PROCEEDINGS OF THE THIRTY-THIRD ANNUAL MEETING OF THE

BERKELEY LINGUISTICS SOCIETY

February 9 - 11, 2007

GENERAL SESSION

and

PARASESSION on MULTILINGUALISM AND FIELDWORK

Edited by

Thera Crane
Oana David
Donna Fenton
Hannah J. Haynie

Shira Katseff
Russell Lee-Goldman
Ruth Rouvier
Dominic Yu

Berkeley Linguistics Society
Berkeley, CA, USA

TABLE OF CONTENTS

GENERAL SESSION

PARASESSION: MULTILINGUALISM AND FIELDWORK

A note regarding the contents of this volume

The following authors also presented papers at the conference, though their work does not appear in this volume: Juliet Langman, Nick Enfield, Christian DiCanio, Yingshing Li, Luis Alonso-Ovalle, Jong-Bok Kim and Jaehyung Yang, Martha Tyrone, Roberto Zavala, Graham Katz and Joan Bresnan.

Foreword

We are pleased to present the proceedings of BLS 33, held at UC Berkeley in February 2007. We would like to thank the contributors to this volume and all those who attended and participated in the conference.

Hannah J. Haynie

GENERAL SESSION

Multilingual Fieldwork, and Emergent Grammars

ALEXANDRA Y. AIKHENVALD
Research Centre for Linguistic Typology, Melbourne

0.　　Abstract

Languages spoken in multilingual situations constantly influence each other. Analyzing their grammars forces a fieldworker to step beyond a purely synchronic approach, so as to account for linguistic systems in constant flux. The ways in which languages adjust to each other, and yet keep separate, depend on relationships between them. Tariana, the only Arawak language in the Vaupés area in north-west Amazonia (famous for its institutionalized multilingualism), converges towards its Tucanoan neighbours by developing new morphology out of its own resources. Manambu, a Ndu language from the Sepik area of New Guinea, now spoken alongside Tok Pisin and English, is evolving parallel grammatical structures: a Manambu form (free or bound) is accompanied by its equivalent in Tok Pisin. The net result is a constant creation of multiple grammatical subsystems, and enrichment of languages.

1.　　Fieldwork in a Multilingual Environment

For many years, linguistic theory has been oriented towards a 'theoretical' construct — linguistic competence of an ideally monolingual speaker in a homogeneous speech community (see Sorensen 1972:91). However, the reality of linguistic communities across the world is different. Multilingual communities — where knowing and using several languages is a societal norm — appear to be much more than a curious rarity. Various challenges await a fieldworker-grammarian whose endeavour is to adequately describe and analyze the linguistic competence of multilingual people.[1]

---

[1] Linguistic fieldwork is crucial for providing a factual base for an empirically-based science of linguistics. Linguistic fieldwork of the 'immersion' type involves living among the people who speak a language, learning the language, collecting stories and participating in the daily life (rather than asking for translations into a local lingua franca). The ultimate aim is to provide a comprehensive analytical reference grammar, and written documentation of a language (see papers overviewed in Aikhenvald 2007, on methodologies of fieldwork, and especially Dixon 2007 and Mithun 2007, on documenting a language for varied audiences).

Two forces are at work in multilingual situations. On the one hand, languages constantly influence each other, and converge. On the other hand, they continue to be separate. New grammatical patterns keep emerging, forcing a fieldworker to step beyond a purely synchronic analysis of a language. The 'why' and the 'how' of such 'emergent' grammars correlates in each case with the relationships between languages, and the language attitudes.

2.   The Many Facets of Multilingualism

Multilingual communities vary in whether there is true multilingualism or simply bilingualism, and what proportion of the community and which social groups are involved. A stable societal multilingualism can go back a long way — as in the Vaupés River Basin area of north-west Amazonia and East Arnhem Land in Australia. Or it can be fairly shallow: in numerous areas of Papua New Guinea, bilingualism in the local language and in Tok Pisin, the country's major lingua franca, goes back only two or three generations (see, for instance, Kulick 1992).

Languages can be roughly equal in status, as used to be the case in the Vaupés area. Or one can be dominant over another, or carry more prestige — as does Tok Pisin, and now also English, in many areas of New Guinea (see Kulick 1992, Aikhenvald 2004). Relationships between languages and their spheres of use can also involve diglossia (see Ferguson 1964, Hudson 2000, and Dorian 2002). Diglossic language situations normally involve two (or more) varieties that coexist in a speech community, in complementary distribution according to the domains of usage (for example, one used at home, and another in other environments). Long-term stable multilingual situations do not require diglossic relationships between languages (see a summary and references in Aikhenvald 2006).

Once a diglossic situation disappears, so may multilingualism. The major sphere of usage for Western Iatmul among the Manambu of the Sepik area of New Guinea used to be ritual discourse (e.g. spells, incantations and song genres). Now that this ritual knowledge is on its way out, very few people know Iatmul.

If one group aggressively imposes its language on another group, contact may result in language displacement, and eventual obsolescence. Language endangerment may go hand in hand with 'endangered' multilingualism. This issue — sadly, relevant for most parts of the world — lies outside the scope of the present paper.

Within a multilingual community, languages in contact borrow and develop new linguistic features — including phonetic traits and habits of pronunciation, distinctive sounds (phonemes), construction types, grammatical categories, and the organization of lexical and grammatical meanings. There can also be borrowing of lexical and of grammatical forms. The extent of this varies, depending on a number of cultural and social factors, including the degree of speakers' awareness and sense of purism, and also on the structure of the languages in contact. A researcher venturing into a multilingual environment will daily face a contact-induced language change 'in the making'.

In a situation of stable multilingualism with a substantial time-depth, some contact-induced changes will be COMPLETED (cf. Tsitsipis 1998:34). Completed changes cover those aspects of the grammatical system of a language which do not show any synchronic variation. Speakers are hardly aware of these as 'foreign'. ON-GOING or CONTINUOUS changes are those in progress; here the degree of influence of the other language depends on the speaker's age and possibly other sociolinguistic variables. Speakers' attitudes to the innovations may be suspicious — yet they are undoubtedly the seeds of emergent structures (cf. Hopper 1987).

My aim here is to offer a brief illustration of 'emergent grammar' in two multilingual situations from different parts of the world, with different time-depths and different language attitudes. Tariana is the only Arawak language spoken in the linguistic area of the Vaupés River Basin (north-west Amazonia, Brazil), characterized by long-term institutionalized multilingualism, rooted in 'linguistic exogamy' — see section 3. Manambu, a Ndu language from the Sepik area of Papua New Guinea, coexists with Tok Pisin in a relatively young bilingual situation — see section 4.[2] Both are true laboratories for 'emergent grammar' — but the mechanisms employed are not the same.

3.   Emergent Grammar in the Multilingual Vaupés: The Case of Tariana
3.1.   Background

The Vaupés basin in north-west Amazonia (spanning adjacent areas of Brazil and Colombia) is a well-established linguistic area, characterized by obligatory multilingualism. This is based on the principle of linguistic exogamy: 'those who speak the same language as us are our brothers, and we do not marry our sisters'. Marrying someone who belongs to the same language group is considered akin to incest and referred to as 'those who are like dogs' (*ʧinu kayu-peni*). Language affiliation is inherited from one's father, and is a badge of identity for each person.

Languages spoken in this area include the East Tucanoan languages Tucano, Wanano, Desano, Piratapuya, Tuyuca (and a few others), and one Arawak language, Tariana (spoken by over 100 speakers in two villages). Speakers of these participate in the exogamous marriage network which ensures obligatory multilingualism (see Aikhenvald 2002).[3]

---

[2] I started fieldwork on Tariana in 1991; the results include a reference grammar (Aikhenvald 2003), a dictionary and several text collections, besides a monograph on the impact of language contact (Aikhenvald 2002). Fieldwork with the Manambu started in 1995; Aikhenvald (forthcoming) is a reference grammar. I owe a debt of gratitude to the Brito and the Muniz family for teaching me Tariana, their father language, and to my adopted family in Avatip (East Sepik, Papua New Guinea) for sharing their native Manambu with me. Special thanks go to R. M. W. Dixon, Nerida Jarkey, Gerd Jendraschek, Tonya Stebbins and Jessica Cleary-Kemp, for valuable comments and suggestions.

[3] Multilingualism based on linguistic exogamy appears to be rare world-wide, but is hardly exceptional: a similar principle has been observed in the Wik-speaking areas of the Cape York Peninsula and other areas of Northern Australia (Sutton 1978 and p.c., Rigsby 1997); also see Stanford (2006) on the Sui minority in Southern China.

There are no diglossic relationships between languages. The rules of 'speech etiquette' require that a speaker should use the addressee's father's language, as a matter of politeness.

A striking feature of the Vaupés linguistic area is a strong cultural inhibition against language mixing viewed in terms of borrowing forms, or inserting bits of other languages, into one's Tariana. (Those who do so are disdainfully referred to with a serial verb construction *na-ñamuɾa na-sape* 'they mix they speak'.) This inhibition operates predominantly in terms of loan forms and items which contain Tucanoan-like sounds, and also newly introduced loan-translations.

However, long-term interaction based on institutionalized societal multilingualism between East Tucanoan languages and Tariana has resulted in the rampant diffusion of grammatical and semantic patterns (though not so much of forms) and calquing of categories. Comparison of Tariana with closely related Arawak languages (e.g. Baniwa/Kurripako and Piapoco) helps identify the diffused and the inherited features in Tariana.

Tucanoan languages and Tariana are genetically unrelated, and typologically different. Like many Arawak languages, Tariana employs prefixes for subject cross-referencing, while Tucanoan languages are predominantly suffixing. As a result of a long-term contact, Tariana has developed numerous un-Arawak features — including cases for core arguments and a fascinating system of evidentials. These are instances of completed changes. On-going changes, on the other hand, present the fieldworker with a flux of 'emergent' structures. Two major mechanisms involve (a) loan translations, or calques, and (b) expanding the meaning of look-alikes.

3.2. How Loan Translations Help Create New Grammar

Tariana is highly polysynthetic, with at least 20 suffix and clitic slots in the verbal word (see Aikhenvald 2003:253-5). Multiword serial verb constructions convey aspectual, modal and Aktionsart meanings. Each of the components cross-references the subject; they have to have the same polarity and tense-evidentiality value. This structure, shared with Tariana's relative Baniwa, is illustrated in (1) — considered good traditional Tariana, just the way 'our grandfathers spoke':[4]

(1)   pi-hña-ka   pi-sita   piha
       2sg-eat-RECENT.PAST.VISUAL   2sg-finish   you
       'You have finished eating; you are done eating' (I saw you eat)

Tucanoan languages, especially Tucano, have verb compounds (or single-word serial verbs). The second component may express a concomitant action, or

---

[4] Abbreviations are: COM - comitative; fem - feminine; FUT - future; LK - linker; LOC - locative; masc - masculine; O - object; pl - plural; PRED - predicate marker; sg - singular; SUBJ - subject.

add an aspectual overtone, as does *-toha-* 'finish doing something; 'already'' in (2), from Tucano (Ramirez 1997, Vol. 1:97, Vol. 2:195):

(2)   ba'â-toha-apö   mö'ö
            eat-FINISH/ALREADY-RECENT.PAST.VISUAL.nonthird.person you
            'You have eaten already' (I saw you eat)

This structure is very common. Tariana, especially the language spoken by people under 40, is gradually developing verb-compounds Tucano-style, to match structures like (2). Example (3) comes from such innovative Tariana:

(3)   pi-hña-ka-sita   piha
            2sg-eat-RECENT.PAST.VISUAL-FINISH/ALREADY   you
            'You have eaten already' (I saw you eat)

These constructions are not quite accepted by older people, the major authorities on Tariana: (3) used to get consistently rephrased as (1) by the speaker's father. And yet, (3) becomes more and more frequent in younger people's speech. The speaker's father uses them occasionally, without correcting himself. Many more verbs tend to be used in root compounds — among them is *-yena* 'pass on, do little by little' (to match Tucano *tiha* 'do little by little').

We are faced with the emergence of a new type of verbal compound — or one-word serial verb. It is obviously contact-induced and ultimately goes back to an occasionalism, a nonce formation. Yet, it is now part of a more and more Tucanoized Tariana. And this creates a typologically unusual system with coexisting multiword and one-word verb sequences. Inasmuch as *-sita* could be interpreted as an aspect marker, this process can be considered an instance of areally triggered grammaticalization, in the spirit of Heine and Kuteva (2005).

In rapid speech *-sita* gets pronounced as [*sta*] or as [*esta*]. I was told by the speakers that this 'sounds like Piratapuya', a Tucanoan language. (This reaction is akin to 'naïve linguistic explanation' by linguistically acute native speakers: cf. Dixon 1991.) Traditional Tariana does not have CCV or VC syllables. This is then a puzzling instance of incipient 'loan' phonology in a language with hardly any actual loans.

3.3.   **Emergent Grammar through Expansion of 'Look-Alikes'**
An alternative way of developing new structures from existing sources are 'shifts due to phonetic similarity', or 'grammatical accommodations' (this is similar to how American Italian *fattoria* 'farm' has acquired the meaning of 'factory', under the influence of English: Weinreich 1953:49). Tariana imperatives are a case in point. Tariana has eight imperative forms: simple, reported ('do because you are told'), proximate ('do here'), distal ('do there'), delayed ('do later'), malefactive ('do to your own detriment'), polite, and 'try and do'. What it does not (yet) have is an imperative used for warnings, as do most East Tucanoan languages in which

Tariana speakers are proficient. One hears nominalizations marked with -*ʃi* in Tariana occasionally appear in commands, with a meaning 'make sure you do or else'.

(4) pi-hña-ɾi!
     2sg-eat-NOMINALIZATION
     'Eat!' (make sure you eat, lest you go hungry)

Tucano, just like most other East Tucanoan languages, has a suffix -*ri* used in commands with an overtone of warning, with the meaning of 'or else' (see Ramirez 1997, Vol. 1:148; cf. Stenzel 2004:390, Barnes 1979). The use of nominalizations as commands in Tariana has in all likelihood been influenced by the -*ri* marked imperative in Tucano.

So far, this has been restricted to casual speech by younger people. Traditional speakers do not use such forms as commands, replacing them with simple imperatives. The segmental similarity with a Tucano form is too conspicuous for the shift from a nominalization to a marker of command to be accepted at once. And yet it is becoming more and more frequent. I haven't heard the oldest speakers use it yet. But, for many speakers, this is now part of the grammar, 'the way we talk'.

3.4.   The Impact of Multilingual Interaction: Convergence and Enrichment

The ever-present need to express in one language what you express in the other one drives the convergence of patterns in Tariana. The new categories and forms are constantly developed out of the language's own resources — these include loan translations and grammatical accommodation. Tariana is becoming more and more complex in its grammatical structure — and only a perspective on other languages with which it is constantly in contact can help a linguist understand 'why'. The net result of the multilingual situation is a 'layered' language, with layer upon layer of new contact-induced patterns. No matter how strong the convergence, the grammars do not become structurally the same — examples above show how Tariana retains its prefixing profile against all odds. The metaphor 'one grammar, several lexicons' (Friedman 1997) would never apply to members of the Vaupés area.

4.   Emergent Parallel Grammars: An Example from Papua New Guinea

Manambu, from the Ndu family, has no monolingual speakers. It is spoken by about 2000 people in five villages in the Middle Sepik area of Papua New Guinea (the major ones are Avatip, Malu, and Yambon). Everyone is proficient in Tok Pisin (Melanesian Pidgin), a major lingua franca throughout Papua New Guinea. Papua New Guinea English is used in school, and by urban Manambu (whose role in the villages is marginal). Both Tok Pisin and Manambu are used at home, and also in rituals, still performed but in a reduced form (compared to what was documented earlier, e.g. by Harrison 1990). Tok Pisin is dominant in village

meetings, parent-teacher meetings at school, and in church (where Manambu is also used, but to a limited extent). That is, Tok Pisin and Manambu are in a partially diglossic situation. This is in contrast to the Tariana situation, with no obvious diglossia. The necessity for proficiency in Tok Pisin is enhanced by the number of outsiders living in the villages, mostly as the result of mixed marriages.

The Tok Pisin-Manambu-English multilingualism is fairly recent, just as in many other places in New Guinea (see Aikhenvald and Stebbins 2007). Proficient speakers of Tok Pisin were few and far between in the late 1950s. However, this does not mean that the Manambu used to be monolingual. Up until recently, the Manambu used to know a fair amount of neighbouring Iatmul (from the same family) — borrowed words, incantations and spells used to be the basis for ceremonial styles, now on their way out. The Manambu used to speak and understand the languages of their neighbours, the Kwoma/Washkuk. Only old people still have this knowledge. The Manambu-Iatmul contact resulted in numerous loans. It is hard to say anything about the structural influence from Iatmul due to potential 'parallelism in drift' as discussed by Sapir (1921:171-2). The contact with Kwoma resulted in numerous loans, and a fair number of shared structural patterns. But the effects of these completed changes are now a purely diachronic matter (see Chapter 22 of Aikhenvald forthcoming).

4.1.   The Impact of Tok Pisin and English 'Imports' on the Composition of Word Classes

Unlike the Tariana in the Vaupés, Manambu speakers are not averse to borrowing forms from open word classes — nouns, verbs, and adjectives — from Tok Pisin, and occasionally, from English.

Loan nouns are fully integrated: they take cases, and are assigned to masculine and feminine genders by their semantic properties, just like other nouns. Loan adjectives behave like other adjectives; for instance, they take intensifying infix -*ka*-, e.g. native *wama*- 'white', *wama-ka-wam* 'very white'; loan *blu* 'blue' (Tok Pisin *blu*), *blu-ka-blu* 'very blue'.

Borrowed verbs can be inflected, as in (5). Or they can occur in their root form with a support verb whose lexical meaning is 'stand', as in (6). English forms are in bold, and Tok Pisin forms are underlined:

(5)   **witness**   kamapə-n
       witness   appear-SEQUENCE
       streti-kə-bana
       straighten-FUT-1plSUBJ.NONPAST+3fem.sgO.NONPAST
       'Since a **witness** has appeared, we will straighten (fix) (the dispute)'

(6)   də   bas   stati   tə-də-l
       he   first   start   'stand'-3masc.sgSUBJ.PAST-3fem.sgO.PAST
       'He first started (it)'

Alternatively, the same verb can occur uninflected and without a support verb, as in (7):

(7)   wun   statim   aka   kəp   olsem   wun   statim
      I   start   here.fem.sg just   like.this   I   start
      'I am starting here, I am just starting'

A Manambu verb cannot occur without inflection. That is, the infiltration of Tok Pisin imports creates a new subclass of uninflectable verbs.

The word class assignment of a few imports with modal meaning is problematic. The loan *tambu* 'taboo, be prohibited' occurs in the predicate slot, and can take a full clause as its complement, as in (8). So can the Tok Pisin loanword *mas* 'must'.

(8)   Avatəpawa   tambu
      Avatip+LK+COM   taboo
      [warya-kə-bana]Complement
      fight-FUT-1plSUBJ.NONPAST+3fem.sgTIME.NONPAST
      'It is taboo (forbidden) for us to fight with Avatip (major Manambu-
      speaking village)'[5]

No other word in the language behaves this way. We are faced with a new word class of borrowed modal terms. This is an example of loan morphology, widely used, but recognizably foreign.

4.2.   'Parallel' Structures

A major — albeit not the only — function of Tok Pisin loans is filling an existing 'gap': traditional Manambu did not have any one-word modal expressions, or a single word for a colour like 'blue'. The same principle applies to some closed word classes: Manambu did not have a word meaning 'some' — so Tok Pisin *sampela* 'some' comes in handy, and is frequently used.

Manambu has a complex linguistic structure: there are nine case forms for nouns, and an array of moods, modalities, and aspects in verbs. Tok Pisin — a typical creole — appears impoverished by comparison.

The few bound morphemes which Tok Pisin has are not borrowed at all; neither are personal pronouns and demonstratives. But other items belonging to closed classes — connectives, quantifiers, and one numeral — do make their way from Tok Pisin into Manambu. Their infiltration takes place via 'pairings' where a native and a borrowed form appear together within one NP or verb phrase.

This process was described by Hajek (2006:170), as a mechanism for 'gradual mediation' of grammatical change in progress in Tetun Dili, the major lingua

---

[5] The Tok Pisin translation of (8) was *mipela i tambu long paitim Avatip* (we PRED taboo to/for fighting Avatip).

franca of East Timor in contact with Portuguese. Here, 'while the borrowing of N, V and Adj appears to be direct and unrestricted, the borrowing of grammatical items and structures can be mediated through "lexical pairing" where native and borrowed grammatical forms appear optionally together', e.g. purposive *atu* (Tetun Dili) *para* (Portuguese) 'in order that'. The native Tetun Dili construction meaning 'during' involves a combination of a locative and a possessed body part construction. In Portuguese the equivalent construction involves the use of the preposition *durante* (similarly to English *during*). Tetun Dili has developed an intermediate construction that combines the two. The three alternatives are:

(10) (a) iha   Agustu   nia   laran
           LOC   August   3sg   inside
           'during August' (body part construction)
      (b) durante Agustu nia laran (< Portuguese *durante* 'during')
      (c) durante Agustu

Similar parallel structures in Manambu involve (i) clause connectors, (ii) quantifiers, and (iii) numeral 'one' — all subtly different from each other.

