Thus any evidence that we find examples like (7a) rather than (7b), and (7c) rather than (7d), is crucial evidence in favor of the structure-dependent auxiliary fronting hypothesis:

(7) a. How could anyone who was awake not hear that?
   b. *How was anyone who awake could not hear that?
   c. When will the man who is in charge be back?
   d. *When is the man who in charge will be back?

The intuitively obvious grammaticality of these examples would suffice if the point were one of syntactic theory, but it is not sufficient to be relevant to the APS. The APS depends on a claim about actual event probabilities, not well-formedness. To evaluate the truth of the empirical premise of the APS we need to know whether such examples actually do turn up in everyday language use. Although generative linguists are much given to calling the problem of how infants acquire language “the logical problem of language acquisition” (the phrase that appears as the title of Baker 1981 and the subtitle of Hornstein and Lightfoot 1981), as if the issue were one to be settled by logical reasoning from known and uncontroversial data, this is not true. Whether sentences with a certain structural or semantic characteristic occur in the huge random assortment of fairly short utterances that an arbitrary human infant is likely to be exposed to during the critical years for language acquisition is not something to be settled by ratiocination. The matter at hand is entirely empirical, and its investigation will demand access to hard data of a sort with which we are
woefully underprovided at present. More directly than most questions that arise in linguistics, this question seems to invite resolution through a computer search of a corpus of everyday utterances.

Ideally, what we need to settle the question is a large machine-readable corpus — some tens of millions of words — containing a transcription of most of the utterances used in the presence of some specific infant (less desirably, a number of infants) over a period of years, including particularly the period from about one year (i.e., several months earlier than the age at which two-word utterances start to appear in children’s speech) to about 4 years (i.e., the age at which we can take the SAI pattern to have become established in the child’s speech). I have not as yet obtained access to any extensive computer corpora that are fully appropriate to the task. However, even without a corpus that is anything like ideal we can do some useful preliminary testing.

One of the most accessible large text corpora is the forty million words of newspaper articles from the Wall Street Journal between 1987 and 1989 included on the CD-ROM made available by the ACL (Linguistic Data Consortium 1993). To be sure (and let me be the first to concede this), even bankers’ children do not get their main exposure to English through being read to from the Journal. But looking at the WSJ corpus is not as misguided as it might at first be thought to be. The WSJ material contains a lot of structurally simple colloquial speech in verbatim quotes from ordinary people of all education levels who are interviewed in news stories, as well as ordinary English of every journalistic genre from news features to theater reviews to humorous essays. The notion that the questions in the WSJ corpus might be of high syntactic complexity is soon dispelled by browsing through them; extremely simple structures in which the auxiliary and subject are combinations like do you or is it predominate overwhelmingly. If the claim made had been merely that one-word (usually pronominal) subjects are much more frequent in polar interrogatives than anything else, it might have been tenable. But it was not. The claim we are concerned with is that subjects containing auxiliaries will essentially not be found at all.

It is highly relevant here that many statistically defined syntactic properties of running text vary little from genre to genre (recall the surprising result of Hudson 1994 that about 37% of the word tokens in running text are nouns, regardless of genre, style, modality, source, or even language). Researchers who do look at adults’ speech to or in the presence of children report that “the input to young children is neither so depleted nor so uniform as some have suggested” (Berman 1990: 1160). We have no reason to assume that we will get an unrepresentative sample of the syntactic types of questions that would come up in natural contexts in front of children if we simply look for question marks in the WSJ corpus. Speakers of English simply do not have enough conscious control over the syntactic properties of the questions they
ask to make such a source unrepresentative: the questions that get asked, whether in the boardroom or the street or the kitchen, are determined by the random informational needs and situations that come along.

In the *WSJ* corpus there are 23,886 lines containing question marks. This overcounts instances of interrogative syntax somewhat, because it counts irrelevant verbless headlines like "WARMING TREND?". It also includes large numbers of constructions irrelevant to auxiliary fronting, e.g. the extremely frequent simple subject *wh*-interrogative constructions like *Who cares?*. The obvious question to ask is how many of these one has to go through before one comes up with a crucial example falsifying the hypothesis that auxiliary fronting is structure-independent. The answer, despite the overwhelming predominance of simple structures that provide no such evidence, is only fifteen. The 15th question in the corpus⁹ is (8a):

(8) a. How fundamental are the changes these events portend? (W7.001:3963)
   b. *How fundamental do the changes these events — portend are t?*

The critical evidence is that (8a) occurs rather than (8b), with fronting of the supportive do that would be the auxiliary of the relative clause.