(I) CLAUSE CONNECTORS IN PARALLEL STRUCTURES. Manambu has a rich array of verbal suffixes used as clause-linking devices. Subordinate clauses are always verb-final — see (11), from traditional Manambu. Square brackets indicate clause boundaries.

(11) [Ya-tataka]   [ata   wa-di]
      come-IMMEDIATE.SEQUENCE   thus   say-3plSUBJ.PAST
      'On having come, they spoke thus'

An alternative, spontaneously occurring in the speech of most people is:

(12) [Ya-tataka-<u>nau</u>]   [ata   wa-di]
      come-IMMEDIATE.SEQUENCE-then   thus   say-3plSUBJ.PAST
      'On having come then, they spoke thus'

This is parallel to the Tok Pisin equivalent of both (11) and (12), <u>*ol i kam nau, na ol i tok olsem*</u> (they PRED come then, and/so they PRED speak thus). The Tok Pisin connector *nau* meaning 'then, as soon as' reinforces the Manambu suffix, without replacing it. The connector occupies exactly the same place as in Tok Pisin. A similar example is in the second clause of (14): here the Tok Pisin contrastive <u>*tasol*</u> 'but' reinforces the Manambu contrastive linker *au*.

(II) QUANTIFIERS IN PARALLEL STRUCTURES. Quantifiers are postposed to the head noun in Manambu — see (13). In Tok Pisin, they tend to be preposed to the head noun, e.g. <u>*olgeta*</u> <u>*man-meri*</u> (all man-woman) 'all the people'.

(13) ñan   [du-ta:kw   aba:b] Malum
     we   man-woman   all   Malu+LOC
     kwa-na-dian
     stay-ACTION.FOCUS-1plSUBJ.NONPAST
     'We all the people (lit. man-woman) live in Malu village'

In parallel Manambu-Tok Pisin structures, the Tok Pisin imports follow the Manambu term, as in (14):

(14) ñan   [du-ta:kw   aba:b   olgeta]   Malum
     we   man-woman   all(Manambu)   all(Tok.Pisin) Malu+LOC
     kwa-na-dian
     stay-ACTION.FOCUS-1plSUBJ.NONPAST
     au   tasol   ñan   Avatip-adian
     but(Manambu)   but(Tok.Pisin) we   Avatip-1plSUBJ.NONPAST
     'We all the people (lit. man-woman) all live in Malu village, but but we are (from) Avatip'

That is, a parallel structure follows the already established 'Manambu-first' principle, providing an exception to Moravcsik's (1978) generalization that borrowed forms are generally borrowed together with their linear order with respect to their head: that is, a preposition is borrowed as a preposition, even if a language has nothing but postpositions.

(III) NUMERAL 'ONE' IN PARALLEL STRUCTURES. The Manambu are 'number-proud': knowing how to count is 'a focus of purism' similarly to Nahuatl (Hill and Hill 1980:337). The only Tok Pisin numeral in Manambu is *wanpela* 'one'. However, it is not used for counting: its function is to introduce new participants in discourse. This is how a young speaker would start a story:

(15) wanpela   ta:kw-al
     one   woman-3fem.sgSUBJ.NONPAST
     'There was a/one woman'…

The Manambu numeral *nak* 'one' — postposed to the head, similarly to a quantifier — is now also used this way, as in (16):

(16) ta:kw   nak-al
     woman   one-3fem.sgSUBJ.NONPAST
     'There was a/one woman'…

An alternative is a parallel structure:

(17) <u>wanpela</u>   ta:kw   nak-al
      one(Tok.Pisin) woman(Manambu) one(Manambu)-3fem.sgSUBJ.NONPAST
      'There was <u>a/one</u> a/one woman'…

The two synonymous forms appear on the different sides of the head noun: *<u>wanpela</u>* preserves the Tok Pisin order and *nak* follows the Manambu order, just as predicted by Moravcsik (1978). They form one NP on all counts (including prosodic parameters). But the 'Manambu-first' principle is violated.

I suggest the reason is that the function of *nak* 'one' as a way of marking new participants comes in the first place from Tok Pisin influence. We can recall that the Manambu connectors and quantifiers, discussed in (i) and (ii) above, did not bear any Tok Pisin influence in their usage.

The process of 'pairing' is characteristic of all registers, and is found with speakers of all generations. We are faced with new 'fused' structures, each subtly different from both languages which are in contact.

4.3. Parallel Structures in an 'Importing' Language?

The Manambu acceptance of loanwords goes together with a more general cultural feature. In Manambu society, as in many other Sepik societies, language was traditionally considered on a par with material goods — spells, incantations and even names and individual words being traded and bought (see Harrison 1990:20-3). This is one facet of Manambu as a representative of what Margaret Mead (1938) termed 'importing culture', characterized by an emphasis on exchange and value assigned to outside goods, both material and non-material. (Indeed, proficiency in ritual poetic genres, and the knowledge of lexicon, is tantamount to monetary riches in Manambu society.)

Lexical parallelism is hardly alien to the Manambu tradition. The ritual poetic genres — namely, the songs of foiled marriages and love affairs, known as *namay* and *sui,* and also mourning songs (*gra-kudi)* — are a case in point. These poetic literary forms (improvized by performers) consist of two parallel stanzas, each referred to either as *apək* 'side, part', or *agək* 'side, counterpart (one of two)'. The second stanza restates the first one using what the Manambu speakers call 'shadowy' register, or 'the other side' (*agəʞem* 'on the (other) side of two'). The 'other side' is replete with Iatmul loans, e.g. Manambu *amæy* 'mother', 'other side' *ñaməy* (from Iatmul), Manambu *asay* 'father', 'other side' *ñas* (from Iatmul). This is the only living legacy of a disappearing multilingual Manambu-Iatmul situation. It is strongly reminiscent of the binarism, or 'parallelism', believed to be a pervasive feature of the Sepik culture — in Bateson's (1936:239) words, 'the idea that everything in the world has its equal and opposite counterpart'. Parallel structures combining Manambu and Tok Pisin are along similar lines.

4.4. The Net Result of the Manambu–Tok Pisin Multilingualism

In the situation of relatively recent multilingualism with no inhibitions against borrowed forms multilingual interaction results in the creation of 'loan morphology'. This is hardly unexpected. A much more puzzling phenomenon is the creation of 'fused' grammatical constructions, creating compromise structures and making 'loan syntax' part of the linguistic competence of multilingual speakers. A set of 'compromise parallel structures' is on the rise.

5. What Can We Conclude?

Languages spoken in multilingual situations tend to converge. At the same time, multilingual speakers need to be successful in maintaining 'demarcation lines within their linguistic repertoires' (Matras 2007:52) — or else they may just as well give up their ancestral language.

I have illustrated two different ways in which a balance can be achieved. Tariana converges towards its Tucanoan neighbours by developing new morphology out of its own resources. A cultural inhibition against loan forms as tokens of frowned-upon 'language mixing' is prevalent in the Vaupés River Basin linguistic area. The result is a 'layered' language: varied layers of contact-induced structures differ in their frequency, their acceptance by all members of the community, and distribution across generation groups.

Manambu, a Ndu language from the Sepik area of New Guinea, now spoken alongside Tok Pisin and English, is evolving parallel grammatical structures: a Manambu form (free or bound) is accompanied by its equivalent in Tok Pisin. This is in addition to numerous loan forms which affect the composition of Manambu word classes.

Languages in multilingual societies appear to be in a constant whirlpool of the creation of new grammatical subsystems. As a result of on-going contact-induced change, their grammars become more and more complex, and often puzzling for a typologist. The constant 'emergent' grammars force us — fieldworker-grammarians — to abandon an idea of an artificially synchronic grammar, moving towards 'dynamic synchrony' of a language, in Jakobson's (1971:574) words, 'involving the space-time coordinates'.

And last, but not least — to keep up with a multilingual situation, a multilingual fieldworker is a 'must'.

References

Aikhenvald, Alexandra Y. 2002. *Language Contact in Amazonia*. Oxford: Oxford University Press.

Aikhenvald, Alexandra Y. 2003. *A Grammar of Tariana, from North-West Amazonia*. Cambridge: Cambridge University Press.

Aikhenvald, Alexandra Y. 2004. Language Endangerment in the Sepik Area of Papua New Guinea. In O. Sakiyama and F. Endo, eds., *Lectures on Endan-*

gered Languages: 5. From Tokyo and Kyoto Conferences 2002, 97-142. Suita, Osaka: ELPR.

Aikhenvald, Alexandra Y. 2006. Grammars in Contact: A Cross-Linguistic Perspective. In Alexandra Y. Aikhenvald and R. M. W. Dixon, eds., *Grammars in Contact*, 1-66. Oxford: Oxford University Press.

Aikhenvald, Alexandra Y. 2007. Linguistic Fieldwork: Setting the Scene. *Sprachtypologie und Universalienforschung* 60(1):3-11. [Special issue *Focus on Linguistic Fieldwork*, edited by Alexandra Y. Aikhenvald.]

Aikhenvald, Alexandra Y. Forthcoming (with the assistance of Yuamali Jacklyn Benji Ala and Pauline Yuaneng Luma Laki). *The Manambu Language from East Sepik, Papua New Guinea*.

Aikhenvald, Alexandra Y., and Tonya N. Stebbins. 2007. Languages of Papua New Guinea. In O. Miyaoka, O. Sakiyama and M. Krauss, eds., *Vanishing Languages of the Pacific*, 239-66. Oxford: Oxford University Press.

Barnes, Janet. 1979. Los imperativos en tuyuca. *Artículos en lingüística y campos afines* 6:87-94.

Bateson, Gregory. 1936. *Naven*. Cambridge: Cambridge University Press.

Dixon, R. M. W. 1991. Naïve Linguistic Explanation. *Language in Society* 21:83-91.

Dixon, R. M. W. 2007. Field Linguistics: A Minor Manual. *Sprachtypologie und Universalienforschung* 60(1):12-31. [Special issue *Focus on Linguistic Fieldwork*, edited by Alexandra Y. Aikhenvald.]

Dorian, Nancy C. 2002. Diglossia and the Simplification of Linguistic Space. *International Journal of the Sociology of Language* 9:63-70.

Ferguson, Charles A. 1964. 'Diglossia', pp. 429-39 of *Language in culture and society,* edited by Dell Hymes. New York: Harper International.

Friedman, Victor A. 1997. One Grammar, Three Lexicons: Ideological Overtones and Underpinnings in the Balkan *Sprachbund. Chicago Linguistic Society* 33:23-44.

Hajek, John. 2006. Language Contact and Convergence in East Timor: The Case of Tetun Dili. In Alexandra Y. Aikhenvald and R. M. W. Dixon, eds., *Grammars in Contact*, 163-78. Oxford: Oxford University Press.

Harrison, Simon. 1990. *Stealing People's Names*. Cambridge: Cambridge University Press.

Heine, Bernd, and Tania Kuteva. 2005. *Language Contact and Grammatical Change*. Cambridge: Cambridge University Press.

Hill, Jane, and K. C. Hill. 1980. Mixed Grammar, Purist Grammar, and Language Attitudes in Modern Nahuatl. *Language in Society* 9:321-48.

Hopper, Paul J. 1987. Emergent grammar. *Berkeley Linguistics Society. Proceedings of the Thirteenth Annual Meeting. General Session and Parasession of Grammar and Cognition*:139-57.

Hudson, A. 2000. Outline of a Theory of Diglossia. *International Journal of the Sociology of Language* 9:1-48.

Jakobson, Roman O. 1971. Linguistics and Communication Theory. In *Selected writings*. Volume II. *Word and language*, 571-9. The Hague/Paris: Mouton.

Kulick, Don. 1992. *Language Shift and Cultural Reproduction: Socialisation, Self, and Syncretism in a Papua New Guinean Village*. Cambridge/New York: Cambridge University Press.

Matras, Yaron. 2007. Contact, Connectivity and Language Evolution. In Jochen Rehbein, Christiane Hohenstein, and Lukas Pietsch, eds., *Connectivity in Grammar and Discourse*, 51-74. Amsterdam: John Benjamins.

Mead, Margaret. 1938. The Mountain Arapesh: An Importing Culture. *American Museum of Natural History, Anthropological Papers* 36:139-349.

Mithun, Marianne. 2007. What is a Language? Documentation for Diverse and Evolving Audiences. *Sprachtypologie und Universalienforschung* 60(1):42-55. [Special issue *Focus on Linguistic Fieldwork*, edited by Alexandra Y. Aikhenvald.]

Moravcsik, Edith. 1978. Language Contact. In Joseph H. Greenberg, Charles A. Ferguson, and Edith A. Moravcsik, eds., *Universals of Human Languages*, Volume 1, 93-123. Stanford: Stanford University Press.

Ramirez, Henri. 1997. *A fala Tukano dos Yepâ-Masa*. Tomo 1. *Gramática*. Tomo II. *Dicionário*. Manaus: Inspetoria Salesiana Misionária da Amazônia.

Rigsby, Bruce. 1997. Structural Parallelism and Convergence in the Princess Charlotte Bay Languages. In Patrick McConvell and Nicholas D. Evans, eds., *Archaeology and Linguistics. Aboriginal Australia in Global Perspective*, 169-78. Melbourne: Oxford University Press.

Sapir, Edward. 1921. *Language*. New York: Harcourt, Brace & World.

Sorensen, Arthur P., Jr. 1967(1972). Multilingualism in the Northwest Amazon. *American Anthropologist* 69:670-84. Reprinted 1972 in J. B. Pride and J. Holmes, eds., *Sociolinguistics*, 78-93. Harmondsworth: Penguin Modern Linguistics readings.

Stanford, James N. 2006. When Your Mother's Tongue is not Your Mother's Tongue: Linguistic Reflexes of Sui Exogamy. *University of Pennsylvania Working Papers in Linguistics* 12(2):217-29.

Stenzel, Kristine Sue. 2004. *A Reference Grammar of Wanano*. Ph.D. diss., University of Colorado.

Sutton, Peter. 1978. *Wik: Aboriginal Society, Territory and Language at Cape Keerweer, Cape York Peninsula, Australia*. Ph.D. diss., Unversity of Queensland.

Tsitsipis, L. D. 1998. *A Linguistic Anthropology of Praxis and Language Shift. Arvanítika (Albanian) and Greek in Contact*. Oxford: Clarendon Press.

Weinreich, Uriel. 1953. *Languages in Contact*. New York: Linguistic Circle of New York.

Alexandra Y. Aikhenvald
Research Centre for Linguistic Typology
La Trobe University
Victoria 3086
Australia

a.aikhenvald@latrobe.edu.au

The Evolutionary Phonology of Glottal Stops in K'ichean

RUSTY BARRETT
University of Kentucky

1.   Introduction

This paper outlines historical changes involving glottal stop in K'ichean languages, including two regular sound changes involving glottal stop as an innovation and two phonological changes related to changes in morphology or phrasal phonology. The regular sound changes are phonetically-motivated changes of the sort that Blevins (2004, 2006) categorizes as "natural" changes and have regular patters of dialectal distribution. The other changes show widespread variation both across and within dialects and languages.

K'ichean Proper includes six closely-related Mayan languages spoken in the highlands of Guatemala: K'iche' (Mondloch 1978, Ajpacaja et al. 1996, López Ixcoy 1997, Par and Can 2000), Achi (Sis Iboy 2002), Kaqchikel (García Matzar and Rodríguez Guaján 1997, Patal et al. 2000, Cojtí et al. 2001), Tz'utujil (Dayley 1985, García Ixmatá 1997, Pérez and Mendoza 2001), Sakapuletko (DuBois 1981) and Sipakapense (Barrett 1999). K'iche' and Achi are sometimes considered dialects of a single language based on their linguistic similarity, but are treated as separate languages for social and political reasons (cf. Sis Iboy 2002). Achi is spoken to the east of K'iche', with Kaqchikel and Tz'utujil south of K'iche'. Sakapulteko is spoken in the town of Sacapulas in the northern part of the K'iche' region, while Sipakapense is spoken far to the west in an area dominated by speakers of Mam (another Mayan language that is not part of K'ichean). The genetic relationships between the K'ichean languages are presented in (1) below.

(1)   Genetic relationships in K'ichean Proper (DuBois 1981, Barrett 1999)

K'ichean

K'iche'   Achi

Kaqchikel   Tz'utujil   Sipakapense   Sakapulteko
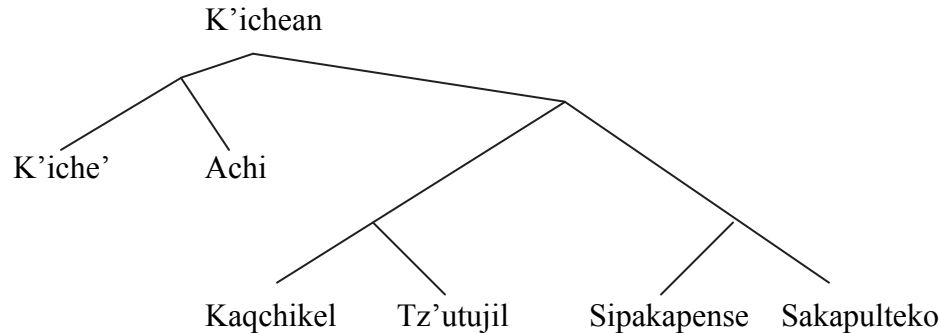
2.   Glottal stop as an innovation

There are two patterns of innovative glottal stop in K'ichean, both involving the loss of oral place of articulation. The first involves debuccalization of word-final bilabial implosives. The second involves the backing and lowering of the voiceless uvular ejective.

2.1   Word-final debuccalization in Southern K'ichean

The loss of oral place for word-final bilabial imposives /b'/ is a distinguishing characteristic of the southern K'ichean languages, Tz'utujil and Kaqchikel (Grimes 1969, Campbell 1977). The sound change *b' > ? occurred word-finally in words with more than one syllable. Roots that are b'-final maintain the bilabial under suffixation (compare the words for "night" and "dawn" in the data below). Examples of correspondences demonstrating this change are given in (2) below.

(2)   [b']:[?] correspondences in K'ichean

Tz'utujil	Kaqchikel	K'iche'	Sipakapense	gloss
aq'a?	aq'a?	aq'ab'	aq'ab'	night
aq'ab'il	aq'ab'il	aq'ab'il	aq'ab'il	dawn
Ξo?o?	wo?o?	Ξo?ob'	Ξ?ob'	five
Ξaab'	Ξob' ~ Ξab'	Ξaab'	Ξaab'	rain

2.2   Merger of glottal stop and uvular ejective in Eastern K'ichean

The other innovative occurrence of glottal stop is an unconditioned sound change in eastern dialects of K'iche' and in Achi (Par and Caan 2000). The uvular ejective /q'/ has changed to glottal stop in Cubulco (Achi). The neighboring communities to the southeast, Joybaj (K'ichee') and Rabinal (Achi), show variation between glottal stop, the uvular ejective, and a pharyngeal stop [ℵ]. The towns further to the east and north, (Chicaj and Cunén) show a similar pattern, but

with a clear predominance of the uvular ejective. Thus, the change is complete in Cubulco, at an intermediary stage in Joyobaj and Rabinal and just spreading to Chicaj and Cunén. Correspondence sets demonstrating this change are given in (3) below.

(3)   Changes in back consonants in Eastern K'iche' (cf. Par and Can 2000)

gloss	sun, day	fire	night	bean
Cubulco (Achi)	ʔiiŋ	ʔan	ʔaʔam'	kinaʔ
Rabinal (Achi)	q'iiΞ	ʔaaʔ ~ ʔaaℵ	ʔaℵam'	kinaʕ
Joyobaj	ʔiiΞ	ʔaaʔ ~ q'aaq'	ʔaq'ab' ~ ʔaʔab'	kinaʔ
Cunén	q'iih ~ q'ih	ʔaaʔ	ʔaq'ab'	kinaʔ
Chicaj (Achi)	q'iiΞ	ʔaaq'	ʔaq'am'	kinaʕ
Other K'iche'	q'iiΞ ~ q'iΞ	q'aaq'	ʔaq'ab'	kinaq'

3.0   Changes in intervocalic glottal stops

In their reconstructions of proto-K'ichean phonology, both Grimes (1969) and Campbell (1977) note a correspondence between VʔV and Vʔ in K'iche'. Both Grimes and Campbell treat this correspondence as the result of a regular sound change, although they disagree on the form in proto-K'ichean, with Grimes choosing *Vʔ and Campbell choosing *VʔV. As Campbell's choice fits with independent reconstructions for proto-Mayan (Kaufman 2003), I will assume that *VʔV is the proto-K'ichean form. This is a regular sound change, *VʔV > Vʔ in K'iche', following the patterns for vowel hiatus described by Casali (1997).

This change in intervocalic glottal stops is regular and exceptionless in roots where both vowels are short (e.g. *ts'aʔam > ts'aʔm, *nose* in all dialects). However, in cases where the second vowel was long in proto-Mayan, there is widespread variation in the K'iche' reflexes (and moderate variation in Sipakapense, Kaqchikel and Tz'utujil). In contrast, reflexes of proto-Maya *VʔVV may have many forms in K'iche', including /ʔV/, /VʔV/, /VʔVV/, /Vʔ/, /VV/, and /V/. Multiple forms are found as reflexes of *VʔVV roots in the same dialect and the distribution of forms rarely extends beyond a single town. While a few towns show a regular pattern, such as all roots as Vʔ in the K'iche' of Momostenango, most dialects have highly irregular distributions. In the dialect region of Nahualá and Santa Catarina Ixthuacán, these forms alternate, following an older pattern from Colonial K'iche' discussed below. Tables (4) and (5) demonstrate the variation in the reflexes of the proto-K'ichean roots for *meat* and *skin*, based on dialectal data from Par and Caan (2000).