Several other such examples occur within first five hundred interrogatives. One is (9a), where again I contrast what we actually find with what we would find if the structure-independent generalization were correct:

(9) a. Why did The Cosby Show’s Lisa Bonet, who has a very strong screen presence, think that participating in a graphic sex scene would enhance her career as a legitimate actress? (W7.006:16426)¹⁰
   b. *Why has The Cosby Show’s Lisa Bonet, who — a very strong screen presence, thought that participating in a graphic sex scene would enhance her career as a legitimate actress t?*

These examples are both *wh*-interrogatives rather than polar interrogatives. If one decided to exclude such cases and concentrate purely on yes/no questions, as in Chomsky’s examples, little would change. Within the first 500 questions in the 1987 files of the *WSJ* database we find (10a), not (10b).

(10) a. Is a young professional who lives in a bachelor condo as much a part of the middle class as a family in the suburbs? (W7.006:2813)
   b. *Does a young professional who — live in a bachelor condo is as much a part of the middle class as a family in the suburbs?*

So far, all the examples cited involve an interaction with supportive *do* rather than having two overt auxiliaries in the corresponding declarative. But if one insists on paying attention only to examples with two overt auxiliaries in
the declarative, it makes no difference. The 180th question-containing line in the corpus is the entirely unproblematic example (11a), with two instances of the copula, one inside the (headless relative) subject NP, exactly like Chomsky’s hypothetical examples. The crucial fact is that we do not find (11b) instead.

(11) a. Is what I’m doing in the shareholders’ best interest? (W7.003:2991)
   b. *Am what I doing is in the shareholders’ best interest?

As far as I have been able to find out, the WSJ corpus happens not to contain any examples with two occurrences of the word form is, one fronted across the other, as in Chomsky’s invented examples. But this is not so surprising. English has as many as 50 morphologically distinct auxiliary verb word forms (the number varies slightly between dialects). This yields 2,500 distinct ordered pairs of auxiliary word forms. Thus in only 0.4% of two-auxiliary cases composed at random (assuming word forms are equiprobable) will we find is in both auxiliary positions. If only one in each hundred questions has the right structural characteristics to count as crucial, we would expect only one double-is example per 25,000 questions, and the WSJ corpus contains fewer questions than that.

Nonetheless, I found a double-is example on my first scan of the only electronic text I have personally prepared, a file containing the script of Oscar Wilde’s comedy The Importance of Being Earnest, around 100 KB. Searching for the sequence ‘is ... is ...?’ in the file immediately brought up (12a), which Lady Bracknell addresses to Jack Worthing in the last act. She does not use (12b).

(12) a. Whó is that young person whose hand my nephew Algernon is now holding in what seems to me a peculiarly unnecessary manner — ti?
   b. *Whó is that young person whose hand my nephew Algernon — now holding in what seems to me a peculiarly unnecessary manner is ti?

Granted, Lady Bracknell is not an ideal exemplar of modern everyday colloquial speech; but her question could have been asked with less verbosity, as Who is the girl whose hand Algernon is holding?, or Who is the girl who is holding Algernon’s hand?). What is really at issue here is how often in everyday life we can expect situations to arise in which questions like this are asked. Chomsky’s claim that many people will never hear any is surely much weakened by finding attested examples so easily in any kind of English one takes the trouble to search.

One could debate further concerning what exactly is a relevant example. But it seems to me that even the preliminary results reported here hold some implications for the stimulus poverty claim. Relevant examples seem to occur
at least once per 500 interrogatives in the *WSJ* corpus. Focusing more closely on polar interrogatives increases the ratio: an examination of the corpus of polar interrogatives in the *WSJ* corpus suggests that up to 12% of the polar interrogative examples confirm the structure-dependent regularity over the structure-independent one (my vagueness being due to various questions about what sort of example should count as relevant).

Thus Sampson’s anecdotally-illustrated suspicions are decisively borne out by a text search. Chomsky’s assertion that “you can go over a vast amount of data of experience without ever finding such a case” is unfounded hyperbole. The putative case of hyperlearning with which Chomsky has been supporting the APS for over twenty years provides no warrant for his hypothesis that there is a specialized language-acquisition brain module pre-programmed with universal grammar. Those who seek to develop such a warrant are sorely in need of a new well-confirmed case of hyperlearning.

3. Implications and conclusions. It is not my aim to present here an argument for adopting an ‘empiricist’ view of language acquisition. However, it is true that casting doubt on the Stimulus Poverty claim about auxiliary fronting removes a key reason for scepticism about data-driven learning. The utterance tokens that could provide the crucial data apparently make up something between 1% of interrogatives and over 10% of polar interrogatives in running text. Rough calculations based on plausible active hours, utterance frequency, and speech rates suggest that a child would hear hundreds of thousands of questions during the language acquisition period, and thus must hear thousands of examples that crucially confirm the structure-dependence of auxiliary fronting. This does not show that there is no innate priming, but it does show that the best and most often-repeated claim in support of the empirical premise of linguists’ central argument for innate priming is false.