(4)   Dialectal variation in the K'iche' word for "meat"

*ti?iiΞ (proto-K'ichean) "meat" (cf. Par and Caan 2000)	
t-?iΞ (=?V)	San Antonio Ilotenango, Zacualpa
ti?iiΞ (= V?VV)	San Miguel Chicaj, Zunil, Santa Clara la Laguna, Momostenango
ti?Ξ (= V?)	Totonicapán, Cunén, Santa Cruz de El Quiché
ti?iΞ (=V?V)	Joyabaj, Chichicastenango

(5)   Dialectal variation in the K'iche' word for "skin"

*tz'uhuum (proto-K'ichean) "skin" (cf. Par and Caan 2000)	
ts'u?uum (= V?VV)	Santa Lucia Utatlan
ts'uum (= VV)	Santa Clara la Laguna
ts'um (= V)	Chichicastenango, Cantel, Santa Maria Chiquimula
ts'u?m (= V?)	Joyobaj

In addition to widespread variation in a particular root across dialects, contemporary forms originating from *V?VV roots show widespread variation within a single dialect. Table (6) below, demonstrates the variation in these forms across dialects of Achi and K'iche'. The dialects are arranged geographically, moving from east to west. Note that although the word for "skin" displays an irregular pattern, forms with a single vowel (CVC) predominate.

(6) Variation in three *V?VV roots in K'iche'

towns, east to west	*ti?iiΞ "meat"	*ts'uhuum "skin"	*k'a?aam "straw"
Chicaj (Achi)	**V?VV**	**V?**	**V?V**
Rabinal (Achi)	**V?**	**V?V**	**V?V**
Cubulco (Achi)	**?V**	--	**V?V**
Joyobaj	**V?V**	**V?**	**VV**
Zacualpa	**?V**	**V**	**V**
Cunén	**V?VV**	**V**	**V?**
Chichicastenango	**V?V**	**V**	**V**
Santa Cruz del Quiché	**V?**	**V**	**V?**
San Antonio Ilotenango	**?V**	--	**V?VV**
Santa Clara la Laguna	**V?VV**	**VV**	**V?V**
Santa Lucía Utatlán	**V?VV**	**V?VV**	**V?VV**
Momostenango	**V?**	**V?**	**V?**
Cantel	**V?**	**V**	**V?**
Zunil	**V?VV**	**V?**	**V?V**
Samayac	**V?VV**	**V?**	**V?V**

3.1   Synchronic alternations of V?VV sequences in Classical K'iche'
The widespread variation in proto-K'ichean *V?VV reflexes is the result of analogical leveling of allophonic variation in earlier K'iche'. In the K'iche' of the *Popool Wuuj* (transcribed around 1700), roots with the form CV?VVC show allophonic variation according to morphological and phrasal contexts (Dürr 1987). In Classical K'ichee', CV?VVC roots had the form CVC when followed by a derivational suffix. Phrase-medially, they had the form CV?C and only maintained the form CV?VVC in phrase-final position. The alternation can be seen in the ways in which the word for "skin" (ts'u?uum) is written in the *Popol Wuuj*. Note that the orthography of the *Popol Wuuj* does not represent vowel length. The vowel length can be reconstructed from the dialects that preserve this alternation (Nahualá and Santa Catarina Ixthuacán). Table (7) shows the synchronic variation in the word for "skin" as found in the *Popool Wuuj* (cf. Dürr 1987).

(7)   Forms of the word "skin" (ts'u?uum) in the *Popool Wuuj*

environment			gloss
phrase-final	…tz'u'um.	**V?VV**	…skin
phrase-medial	ri <u>tz'u'm</u> Pasilisib' ub'i.	**V?**	the skin named Pasilisib'
suffixed	xa u<u>tz'um</u>al chikop	**V**	only an animal's skin

The irregular distribution in proto-K'ichean *V?VV reflexes results from analogical leveling combined with the loss of these synchronic alternations. It is not surprising that the root for "skin" shows a much higher distribution of forms without a glottal stop, given that this root typically occurs as a possessed form which requires the suffix +*al*. In Colonial K'iche', suffixed forms did not include the underlying glottal stop when a root occurs with a suffix.

The alternations in *V?VV roots are still found in the dialects of Nahualá and Santa Catarina Ixthuacán, where they are part of a larger set of alternations involving glottal stop in intervocalic position. Additional alternations occurring with intervocalic and word-final glottal stops are outlined in the following section.

3.2.1   V?V-final forms
In Nahualá K'iche', the prosodic alternation between phrase-medial V? and V?VV forms is limited to forms in which both vowels are identical and are followed by a consonant (other than glottal stop). Instances of $V_1?V_2$ surface as $V_2?$ in most dialects of K'iche' and in Sipakapense (cf. Barrett 1993). Cases of V?V# follow this pattern, surfacing as V?# phrase-finally. Nahualá K'iche' verbs take modal agreement suffixes phrase-finally that do not occur phrase-medially, as with the root /b'an/ *to do, make* shown in (8) below.

(8)   Modal agreement suffix in Nahualá K'iche':

(a)   Kub'an ri sub'.   "S/He is making tamales"
(b)   Are ri sub' kub'an<u>o</u>   "It is tamales that s/he is making"

The suffix +*o* (marking active transitive agreement) only occurs when the verb is in adjacent to the edge of a CP, usually when phrase-final (as in example (b) above). In verbs with a root-final glottal stop, the root vowel is lost in the phrase-final position due to a regular alternation in which underlying $V_1?V_2$ sequences surface as $V_2?$. The examples in (9) demonstrate the loss of root vowel in this context in which the verb roots /ta?/ and /to?/ both surface as [to?] when followed by the modal agreement suffix +*o*.

(9)   Modal agreement suffix with glottal-final roots

(a)   Kinta? Ξun ts'i?.   "I hear a dog"
(b)   Kinto? Ξun ts'i?.   "I help a dog"
(c)   Are Ξun ts'i? kinto?   "It's a dog I hear" (/ta?+o/)
(d)   Are Ξun ts'i? kinto?   "It's a dog I help" (/to?+o)

3.2.2 Word-final glottal stops
All K'ichean languages have alternations involving the loss of word-final glottal stops when followed by a consonant in the same phonological phrase. Languages vary, however, in the exact ways in which this alternation occurs. In Tz'utujil, for example, final glottal stop is deleted phrase-medially regardless of the length of the preceding vowel. The examples in (10) demonstrate this alternation for a preceding long vowel (a) and a preceding short vowel (b).

(10)   Loss of final glottal stop phrase-medially in Tz'utujil (Dayley 1985:49):

(a)   b'aark<u>ii</u>?   "where"
        b'aar<u>kii</u> k'o wi?   "where is it?"

(b)   taτΣey<u>a</u>?   "hit it"
        taτΣe<u>ya</u> jar achi   "hit that man"

The pattern in K'iche' is different, in that the phrase-internal glottal stop deletes only when preceded by a short vowel. Loss of the glottal stop also involves compensatory lengthening, so that a /V?/ sequence surfaces as [VV] in phrase-medial position. The distinction is presented in (11) below, where the forms involving a long vowel (those in (a) below) do not show glottal stop deletion. The forms in (b) involve a preceding short vowel and demonstrate the pattern of glottal-deletion with compensatory lengthening.

(11)   Patterns of final glottal stop in K'iche':

(a)   Are Ξun nimalaΞ τΣee?   "That is a really big tree."
         K'o Ξun τΣee? sib'alaΞ niim.   "There is a tree that is really big."

(b)   Are Ξun nimalaΞ <u>ts'i</u>?   "That is a really big dog."
         K'o Ξun <u>ts'ii</u> sib'alaΞ niim.   "There is a dog that is really big."

The phrase-level alternations involving glottal consonants in Nahualá K'iche' also interact with a separate pattern involving the deletion of final consonants in CVC clitics. Post-verbal CVC clitics show an alternation between phrase-final and phrase-medial forms, with the final consonant deleting phrase-medially. The pattern is demonstrated in (12) below, where the clitic /taΞ/ (*irrealis*) surfaces as [ta] in non-final position.

(12)   Alternations in the verbal clitic /taΞ/ in Nahualá K'iche'

		example	gloss
clitic-group-medial	ta	Na kimb'e **ta** τΣik	I am not going again.
clitic-group-final, phrase-medial	ta	Na kimb'e **ta** [pa k'ayb'al]PP	I am not going to the market.
clitic-group-final, phrase-final	taχ	Na kimb'e **taΞ**	I am not going.

This alternation interacts with the loss of final glottal consonants with compensatory lengthening described above. In cases where the final consonant of a CVC clitic is glottal (either h or ?), there are three distinct surface forms. In cases where the CVC clitic is followed by another clitic, the glottal consonant deletes following the regular pattern in (12) above. If the CVC clitic occurs at the end of the clitic group, but is still phrase-medial, the pattern of final loss with compensatory lengthening occurs. In cases where the clitic is phrase-final, the full CVC form occurs. The examples in (13) below show these alternations for two glottal-final clitics, /nah/ (marking obligation or future) and /lo?/ (marking possibility or probability).

(13)   Alternations in the verbal clitics /nah/ and /lo?/ in Nahualá K'iche'

clitic-group-medial	na	Kimb'e **na** τΣik	I will go again.
clitic-group-final, phrase-medial	naa	Kimb'e **naa** [pa k'ayb'al]PP	I will go to the market.
clitic-group-final, phrase-final	nah	Kimb'e **nah**	I will go.

clitic-group-medial	lo	Kimb'e **lo** τΣik	I might go again.
clitic-group-final, phrase-medial	loo	Kimb'e **loo** [pa k'ayb'al]ₚₚ	I might go to the market.
phrase-final	lo?	Kimb'e **lo**?	I might go.

4. Initial glottal stop

In all K'ichean languages, syllable onsets are obligatory so that epenthesis of an initial glottal stop occurs for unprefixed vowel-initial roots. K'ichean languages have two distinct sets of possessive prefixes corresponding to vowel-initial and consonant-initial roots. The distinction is demonstrated with examples from K'iche' in (14) below (the pattern occurs for all prefixes, although only the first-person singular is given here).

(14)   Possessive prefixes in K'iche'

(a)   ?iΣiim   *corn*   wiΣiim   *my corn*
(b)   τΣ'iiτΣ'   *car*   nuτΣ'iiτΣ'   *my car*

The form in (a) above shows an initial glottal in isolation, but takes the "vowel-initial" prefix (*w+*) without the glottal stop when possessed. The forms in (b) show the "consonant-initial" prefix. This pattern holds for possessive prefixes across K'ichean languages, however with the agentive prefix /aΞ++++/, vowel-initial roots surface with an initial glottal stop, as demonstrated in (15) below.

(15)   The agentive suffix /aΞ++++/ with a vowel-initial root in K'iche'

?iik'   *month*   aΞ?iik'   *worker paid by the month*

While the overwhelming majority of noun roots follow the pattern corresponding to that in (14) above, all K'ichean languages contain a small set of vowel-initial roots that always occur with an initial glottal stop and regularly take the "consonant-initial" possessive prefixes. Compare the form in (16) below with those in (14) above.

(16)   Possession on a noun root with an underlying initial glottal (Nahualá)

?aΣuuΣ   *garlic*   nu?aΣuuΣ   *my garlic*

The roots with an initial glottal stop vary widely across languages and dialects. However, forms with an initial glottal stop are typically those forms that are borrowed from Spanish or nouns that are very rarely possessed. For example, the root in (16) does not have an initial glottal in most other dialects of K'iche' (where the possessed form is regular, [waΣuuΣ]). These roots show variation in sub-dialects as well. For example, the noun meaning *bromeliad* shows variation

between Nahualá and Santa Catarina Ixthuacán, neighboring towns generally assumed to form a single dialect of K'iche'. Examples of this form are given in (17) below.

(17)   Forms for *bromeliad* in Nahualá and Santa Catarina Ixthuacán

?eek'   "bromeliad"
week'   "my bromeliad" (Santa Catarina Ixthuacán)
nu?eek'   "my bromeliad" (Nahualá)

Similarly local patterns are found in other K'ichean languages. The examples in (18) demonstrate variation in these forms from Kaqchikel (cf. Patal et al. 2000).

(18)   Dialectal variation in possession of vowel-initial roots in Kaqchikel

nu?okoΣ   "my mushroom" (San Antonio Aguas Calientes)
wokoΣ   "my mushroom" (elsewhere)

nu?oΞ   "my avocado" (San Antonio Aguas Calientes)
woΞ   "my avocado" (elsewhere)

nu?iΣin   "my corn" (San José Poaquil)
wiΣin   "my corn" (elsewhere)

The pattern in Sipakapense is similar (Barrett 1999). Although there is very little dialectal variation in Sipakapense, vowel-initial forms vary across areas of town. Non-final vowels in Sipakapense are generally deleted, so that both the "consonant-initial" and the "vowel-initial" prefixes result in forms with a CC onset. This is demonstrated in (19) below.

(19)   Sipakapense possession (first singular)

?iΣiim   "corn"   wΣiim   "my corn" (all dialects)
ts'i?   "dog"   nts'i?   "my dog"

The word for "rabbit" shows three different variants, given in (20) below. In addition to the glottal-initial form that takes the preconsonantal prefix and the regular vowel-initial form, a third form occurs with the "consonant-initial" prefix and loss of the initial vowel.

(20)   Sipakapense words for "my rabbit"

?imul	"rabbit" (all dialects)
wmul	"my rabbit" (north)
n?imul	"my rabbit" (west)
nmul	"my rabbit" (east)

In addition to forms that are rarely possessed and borrowings from Spanish, Sipakapense forms with the agentive prefix /aΞ++/ always occur with an underlying initial glottal stop. In other K'ichean languages, these forms are regular vowel-initial roots. Examples are given in (21) below.

(21)   Forms of the word for "teacher" in K'iche' and Sipakapense

Sipakapense:	aΞ tiiΞ "teacher"		n?aΞ tiiΞ	"my teacher"
K'iche':	aΞ tiiΞ "teacher"		waΞ tiiΞ	"my teacher"

Dialectal variation in the possession of vowel-initial roots is the most highly irregular form of variation in K'ichean languages, with variation occurring both within and across regional dialects.

5.   Conclusion

The evolution of glottal stops in K'ichean demonstrates the distinction between "natural" and "unnatural" changes in evolutionary phonology (Blevins 2006). Regular ("natural" in Blevins framework) sound changes result in distinct dialect areas with regular isoglosses delineating regions that have undergone phonetically-motivated sound change. In contrast, "unnatural" changes related to morphological change result in irregular variation in which a single form in the proto-language corresponds to multiple forms in a individual dialects.

References

Ajpacaja Tum, Pedro Florentino, Manuel Isidro Chox Tum, Francisco Lucas Tepaz Raxuleu and Diego Adrian Guarchaj Ajtzalam. 1996. *Diccionario K'iche'* Guatemala: Cholsamaj/Proyecto Lingüístico Francisco Marroquín.

Barrett, Rusty. 1993. K'iche' Maya truncation and prosodic hierarchy theory. MA Report. University of Texas at Austin, Department of Linguistics.

Barrett, Rusty. 1999. *A grammar of Sipakapense Maya.* PhD dissertation. University of Texas at Austin.

Blevins, Juliette. 2004. *Evolutionary phonology: The emergence of sound patterns*. Cambridge: Cambridge University Press.

Blevins, Juliette. 2006. New perspectives on English sound patterns: 'Natural' and 'unnatural' in evolutionary phonology. *Journal of English Linguistics* 34(1): 6-25.

Campbell, Lyle. 1977. *Quichean linguistic prehistory.* University of California publications in linguistics; 8. Berkeley, CA: University of California Press.

Casali, Roderic F. 1997. Vowel elision in hiatus contexts: Which vowel goes? *Language* 73(3): 493-533.

Cojtí Macario, Narciso, Martín Chacah Cutzal and Marcos Armando Cali. 2001. *Diccionario Kaqchikel.* Guatemala: Cholsamaj/Proyecto Lingüístico Francisco Marroquín.

Dayley, Jon P. 1985. *Tzutujil grammar.* University of California pulbications in linguistics; 107. Berkeley, CA: University of California Press.

DuBois, John William. 1981. *The Sacapultec language.* PhD dissertation, University of California at Berkeley.

Dürr, Michael. 1987. *Morphologie, Syntax und Texstrukturen des (Maya-)Quiche des Popol Vuh: linguistische Beschreibun eines kolonialzeitle.* Bonn: Vom Verf.

García Ixmatá, Ajpub' Pablo. 1997. *Rukeemik ja Tz'utujiil Chii'.* Guatemala: Cholsamaj.

García Matzar, Lolmay Pedro and Pakal B'alam José Obispo Rodríguez Guaján. 1997. *Rukemik ri Kaqchikel Chi': Gramática Kaqchikel.* Guatemala: Cholsamaj.

Grimes, James Larry. 1974. *Phonological history of the Quichean languages.* Carbondale, Illinois. Southern Illinois University Museum Studies.

Kaufman, Terrence. 2003. *A Preliminary Mayan Etymological Dictionary.* Ms., University of Pittsburgh.

López Ixcoy, Saqijix Candelaria Dominga. 1997. *Gramatica K'ichee'* Guatemala: Cholsamaj.

Mondloch, James. 1978. *Basic Quiché grammar.* Albany, NY: Institute of Mesoamerican Studies, SUNY-Albany.

Par Sapón, María Beatriz and Telma Angelina Can Pixabaj. 2000. *Ujunamaxik ri K'ichee' Ch'ab'al.* Guatemala: Cholsamaj.

Patal Majzul, Filiberto, Lolmay Pedro Oscar Garcia Matzar and Ixchel Carmelina Expantzay Serech. 2000. *Rujunamaxik ri Kaqchikel Chi'.* Guatemala: Cholsamaj.

Sis Iboy, Nikte' María Juliana. 2002. *Ri K'ichee' jay ri achi: La e ka'iib' chi ch'ab'al?* Tesis de licenciatura. Universidad Rafael Landívar.

Pérez Mendoza, Francisco and Miguel Hernández Mendoza. 2001. *Diccionario Tz'utujil.* Guatemala: Cholsamaj/Proyecto Lingüístico Francisco Marroquín.

VP Ellipsis in Japanese[1]

MICHIKO TODOKORO BUCHANAN
University of Minnesota

0.   Introduction

This study examines the Japanese phenomenon where VP is not overtly expressed but recoverable, as exemplified in (1), where (1b) and (1c) are preceded by (1a). Although the property of this phenomenon is shared with English VP ellipsis (VPE), it has not been discussed in detail to date.

(1) a. John-wa   sushi-o   tabe.ru.
          -TOP   sushi-ACC   eat.PRESENT
          'John eats sushi'
     b. Mary-mo   da.
          -also   COP
          '(lit.) Mary is also'
     c. Bill-wa   zenzen   da.
          -TOP   at all   COP
          '(lit.) Bill is at all'

In (1b) and (1c), there is no VP, and the copula *da* appears. For (1b), it is interpreted as 'Mary does too'. For (1c), despite the fact that there is no negation marker, it reads 'Bill doesn't at all.' Since Japanese verb morphology is different from English, there is no parallel structure to English VPE. However, (1b) and (1c) exhibit some parallelism to the English counterpart. That is, as long as there is a linguistic antecedent, redundant VPs can be elided and the elided VPs are recoverable.

I consider this Japanese phenomenon to be a type of VPE (referred to as Japanese VPE hereinafter), and investigate how the copula *da* appears; what allows the ellipsis to occur (Licensing Condition); and how the elided VP is recovered

---

(Identity Condition). I argue that elements that can determine the negation of the clause can license ellipsis, and that ellipsis is allowed under the syntactic identity. To account for the appearance of the copula *da*, I claim that *No-da* 'It's that' Focus Construction is the underlying construction for the Japanese VPE, and that the VPE undergoes focus movement and remnant deletion. This analysis assumes the presence of a syntactic structure that holds the moved focused element. Thus, this study contributes to cross-linguistic analyses of Rizzi's (1997) structure of the left periphery, as well as to cross-linguistic studies of VPE.

1. Japanese VPE: Previous Studies

Because of its different verb morphology, Japanese does not have VPE parallel to English VPE. Japanese lacks *do*-support, and its tense morphemes are bound to the verb. Japanese VPE parallel to the English VPE in (2), therefore, is ungrammatical, as shown in (3).

(2) a. John eats sushi.
    b. Mary does [*e*] too.
(3) a. John-wa   sushi-o   tabe.ru.
        -TOP   -ACC   eat.PRESENT
      'John eats sushi'
    b.* Mary-mo   [*e*]-ru.
         -also   -PRESENT
      '[intended reading] Mary does too'

In English, *not* can precede an ellipsis site as in (4b). However, the Japanese negation morpheme is bound to the verb, therefore, the Japanese counterpart to (4b) is ungrammatical, as seen in (5b).