Searching for new cases of linguistic hyperlearning to support the APS will bring generative linguists into contact with two things toward which they have traditionally shown considerable antipathy: research results on formal learning theory, and the methods of corpus linguistics. The relevance of formal learning theory is that it is the mathematical study of the limits on data-driven learning, and without clear results on that, hyperlearning cannot even be characterized. And corpus study is relevant because a claim that hyperlearning occurs will incorporate a specific claim about what occurs in typical corpora of material available to infants during their critical period for language acquisition. Generative linguists interested in defending the APS are going to have to become more broad-minded about these matters if they are going to accomplish the task they have set themselves.

Interestingly, work on establishing the soundness of the APS is almost certainly going to be self-undercutting to some degree. The research will necessarily involve close study of what data-driven learning procedures can do.
It is highly likely that research on that topic will yield some improvements in the success rates of such procedures. Those successes are likely to eliminate apparent cases of hyperlearning by revealing that more can be learned in a data-driven way than was previously thought. To some extent this is happening already. Brent (1993) has demonstrated that an "unsupervised" algorithm taking raw text as input and using rudimentary facts about grammatical diagnostics (like what the verbal affixes are) can identify the verbs of a language and their subcategorization frames. And even more remarkably, Schütze (1995) develops methods for deducing syntactic category, semantic class, word sense for ambiguous forms, and subcategorization information from raw text alone, using nothing more than the distributional information in the corpus.

A substantive defense of the APS will have to be based on study of this sort of research. The strategy would be to establish known limits on what such data-driven learning algorithms can do, and then search for instances of a child engaging in hyperlearning in the specific sense of acquiring knowledge about a language that such algorithms provably could not induce (within a reasonable time) from the corpus presented to that child. Nothing like this has so far been attempted.

I hazard no guess about whether innate mechanisms for first language acquisition will turn out to be surprisingly minimal or surprisingly rich. Perhaps, at some time in the future, data-driven algorithmic techniques for language learning will hit a serious roadblock, or perhaps some kind of genuine evidence for innate task-specific language acquisition mechanisms will turn up. But linguists have been paying virtually no attention to data-driven learning for the last forty years, so they are currently ill-equipped to speculate on the matter.

Some philosophers have accepted linguists' claims about the APS, and treated it as an established philosophically relevant contribution of linguistic research to the cognitive sciences. Fodor (1981, 258), for example, a year after Chomsky introduced the phrase 'poverty of the stimulus', described the APS as "the existence proof for the possibility of cognitive science". That was somewhat premature. Fifteen years later the APS still provides no such existence proof. Its soundness as an argument depends on finding empirical confirmation of hyperlearning in first language acquisition. Such confirmation is still awaited.

Footnotes

1 This work was partially supported by a grant from the Humanities Division to the Mind and Meaning Research Group at the University of California, Santa Cruz. Thanks to Geoffrey Sampson for sending me a copy of Sampson (1989), which started me thinking about this topic; to Hinrich
Schütze for sending me a copy of his dissertation; to Melissa Bowerman, Dave Chalmers, Eve Clark, Herb Clark, Gerald Gazdar, Lotus Goldberg, Lise Menn, Cris Moddeé, Daniel Osherson, Jaye Padgett, Pete Schult, Dan Slobin, Rachel Walker, Tom Wasow, and Kathryn Zally for useful comments and discussion; to Cher Bergeon for a fine copy-editing job (remaining errors are the fault of the typesetter and author, who are unfortunately token-identical), and particularly to Barbara C. Scholz, who read several drafts and supplied incisive and useful criticisms.

2 Strictly, there is a different notion of hyperlearning for each of the indefinitely many fully precise definitions of data-driven learning procedures that can be given, but the approximate general characterization offered in the text will suffice for me to make the point I want to make in this paper.

3 It should be clear that neurophysiological evidence would not suffice. The point is not about brain mechanisms, but rather about the interpretation of their operations in terms of specifially linguistic knowledge states, and we have no idea of how to glean that sort of information through dissection of neural tissue. We cannot even do it for CPU chips, since one cannot identify data inscribed in silicon without knowing something about the encoding.


5 Actually, it is not quite correct to say that auxiliary-initial syntax is innocent of semantic entanglements. There is interesting evidence, originally pointed out by Joseph Emonds and discussed in Chomsky (1971a, 209–210), of meaning differences between auxiliary-initial constructions and the subject-initial structures from which they are derived in transformational accounts (note that I shall go makes a definite future prediction, but Shall I go? does not simply ask about the truth value of that prediction, but rather asks if the speaker should go, or whether the hearer would like the speaker to go). But my assumption is that if special meanings are associated with auxiliary-initial sentences so that they have to be learned independently of the strings from which they are putatively derived, it becomes harder to show that a syntactic generalization about structure has been acquired via hyperlearning, not easier. I set aside this sort of evidence here in order to give the proponents of the APS the benefit of the doubt.