(4) a. John eats sushi.
    b. Mary does not [*e*].
(5) a. John-wa   sushi-o   tabe.ru.
        -TOP   -ACC   eat.PESENT
      'John eats sushi'
    b.* Mary-wa   [*e*]-nai.
         -TOP   -NEG.PRESENT
      '[intended reading] Mary does not'

There is an approach that claims VPE occurs in Japanese. Otani and Whitman (1991) claim that the null object construction in Japanese is VPE assuming the V-to-T raising. They argue that the availability of a sloppy reading in the null object constructions like (6) is evidence for Japanese VPE, since, as noted by Sag (1976) and Williams (1977), a sloppy reading is available in English VPE as in (7).

(6) a. John-wa   [zibun-no   tegami-o]   sute-ta.
       John-NOM   self-of   letter-ACC   discard-PERF
       'John$_i$ threw out self$_i$'s letters'
    b. Mary-mo   [e]   sute-ta.
       Mary-also   discard-PERF
       = Mary$_j$ also threw out self$_j$'s letters. (sloppy reading)
       = Mary also threw out John's letters. (strict reading)
       (Otani and Whitman 1991:346-347)
(7)   John likes his children, and Bill does too.
       = John$_i$ likes his$_i$ children, and Bill$_j$ likes his$_j$ children. (sloppy reading)
       = John$_i$ likes his$_i$ children, and Bill likes John's children. (strict reading)
       (Williams 1977:118)

After Otani and Whitman's argument that the null object construction is VPE in disguise in Japanese, Hoji (1998), Oku (1998), and Tomioka (1998) argue against the VPE analysis of the sloppy reading in the null object construction. Hoji argues that the null object is *pro*, and the null argument is pragmatically recovered. Oku points out that the sloppy identity reading is also available for null subjects in Japanese, and argues that VPE is not necessarily responsible for the sloppy readings. Tomioka argues that *pro* is sometimes a pronoun of "laziness". "Laziness" is used to describe a property of pronouns that allows them to refer to a closely preceding referent as illustrated in (8) below.

(8)   A man who$_1$ gives his$_1$ paycheck to his wife is wiser than a man who$_2$ gives it ($\neq$ his$_1$ paycheck, =his$_2$ paycheck) to his cat.

These arguments are concerned with the source of the sloppy reading in Japanese. The sloppy reading is used as strong evidence for Otani and Whitman's claim that the Japanese null object construction is VPE in disguise. Therefore, the arguments against the source of the sloppy reading leads to the argument against the VPE analysis of the null object construction. In the current study, I discuss Japanese VPE setting the sloppy reading aside.

2.   Japanese VPE in This Study

In (1b) and (1c), which I claim as Japanese VPE, the copula *da* appears. In standard Japanese, the copula is always preceded by nominals, and VP cannot be immediately followed by the copula, as seen in (9).

(9)   * Mary-ga   sushi-o   taberu   **da**.
         -NOM   -ACC   eat   COP

In order to account for the appearance of the copula, inspired by Hiraiwa and Ishihara's (2002) analysis of Japanese Sluicing, I claim that *No-da* 'It's that' Focus Construction is the underlying construction for Japanese VPE. In *No-da*

Focus Construction, the entire main clause is nominalized by the nominalizer *no* and the copula *da* follows, as seen in (10).

(10)   [$_{CP}$ [$_{TP}$ Mary-ga [$_{VP}$ sushi-o   taberu]] **no**]   **da**.
                    -NOM   -ACC   eat   C   COP
       'It's that Mary eats sushi'

The whole nominalized clause is focused in this construction. Thus, in (10), the entire clause, *Mary-ga sushi-o taberu* 'Mary eats sushi', is focused.

　　Also, adopting Rizzi's (1997) structure of the left periphery, I propose that topics and focused elements can move out to the left periphery CP-domain from the underlying *No-da* Focus Construction in order for a focused element to be more prominent. Rizzi's thought of the structure of the left periphery, that is, the complementizer system, is illustrated in (11)[2]. I argue that, in Japanese, topics and the prominent focused items overtly move to Spec of TopP and Spec of FocP, respectively. Rizzi describes the complementizer system as the interface between a propositional content and a higher structure, such as, a higher clause or discourse articulation. Since VPE does not occur without discourse context, specifically, linguistic antecedents, the idea of the CP-domain as discourse articulation fits the structure of VPE.

(11)   ForceP

        Force^0 TopP

              Topic   FocP

                 Top^0
                      Focus   FiniteP

                          Foc^0
                                 Fin^0 TP
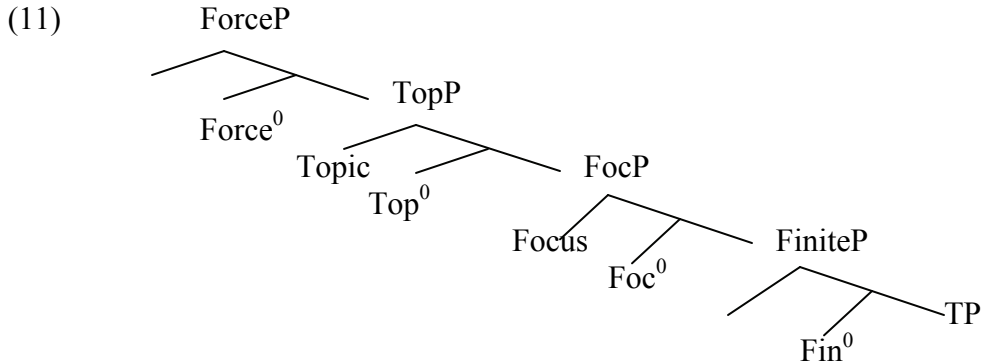
　　Considering *No-da* Focus Construction and the left periphery structure, the underlying constructions and the derivation for (1b) and (1c) are (12b) and (12c), respectively.

---

[2] According to Rizzi, the complement of Top^0 is the comment, that is, new information, and the complement of Foc^0 is the presupposition, that is, given information. Rizzi, therefore, assumes that TopP can be recursive, while FocP cannot. In this paper, however, only overtly expressed TopP appears in the diagram.

(12)a. John-wa   sushi-o   tabe.ru.
       -TOP   -ACC   eat.PRESENT

b. Mary-mo$_i$ [$_{CP}$ [$_{TP}$ t_i [$_{VP}$ sushi-o   tabe.ru]]   no]   da.
      -also   -ACC   eat.PRESENT C   COP

c. Bill-wa$_i$ zenzen$_j$ [$_{CP}$ [$_{TP}$ t_i [$_{NEG}$ [$_{VP}$ t_j sushi-o tabe.nai]]] no] da.
      -TOP   at all   -ACC eat.NEG   C   COP

The tree diagram (13) schematically illustrates the derivation of (12b)[3]. The operation is structurally CP ellipsis. However, the motivation of the ellipsis is to elide a redundant VP, thus, I refer to this phenomenon as VP ellipsis in this study.

(13)
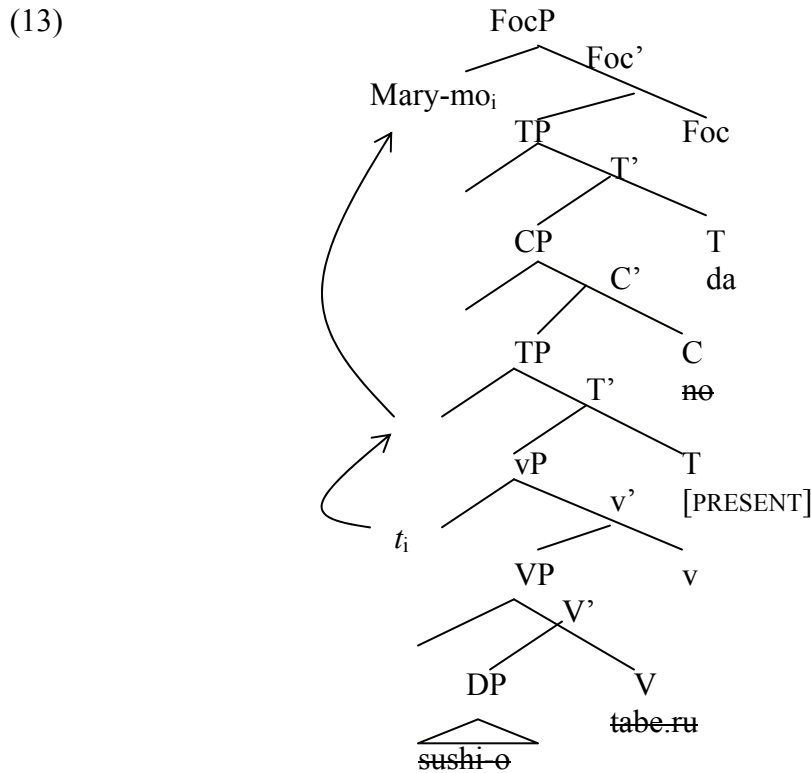
Kim and Sohn (1998) discuss a Korean structure similar to (1b) in relation to VPE. They refer to these structures in Korean and Japanese as Pseudo-VPE. The Korean Pseudo-VPE is illustrated in (14).

---

[3] Hiraiwa and Ishihara claim that the copula *da* is the head of FocP. However, in this study, since the copula carries tense, I assume that there is a TP layer where the copula is generated between the CP and the FocP.

(14) John-i   sakwa-lul   meke   (kuliko)   MARY-to [e]   ya.
       -Nom   apple-Acc   eats   and   -Foc   is
      'John eats apples, and MARY does too'
      (Kim and Sohn 1998:460)

They claim, within a minimalist framework, that the focused item with the strong [+focus] feature moves to Spec of FocP to check its [+focus] feature. In their analysis, they argue that the copula *ya* in Korean and *da* in Japanese support the stranded tense after the remnant deletion occurs. However, in Japanese VPE, the tense of the copula and the tense of the elided VP can be different, as seen in (15b).

(15)a. John-wa   sushi-o   tabe.ta.
           -TOP   -ACC   eat.PAST
        'John ate sushi'
    b. Mary-mo$_i$ [~~$_{CP}$ [$_{TP}$ t_i [$_{VP}$ sushi-o   tabe.ta]]   no~~] da.
           -also   -ACC   eat.PAST   C   COP.PRESENT
        'Mary did too'

In (15), the tense of the antecedent VP in (15a) and the tense of the elided VP in (15b) are PAST, while the tense of the copula in (15b) is PRESENT. This shows that the copula in the Japanese VPE does not play the role as Kim and Sohn claim.

3.   Licensing Conditions and Identity Conditions

Studies on English VPE have been discussing two issues extensively; the licensing conditions – that is, under what condition ellipsis can occur – and the identity conditions – that is, how the missing items are recovered. Among the widely accepted elements that can license English VPE are: the morphologically realized head, such as, auxiliaries, including modals, *have*, *be*, and *do* (Bresnan 1976), X^0 specified for strong agreement (Lobeck 1995), and Neg^0 (Potsdam 1997).

The debate on the identity conditions has been between proponents of syntactic analysis and semantic analysis. The syntactic analysis claims that ellipsis involves syntactic representation at some point, either at PF or LF. There are two approaches in the syntactic analysis: PF-deletion approach and LF-reconstruction approach. The PF-deletion approach claims that the ellipsis site has a syntactic structure, but it is not overtly pronounced (Tancredi 1992, Fox 2000, among others). LF-reconstruction approach claims that the ellipsis site does not have syntactic structure, but it involves syntactic recovery at LF (Williams 1977, Fiengo and May 1994, among others). On the other hand, the semantic analysis argues that the elided site does not have syntactic representation at all, either at PF or LF (Dalrymple, Shieber and Pereira 1991, Hardt 1999, among others).

In what follows, I examine the licensing conditions (Section 3.1) and the identity conditions (Section 3.2) for Japanese VPE.

3.1. Licensing Conditions for Japanese VPE

I claim that items that can determine the negation of the clause can license Japanese VPE. For example, *-mo* 'also' can determine the negation in relation to the preceding sentence. *Zenzen* '(not) at all' determines the negation of the clause regardless of the negation of the preceding sentence. Thus, both can precede an ellipsis site.

3.1.1. Licensor *-mo* 'also': [α neg]

According to the negation of the preceding sentence, *-mo* 'also' can determine the negation of the clause. That is, if the preceding sentence is positive, the sentence that contains *-mo* is also positive, as seen in (16).

(16)a. John-wa   sushi-o   tabe.ru.
      -TOP   -ACC   eat.PRESENT   [- neg]
      'John eats sushi'
  b. Mary-**mo**   sushi-o   tabe.ru.
      -also   -ACC   eat.PRESENT
      'Mary eats sushi too'

If the preceding sentence is negative, the sentence that contains *-mo* is also negative, as seen in (17).

(17)a. John-wa   sushi-o   tabe.na.i.
      -TOP   -ACC   eat.NEG.PRESENT [+ neg]
      'John doesn't eat sushi'
  b. Mary-**mo**   sushi-o   tabe.na.i.
      -also   -ACC   eat.NEG.PRESENT
      'Mary doesn't either'

The negation of the clause that contains *-mo* is the same as the one in the previous sentence. Thus, I claim that [α neg] is encoded in *-mo*.

Since *-mo* can determine the negation, which is [α neg] in relation to the previous sentence, the negation of the ellipsis site preceded by *-mo* is recoverable. This is illustrated in (18) and (19). (18) is same as (1b).

(18)a. John-wa   sushi-o   tabe.ru.   'John eats sushi' [- neg]
      -TOP   -ACC   eat.PRESENT
  b. Mary-**mo**   da.   'Mary does too' [- neg]
      -also   COP
(19)a. John-wa   sushi-o   tabe.na.i.   'John doesn't eat sushi' [+ neg]
      -top   -ACC   eat.NEG.PRESENT
  b. Mary-**mo**   da.   'Mary doesn't either' [+ neg]
      -also   COP

The Japanese VPE licensor *-mo* is commonly referred to as a focus marker. Focus markers make elements followed by them prominent. I have been claiming in this paper that focused items can move up to Spec of FocP in the complementizer system, and the remnant can be elided under certain conditions. Therefore, focus markers may seem to be the key to license Japanese VPE. However, the VPE licensing of *-mo* is solely attributed to [α neg] encoded in *-mo*. I demonstrate that not all focus markers can license Japanese VPE in Section 3.1.3.

3.1.2. Licensor *zenzen* '(not) at all': [+neg]

Zenzen '(not) at all' is a Japanese adverbial expression that denotes frequency or quantity, and it is a Negative Polarity Item (NPI) in that it must appear with negation[4], as seen in (20).

(20) John-wa **zenzen** sushi-o {tabe.nai / *taberu}.
      -TOP   at all   -ACC   eat.NEG   eat
    'John {doesn't eat sushi / *eats sushi} at all.'

I observe that this NPI can license Japanese VPE, as seen in (1c), repeated as (21b) here.

(21)a. John-wa   sushi-o   tabe.ru.
        -TOP   -ACC   eat.PRESENT
     'John eats sushi'
   b. Bill-wa   **zenzen**   da.
        -TOP   at all   COP
     'Bill doesn't at all'

I claim that [+ neg] is encoded in *zenzen*, which allows it to license ellipsis. That is, regardless of the negation of the preceding sentence, the ellipsis site preceded by *zenzen* is interpreted as negative.

I note that not all NPIs can license Japanese VPE, as seen in (22). The adverbial expressions in the curly parentheses are NPIs, as shown in (23).

(22)a. John-wa   sushi-o   taberu.
        -TOP   -ACC   eat
   b. Mary-wa   {zenzen/ mattaku/ sappari/ *kessite/ *sukosi-mo/ *amari} da.
        -TOP   at all   at all   at all   at all   a bit-even   much COP
(23)   Mary-wa   {zenzen / mattaku / sappari / kessite / sukosi-mo / amari}
      sushi-o   {tabe.nai / *taberu}.
      'Mary {doesn't eat sushi / *eats sushi} {at all / at all /at all /at all/
      even a bit / much}'

---

[4] When *zenzen* is used with adjectives to denote degree, it sometimes appears with affirmation. This study, however, focuses on the use of *zenzen* with verbs, where it must appear with negation.

My claim is as follows. NPIs that can license ellipsis, such as, *zenzen* 'at all', *mattaku* 'at all', and *sappari* 'at all', are [+ neg]. With them, negation is emphasized because of their [+ neg]. *Kessite* 'at all' also emphasizes negation. However, unlike NPIs with [+ neg], it expresses the person's strong determination. The negation is emphasized by the depiction of how strong the person's determination is, not by [+ neg]. *Sukosi-mo* 'even a bit' also emphasizes negation. It is a minimizer that denotes a minimal quantity. With *sukosi-mo* in (23), that Mary does not eat even a minimal quantity of sushi is expressed. That is, the emphasis is inferred semantically/pragmatically. *Amari* 'much', which is an attenuating NPI in Israel's (2001) term, makes the negative statement weaker, thus, we can assume that it is not semantically negative.

3.1.3. Focus Markers That Cannot License Japanese VPE

A focus marker *-mo* can license Japanese VPE, but not all focus markers license ellipsis, as seen in (24).

(24)a. Minna   sushi-o   tabe.ta
        everybody   -ACC   eat.PAST
        'Everybody ate sushi'
    b.* Mary-**sae**   da.
            even   COP
      '(intended reading) Even Mary did'

Since *-sae* 'even' cannot determine the negation of the clause, it cannot license ellipsis. This indicates that being focused is not the key; rather, being able to determine the negation is the key to the Japanese VPE.

There is other evidence for the significance of the negation. The Japanese topic marker *-wa* is referred to as a contrast marker in a certain context (Kuno 1973). Elements followed by *-wa* contrast with elements in the preceding sentence, which results in making the element with *-wa* prominent. Thus, it is also referred to as a focus marker. The use of the contrast marker *-wa* is illustrated in (25).

(25)a. John-wa   sushi-o   taberu.
            -TOP   -ACC   eat
        'John eats sushi'
    b. Mary-**wa**   sushi-o   tabe.nai.
        -CONTRAST   -ACC   eat.NEG
        '(In contrast,) Mary doesn't eat sushi.'

In (25), the contrast in negation occurs, that is, (25a) is affirmative while (25b) is negative. This results in the appearance of the contrast marker *-wa*. However, the contrast is not always between negation and affirmation. Thus, *-wa* does not always predict the negation of the clause. This is illustrated in (26).

(26)a. John-wa   sushi-o   taberu.
            -TOP   -ACC   eat
        'John eats sushi'
   b. Mary-**wa**   teriyaki-o   taberu.
            -CONTRAST   -ACC   eat
        'Mary eats teriyaki'

In (26), the contrast is between what they eat, but not in negation. This indicates that -*wa* cannot determine the negation of the clause. For this reason, -*wa* cannot license Japanese VPE, as seen in (27), which is intended to be the ellipsis counterpart of (25).

(27)a. John-wa sushi-o taberu.
            -TOP   -ACC   eat
        'John eats sushi'
   b.* Mary-**wa**   da.
            -CONTRAST   COP
        '(intended reading) Mary doesn't'

These ungrammatical examples seen above indicate that being focused or contrasted is not the primary key to licensing Japanese VPE. Instead, whether or not the element can determine the negation of the clause is the key. They also show that the copula *da* is not solely responsible for Japanese VPE.

3.2   Identity Conditions

In this study, I claim that Japanese VPE is a consequence of PF-deletion, and it is allowed under syntactic identity. In what follows, evidence for PF-deletion is provided. I also discuss how VPs are deleted and recovered in Japanese VPE.

3.2.1   PF-deletion under Syntactic Identity

Assuming NPIs are licensed at a syntactic level, I argue that the fact that *zenzen* is overtly expressed is the indication of the appearance of the negation marker at PF. That leads to my claim that Japanese VPE is considered to be a result of PF-deletion.

Additional evidence for the PF-deletion analysis is as follows. I observe that Japanese VPE is not allowed without linguistic antecedent, as seen in (28).

(28)   [Seeing John is eating sushi…]
   # Watashi-mo   da.
        I-also   COP.PRESENT
        '[intended reading] I'm going to eat sushi too'

In Hankamer and Sag's (1976) work on what controls anaphora, they discuss two types of anaphora; Surface Anaphora, which is syntactic controlled anaphora, and Deep Anaphora, which is pragmatic controlled anaphora. Surface Anaphora requires a linguistic antecedent, while the meaning of Deep Anaphora can be recovered pragmatically. According to their classification, Japanese VPE is Surface Anaphora: it requires a linguistic antecedent. Following their claim that Surface Anaphora involves syntactic deletion, I argue that Japanese VPE involves syntactic deletion. English VPE also exhibits the same property (Hankamer and Sag 1976).

3.2.2. Deletion and Recovery

In this section, I demonstrate how the deletion of VP occurs, and how the elided VP is recovered taking ellipsis involving *zenzen* as an example. I argue that in a sentence where a semantically negative NPI (e.g., *zenzen*) appears, the negation marker *-nai* is always a candidate for deletion because of the semantic redundancy of [+ neg]. However, since *–nai* is bound to the verb in Japanese, it cannot be elided leaving VP as shown in (29).

(29) * Mary-wa **zenzen** sushi-o tabe-[*e*]. (*e* = nai)

Thus, for ellipsis like (1c) to occur, two conditions have to be satisfied: there is a linguistic antecedent; the NPI is semantically negative. This is illustrated in (30).