6 The first reference in the linguistics literature to the structure-dependence of auxiliary fronting is in Chomsky (1965: 55–56). Chomsky (1968: 51–52) repeats the point, adding that the "language-learner knows" that only structure-dependent operations are available. But over the last twenty-five years, Chomsky has taken things further, and developed an explicit argument that hyperlearning occurs. This begins with Chomsky (1971b: 29–33) and
continues in Chomsky (1975: 30–33; 153–154), Piattelli-Palmarini (1980: 114–115), and (with the data adapted to Spanish) Chomsky (1988: 41–47). The claims have since been repeated by many others (e.g., Marcus 1993: 80, Pinker 1994: 40–42; 233–234).

Sampson also gives an epistemological argument against the APS: he argues that anyone defending the stimulus poverty claim by exhibiting a fact $F$ about a language $L$ that could not be induced from the evidence of ordinary use of $L$ must face the question of how they know that $F$ is a fact. If the warrant they offer for $F$ comes from evidence of use of $L$, they have contradicted themselves by conceding that such evidence is available; if the warrant is held to be the result of knowledge gained by an adult native speaker investigator via her innate priming, they have committed the fallacy of petitio principii; and there appear to be no other cases. This may be a valid additional objection to the APS (whether or not it is depends on whether it can be made clear that the linguist has, and standardly uses, some third way of finding out about what the rules of a grammar are, one that depends neither on mere facts of what sentences are grammatical nor on the putative fact that the linguist has been handed the evidence by an innate mechanism), but I do not take a position on that here.

Despite the promising start provided through the CHILDES database; see MacWhinney (1995).

All examples from the Wall Street Journal corpus in this paper are taken from the 1987 directory, /WSJ/1987. I append to each an identifier of the form file-name:line-number. The example just cited is in the file w7.001. The UNIX command fgrep "?" w7.001 | head -15 | tail -1 will find it.

I have silently removed some strange and typographically incorrect double quotes that appear around the phrase The Cosby Show's in the original; they are irrelevant to the point at hand.

References


'No Negative Evidence': What's the Problem?
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1. Overview

This paper considers the implications of negative evidence for issues of language learnability. At present, there is a broad consensus of opinion which suggests that children's errors are not corrected (e.g. Pinker, 1989; Hyams, 1992; Jackendoff, 1993) and that, moreover, potentially corrective forms of input available to the child do not, in fact, exert any discernible influence on the child's recovery from error (e.g. Marcus, 1993; Morgan, Bonamo & Travis, 1995). However, it will be argued here that these empirical conclusions are somewhat premature. At the same time, it is suggested that the 'no negative evidence' assumption should generate far less controversy than has hitherto been the case (e.g. Bohannon, MacWhinney & Snow, 1990, versus Gordon, 1990). In support of this thesis, three separate points will be advanced in this paper, which can be summarised as follows:

(1) a. Extant empirical data on negative evidence have barely begun to examine questions concerning its occurrence, long-term effects, and generality. Hence, far more research is required before we can genuinely begin to assess the true impact of negative evidence on child language acquisition.

b. The 'no negative evidence' assumption provides a central instantiation of Chomsky's argument from the poverty of the stimulus. However, given competing explanations for a single phenomenon within UG theory, the 'no negative evidence' assumption cannot possibly function as an evaluation metric for choosing between them. Hence, the 'no negative evidence' assumption is of negligible importance in specifying the precise description and explanation of Universal Grammar.

c. Convincing explanations for recovery from all kinds of errors (pertaining to both core and peripheral aspects of grammar) are still required. In this respect, negative evidence may prove to be one (amongst potentially several) sources of information available to the child. Negative evidence is typically presented as being in direct opposition to alternative explanations for error recovery in the child. Logically, however, there is no reason why negative evidence could not function in tandem, or in parallel, with alternative mechanisms. It would therefore make sense to talk more generally about the retreat problem facing the child rather than the 'no negative evidence' problem.
2. 'No negative evidence': a premature assumption

Opinions on the availability of negative evidence are critically conditioned by one's conception of what would count as a correction from the child's point of view. In this respect, it is apparent that a consensus has not yet been reached. At the same time, though, a great deal of empirical interest has been focused on one candidate form of correction in particular, namely, adult recasts (e.g. Hirsh-Pasek, Treiman & Schneiderman, 1984; Demetras, Post & Snow, 1986; Penner, 1987; Bohannon & Stanowicz, 1988; Furrow, Baillie, McLaren & Moore, 1993; Morgan, Bonamo & Travis, 1995). Thus, adult responses of the following kind have been examined for their corrective potential:

(2) a. Child: The crocodile bit the giraffe's feet.
   Adult: He bit his feet?

b. Child: It's bored of being on the bike.
   Adult: It's not boring.

c. Child: He shot the fish.
   Adult: He shot the fish.