(30)a. John-wa sushi-o taberu. ← *Linguistic antecedent*

  b. Mary-wa$_i$ **zenzen**$_j$ [$_{CP}$ [$_{IP}$ t_i [$_{NEG}$ [$_{VP}$ t_j sushi-o tabe nai]]] no] da.

Semantic redundancy of negation

Following Rooth (1992), I consider ellipsis to be a device expressing redundancy. Recovery of the elided VP in (30b) works as follows. Ellipsis followed by the copula *da* indicates that there are syntactic and/or semantic redundancies. The VP, *sushi-o taberu* 'eat sushi', is available from the preceding clause in (30a), and *zenzen*, where [+ neg] is encoded, adds the negation to the VP. Thus, *Mary doesn't eat sushi* is recovered.

4. Summary

This study examined the Japanese phenomenon where VPs are not overtly expressed but are recoverable. The property is shared with English VPE and the phenomenon is considered to be VPE. I argued that *No-da* Focus Construction is the underlying construction of Japanese VPE. I also argued that Japanese VPE undergoes focus movement: focused elements can move up to Spec of FocP in the structure of the left periphery and the remnant can be deleted. I claimed that items that can determine the negation of the clause, such as, *-mo* 'also' and *zenzen* '(not)

at all' can license Japanese VPE, and that PF-deletion is involved. I also demonstrated how VPs are elided and recovered.

References

Bresnan, Joan. 1976. On the Form and Functioning of Transformations. *Linguistic Inquiry* 7:3-40.

Dalrymple, Mary, Stuart M. Shieber, and Fernando C. N. Pereira. 1991. Ellipsis and Higher-order Unification. *Linguistics and Philosophy* 14:399-452.

Fiengo, Robert and Robert May. 1994. *Indices and Identity*. Cambridge, Massachusetts: MIT Press.

Fox, Danny. 2000. *Economy and Semantic Interpretation*. Cambridge, Massachusetts: MIT Press.

Hankamer, Jorge and Ivan Sag. 1976. Deep and Surface Anaphora. *Linguistic Inquiry* 7:391-426.

Hardt, Daniel. 1999. Dynamic Interpretation of Verb Phrase Ellipsis. *Linguistics and Philosophy* 22: 187-221.

Hiraiwa, Ken and Shinichiro Ishihara. 2002. Missing Links: Cleft, Sluicing, and "*No da*" Construction in Japanese. *MIT WP in Linguistics* 43:35-54.

Hoji, Hajime. 1998. Null Object and Sloppy Identity in Japanese. *Linguistic Inquiry* 29:127-152.

Israel, Michael. 2001. Minimizers, Maximizers and the Rhetoric of Scalar Reasoning. *Journal of Semantics* 18:297-331.

Kim, Jeong-Seok and Keun-Won Sohn. 1998. Focusing Effects in Korean/Japanese Ellipsis. *Japanese/Korean Linguistics* 8:459-470.

Kuno, Susumu. 1973. *The Structure of the Japanese Language*. Cambridge, Massachusetts: MIT Press.

Lobeck, Anne. 1995. *Ellipsis: Functional Heads, Licensing and Identification*. Oxford: Oxford University Press.

Oku, Satoshi. 1998. LF Copy Analysis of Japanese Null Arguments. *Chicago Linguistic Society* 34:299-314.

Otani, Kazuyo and John Whitman. 1991. V-raising and VP-ellipsis. *Linguistic Inquiry* 22:345-358.

Potsdam, Eric. 1997. NegP and Subjunctive Complements in English. *Linguistic Inquiry* 28:533-540.

Rizzi, Luigi. 1997. The Fine Structure of the Left Periphery. In L. Haegeman, ed., *Elements of Grammar: Handbook in Generative Syntax*, 281-337. Dordrecht: Kluwer Academic Publishers.

Rooth, Mats. 1992. Ellipsis Redundancy and Reduction Redundancy. In S. Berman and A. Hestvik, eds., *Proceedings of the Stuttgart Ellipsis Workshop*, 1-26. Stuttgart: Universities of Stuttgart and Tübingen, and IBM Germany.

Sag, Ivan. 1976. Deletion and Logical Form. Ph.D. diss., MIT.

Tancredi, Christopher. 1992. Deletion, Deaccenting, and Presupposition. Ph.D. diss., MIT.

Tomioka, Satoshi. 1998. The Laziest Pronouns. *Japanese/Korean Linguistics* 7:515-531.

Williams, Edwin S. 1977. Discourse and Logical Form. *Linguistic Inquiry* 8:101-139.

Michiko Todokoro Buchanan
University of Minnesota
Linguistics
214 Nolte Center
315 Pillsbury Drive S.E.
Minneapolis, MN 55455

buch0119@umn.edu

Multiple Exponence of Derivational Morphology in Rarámuri (Tarahumara)[*]

GABRIELA CABALLERO
University of California, Berkeley

1.   Background

Theories of structural complexity and blocking (Anderson 1992, Andrews 1990) are challenged by the existence of Multiple Exponence (ME), a one-to-many mapping between a (morphological) category and its formal expression (Matthews 1972). Cases of ME, however, are well attested (e.g. agreement in Potawatomi (Anderson 1992), negation in Luganda (Peterson 1994), negation and agreement in Limbu (van Driem 1997)), and have been argued to support realizational theories of morphology and syntax. In these theories, morphosyntactic features are transferred and realized morphologically in several ways in the language (Matthews 1972, Stump 2001, Sells 2004); this entails that ME might be exhibited by inflectional categories, but not by categories that do not involve transfer of morphosyntactic features, such as argument structure changing operations.

Given the recursivity property of derivational morphology (Booij 2000), a derivational process may apply to a stem previously derived through the same process. In Rarámuri (Tarahumara), a causative stem may be causativized a second time, adding a second causer argument, as shown in (1b):[1]

[1] Abbreviations: A - Accusative; APPL – Applicative; CAUS – Causative; CAUS.IND - Indirect Causative; COP – Copula; COMP – Complementizer; DEM – Demonstrative; DESID – Desiderative; DUB – Dubitative; EV - Evidential; FUT.SG - Future sg; FUT.PL - Future Pl; FUT.PASS - Future Passive; HAB.PASS – Habitual Passive; INCH – Inchoative; INT – Intensive; MOT - Associated

(1) a.   ne   mi   biné   **-ri**   -ma   wikará
              1SGN 2SGA LEARN   **-CAUS** -FUT.SG   SING
              'I will make you learn (I'll teach you) how to sing'
              [[learn] + CAUS = teach]

    b.   nihé mi   biné **-r**   **-ti**   -ki   kúruwi
              1SGN 2SGA LEARN **-CAUS -CAUS** -PST:1 CHILDREN
              'I made you teach the children'
              [[[learn] + CAUS = teach] + CAUS = make teach]

However, Rarámuri also displays multiple formal instances of the same derivational process with no parallel semantic recursivity, as shown in (2).

(2)   nihé mi   rikú   **-r**   **-ti**   -ma
              1SGN 2SGA   GET.DRUNK   **-CAUS -CAUS** -FUT.SG
              'I will make you get drunk' (*'I will make you make her drunk') [2]

The example in (2) constitutes ME, since a single morphological category (one causer argument) is formally introduced by two exponents (two causative allomorphs).

    This paper makes an empirical contribution by introducing several patterns of ME in Rarámuri, which crucially involve derivational information.[3] This paper also shows that ME in Rarámuri targets categories in specific areas of the layered structure of the verb with characteristic morpho-prosodic properties which make them difficult to parse and prone to be reanalyzed as part of the stem. Specifically, I argue that the opaque inner morphological markers generate a morphological constituent that requires further affixation.

2.   Rarámuri Verb Structure

Rarámuri is an agglutinative, mostly suffixing Uto-Aztecan language spoken in the Mexican State of Chihuahua by about 75,000 speakers.[4] Figure 1 shows the relative order of the suffixes of the Rarámuri verb.[5] The "inner stem" is the input to suffixation, where lexicalized and unproductive or semi-productive processes take place.

Motion; N – Nominative; PARTC – Participle; PRES – Present; PST – Past; PST:1 - Past 1st person; TR – Transitive; TR.PL – Transitive Pluractional.

[2] There are no case markers in this language and there is no pronominal form for third person.

[3] The characterization of Rarámuri's suffixes as derivational or inflectional was based on criteria such as generality/productivity, obligatoriness, recursivity and sensitivity to grammatical environment (Bybee 1985, Bickel & Nichols 2001).

[4] This paper presents data of the Rarámuri dialect spoken in Choguita, municipality of Guachochi. The data were obtained through my field research in this community from 2003 to 2007.

[5] Ordering facts that partially motivate this organization are shown in the Appendix.

Figure 1 – Suffix positions and categories expressed in the Rarámuri verb

[Inner stem] S1   S2   S3   S4   S5   S6   S7   S8   S9   S10   S11
             INCH TR APPL MOT CAUS APPL DESID EV   TAM TAM Subord.

This scheme does not imply a slot-and-filler, template-like structure. The verb has a layered, hierarchical structure that can be divided into stem levels, determined by morphophonological properties, such as back harmony and stress shifts. The morphological processes taking place closer to the root are tighter phonologically to the root than later morphological process. This is schematized in Figure 2.

Figure 2 – Rarámuri verbal stem levels and their morphophonology

		S1 S2	S3 S4 S5 S6	S7 S8 S9 S10	S11
Stem levels	Inner Stem	Derived Stem	Syntactic Stem	Finite Verb	Subord. Verb
Morphophono-logical processes	Compensatory lengthening				
	Stress shift				
	Back harmony				

Stress is assigned in either the first, second or third syllable, on either the root or on suffixes that are cohering prosodically with the stem (there is an initial three-syllable stress window (Caballero 2005)). The stress behavior of suffixes is schematized in Figure 3:

Figure 3 – Rarámuri verbal stem levels and stress behavior of suffixes

[[[[[**Inner Stem**] S1 S2 **Derived**] S3 S4 S5 S6 **Syntactic**] S7 S8   S9 S10 **Finite**] S11 **Sub.**]

     Cohering   Non-Cohering   Cohering   Non-Cohering

The syntactic stem (S3-S6) constitutes an intermediate zone: it is the domain of only one phonological process (back harmony), its suffixes are non-cohering, and causative *–ti* and applicative *–ki* (in S5 and S6) display ME, as it will be discussed in §3.3 and §3.4.

3. Multiple Exponence in the Rarámuri Verb

ME in this language is formally expressed in several ways:[6]

---

[6] Similar patterns are documented for a closely related language, Highland Guarijío (Miller 1996).

a) Prefixation and stem consonant mutation to mark intensive aspect (§3.1).
b) Applicative stems that redundantly take applicative suffixes (§3.2).
c) Multiple suffixation of causative and applicative suffixes with no parallel semantic recursivity (§3.3 and §3.4).

Though patterns (a) and (b) are not uncommon cross-linguistically, to my knowledge there are only a few documented cases of pattern (c) for derivational morphology.[7]

3.1. Prefixation and Medial Consonant Mutation in the Intensive

Rarámuri "intensives" (pluractionals) indicate in the verb a plural subject, or an action that occurs or is being performed by several agents or by the same agent several times (Lionnet 1968). Intensives, appearing frequently in text but of receding productivity, are marked through prefixation (a), consonant mutation (b), or marked through both prefixation and consonant mutation (c-d).[8]

			Intensive	
(3)	a.	čóni	o-čóni	'to become black'
	b.	ka**p**órame	ka**b**órame	'to be round'
	c.	ki**p**á	i-ki**b**á	'to snow'
	d.	**b**ahí	a-**p**ahí	'to drink'

The forms with both prefixation and consonant mutation do not have alternative forms with a single exponent for the intensive.

3.2. Applicative Stems Adding Applicative Suffixes

Another ME pattern involves applicative stems. There are unaccented and accented roots and stress-perturbing and stress-neutral suffixes in Rarámuri. Stress-perturbing suffixes trigger stress shifts and vowel alternations with unaccented stems. Unaccented stems have a valence stem allomorphy system (schematized in Table 4): applicative stems are formed by replacing the final stem vowel with a stressed front vowel (e.g., (4c)).

Table 4 – Valence stem allomorphy

Intransitive	*Transitive*	*Applicative*	
-	ori-/orá	orí	'cut grains from cob'
-	iči-/ičá	ičí	'plant'
noko/noká	-	noké	'move'
suwí	suwá	suwé	'run out/finish up'

---

[7] Similar cases are found in Bantu (e.g., causative doubling in Jita (Downing 2005), Kinande (Mutaka and Hyman 1990), and Bemba (Hyman 1994)).
[8] The prefix (originally *i-*) assimilates in color with the first stem vowel (Lionnet 1968).

(4) a.   nihé   ba'arí   **iči**   -méa   muní
          1SGN   TOMORROW   PLANT -FUT.SG   BEANS
          'I will plant beans tomorrow'

    b.   nihé   sunú **ičá** -ki   rapáko
          1SGN   CORN   PLANT -PST:1 YESTERDAY
          'I planted corn yesterday'

    c.   nihé   ba'arí   ne   yé   -ra   **ičí**   -ma
          1SGN   TOMORROW   1SGN MOTHER-POSS PLANT.APPL-FUT.SG
          'I will plant for my mom tomorrow'

These applicative stems might add an applicative suffix in an apparently redundant fashion (e.g. (5b-6b)).

(5) a.   nihé   ba'arí   ne   yé   -ra   **ičí**   -ma
          1SGN   TOMORROW   1SGN MOTHER-POSS **PLANT.APPL**-FUT.SG
          'I will plant for my mom tomorrow'

    b.   nihé   ne   yé   -ra   **ičí**   **-ki** -ma
          1SGN   1SGN MOTHER-POSS **PLANT.APPL**   **-APPL** -FUT.SG
          'I will plant for my mom'

(6) a.   ma   =ni   mi   **suwé**   -ri remé
          ALREADY=1SGN 2SGA **FINISH.UP.APPL**-PST TORTILLAS
          'I already finished (ate) up your tortillas'

    b.   ma   =ni   mi **suwé**   **-ki**   -ri remé
          ALREADY=1SGN 2SGA **FINISH.UP.APPL -APPL** -PST TORTILLAS
          'I already finished (ate) up your tortillas'

There is free variation between the verbal forms that have one applicative marker (5a, 6a) and the forms with two applicative markers (5b, 6b).

3.3.   Multiple Affixation of Causative

The Rarámuri causative suffix adds a causer argument to both intransitive and transitive verbs. The causative suffix has two allomorphs, *-ti* (7a) and *–ri* (7b).[9] The distribution of the allomorphs is largely unpredictable, but following general rules of allophony in the language, the allomorph with the voiceless onset (*–ti*) is used post-consonantally. In (7c) post-tonic vowel deletion yields an environment in which the onset of the causative is voiceless.

---

[9] All suffixes with a stop onset display this allomorphy.

(7) a.   ne   mi   napá **-ti**   -ma   ta   múchi
          1SGN 2SGA HUG **-CAUS** -FUT.SG DEM BABY
          'I will make you hug the baby'

    b.   ne   mi   pewá **-ri**   -ma   bahí   -wa   -chi
          1SGN 2SGA SMOKE **-CAUS** -FUT.SG DRINK -HAB.PASS -LOC
          'I will make you smoke at the drinking party'

    c.   ti   michípiri tamí láan **-ti**   -ki *lán-ri-ki
          /ti   michípiri tamí láni **-ti**   -ki
          DEM SPLINTER 1SGA BLEED **-CAUS** -PST
          'the splinter made me bleed'

A very productive pattern of ME in Rarámuri involves repetition of the causative suffix, where post-tonic vowel deletion yields non-identical allomorphs of the causative suffix, as shown in (8).[10]

(8)   á   =mi tamí mé   **-r**   **-ti**   -ma?
       AFF   =2SGN 1SGA WIN   **-CAUS** **-CAUS** -FUT.SG
       'will you make me win?'

The possibility of having ME of the causative is conditioned by the position of stress and post-tonic vowel deletion. There are stems that have final or pre-final stem stress depending on tense/aspect morphemes or alternating freely. On these stems, non-final stem stress yields a form with one causative (9a), while final stem stress yields a form with ME (9b).

(9) a.   tamí   <u>ú</u>b   -ti   -ma,   mama?
          1SGA   BATHE -CAUS -FUT.SG   MOM
          'Will you bathe me, mom?'

    b.   tamí   ma   ub<u>á</u> **-r**   **-ti** -ri   ne   yé -ra
          1SGN   ALREADY BATHE-**CAUS**-**CAUS**-PST   1SGN MOM-POSS
          'my mom already bathed me'

The distribution of ME of causatives is consistent with this prosodic generalization: final-stress stems will optionally have ME of the causative (10-11). The forms with one causative freely alternate with forms with two causatives.

(10) a.   ne   mi   mé   **-r**   -ma   orá
          1SGN   2SGA WIN   **-CAUS** -FUT.SG   EV
          'I will make you win'

---

[10] Recall that the two allomorphs are also used with compositional semantics (cf. (1b))

b.   ne   mi   mé   **-r**   **-ti**   -ma   orá
         1SGN   2SGA   WIN   -CAUS   -CAUS   -FUT.SG   EV
         'I will make you win'

(11) a.   muhé ma   tamí haré   wási   ko'í   **-ri**   -ri
         1SGN ALREADY   2SGA   SOME   COWS   KILL   -CAUS   -PST
         'You already made me kill some cows'

b.   ne   mi   haré wási ko'í   **-r**   **-ti**   -ma   orá
         1SGN 2SGA SOME COWS KILL.PL   -CAUS   -CAUS-FUT.SG   CER
         'I will make you kill some cows'

     Stems with non-final stress, on the other hand, where post-tonic vowel dele-tion targets the final vowel of the stem, never display double causative suffixa-tion, as in the examples in (12).

(12) a.   nihé   émi   t<u>é</u>k   **-ti**   -ma   *t<u>é</u>k-r-ti-ma
         /nihé   émi   t<u>é</u>ki   **-ti**   -ma/
         1SGN   2PLA   BE.DRUNK.PL   -CAUS   -FUT.SG
         'I will make you all drunk'

b.   nihé   mi   pan<u>í</u>k   **-ti**   -ma   *pan<u>í</u>k-r-ti-ma
         /nihé   mi   pan<u>í</u>ki   **-ti**   -ma/
         1SGN   2SGA   WASH.HANDS   -CAUS   -FUT.SG
         'I will make you wash your hands'

3.4.   Multiple Suffixation of Applicative

The applicative suffix *-ki* adds a benefactive argument ('to do X for Y'), and, as the causative suffix, it can be doubled with no equivalent semantic compositional-ity (13-14). The forms with one and two applicatives are judged to be semantical-ly equivalent.

(13) a.   ne   mi   semé   **-ki**   -ma   orá   biré   takí
         1SGN   2SGA   PLAY   **-APPL**   -FUT.SG   EV   ONE   SONG
         'I will play one song for you'

b.   ne   mi   semé   **-ki**   **-ki**   -ma   orá   biré   takí
         1SGN   2SGA   PLAY   **-APPL**   **-APPL**   -FUT.SG   EV   ONE   SONG
         'I will play one song for you'

(14) a.   ne   mi   wató   -n   **-ki**   -ma   úle
         1SGN   2SGA   STRETCH   -TR   **-APPL**   -FUT.SG   RUBBER
         'I will stretch out the rubber for you'

b.　　ne　　　mi　　wató　　-n　　**-ki**　　**-ki**　　-ma　　úle
　　　　1sgN　　2sgA　STRETCH -TR　**-APPL**　**-APPL**　-FUT.SG　RUBBER
　　　　'I will stretch out the rubber for you'

Unlike ME of causatives, ME of applicative *-ki* is not prosodically conditioned, and is very restricted and subject to considerable speaker variation.

There are, however, other, less restricted patterns of ME involving applicatives in Rarámuri. Suffixes *–ni* and *–si* introduce benefactive arguments, but are less general and productive than suffix *-ki*. Verbs taking suffixes *–ni* (15) and *–si* (16) can add the more productive suffix *-ki*:

(15) a.　　ne　　　mi　　sú　　**-n**　　-ma　　　　sipúcha
　　　　　1SGN　　2SGA　SEW　**-APPL** -FUT.SG　　　SKIRT
　　　　　'I will sew a skirt for you'

　　　b.　　ne　　　mi　　sú　　**-n**　　**-ki**　　-ma　　　　sipúcha
　　　　　1SGN　　2SGA　SEW　**-APPL**　**-APPL** -FUT.SG　　　SKIRT
　　　　　'I will sew a skirt for you'

(16) a.　　ma　　　　=ni　　mi　　pá　　**-si**　　-ri　　　pelota
　　　　　ALREADY=1SGN 2SGA　THROW **-APPL** -PST　　BALL
　　　　　'I already threw the ball at you'

　　　b.　　ma　　　　=ni　　mi　　pá　　**-si**　　**-ki**　　-ri　　　pelota
　　　　　ALREADY=1SGN 2SGA　THROW **-APPL** **-APPL** -PST　　BALL
　　　　　'I already threw the ball at you'

The examples in (16-17) show that in these cases there is also free variation between the forms with one and two applicative suffixes.

4.　ME as Morphological Transparency

There are, then, several patterns of ME in Rarámuri that involve derivational information (intensive, causative and applicative). What should be accounted for is the fact that ME is restricted to the inner stem and the syntactic stem:

Figure 4 – Rarámuri verbal stem levels and the occurrence of ME
[**Inner stem**] S1 S2 **Derived stem**] **S3** S4 **S5 S6** **Syntactic stem**] S7 S8 S9 S10 **Finite verb**] S11 **Subord.**]
　ME　　　　　　　　　　　　　　ME

What these specific areas of the verb have in common is that the morphological markers that belong in these zones are difficult to parse. According to Hay & Plag (2004), affixes have different degrees of decomposability or parsability in speech perception, and occupy a place along a processing complexity scale. On this account, affixes difficult to parse are less separable affixes with higher

boundary strengths, either because they are less phonologically segmentable, less transparent, less frequent and/or less productive (2004:571).

The morphological markers exhibiting ME in Rarámuri are difficult to parse in two ways: they are either increasingly unproductive (intensive and applicative) or less phonologically segmentable due to a high degree of morphophonological fusion (causative). Thus, the overarching mechanism generating ME in the Rarámuri verb is morphological opacity: ME arises when a morphological marker is difficult to parse and a second round of marking is required for the sake of morphological transparency.

ME in the syntactic stem, a verbal zone with non-cohering suffixes, is prosodically conditioned. As shown in §3.3, ME of the causative suffix depends on stress assignment and post-tonic vowel deletion. Post-tonic vowel deletion targets the nucleus of the causative suffix, making this suffix less phonologically segmentable. Specifically, the inner copy of the causative is getting fused phonologically and reanalyzed as part of the stem; the outer copy is there for morphological transparency. This is shown schematically in Figure 5.

Figure 5 – Reanalysis of causative allomorph

	Post-tonic V deletion:		Reanalysis and further suffixation:
mé-ri-ma -	mé-r-ma	-	mér-ti-ma

The first copy of the causative, reanalyzed as part of the stem, generates a Causative Stem, a morphological constituent that requires further suffixation.

Doubling of applicative suffix *–ki*, on the other hand, seems to arise through analogical extension with the causative. In this case analogical extension is plausible, given the morpho-syntactically relatedness of causative and applicative, and the adjacency of these suffixes in the layered structure of the verb.

Finally, the remaining cases of ME can also be thought of as arising from morphological opacity. In these cases, ME targets categories that are less parsable due to their decreasing productivity. The intensive pattern, which involves prefixation and consonant mutation, is archaic and has been argued to originate in a formerly productive stress pattern with voiceless/fortis onsets of stressed syllables (Lionnet 1972).[11] The applicative patterns, however, are a more recent development: both the applicative stems with vowel alternations and the roots that take the less general applicative suffixes are re-interpreted as requiring the further affixation of the more productive and general applicative suffix *–ki*. There are no

---

[11] The reduplicated forms would have a plosive voicing pattern opposite to that of unreduplicated stems. The loss of the rhythmic pattern, plus leveling of the stress differences between unreduplicated and reduplicated stems, would have then rendered the voicing alternation opaque.

cases of applicative stems that add the less general suffixes *–ni* and *-si*.[12] Only the more productive applicative *-ki* can be attached to an applicative stem.[13]

Since forms displaying ME co-exist freely with forms with no ME, we might consider this phenomenon as a first step in a historical process that has been proposed as the source of ME in Skou (Donahue 1999). In Skou, a language of New Guinea, a series of sound changes (loss of voicing and other contrasts) led to consonant cluster simplifications. These changes affected agreement prefixes, leading to loss of contrast in a large number of verb forms in paradigms. "These factors would appear to be sufficient to bring about a second process of cliticization onto the verb in order to preserve contrastive verbal agreement" (Donohue 2003:493). Similar developments have been proposed for the ME patterns of Limbu, a Kiranti language (van Driem 1997, Anderson 2001).

5.   Some Possible Implications

This case raises the more general issue of the status of derivational morphology for realizational models of morphology, which are founded on the assumption that inflection and derivation belong to different components of the grammar, and thus differ in their formal properties (the 'Split Morphology Hypothesis' (Matthews 1972, Anderson 1992). ME is commonly described for inflection (particularly agreement), but not for derivation. This paper shows that ME can be morphologically conditioned and not constrained to inflection, constituting a possible example of how inflectional and derivational morphology do not differ drastically as to their formal morphological properties.

References

Anderson, Stephen. 1992. *A-morphous Morphology*. Cambridge: Cambridge University Press.
Anderson, Stephen. 2001. On some issues in morpological exponence. In G. Booij & J. Van Marle (eds.), *Yearbook of Morphology 2000,* 1-17. Dordrecht/Boston/London: Kluwer.
Bickel, Balthasar & Johanna Nichols. 2001. Inflectional morphology. To appear in: T. Shopen [ed.] *Language typology and syntactic description*. Cambridge: Cambridge University Press.
Booij, Geert. 2000. Inflection and derivation. In Gert Booij, Christian Lehmann & Joachim Mugdan (eds.), *Morphology*, 360-369. Berlin: Walter de Gruyter.

---

[12] In Guarijío, a closely related language, an applicative stem might co-occur with the applicative suffix *–nie* (cognate to Rarámuri applicative *-ni*): *čuhč-é-nie-na* (LOAD-APPL-APPL-PRES) 'to load (something) over a beast' (Miller 1996:162)
[13] In contrast with other dialects of Rarámuri (cf. Caballero 2003), the variant spoken in Choguita is also innovating the replacement of some causative suffixes exclusive to predicates of change of state with the more general causative suffix *–ti*.

Bybee, Joan. 1985. *Morphology: a study of the relation between meaning and form.* Amsterdam: Benjamins.

Caballero, Gabriela. 2003. Valence and Transitivity Changing Operations in Raramuri. In L. Barragan and J. Haugen (eds.), *MIT Working Papers on Endangered and Less Familiar Languages #5 – Studies in Uto-Aztecan Linguistics*. Cambridge: MIT.

Caballero, Gabriela. 2005. The Stress System of Central Rarámuri: Root Privilege, Prosodic Faithfulness and Markedness Reversals. Ms, University of California, Berkeley. ROA-706.

Donohue, Mark. 2003. Agreement in the Skou Language: a Historical Account. *Oceanic Linguistics* 42:2. 479-498.

Downing, Laura. 2005. 'Jita Causative Doubling Provides Optimal Paradigms'. In L. Downing, T.A. Hall & R. Raffelstein, eds. *Paradigms in Phonological Theory,* 122-144. Oxford: Oxford University Press.

Hay, Jennifer & Ingo Plag. 2004. What constrains possible suffix combinations? On the interaction of grammatical and processing restrictions in derivational morphology. *Natural Language & Linguistic Theory* 22: 565-596.

Hyman, Larry. 1994. 'Conceptual issues in the comparative study of the Bantu verb stem'. In S. Mufwene & L. Moshi (eds.), *Topics in African Linguistics,* 3-34. Amsterdam: Benjamins.

Lionnet, Andrés. 1968. "Los intensivos en tarahumar". Anales del Instituto Nacional de Antropología e Historia. 135-46.

Lionnet, Andres. 1972. Los elementos de la lengua tarahumara. Mexico: Universidad Nacional Autonoma de Mexico.

Matthews, Peter H. 1972. *Inflectional morphology: a theoretical study based on aspects of Latin verb conjugation.* Cambridge: Cambridge University Press.

Miller, Wick R. 1996. *Guarijío: gramática, textos y vocabularios.* Mexico: UNAM, Instituto de Investigaciones Antropológicas.

Mutaka, Ngessimo & Larry Hyman. 1990. 'Syllables and morpheme integrity in Kinande reduplication'. *Phonology* 7: 73-119.

Peterson, David A. 1994. Multiple Exponence and Morphosyntactic Redundancy. In E. Duncan, D. Farkas & P. Spaelti (eds.), *Proceedings of the Twelfth West Coast Conference on Formal Linguistics*.

Sells, Peter. 2004. Syntactic Information and its Morphological Expression. In L. Sadler and A. Spencer (eds.), *Projecting Morphology*. Stanford: CSLI Publications.

Stump, Gregory. 2001. *Inflectional Morphology: A Theory of Paradigm Structure.* Cambridge: Cambridge University Press.

van Driem, George. 1997. A new analysis of the Limbu verb. In D. Bradley (ed.), *Tibeto-Burman languages of the Himalayas*. Volume 14 of of Papers in Southeast Asian Linguistics, 157-173. Camberra: Pacific Linguistics.

Gabriela Caballero
University of California, Berkeley
Department of Linguistics
1203 Dwinelle Hall
Berkeley, CA 94720-2650

gcaballe@berkeley.edu

Appendix: Ordering facts of the Rarámuri verb
INCH (S1) – TR.PL (S2)

nehé	rata	**-bá**	**-ča**	-ma		ko'wá	-ami
1SGN	HEAT	**-INCH**	**-TR.PL**	-FUT.SG		EAT	-PRTC

'I will heat up the food'

TR (S2) – APPL (S3)

ne	mi	moo	**-bú**	**-ni**	-ma		ta	towí	trókači
1SGN	2SGA	GO.UP	**-TR**	**-APPL**	-FUT.SG		DEM	BOY	TRUCK

'I will lift you the boy up into the truck'

APPL (S3) – MOT (S4)

nám	-ta	hu	nápu	ma	tamí	širú	**-n**	**-ši**	-o
HEAR	-PARTC	COP	COMP	ALREADY	1SGA	HUNT	**-APPL**	**-MOT**	-EV

'It sounds like (they) are already hunting it for me'

MOT (S4) – CAUS (S5)

mi	=ni	wikará	**-si**	**-ti**	-ma		orá	sumá	bu'uchí
2SGA	=1SGN	SING	**-MOT**	**-CAUS**	-FUT.SG		EV	ALL	ROAD

'I will make you go singing all the way'

CAUS (S5) – APPL (S6)

mi	=n	Patricio	soda	raríi	-r	**-ti**	**-ki**	-ma		orá
2SGA	=1SGN		SODA	BUY	-CAUS	**-CAUS**	**-APPL**	-FUT.SG		EV

'I will make you buy soda for Patricio'

APPL (S6) – DESID (S7)

ne	mi	biré	wási	mi'rí	**-ki**	**-niri**	muhé	omáwarachi
1SGN	2SGA	ONE	COW	KILL	**-APPL**	**-DESID**	2GNN	PARTY

'I want to kill one cow for you, for your party'

DESID (S7) – EV (S8)

ne	ko	mayé	ma		bahí	**-ni**	**-čin**	-o
1SGN	EMPH	THINK	ALREADY		DRINK	**-DESID**	**-EV**	-EV

'I think it sounds like they already want to drink (start the drinking party)'

Disambiguation Strategies in Across-the-Board Wh-Questions

BARBARA CITKO
University of Washington

0. Ambiguity of ATB Wh-Questions

Across-the-board wh-questions are considered to be ambiguous between so-called single individual and pair list readings. The two readings are best distinguished by the types of answers such questions allow. For example, (1a) can either be a question about a single quantity of books, or about two distinct quantities, as shown by the availability of the answers in (1b) and (1c).[1]

(1) a. *How many books$_i$ did John like t_i and Mary dislike t_i?*
     b. Seven.
     c. John liked 5 books and Mary disliked 8 books.

On the copy theory of movement of Chomsky (1995), which treats movement as a sequence of three operations (*Copy*, *Merge*, and *Delete*), the availability of these two interpretations can be reduced to the issue of which copy (or copies) are deleted at LF. The two possible derivations of (1a), corresponding to the two interpretations, are schematized in (2a-c) and (3a-c), respectively. Both involve deletion of the lower two copies at PF, illustrated in (2b) and (3b). The two differ, however, with respect to which copies delete at LF. If the two lower copies delete, the result is a single individual reading, given in (2c), in which the fronted wh-phrase has wide scope with respect to the conjunction. If the higher copy deletes,

---

[1] There is a preference for single individual readings, which has to do with the blocking effect induced by the availability of CP coordination alternative, given in (i), which is unambiguously interpreted as pair list.
(i) *How many books$_i$ did John like t_i and how many books$_j$ did Mary dislike t_j?*
The availability of pair list readings in ATB questions becomes more apparent in examples of the following sort:
(ii) *Which of his victims$_i$ did Bill kill t_i on Tuesday and Fred kill t_i on Wednesday?*
(iii) Bill killed his first victim and Fred killed his second.
(iv) Bill killed Bruno and Fred killed Arno. (Munn 1999:422)

the result is a pair list reading, given in (3c), in which the wh-phrase has narrow scope with respect to the conjunction.

(2) a. Copy and Merge *how many books* in [Spec,CP]:
        [CP *How many books* did [&P [TP John like *how many books*] and [TP Mary dislike *how many books*?]]]
     b. Delete lower copies at PF:
        [CP *How many books* did [&P [TP John like ~~*how many books*~~] and [TP Mary dislike ~~*how many books*~~?]]]
     c. Delete lower copies at LF:
        [CP *How many books* did [&P [TP John like ~~*how many books*~~] and [TP Mary dislike ~~*how many books*~~?]]] (*single individual reading*)

(3) a. Copy and Merge *how many books* in [Spec,CP]:
        [CP *How many books* did [&P [TP John like *how many books*] and [TP Mary dislike *how many books*?]]]
     b. Delete lower copies at PF:
        [CP *How many books* did [&P [TP John like ~~*how many books*~~] and [TP Mary dislike ~~*how many books*~~?]]]
     c. Delete upper copy at LF:
        [CP ~~*How many books*~~ did [&P [TP John like *how many books*] and [TP Mary dislike *how many books*?]]]   (*pair list reading*)

This is by no means the only way to account for the ambiguity of ATB questions. However, since my main focus in this paper is not on what allows both readings, but on what factors disambiguate toward one reading over the other, I will refrain from comparing the copy deletion based account schematized here to more semantic alternatives, such as Munn's (1999) account, which assimilates pair list readings to functional readings, or Gawron and Kehler's (2003) account, which derives pair list readings from the presence of an implicit *RESP* operator, thus assimilating them to coordinate structures containing the adverb *respectively.*

Instead, I will examine two factors that disambiguate toward either a single individual or a pair list interpretation of ATB questions. One involves the choice of the coordination strategy, and the other one left branch extraction. I will focus on Polish, a West Slavic language, which differs from English in three relevant respects. First, unlike English, it allows the correlative coordination *both ... and* with clausal conjuncts:[2] [3]

---

[2] Polish is not unique in this respect. Johannessen (2005) shows that Norwegian, Icelandic, Greek, and Dutch behave similarly.

[3] All correlative coordination strategies in Polish involve repetition of the relevant conjunction:

(i)   *i*   Jan *i*   Maria
       and Jan and Maria
       'both Jan and Maria'

(4)   a.   * *Both* John laughs *and* Mary smiles.   (Larson 1985:237)

        b.   I Jan się śmieje i Maria się śmieje.

            and Jan REFL laughs and Maria REFL laughs

            'Jan laughs and Maria laughs'

Second, unlike English, Polish allows left branch extraction:

(5)   a.   * *How many$_i$* did you read t_i books?

        b.   *Ile$_i$*   książek t_i przeczytałaś?

            how-many books   read.2sg

            'How many books have you read?'

And third, Polish has an 'extra' conjunction marker, the so-called contrastive conjunction, which creates extra interpretive possibilities in ATB questions. The conjunction in question is *a,* glossed as *and$_C$*, which is distinguished from the consecutive conjunction *i*, which marks temporal sequence. English uses the same conjunction to express both contrast and temporal sequence, which has been shown by Malchukov (2004) to be quite common from a typological perspective.[4]

(6)   a.   Poszedł do sklepu *i/ *a*   kupił chleb.

            went   to   store and and$_C$ bought bread

            'He went to the store and bought some bread.'

        b.   Jan poszedł do sklepu *a/ *i*   Maria pojechała do kina.

            Jan went   to store and$_C$/and Maria went   to cinema

            'Jan went to the store and Maria to the movies.'

The contrastive nature of the Polish conjunction *a* is further shown by the fact that it is required in cases of coordinate ellipsis, such as gapping or right node raising.[5]

(ii)   *albo* Jan *albo* Maria

        or   Jan or Maria

        'either Jan or Maria'

(iii)   *ani* Jan *ani* Maria

        nor Jan nor Maria

        'neither Jan nor Maria'

[4] In cases such as the ones given in (i-ii), in which there is no overtly expressed contrast, there is an implicit one.

(i)   Znikał   na całe tygodnie, *a*   nawet miesiące.

       disappeared for whole weeks,   and$_C$ even   months

       'He would disappear for whole weeks, and even months.'

                           (The IPI PAN Corpus of Polish)

(ii)   Słoń   *a*   sprawa polska

       elephant and$_C$ question Poland

       'The elephant and the Polish issue'   (Robert Rothstein, p.c.)

Frajzyngier (1985) shows that it can also be used as a switch reference marker.

[5] Ellipsis is well-known to require its remnants to be contrastively focused (see Hankamer 1971, Jackendoff 1971 for early observations of this requirement).

(7)   a.   Maria czyta książki **a/ *i**   Ania opowiadania.
                 Maria reads books and$_C$ and Ania stories
                 'Maria reads books and Ania stories.'
    b.   Jan przeczytał **a/ *i**   Maria zrecenzjonowała ten artykuł.
                 Jan read   and$_C$ and Maria reviewed   this article
                 'Jan read and Maria read this article.'

In the remainder of this paper, I turn to the issue of how the choice of coordination strategy and left branch extraction affect the interpretation of ATB questions. I will proceed as follows. In Sections 1 and 2, I will show that correlative coordination disambiguates toward a single individual reading and left branch extraction disambiguates toward a pair list reading. And in Section 3, I will propose an account which derives these two generalizations from two independent factors: the status of the correlative *both* as a focus particle, and the fact that focus particles cause intervention effects.

1.   Conjunction Strategies in Polish ATB Questions

All three conjunctions strategies discussed in the previous section, namely consecutive, contrastive, and correlative conjunctions, are allowed in Polish ATB questions. However, they result in different interpretations. Questions with consecutive and correlative conjunctions are disambiguated toward a single individual reading, as shown in (8) and (9), whereas questions with a contrastive conjunction allow both readings, as shown in (10).

(8)   a.   *Ile*   *artykułów$_i$* **i**   Maria napisała t_i **i**   Ania
                 how-many articles   and Maria wrote   and Ania
                 przeczytała t_i?
                 read
                 'How many articles did Maria write and Ania read?'
    b.   Pięć.
                 five
    c.   # Maria napisała 5 artykułów i   Ania przeczytała 9 artykułów.
                 Maria wrote   5 articles   and Ania read   9 articles
                 'Maria wrote 5 articles and Ania read 9 articles.'

(9)   a.   *Ile*   *artykułów$_i$* Maria napisała t_i **i**   Ania przeczytała t_i?
                 how-many articles   Maria wrote   and Ania read
                 'How many articles did Maria write and Ania read?'
    b.   Pięć.
                   five
    c.   # Maria napisała 5 artykułów **i**   Ania przeczytała 9 artykułów.
                 Maria wrote   5 articles   and Ania read   9 articles
                 'Maria wrote 5 articles and Ania read 9 articles.'

(10) a.   *Ile   artykułów$_i$* Maria napisała t_i *a*   Ania   przeczytała t_i?
             how-many articles   Maria wrote   and$_C$ Ania   read
             'How many articles did Maria write and Ania read?'

      b.   Pięć.
             five

      c.   Maria napisała 5 artykułów *a*   Ania przeczytała 9 artykułów.
             Maria wrote   5 articles   and$_C$ Ania read   9 articles
             'Maria wrote 5 articles and Ania read 9 articles.'

In cases in which only a pair list reading is felicitous, such as the one in (11a-b), only a contrastive conjunction is possible:[6]

(11) a.   *Ile   ze swoich   ofiar*   Jan zabił t_i w piątek *a /*i*   Tomek
             how-many of REFL   victims Jan killed on Friday and$_C$/and Tom
             zamordował t_i w sobotę?
             murdered   on Saturday
             'How many of his victims did Jan kill on Friday and Tom murder
             on Saturday?'

      b.   * *Ile   ze swoich ofiar   i*   Jan zabił w piątek *i*
             how-many of REFL victims   and Jan killed on Friday   and
             Tomek zamordował w sobotę?
             Tom murdered   on Saturday

     The generalization that emerges from the data discussed in this section is that correlative and consecutive coordination strategy block pair list readings in ATB wh-questions. In the next section, I turn to the effects of left branch extraction on the interpretation of ATB questions.

2.   Left Branch Extraction in ATB Wh-Questions

As is well-known since Ross 1967, Slavic languages allow violations of the Left Branch Condition in simple wh-questions. An example from Polish is given in (12a). It contrasts in grammaticality with (12b), which might suggest that left branch extraction is impossible in ATB questions.

(12) a.   *Ile$_i$ *   Maria   napisała t_i artykułów?
             how-many Maria   wrote   articles
             'How many articles did Maria write?'

---

[6] These examples are modeled upon Munn's (1999) English examples.

b. * *Ile$_i$*   Maria   napisała t_i artykułów ***i*   */a*   Ania
how-many Maria   wrote   articles   and/and$_C$ Ania
przeczytała t_i artykułów?
read   articles
'How many articles did Maria write and Ania read?'

However, this is only apparent. In Citko 2006, I showed that ATB LBE is grammatical as long as long as the 'remnants' inside the second conjunct are distinct from their correspondents inside the first conjunct. (12b) thus becomes grammatical if the stranded nominal inside the second conjunct is replaced with one that is distinct from its correspondent inside the first conjunct.