(Unless otherwise stated, the examples throughout are taken from a diary study reported in Saxton, 1995). The adult responses in (2) constitute a subset of responses which would normally qualify as recasts. In fact, on most definitions, any adult response in which the adult repeats part or all of what the child has said, whilst introducing certain changes or additions to the lexis or syntax, would qualify as a recast. Thus, recasts can follow both grammatical and ungrammatical child utterances, although a consistent finding has been that a differential response rate exists, whereby recasts are more closely associated with child errors (e.g. Morgan et al., 1995). More generally, it is clear that the category of recast comprises a limitless range of possible utterances with no unifying linguistic theme. How the child could ever identify such a nebulous category is simply one of many conceptual problems which militate against the concept of 'recast-as-correction' (for more detailed discussion, see Bowerman, 1988; Pinker, 1989; Marcus, 1993; Morgan et al., 1995; Saxton, forthcoming). A curious feature of this theoretical debate is that it has signally failed to bring a halt to empirical research based on recasts. Thus, Morgan et al. (1995) rehearse many of the familiar criticisms. At the same time, however, they are content to conduct an extensive empirical investigation which is based on several permutations of the notion of 'recast-as-correction'.

If one concentrates only on adult responses of the kind in (2), in which a child error is met by an adult response containing the correct alternative, then it is clear that many of the recasts which have attracted attention over the years do indeed look, prima facie, like corrections. However, the way in which the child might exploit potentially available corrective information must be entirely independent of the notion of 'recast.' Although it is not the main focus of this paper, alternative explanations are possible, as exemplified by the Contrast Theory of negative input which I set out elsewhere (Saxton, forthcoming). Undoubtedly, an alternative theoretical basis for research is
required which can build on what is known about correction-like adult responses in the input. Certainly, responses of the kind exemplified in (2) are a standard feature of the input to children, being reported in all of the studies on negative evidence cited above.

Having identified candidate forms of correction in the input to the child, the next logical step is to try and determine whether they actually exert any influence on the child's retreat from overgeneralization. That is, does negative evidence work? In fact, to date, there have been very few studies which address the issue of effectiveness. And those studies which have done so have tended to focus more on how corrective input affects the child's immediate speech output.

With respect to short-term effects, the conclusions of Farrar (1992) stand in direct conflict with those of Morgan et al. (1995). Thus, Farrar (1992) compared the level of child responsiveness to negative versus positive evidence and reported that children were far more sensitive to linguistic information when it is presented in the form of negative evidence. Morgan et al., on the other hand, compared the effects of negative evidence with those of move-ons and report a lack of distinctiveness in child responsiveness to the two forms of input. One reason for Morgan et al.'s pessimistic findings may be the unusually restrictive definitions of recast they adhere to. Thus, in their study of child article errors, a parental recast was scored when the adult supplied an article missing from the preceding child utterance. Additionally, however, recasts were only scored when the adult also reproduced the exact same noun as the child. Thus, in the following example, the first adult response, (3a), would be counted as a recast, while the second, (3b), would be classified as a move-on. In both cases, however, the adult exemplifies correct article usage, directly contingent on a child article error.

(3)    Child: He likes cat.
   a. Adult: Yes, he likes the cat.    RECAST
   b. Adult: Yes, and he likes the dog, too.    MOVE-ON

Given that in (3b), the adult is modelling an article, contingent on a child article error, one might predict a potentially corrective influence. The child's interpretation of the adult response is, of course, an empirical issue, but it is possible that Morgan et al. classified potentially many corrective responses as move-ons. As a result, Morgan et al. may simply have been comparing one form of correction with another.

The index of effectiveness adopted in these studies may also contribute to the difficulties experienced in interpreting the findings. When the adult responds to a child error with a recast, one can then gauge the effectiveness of the recast by observing whether the child adopts the correct adult version in her own immediate speech output. Thus, both Farrar and Morgan et al. establish the frequency of shifts from erroneous to correct forms (E→C) in the child's speech, as in (4) below.

(4)    a. Child: I'm not interesting of lunch.
   Adult: You're not interested?
   Child: I'm not interested.
   I'm not interested of lunch.
b. Child: It's a bit ripened, that white paper.
   Adult: A bit ripped?
   Child: Yeah, a bit ripped, that white paper.

c. Child: Shall I make it a bit gooder for you?
   Adult: Better for me?
   Child: Better.

Farrar (1992) reports that E→C shifts were more frequent in cases of negative, rather than positive, evidence. Morgan et al., by contrast, reported similar levels of E→C shifts for both recasts (negative evidence) and move-ons. On this basis, Morgan et al. are compelled to conclude that, for the child, move-ons and recasts are indistinguishable, and hence, recasts do not actually function as a form of negative evidence for the child.

However, erroneous-to-correct shifts (E→C) are ambiguous in interpretation. The problem is that this single performance phenomenon may be prompted by at least two quite distinct underlying causes:

(5) An E→C shift may be indicative of:

a. a corrective influence; the child rejects an erroneous form in favour of the correct adult form;

or b. an overgeneralized system; the child is simply vacillating between two forms (e.g. buyed and bought), which, from her point of view, are equally acceptable.