(13)   *Ile$_i$*   Maria napisała t_i artykułów ***a***   Ania przeczytała t_i opowiadań?
how-many Maria wrote   articles   and$_C$ Ania read   stories
How many articles did Maria write and how many stories did Ania read?

What is interesting is the fact that left branch extraction in ATB questions is only possible with a contrastive conjunction. This is shown by the contrast between the grammatical example in (13) above, and the ungrammatical ones in (14a-b) below, involving a consecutive and a correlative conjunction, respectively.

(14) a.   **Ile$_i$*   Maria napisała t_i artykułów ***i***   Ania   przeczytała t_i
how-many Maria wrote   articles   and Ania   read
opowiadań?
stories
'How many articles did Maria write and how many stories did Ania read?'
  b.   **Ile$_i$*   ***i***   Maria napisała t_i artykułów ***i***   Ania
how-many and Maria wrote   articles   and Ania
przeczytała t_i opowiadań?
read   stories
'How many articles did Maria write and how many stories did Ania read?'

Furthermore, left branch extraction forces narrow scope interpretation. The only possible answer to the question in (13) above involves two distinct quantities of books.

(15) a.   # Pięć.
five
  b.   Maria napisała 5 artykułów a   Ania preczytała 10 esejów.
Maria wrote   5 articles   and$_C$ Ania   read   10 essays
'Maria wrote 5 articles and Ania read 10 essays.'

In this respect, ATB questions with left branch extraction (and a contrastive conjunction) differ from their pied-piped counterparts, which allow both readings (as shown in (10a-c) above). This raises the question of why left branch extraction forces narrow scope interpretation. Two other questions that emerge from the discussion so far are why correlative coordination blocks left branch extraction (as shown in (14b) above), and why correlative coordination blocks narrow scope reading (as shown in (10a-c) above). In what follows, I will show that the answers to these questions are related, and follow from the status of correlative coordination particles, coupled with independent properties of focus particles.

3.   Toward an Account

There are two crucial ingredients to my proposal. The first one involves the semantic contribution of the correlative particle *both* (and its Polish counterpart *i 'and')*. In this respect, I follow Hendriks (2001) and Johannessen (2005), who analyze correlative particles as focus particles. They point to the fact that in English *both* behaves like *only* in (at least) two respects. Both *both* and *only* can be separated from the constituents they are associated with, as shown in (16a-b).

(16)   a.   These circumstances proved fortunate *both* for [myself and
               Augustus].   (Hendriks 2001:4)
       b.   These circumstances proved fortunate *only* for MYSELF.

Furthermore, both are incompatible with clauses:

(17)   a.   * *Both* it rains and it snows.
       b.   * *Only* it rains.

This prohibition is not universal, as shown by the grammatical status of the Polish counterparts of the English examples in (17a-b).

(18)   a.   *I*   pada deszcz *i*   pada śnieg
               and falls rain   and falls snow
               'It both rains and snows.'
       b.   *Tylko* pada deszcz.
               only falls rain
               'It only rains.'

The second crucial ingredient in my proposal involves an independent fact that focus particles cause intervention effects (Beck 2006, Kim and Beck 1997, Pesetsky 2000, among others). A typical configuration that gives rise to intervention effects is given schematically in (19a). Typical interveners, which can vary from language to language, are given in (19b). The suggestion I would like to make is that the focus particle *both* also belongs to the class of interveners.

(19) a.   * A   Intervener   B

       b.   only, even, also, not, (almost) every, no, most, few (and other nominal quantifiers),   always, often, never (and other adverbial quantifiers), ***both***

There are three distinct environments that show intervention effects, depending on the nature of A and B in (19a). The first one involves wh-in-situ languages, in which the intervener blocks the relationship between a wh-pronoun in situ and its licensing complementizer. In the examples that follow, the interveners are in italics, and the elements whose relationship is blocked are in bold.

(20)   C   Intervener   WH   (wh-in-situ)

       a.   * *Lili-yum* **eete pustakam**-aane waayikk-ate?   [Mal]
            Lili-also   which book-be   read-NOM
            'Which book did Lili, too, read?'

       c.   * *Hotondo dono hito-mo* **nani-o**   yonda **no**?   [Jap]
            almost   every person   what-ACC read   Q
            'What did almost every person read?'

       d.   ?**Zhiyou Lili* kan-le   **na-ben shu**?   [Man]
            only   Lili read-asp   which-cl book
            'Which book did only Lili read?'   (Beck 2006:6)

The second case of intervention involves multiple wh-questions in languages which front only one wh-phrase overtly. Here the intervention effect concerns the relationship between the two wh-phrases.[7]

(21)   WH₁ Intervener   WH₂   (multiple wh-questions)

       a.   * **Wen**   hat *niemand* **wo**   gesehen?   [Ger]
            whom has nobody   where seen
            'Where did nobody see whom?'

       b.   * **Wie** heeft *niemand*   aan **wie** voorgesteld?   [Dut]
            who has   nobody   to   who introduced
            'Who did nobody introduce to whom?'   (Beck 2006:7)

---

[7] The situation is a little more complex in English, which show intervention effects only in D-linked wh-questions violating superiority, as shown by the ontrast between (i) and (ii) (from Pesetsky 2000)

(i)   Who did *only John* introduce ***to whom***?

(ii)   ?? Which boy$_i$ did *only Mary* introduce *which girl* to t_i ?

And the third one, which is the one that is going to be most relevant for our purposes, involves so-called discontinuous (or split) wh-phrases, in which the relationship between two parts of a single wh-phrase is blocked by an intervening quantificational element.[8]

(22)   WH$_1$ Intervener   WH$_1$ (discontinuous wh-phrases)

[Ger]
    a.   * **Wen**$_i$ hat *keine Studentin* t_i **von den Musikern** getroffen?

        whom has no   student   of   the musicians met
        'Which of the musicians did no student meet?'
    b.   # **Koho**$_i$ *málo studentù* vidìlo t_i **z**   **muzikantů**?   [Cze]
        whom few   students   saw   from musicians
        'Who from the musicians did few students see?

                                 (Kucerova, in press)

With this background on intervention, we can explain the effects of correlative coordination on the interpretation of ATB wh-questions. The first question I want to address here is why narrow scope reading is blocked by the presence of the correlative marker. The relevant example is repeated below.

(23)   a.   *Ile   artykułów$_i$ **i**   Maria napisała t_i **i**   Ania*
        how-many articles   and Maria wrote   and Ania
        przeczytała t_i?
        read
        'How many articles did both Maria write and Ania read?'
    b.   Pięć.
        five
    c.   # Maria napisała 5 artykułów i   Ania przeczytała 9 artykułów.
        Maria wrote   5 articles   and Ania read   9 articles
        'Maria wrote 5 articles and Ania read 9 articles.'

The most straightforward syntactic explanation for the availability of narrow scope reading *involves interpretation of the ATB extracted wh-phrase in a reconstructed position.* In the case at hand, however, reconstruction is blocked by the correlative marker. Given the fact that the correlative marker is a focus particle, the lack of narrow scope reading becomes a straightforward case of an interven-

---

[8] Corresponding examples in which the nominal is pied-piped are fine:

(i)   **Wen   von den Musikern**$_i$ hat *keine Studentin t_i* getroffen?
        whom of   the musicians   has no   student   met
        'Which of the musicians did no student meet?'   (Beck 1996:3-4)
(ii)   **Koho z   muzikantů**$_i$ vidìlo *málo studentù t_i*?
        whom from musicians   saw   few   students
        `Who from the musicians did few students see?'

tion effect, a covert counterpart of the overt cases given in (21) above. The correlative marker intervenes between the interrogative complementizer and the reconstructed wh-phrases, as shown in (24a-b).

(24)   a.   ~~How many articles~~ did **both** Maria write *how many articles* and
                                          Anna read *how many articles*?
        b.   C   BOTH   how many articles

We have also seen above that left branch extraction is blocked by an intervening correlative focus particle, as shown by the ungrammatical status of (25).

(25) * *Ile$_i$*   *i*   Maria napisała *t$_i$* artykułów   *i*   Ania
        how-many and Maria wrote   articles   and   Ania
        przeczytała *t$_i$* esejów?
        read   essays
        'How many articles did Mary write and how many essays did Anna read?

This also becomes a straightforward case of an intervention effect, parallel to the one illustrated in (22) above. The two parts of a wh-phrase (the *how many* question part and its nominal complement) are separated by the focus particle *both*, which is what induces an intervention effect.

(26)   a.   *how many* **both** Maria wrote *articles* and Ania read *essays*
        b.   how-many   BOTH   articles/essays

So far I have explained why correlative coordination blocks narrow scope and left branch extraction. These two are obviously related, as they involve the similar (if not identical) configurations at LF. I have not yet explained why consecutive coordination in Polish induces the same intervention effect (as shown by the lack of a pair list reading in (9) above), and why only contrastive coordination allows narrow scope reading. While a complete consideration of these issues goes beyond the scope of this paper, let me in conclusion offer some suggestions. One way of explaining the lack of pair list readings with consecutive coordination would involve a covert focus particle, akin to the overt *both* in correlative coordinate structures.

The correlation between the availability of pair list readings and the use of a contrastive conjunction, on the other hand, can be attributed to the lexical properties of the contrastive conjunction. It requires contrast between the two conjuncts. A pair list reading, which results in two distinct answers, is one way of satisfying this requirement. Alternatively, it can be satisfied by focusing the verbs or the subjects, which makes a single individual reading possible. These two possibilities are illustrated in (27-28).

(27) a.   *Ile*   *artykułów$_i$*   Maria napisała t_i ***a***   Ania
                how-many articles   Maria wrote   and$_C$ Ania
                przeczytała t_i?
                read
                'How many articles did Maria write and Ania read?'

       b.   Maria napisała 5 artykułów i   Ania   przeczytała 9 artykułów.
                Maria wrote   5 articles   and Ania   read   9 articles
                'Maria wrote 5 articles and Ania read 9 articles.'

(28) a.   *Ile*   *artykułów$_i$* Maria NAPISAŁA t_i ***a***   Ania
                how-many articles   Maria wrote   and$_C$ Ania
                PRZECZYTAŁA t_i?
                read
                'How many articles did Maria WRITE and Ania READ?'

       b.   Pięć.
                five

4.   Conclusion

To conclude briefly, I have examined in this paper two factors that affect the interpretation of ATB questions. One was the choice of a coordination strategy (consecutive, contrastive, or correlative), and the other one was left branch extraction. I have shown that correlative coordination forces wide scope reading and blocks left branch extraction. I have argued that this effect of correlative coordination can be attributed to the status of the correlative *both* as a focus particle, combined with an independent observation that focus particles cause intervention effects. Consequently, I have shown that the incompatibility of pair list readings and left branch extraction with correlative coordination is yet another instance of an intervention effect.

References

Beck, Sigrid. 2006. Intervention Effects Follow from Focus Interpretation. *Natural Language Semantics* 14:1-56.

Beck, Sigrid, and Shin-Sook Kim. 1997. On Wh- and Operator Scope in Korean. *Journal of East Asian Linguistics* 6:339-384.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge: MIT Press.

Citko, Barbara. 2006. On the Interaction Between ATB Wh-Movement and Left Branch Extraction. *Syntax* 9:225-247.

Frajzyngier, Zygmunt. 1985. Propositional Characterization of Categories. In S. DeLancey and R.S. Tomlin, eds., *Proceedings of the First Annual Meeting of the Pacific Linguistics Conference*, 108-119. Eugene: Department of Linguistics, University of Oregon.

Gawron, Jean Mark, and Andrew Kehler. 2003. Respective Answers to Coordinated Questions. In R. B. Young and Y. Zhou, eds. *Proceedings of the Thir-*

teenth Conference on Semantics and Linguistic Theory. Ithaca: CLC Publications.

Hankamer, Jorge. 1971. Constraints on Deletion in Syntax. Ph. diss., Yale University.

Hendriks. 2001. Edgar Allan Poe and the Case of the Misbehaving Coordinators: 'either', 'both', and 'neither' in Coordinate Structures. Unpublished manuscript, University of Groningen.

Jackendoff, Ray. 1971. Gapping and Related Rules. *Linguistic Inquiry* 2:21-36.

Johannessen, Janne Bondi. 2005. The Syntax of Correlative Adverbs. *Lingua* 115: 419-443.

Kucerova, Ivona. (in press). An Anti-Intervention Effect in Czech Splits: An Argument for Late Merge. *Proceedings of Formal Approaches to Slavic Languages 15*.

Larson, Richard. 1985. On the Syntax of Disjunction Scope. *Natural Language and Linguistic Theory* 3:217-264.

Malchukov, Andrej. 2004. Towards a Semantic Typology of Adversative and Contrast Marking. *Journal of Semantics* 21:177-198.

Munn, Alan. 1999. On the Identity Requirement of ATB Extraction. *Natural Language Semantics* 7:421-425.

Pesetsky, David. 2000. *Phrasal Movement and its Kin*. Cambridge, MA: MIT Press.

Ross, John. R. 1967. Constraints on Variables in Syntax. Ph.D. diss., Massachusetts Institute of Technology.

University of Washington
Department of Linguistics
P.O. Box 354340
Seattle, WA 98195-4340

bcitko@u.washington.edu

Toward a True Theory of the Periphery:
Why Culicover's "Odd Prepositions" Aren't That Odd[*]

ELIZABETH COPPOCK
Stanford University

1.   A chaotic picture of English prepositions

In *Syntactic Nuts*, Culicover (1999) uses the existence of lexical idiosyncrasies to argue that the learner of English must be "conservative" and "attentive". What he means by this is perhaps most clear in his discussion of prepositions.

A normal preposition precedes its argument as in (1a), and pied-pipes, preceding its argument as in (1b). It does not follow its argument, either in canonical position (1c) or pied-piped (1d). It can strand, however, as in (1e):

(1)   a.   John sent a letter **to** Mary.
       b.   This is the lady **to** whom John sent a letter.
       c.   *John sent a letter Mary **to**.
       d.   *This is the lady whom **to** John sent a letter.
       e.   This is the lady John sent a letter **to**.

But *notwithstanding*, *ago*, *since*, *during*, *out*, and *off* each differ from this picture in their own little way. Culicover summarizes their properties as in Table 1.

Table 1: Behavior of odd prepositions according to Culicover (1999:82)

Preposition	Precede NP	Piedpipe (prec.)	Follow	Piedpipe (follow)	Strand
notwithstanding	yes	yes	yes	no	no
ago	no	n/a	yes	yes	no
since	yes	with *when*	no	n/a	no
during	yes	yes	no	n/a	??
out	yes	no	no	n/a	no
off ə	yes	no	no	no	no

---

[*] Thanks to Ivan Sag, Arnold Zwicky, Charles Fillmore, and Daniel Johnson for useful insights.

Table 1 shows the whole range of patterns: some prepositions must strand, some must pied-pipe, and some do neither. In summary of this table, Culicover writes, "a number of possible patterns are realized, with no apparent generalization emerging among the exceptions" (p. 82). Based on this, he argues for "the conservative [learning] strategy of 'setting' the 'features' [STRAND] and [PIEDPIPE] independently [for each word], on the basis of positive experience" (granted, with scare quotes). This describes an *attentive* learner, who pays attention to what prepositions have (for example) pied-piped, and a *conservative* one, who does not allow a preposition to pied-pipe unless it has been seen doing it. By this logic, [PRECEDE NP] and [FOLLOW NP] must also be individually-set features.

The goal of this paper is to evaluate the empirical basis for Culicover's conclusion about learning. I will argue that a corrected version of the picture that he presents follows from deeper principles, and that prepositions do not differ arbitrarily in their ability to precede or follow their argument, strand, or pied-pipe.

2. Quibbling with the data

Before developing an account of the facts, I would like to establish the facts more accurately; some of the entries in Table 1 appear to be incorrect. The native English-speaking reader is encouraged to independently assess the data judgments before getting to the analysis to be presented, to avoid bias.

2.1. Typo regarding *off ə*

If a preposition never follows its argument, then there is no reason to expect that it should follow its argument when pied-piped. Therefore, the value in the "Piedpipe (follow)" column should be "n/a" whenever the "Follow" column is "no," as it is for *since*, *during*, and *out*. The "no" in the "Piedpipe (follow)" column for *off ə* should therefore read "n/a". This renders the last two columns identical, so neither *out* nor *off ə* can be considered a unique "nut."

2.2. Pied-piping with *since*

Culicover judges that *since* cannot be pied-piped, except when its argument is *when*, citing the contrast between these two examples:

(2) *****Since** which party hasn't John called?
(3) **Since** when have you been able to speak French?(!)

There are other examples of pied-piped *since* that sound fine (found on the web):

(4) **Since** what year have all popes been cardinals?
(5) **Since** what war has Sweden remained a neutral country?

Presumably then, it is for pragmatic reasons that (2) sounds awkward, and "with *when*" in *since*'s entry for "Piedpipe (prec.)" should be a "yes."
According to Table 1, the preposition *since* cannot strand, and stranding with

during gets a ??. They seem equally acceptable stranded, however:

(6)   ??World War I was the war that Sweden has been neutral **since**.
(7)   ??World War II was the first war that Sweden was neutral **during**.

Therefore I put a "no" under "Strand for both *during* as well as *since*.

2.3.   Stranding with *out*
Culicover claims that stranded out is ungrammatical without *of*, thus:

(8)   This is the door that you go **out** of.
(9)   *This is the door that you go **out**.   [C.'s judgment]

I find the *of* to be optional, and examples of stranded *out* without *of* are readily found on well-written Internet pages. Some members of the BLS audience even rejected (8), preferring (9). There should be a "yes" under "Strand" for *out*.

2.4.   The new picture
All of these corrections leave us with the picture in Table 2. Deviations from the normal pattern are shown in bold; corrections are shown with strike-throughs.

Table 2: Behavior of odd prepositions (revised)

Preposition	Precede NP	Piedpipe (prec.)	Follow	Piedpipe (follow)	Strand
to (normal)	yes	yes	no	n/a	yes
notwithstanding	yes	yes	**yes**	**no**	**no**
ago	**no**	**n/a**	**yes**	**yes**	**no**
since	yes	~~with *when*~~ yes	no	n/a	**no**
during	yes	yes	no	n/a	~~??~~ **no**
out	yes	**no**	no	n/a	**no**
off ə	yes	**no**	no	~~no~~ n/a	**no**

Already this picture is less chaotic than the one in Table 1; it contains two pairs of identical prepositions, *since* and *during*, and *out* and *off ə*. With the deviations from the normal pattern highlighted, it can also be seen that the cases of deviation from the normal pattern are less numerous than cases in which the normal pattern is followed. There is a heavy concentration of deviations under the "Strand" column, where there is ironically quite a uniform pattern of "no"s. The row for *ago* is likewise uniformly deviant from the normal pattern. This picture does not seem quite as hopelessly inexplicable as the other.

3.   Explaining the new picture
Indeed, with a small number of independently-motivated principles, we can derive

the picture in Table 2.

3.1.   *since* and *during*

The unusual property of *since* and *during* is the inability to strand, as shown in (6) and (7). This seems to follow from a general constraint, because temporal prepositions all have difficulty stranding:[1]

(10)   ??That is the war that Sweden became a neutral country **after**.
(11)   ??That is the war that Sweden was our ally **until**.
(12)   ??That is the war that Sweden was our ally **before**.

One might be tempted to explain this generalization under some form of the Adjunct Condition (Huang 1982, later derived by the principle of Subjacency in Chomsky 1981), which bars extraction out of adjuncts. The empirical status of this principle is not strong, however; extraction from locative adjuncts can be perfectly acceptable:

(13)   Which room does Julius teach his class **in**? (Pollard and Sag 1994:191)

Johansson and Geissler (1998) find in a corpus study that pied-piping out of adjunct PPs is more common that pied-piping out of complement PPs, but that both occur a fair amount. It may be the case that extraction degrades as the adjunct becomes more clause-peripheral, however. Hoffman (2005) used a more fine-grained analysis of PP types in an elaborate corpus study and concluded that the "sentence adjunct" type involves obligatory pied-piping. Regardless of how this issue is ultimately resolved, the generalization that temporal prepositions strand with difficulty will remain intact.

3.2.   *ago*

All of *ago*'s properties are strange for a preposition. It can follow its argument, and can never precede it:

(14)   John received a very generous offer a few minutes **ago**.
(15)   *John received a very generous offer **ago** a few minutes.

It pied-pipes, but only following the NP (as one would expect based on its behavior in canonical sentences):

(16)   How long **ago** did John receive the offer?
(17)   ***Ago** how long did John receive the offer?

---

[1] The preposition *on* seems to be an exception to this generalization: *What day did he leave on?* The fact that *on* is primarily spatial may be the explanation for this.

and it doesn't strand:

(18)   * How long did John receive the offer **ago**?

Like Fillmore (2002), I propose to analyze *ago* as an intransitive preposition, like complement-less *before* and *after*, and *abroad*, *north*, and *downstairs*, to name a few of the 40 intransitive prepositions listed in the *Cambridge Grammar of the English Language* (CGEL; Huddleston and Pullum 2002).