Both of these possible causes for E→C shifts are entirely plausible. The problem is that, unless one can determine the motivation for a particular E→C shift, one can never be absolutely certain whether it indicates either the existence of an overgeneralized system or the retreat from an overError! Reference source not found. generalized system. In this respect, naturalistic data are entirely inadequate to the task of distinguishing which possibility might obtain on a given occasion of utterance (for an experimental approach, see Saxton, forthcoming).

Studies on the long-term effects of negative evidence are even more scarce than studies on its immediate influence. In fact, Morgan et al. (1995) provide the only published data on this issue (see also Saxton, 1995). In an exciting departure within child language studies, Morgan et al. adapt a technique from econometric theory, known as time series analysis, and apply it to Brown's (1973) data on Adam, Eve, and Sarah. Morgan et al. sought to determine whether recasts function as a so-called leading indicator, that is, whether information about the incidence of recasts at time \( T_x \) can improve predictions about the grammaticality of child speech in the future. From the pattern of results which emerged, Morgan et al. concluded that recasts actually function as a negative leading indicator, that is, recasts are predictive of decreasing levels of grammaticality over periods between 2 and 12 weeks.

Arguably, however, this conclusion is not warranted. In the first instance, as Morgan et al. allow, the data samples analysed in this study were far smaller than would be the case in more conventional applications of time series techniques. The attempts made by Morgan et al. to compensate for this
deficiency lead to a highly liberal interpretation of what counts as a statistically significant finding (p < .20). Hence, the possible incidence of Type 1 errors is greatly increased. Time series analyses also require a minimum of 30 individual observations, but for one of the three children (Eve), there are fewer than 20. If one discounts the findings on Eve, therefore, the possibility of Type 1 errors is magnified even more.

Even more seriously, all of the data sets analysed by Morgan et al. comprise irregular time series. It is, in fact, a requirement of time series analysis that the data comprise a series of observations made at strictly regular intervals. Morgan et al. assume that the data for their three subjects were gathered at two-weekly intervals, but even if one rearranges the original transcripts in the most advantageous way possible (Jim Morgan, personal communication), it still remains the case that the time series are highly irregular. For example, very few of the lags between individual samples actually conform to the projected two-week interval: 0 out of 20 for Eve; 4 out of 139 for Sarah; and 12 out of 55 for Adam. All of these problems stem from the simple fact that the data analysed by Morgan et al. were not gathered with the purpose of conducting a time series analysis. It is not surprising, therefore, that the data on Adam, Eve, and Sarah are inherently ill-suited, both in terms of quantity and regularity, for the requirements of econometric techniques.

Even if one were to take Morgan et al.'s findings at face value, one could still argue that their pessimistic conclusions are unwarranted. Although recasts do seem to function as a negative leading indicator in the medium term, a consistent pattern of findings emerged whereby recasts become strong positive leading indicators over longer periods (e.g. after 12 weeks). It would seem, then, that recasts are functioning both as a negative and a positive leading indicator simultaneously. More to the point, though, it would seem that recasts are, ultimately, associated with increases in grammaticality, as one might predict if they were functioning as negative evidence for the child. Again though, extreme caution is required before one draws any firm conclusions from these findings. For the fact is that the pattern of findings reported by Morgan et al. is simply not found in more conventional applications of time series analysis within econometric theory. The mixture of positive and negative cross-regressors is highly unusual, and only serves to further diminish confidence in the strength of Morgan et al.'s conclusions.

It is clear that Morgan et al. have demonstrated where the future lies with respect to research on negative evidence. Time series analysis represents a highly sophisticated technique with considerable predictive power. However, it is essential that this analytical method only be applied when the dictates of econometric theory can be met in full. Brown's data on Adam, Eve, and Sarah patently fail to meet these requirements. One can only hope that future studies will be able to incorporate the necessary design features to permit a valid time series analysis. In conclusion, it is apparent that we still have very little idea about both the short-term and long-term effects of negative evidence. And until we do have far more relevant data, it is essentially premature to invoke the 'no negative evidence' assumption in theories of child language acquisition.
3. Innate Constraints and Negative Evidence

Bohannon & Stanowicz (1988) have suggested that if one could demonstrate that negative evidence were available for all children, one would not need to postulate innate constraints in theories of language acquisition. However, the logic of this argument is not especially compelling. For the simple fact is that the child's linguistic endowment at birth is entirely unaffected by the state of the linguistic environment. If Universal Grammar exists, the occurrence or non-occurrence of negative evidence cannot alter that fact. More particularly, negative evidence has no relevance for what linguistic items are acquired by the child. Thus, negative evidence has no bearing on the way in which overgeneralizations become established in the speech of young children. Instead, its function is to assist in the process of 'unlearning,' that is, the elimination of ungrammatical forms. Hence, the concepts of Universal Grammar and negative evidence are entirely independent, and should not be seen as being in some sort of competition with one another.

The 'no negative evidence' assumption tends to figure in discussions of Universal Grammar as an instantiation of Chomsky's argument from the poverty of the stimulus (APS) (e.g. Hyams, 1992). In essence, the APS furnishes researchers with a method of enquiry which might conceivably allow them to discover what is innate.

The natural way to proceed, if we are trying to determine the nature of $S_0$, is to try to find some property of the steady state that is minimally affected by experience, a property for which $E$ (experience) is reduced as close to zero as possible.

Chomsky (1980:113)

An immediate problem with this formulation is that the 'no negative evidence' assumption can contribute very little to theoretical discussions concerning the nature of the innate language faculty. To illustrate this point, consider the traditional role allotted to negative evidence in discussions of language learnability. If we take, for expository purposes, the linguistic Principle (X) which is designated as a component of Universal Grammar. An oft-repeated argument can then be applied in favour of the idea that Principle (X) is, genuinely, part of the child's genetic endowment. Briefly, the argument runs as follows:

Principle (X) is acquired under conditions of:

no negative evidence
(underspecified) positive evidence only

Therefore, (X) must be innate

Thus, for certain aspects of grammar, the linguistic environment is held to be impoverished in two respects: first, there is 'no negative evidence,' that is, no information concerning the bounds of grammaticality; and second, the positive evidence available is underspecified, that is, it lacks critical information which might allow the child to discover the systematic, highly
abstract properties of grammar underlying the surface, performance phenomena they are exposed to.

As I have already argued, the empirical evidence in favour of the 'no negative evidence' assumption is currently rather sparse and difficult to interpret. If, at some point in the future, nativist assumptions about the input are confirmed, though, one still needs to examine how useful they would be in arriving at a full description and explanation of Universal Grammar. The problem is that, typically, for any purported aspect of Universal Grammar, there tends to be a whole range of conflicting and evolving linguistic-theoretical accounts on offer (see, for example, the various accounts of the null subject phenomenon). The question then becomes one of choosing between alternative accounts, in order to specify more correctly the nature of Universal Grammar. In order to verify the innateness of Principle (X), linguists can appeal to the 'no negative evidence' assumption. The problem is, though, that any and every candidate explanation of (X) can appeal to this assumption in support of the contention that it is innate.

In corroborating every competing explanation, though, the 'no negative evidence' assumption loses any force it may have had in helping specify what is and is not innate. Logically, therefore, the 'no negative evidence' assumption cannot function as an independent evaluation metric for choosing between competing theoretical formulations. At most, one would be left with the vague (and uncontroversial) assertion that 'something must be innate.' However, there are very few child language researchers, if any, who would not support this contention anyway (c.f. Braine, 1994). Moreover, one does not need to demonstrate the empirical validity of the 'no negative evidence' assumption first, in order to arrive at this conclusion. In order to characterise Universal Grammar precisely, therefore, one must inevitably look to alternative sources of evidence.

4. Extending Baker's Paradox

In this section, I will argue that negative evidence does remain relevant for issues of language learnability, even though its direct relevance for theories of UG is strictly limited. In this respect, it will be argued that the domain of the so-called 'no negative evidence' problem is potentially far wider than has previously been anticipated. That is, there are many kinds of errors which present the child with a potentially serious learnability problem. It is commonly assumed that the child only faces a genuine 'no negative evidence' problem in cases where the structure being acquired is a component of Universal Grammar, for which both negative evidence is unavailable and positive evidence is underspecified. For peripheral, language-particular structures, on the other hand, it is generally assumed that positive evidence is not underspecified. Thus, the child simply needs to be exposed to the correct form in the input in order to supplant incorrect forms (e.g. Pinker, 1984). Thus, a child who produces *buyed* simply needs to be exposed to the correct version, *bought*, in order to expunge *buyed*.

In Saleemi's (1992) terms, the child is commonly thought to face the substitution problem with respect to peripheral aspects of grammar like irregular past tense forms. On this view, it is assumed that the child grammar contains a single form (in this case *buyed*), for which the child must
eventually substitute the correct adult form (bought). In fact, though, it is well established by now that the child actually faces the overgeneralization problem in cases of this kind, since the child typically goes through an often protracted phase in which, say, both buyed and bought figure in the child's speech repertoire (e.g. Marcus, Pinker, Ullman, Hollander, Rosen & Xu, 1992). Furthermore, it becomes clear that the learnability problem posed by peripheral aspects of grammar, like past tense overgeneralizations, is identical to cases where innate constraints are held to be critical.

(5)  
a. deliver NP1 to NP2  
*deliver NP2 NP1  
b. bought  
*buyed

The example in (5a) is taken from Pinker (1984), and provides an example in which the child is assumed to depend on some form of innate knowledge (so-called Linking Rules and Broad Range rules) in order to recover from errors when they arise. When viewed strictly in terms of the learnability problem facing the child, the case in (5b) appears to be identical on a number of counts:

(6)  
a. both types of error exemplify overgeneralization, since correct and erroneous forms occur contemporaneously in child speech;  
b. in both cases, the child must expunge an ungrammatical form, whilst retaining the correct adult version;  
c. for both, the occurrence of the correct form in the input is not, in and of itself, evidence that the alternative form is ungrammatical.

Errors with the dative alternation, as in (5a) are dubbed instances of Baker's paradox by Pinker (1989). However, it should be clear that the identifying feature in cases of Baker's paradox is the occurrence of overgeneralization: the adult grammar is a superset of the child grammar. Since this situation also obtains in cases of past tense errors (and many other observed morphosyntactic errors), it should be apparent that overgeneralization (and not the substitution problem) is the norm. Apparently, Baker's paradox is simply overgeneralization by another name.

A characteristic feature of Baker's paradox, as described by Pinker (1989) and Gropen, Pinker, Hollander & Goldberg (1991), is that positive evidence is held to be inadequate for guiding the child in recovery from errors. The problem is that the child is quite content to tolerate alternations, where two linguistic forms fulfil a single grammatical function. In the case of deliver-class verbs, of course, the child has ample opportunity to observe that a whole range of give-class verbs do alternate fully. The problem then is that the child could easily assume, in the absence of evidence to the contrary, that deliver-class verbs are also licensed to alternate, on analogy with give-class verbs.

In the case of past tense errors, there is also ample evidence that the child tolerates alternation, as indicated above. And of course, there are several verbs in English which possess alternate past tense forms in the mature
grammar (e.g. burnt / burned; dreamed / dreamt). Evidently, children tolerate alter- 
ant forms in many linguistic domains, and critically, the range of 
domains is not restricted in any way by whether or not the relevant aspect of 
grammar is subsumed within Universal Grammar. Hence, one can conclude 
that if positive evidence alone is inadequate for recovery from dative errors, it 
is also inadequate for recovery from past tense errors. The problem is that 
positive input provides no information on the legality or otherwise of 
alternations per se. For example, although adult speech may exemplify the 
correct form, bought, that fact, in and of itself, tells the child nothing about the 
inadmissibility of bought.

One is left wondering how retreat from error can be achieved for 
aspects of grammar which are not part of Universal Grammar. Of course, if 
negative evidence were available to the child, the learnability problem would 
be far less acute. In addition to negative evidence, a range of other possible 
solutions have also been entertained. For example, Marcus et al., (1992) 
suggest that general improvements in the child's memory capacity will 
eventually block the process of overregularization in the case of irregular 
verbs. In consequence, overregularized forms like bought will eventually fade 
out, thus allowing the correct form bought to predominate in the child's 
speech. It is important to note that explanations of this kind are entirely 
independent of the possible occurrence and functioning of negative evidence. 
Both kinds of explanation could easily co-occur. For instance, the provision 
of negative evidence would presumably provide a far more effective 
'reminder,' to a child with an underdeveloped memory capacity, than the 
simple occurrence of the correct version in the form of positive evidence.

In conclusion, therefore, the learnability problem facing the child is far 
more extensive than the handful of cases considered by Pinker under the 
heading of Baker's paradox. Instead, overgeneralization is manifest in many 
linguistic domains and, in each case, presents a learnability problem for which 
positive evidence only is inadequate (c.f. Morgan et al., 1995). Since so little 
is currently known about the provision of negative evidence, we do not yet 
know whether the child genuinely faces a 'no negative evidence' problem. We 
do know, however, that the child faces the problem of recovering from 
overgeneralization. What is more, for many errors the child does not have the 
luxury of Universal Grammar to draw on in the process of recovery. It seems 
appropriate, therefore, to reject the notion of a 'no negative evidence' 
problem and refer instead to the retreat problem facing the child.

5. Summary

This paper has sought to re-evaluate the status of negative evidence in 
theories of child language acquisition. It was argued that the empirical data 
currently available to us are simply inadequate to the task of assessing in any 
meaningful way the true import of corrective input on the course of language 
acquisition. More substantial data, from a variety of sources, are required, 
both on the short-term and long-term effects of candidate forms of corrective 
input, before one can begin to arrive at any substantive conclusions. In the 
meantime, it was suggested that we need to reconsider the relevance of 
negative evidence for issues of language learnability. It was argued that the 
traditional view of negative evidence as part of the argument from the poverty
of the stimulus is simply unhelpful in terms of advancing the debate about how one might characterise precisely the contribution of genetic factors in language acquisition. At the same time, though, it was argued that negative evidence may still turn out to be an important factor (perhaps one amongst several) in helping explain how children do eventually recover from overgeneralizations. Evidently, children do face a retreat problem in many linguistic domains. And until far more is known about the child's exploitation of available input resources, it is essentially premature to equate the retreat problem with the 'no negative evidence' problem.

References:


Bohannon, John N., Brian MacWhinney & Catherine E. Snow. 1990. No negative evidence revisited: beyond learnability or who has to prove what to whom. Developmental Psychology 26/2:221-226.


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