I propose to analyze the argument of *ago* as a specifier, like measure phrases that modify prepositional phrases, as in *[three years] in the past* or *[two blocks] past the light*. This analysis is fully in line with that of Fillmore (2002), which relates the syntax of time expressions to a simple but explicit semantic ontology. Expressions like these are "Vector Constructions" which locate a Target (e.g. the time of the event) at a Distance (e.g. 3 months) in a Direction (e.g. before) from some Landmark (e.g. now). The Distance argument in a Vector Construction is expressed as a specifier. Unlike *before* and *after*, the preposition *ago* idiosyncratically requires its Distance argument to be expressed.

These assumptions account for the facts as follows. *Ago* follows its argument because specifiers precede their heads in English. The same principle accounts for ordering in pied-piping constructions. *Ago* cannot be stranded for the same reason that stranding of *book* is impossible in (18):

(19)   * Whose did you read book? [cf. *Whose book did you read?*]

However the constraint is formulated – as the "Left Branch Condition" or otherwise – specifiers do not strand their heads in long distance dependencies.

3.3.   *notwithstanding*
The surprising properties of *notwithstanding* include its ability to follow its complement (19) as well as follow it (20):

(20)   Your generous offer **notwithstanding**, we will demolish the building.
(21)   **Notwithstanding** your generous offer, we will demolish the building.

Yet (unlike the other cases we've seen) its behavior in pied-piping constructions does not mirror its behavior in declarative sentences; when it pied-pipes, it can only precede the argument:

(22)   *That was a generous offer, which **notwithstanding** we will demolish the building.
(23)   That was a generous offer, **notwithstanding** which we will demolish the building.

It also does not strand:

(24)   *That was a generous offer, which we will demolish the building **notwith-standing**.

I propose to account for these facts by splitting up *notwithstanding* into two lexemes. *Notwithstanding₁* is a preposition, which, as such, can precede its argument and pied-pipe with that order as well. *Notwithstanding₂* is a (subject-taking) participle which heads the modifier in absolute constructions, such as those illustrated in the following examples:[2]

(25)   <u>No other business arising</u>, the meeting was adjourned. [The American Heritage Book of English Usage online]
(26)   The horse loped across the yard, <u>her foal trailing behind her</u>. [ibid.]
(27)   <u>His hands gripping the door</u>, he let out a volley of curses. [CGEL]

Because the argument of *notwithstanding₂* is its subject, *notwithstanding* can follow its argument.

Why can't *notwithstanding* follow its argument when pied-piped? We do not find pied-piping of predicates within absolute modifiers in general:

(28)   *Here is the foal, which trailing behind her, the horse loped across the yard.
(29)   *These are the hands, which gripping the door, he let out a volley of curses.

Clearly a general constraint, rather than a lexical idiosyncrasy, is at work here.

Regarding *notwithstanding*'s inability to strand, we have several possible deeper explanations, which may work in concert. Firstly, it is extremely formal, whereas stranding is uncommon in formal registers (Hoffman 2005). Use of a formal word in an informal construction can produce an effect of stylistic discord, as shown by Silva and Zwicky (1975), who explain the deviance of examples like (29) in terms of a scalar difference in formality level between the elements they contain − in this case, subject deletion (casual) and non-contraction of the auxiliary (formal).

(30)   *Have not seen George around for a long time.

---

[2] Huddleston and Pullum (2002) argue that constructions involving post-argument *notwithstanding*, along with similar ones involving *apart* and *aside*, are not absolute constructions because *notwithstanding*, *apart*, and *aside* cannot be predicative: **These objections are notwithstanding* or **This is apart/aside* (p. 631). They argue for a prepositional analysis of these words on this bases. It seems to me that the non-predicativity is equally unexpected under the prepositional analysis, as prepositions can usually be predicative, so I think in either case it must be stipulated that these lexical items are restricted to the absolute construction.

The combination of *notwithstanding* (formal) and stranding (casual) could cause a similar stylistic discord to occur. Another possible explanation is that *notwithstanding* always heads a sentence adjunct, and as discussed earlier, extraction from clause-peripheral phrases seems to be unacceptable in general.

3.4.   *out*
The surprising property of *out* is its inability to pied-pipe:

(31)   *This is the door **out** which he went/ran.

This property is shared by *in* (meaning *through*, not *inside*):

(32)   *This is the door **in** which he went/ran.

This similarity gives us two options for explaining why *out* doesn't pied-pipe. It may be that prepositions describing movement through portals, as a semantic class, fail to pied-pipe. Alternatively, it could have to do with stylistic discord. Both *in the door* and *out the door* strike my ear as quite informal, especially compared with *in through the door* and *out through the door*, respectively. Because *through* pied-pipes, it cannot be that prepositions describing movement through a portal do not pied-pipe, as a rule:

(33)   This is the door **through** which he went/ran.

For this reason, I suspect that the stylistic explanation is correct, but there may be an important semantic difference between *through* on the one hand and *in* and *out* on the other (*in* and *out* both specify locations, for example). In any case, this gap is not an idiosyncratic property of *out*.

3.5.   *off*
Both pied-piping and stranding are difficult for *off*, without help from *of*:

(34)   This is the chair **off** *(of) which Robin fell.
(35)   This is the chair which Robin fell **off** *(of).

Culicover argues that *off* NP is a full reduction of *off ə* NP, because they have the same distribution with respect to these properties:

(36)   *This is the chair **off ə** which Robin fell.
(37)   *This is the chair which Robin fell **off ə**.

If this is true, then we can explain the restriction against (32) in terms of stylistic discord as well: *off ə*, and hence *off*, are too informal to pied-pipe.
    This idea could also explain why *off* cannot strand. It could follow from

general restrictions on reduction, if *off* is a reduced form of *off ə*. Compare:

(38)   She's the person I told you I didn't approve of / *ə.

It is well-known that this type of phonological reduction is barred in phrase-final position (Selkirk 1984; Inkelas and Zec 1993). Since stranding occurs phrase-finally, *off* as a reduced form of *off ə* would not be expected to strand.

4.   Interim summary

The chaotic picture that Culicover presents actually has an underlying orderliness; it follows from these general principles:

- The "Left Branch Condition" or equivalent: *wh* specifiers do not strand their heads in *wh-* dependency constructions. (hence no stranding with *ago*)
- No phrase-final phonological reduction (hence *off ə* does not strand).
- Specifiers precede their heads (*ago, notwithstanding₂*).
- Heads precede their complements (hence all transitive prepositions precede their argument).

In addition to these general principles, the analyses I have given have appealed to a couple of descriptive generalizations that could still be made to follow from deeper analyses:

- Temporal prepositions have difficulty stranding.
- Absolute participles do not pied-pipe.

I have also made use of some lexical stipulations: *ago* is intransitive and requires a specifier, *notwithstanding₂* is limited to absolute constructions, and *off* is an extremely reduced form of *off ə*. However, we do not need to stipulate restrictions on the ability of individual prepositions to strand or pied-pipe.

5.   Additional cases

Having exhausted all of Culicover's examples does not imply that there are no prepositions that are arbitrarily restricted from pied-piping or stranding. Indeed, there are some other preposition-like words that do not pied-pipe. These are discussed by Huddleston and Pullum (2003) in their response to Maling (1983), in the context of a debate on whether to analyze certain words (*near, opposite, like, unlike, due, due to, worth*) as adjectives or prepositions.

A diagnostic Huddleston and Pullum give for status as a preposition is *predicativity as a fronted adjunct*: fronted adjuncts headed by adjectives must be interpreted as predicating over the subject of the sentence; those headed by prepositions need not be. In the following example, both the adjective *alone* and the preposition *ashore* are interpreted as predicating over the subject:

(39)   Finally **ashore/alone**, John could relax.

Such a predicative interpretation is impossible when the subject is an expletive pronoun, and in that case only the preposition is grammatical (Huddleston and

Pullum 2002, p. 531):

(40)   **Alone**/***ashore**, there was much drunkenness.

By this diagnostic, *like* and *unlike* appear to be somewhat ambiguous between adjective and preposition. *Like* is marginal heading a non-predicative fronted adjunct:

(41)   [%]Just **like** LA, there was a lot of smog. [H&P's judgment]

Unlike is better:

(42)   **Unlike** yesterday, I'm feeling full of energy.

Both *like* and *unlike* can also function as predicative fronted adjuncts, and as the complement to *become*, which is a diagnostic indicating adjectivehood, so they can certainly function as adjectives as well as prepositions. In their prepositional function, it does not appear that they can pied-pipe:

(43)   *Seattle is a place **like** which we have a lot of fog here.
(44)   *That was a time in my life **unlike** which I'm feeling full of energy now.

In this case again, however, the putative pied-pipers are very informal words, which is stylistically discordant with the formality of the pied-piping construction.
    Given their informality, we might expect *like* and *unlike* to strand instead, but this does not appear to be possible either:

(45)   *Seattle is a place which we have a lot of fog here **like**.
(46)   *That was a time in my life which I'm feeling full of energy now **unlike**.

When they function as prepositions, however, *like* and *unlike* head quite clause-peripheral adjuncts; this is a likely explanation for their inability to strand.
    Two other unclear cases discussed by Huddleston and Pullum (2003), which pass the test for non-predicativity of fronted adjuncts, are *effective* and *absent*:

(47)   **Absent** further justification, nothing can be done.
(48)   **Effective** tomorrow morning, fares will increase.

I found some tokens of pied-piped *absent* on the internet, which sound fine to me:

(49)   These constitutive principles include ... both a principle of veracity and a principle of credulity, **absent** which we would be unable to...

Thus, *absent* behaves as a regular preposition. It does not appear that *absent* can

strand:

(50)   *These are principles which civilization would be impossible **absent**.

As suggested by the erudite language in examples (47) and (49), *absent* is highly formal, so we would not expect to find it stranded.
    Unlike *absent*, it seems that *effective* cannot pied-pipe:

(51)   *That is the day **effective** which fares will increase.

Effective is a very formal word, so there is no stylistic discord here. Rather, the explanation for its inability to pied-pipe seems to lie in the categorial analysis of *effective*; it seems that *effective* is not a preposition, despite its ability to head a non-predicative fronted adjunct. This is supported by its complementation behavior; it resists NP complements:

(52)   Effective *(at) 8am, fares will increase.

Other temporal prepositions such as *since* and *before* combine directly with bare time expressions: *since 8am*, *before 8am*.
    In summary, none of Huddleston and Pullum's cases provide any further justification for Culicover's claim that the features [STRAND] and [PIEDPIPE] must be set individually for each word on the basis of positive experience.

6.   Conclusion

Individual prepositions do not differ arbitrarily in their ability to strand or pied-pipe. This removes the argument that the features [STRAND] and [PIEDPIPE] must be set for each word individually on the basis of positive experience (nor is there even any evidence that such features exist).
    Prepositions do not differ arbitrarily in whether they precede or follow their argument, either. [PRECEDE NP] and [FOLLOW NP] are likewise not features that must be set individually on the basis of positive experience, if they exist.
    In her review of *Syntactic Nuts*, Janet Dean Fodor (2001) writes that "the route we have to take toward a true theory of the periphery" is to evaluate conjectures which "relate the stipulations to the general ecology of natural language grammars." Some of what has been presented here can be seen as a step in that direction, and some of it goes even further: seen against the backdrop of general constraints of the grammar, idiosyncrasies can even disappear.
    Does this mean that there are no features that must be set individually for each word on the basis of positive experience (or another mechanism that acquires arbitrary lexical gaps)? Maybe. Claims of arbitrary lexical variation like Culicover's have been made for other phenomena, also in the context of learnability. The dative alternation is the celebrity among these (Baker 1979):

(53) a.　　Sue *gave/donated* $100 to the library.
　　　b.　　Sue *gave/*donated* the library $100.

The causative alternation has also been treated as a case of arbitrary lexical variation (Bowerman 1988, p. 84):

(54) a.　　That huge bite made her *choke/gag/cough*.
　　　b.　　That huge bite *choked/gagged/*coughed* her.

Over the decades, analyses have been proposed to account for these argument structure alternations. Grimshaw (2005) shows that the dative alternation is conditioned by a conjunction of metrical and lexical semantic constraints; all non-alternating dative verbs are either of the wrong semantic type or have the wrong metrical structure (being longer than one metrical foot). Levin and Rappaport-Hovav (1995) explain the contrasts in (51) using the semantic concept of *internally-caused* vs. *externally-caused* events; only the latter can undergo the causative alternation.

Baker (1979) offered two other putative examples of arbitrary lexical variation, illustrated in (52) and (53).

(55) a.　　It is likely/probable that Robin will succeed.
　　　b.　　Robin is likely/*probable to succeed.

(56) a.　　Michelle seems/happens to be happy.
　　　b.　　Michelle seems/*happens happy.

I do not know of a systematic, observable difference between adjectives that allow raising, like *likely*, and those that do not, like *probable*; likewise, I do not know of a systematic difference between those verbs that allow adjectival complements along with infinitival complements and those that do not. But these remaining cases are in peril; perhaps the reader or I will soon have a clever analysis to offer. If we can explain all of these cases, then maybe arbitrary lexical gaps of this nature do not exist. If they don't exist, then maybe the learner is *not* "conservative," at least about assigning syntactic properties to words, or "attentive" to the syntax of individual words.

References

Baker, C. L. 1979. Syntactic theory and the projection problem. *Linguistic Inquiry*, 10:533–581.

Bowerman, Melissa. 1988. The 'no negative evidence' problem: How do children avoid constructing an overly general grammar? In Hawkins, J. A., ed., *Explaining language universals*, pp. 73–101. Oxford: Basil Blackwell.

Chomsky, Noam. 1986. *Barriers*, vol. 13 of *Linguistic Inquiry Monographs*.

Cambridge: MIT Press.

Culicover, Peter. 1999. *Syntactic Nuts*. Oxford: Oxford University Press.

Fillmore, Charles. 2002. Mini-grammars of some time-when expressions in English. In Bybee, Joan and Michael Noonan, eds., *Complex Sentences in Grammar and Discourse: Essays in honor of Sandra A. Thompson*. Amsterdam: John Benjamins.

Fodor, Janet Dean. 2001. Parameters and the periphery: reflections on *Syntactic Nuts*. *Journal of Linguistics*, 37:367–392.

Grimshaw, Jane. 2005. *Words and Structure*, chapter 4. Stanford: CSLI Publications.

Hoffman, Thomas. 2005. Variable vs. categorical effects: Preposition pied piping and stranding in British English relative clauses. *Journal of English Linguistics*, 33(3):257–297.

Huang, C.-J. T. 1982. *Logical Relations in Chinese and the Theory of Grammar*. Ph.D. thesis, MIT.

Huddleston, Rodney and Geoffrey K. Pullum. 2002. *The Cambridge Grammar of the English Language*. Cambridge University Press.

Huddleston, Rodney and Geoffrey K. Pullum. 2003. Anomalous adjectives and prepositions in English. Handout for the 2003 LSA Annual Meeting, Atlanta, GA.

Inkelas, Sharon and Draga Zec. 1993. Auxiliary reduction without empty categories: A prosodic account. *Working Papers of the Cornell Phonetics Laboratory*, 8.

Johansson, Christine and Christer Geisler. 1998. Pied piping in spoken English. In Renouf, A. ed., *Explorations in Corpus Linguistics*, pp. 67–82. Amsterdam: Rodopi.

Levin, Beth and Malka Rappaport-Hovav. 1995. *Unaccusativity*. Cambridge: MIT Press.

Pollard, Carl and Ivan A. Sag. 1994. *Head-Driven Phrase Structure Grammar*. Chicago: The University of Chicago Press.

Silva, Clare M. and Arnold Zwicky. 1975. Discord. In R. W. Fasold and R. W. Shuy (eds.), *Analyzing variation in language*, 203–219. Washington, D.C.: Georgetown University Press.

Elizabeth Coppock
Department of Linguistics
Margaret Jacks Hall, Building 460
Stanford, CA 94305

coppock@stanford.edu

Stress in Punjabi

RAJDIP DHILLON
Yale University

0.　Introduction

Punjabi[1] is an Indo-Aryan language spoken in northwest India and parts of Pakistan. Assignment of stress in Punjabi is entirely predictable, yet it patterns differently in disyllabic and trisyllabic words.

　　Although a derivational approach to Punjabi stress is capable of characterizing the pattern of stress assignment in disyllabic and trisyllabic words, it is not without its flaws. The most apparent of which is that it lacks unification in that it requires one set of rules to apply to disyllabic words and another entirely different set of rules to apply to trisyllabic words. As will be illustrated in Section 2, the rules required by the derivational approach ultimately appear unnatural and are without typological force.

　　Optimality Theory, on the other hand, can provide a unified system in which both disyllabic and trisyllabic words can be handled under a single ranking using typologically attested constraints. An Optimality Theoretic analysis of Punjabi stress is presented here, as well as a brief exploration of Hindi, Sindhi, and Urban Hijazi Arabic—three languages with stress systems similar to that of Punjabi.

1.　Overview of Basic Properties of Stress in Punjabi

Punjabi exhibits a three-way distinction in syllable weight with monomoraic light syllables, bimoraic heavy syllables, and trimoraic superheavy syllables. Punjabi also possesses a left-dominant stress system, requiring the construction of moraic trochees. Foot construction is from right to left and degenerate feet are permitted. Syllables are minimally bimoraic and ternary feet are permitted. Possible types of monosyllabic words in Punjabi are shown in (1).

(1)　　(C)VV　　　mee　　　　　'me'
　　　　(C)VVC　　tʃaaɾ　　　　'four'
　　　　(C)VC　　　kal　　　　　'yesterday/tomorrow'
　　　　(C)VCC　　betʃtʃʰ　　　'inside'

---

[1] The dialect examined here is spoken in villages near the city of Amritsar, India.

In Punjabi, secondary stress is not found and main stress is not contrastive.[2] For instance, there are no such contrastive patterns as LŚH and ĹSH.[3]

Stress is also not affected by morphology. In the verb forms in (2), the addition of a suffix to the verb stem does not alter stress placement; nor does the addition of the plural suffix alter stress placement for the nominal forms in (3). As will be shown in Section 2, stress in Punjabi is distributed solely according to a pattern based on the weight of the syllables contained within a word. The same phenomenon is evident in Hindi (Hayes 1995, Pandey 1989, Kelkar 1968) and Sindhi (Walker 1997)—two Indo-Aryan languages closely related to Punjabi.

(2) léenaa   'to take'
      lée   'take' (present/imperative)
      léelaa   'you may take it'
      léedʒaa   'it is suggested that you take it (and go)'
(3) gádʒəɽ   'carrot'
      gádʒəɽaa   'carrots'

2.   Stress Assignment in Disyllabic and Trisyllabic Words
To repeat, the placement of stress in Punjabi is entirely predictable, yet it patterns differently in disyllabic and trisyllabic words. An exhaustive list of stress patterns for disyllabic words is shown in (4) and for trisyllabic words in (5).[4]

(4)   ĹH   pé.laa   'before/earlier'
      ĤH   kán.daa   'thorn'

---

[2] Arun (1961) and Bhatia (1993) incorrectly claim that stress is contrastive in some instances and provide the following supporting data:

i)   gálaa   'throat'   ii) galáa   'cause to melt'
     tálaa   'sole'   taláa   'cause to fry'
     bálaa   'evil spirit'   baláa   'call'
(Bhatia 1993: 343)

One crucial factor overlooked by Arun and Bhatia is that the word-medial approximants in the words in (i) are actually geminates—which in general are not contrastive with single consonants—thus making the words in (i) of the form $\text{ǵ}_{\mu\mu}\ \sigma_{\mu\mu}$ and not $\text{ǵ}_{\mu}\ \sigma_{\mu\mu}$. A second crucial factor overlooked by Arun and Bhatia is that the words in (ii) are actually monosyllabic—the first vowel in each of these words undergoes deletion.

[3] L=light syllable, H=heavy syllable, S=superheavy syllable

[4] Vijayakrishnan (2003) lists the same stress patterns found in (4) and (5) but does not list the trisyllabic pattern ĹLH and includes the additional pattern ĤLS, for which he does not provide any examples of corresponding Punjabi words. ĤLS is unattested in the dialect examined here and consequently will not be explored here, although the OT analysis presented in Section 3.2 is capable of handling this pattern.

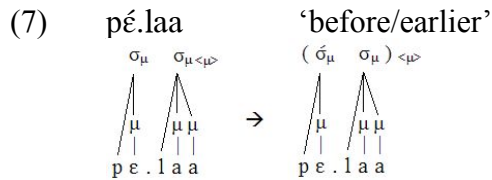|		
ŚH	dɔ́ɔl.naa	'to spill'
ŚS	áadʒ.kaal	'nowadays'
LŚ	bə.máaɽ	'sick'
HŚ	təɽ.búudʒ	'watermelon'

(5)
ĹLH	tʃí.ʈi.aa	'letters'
ĤLH	hóɽ.te.ɽaa	'odd'
ĤHS	mɔ́ŋ.gɔl.vaaɽ	'Tuesday'
ĹHS	mí.ɽaa.kɔɔl	'near/next to me'
HĤH	bəkʰ.súu.wii	'safety pin'
LĤH	bɪ.ʃáa.naa	'to lay something down'
LŚH	bɪ.tʃáaɽ.naa	'to think'
HŚH	səŋ.gíit.naa	'to sing and dance'

What the data in (4) and (5) indicate is that neither morphology nor lexical government of stress assignment is applicable to stress assignment in Punjabi. Instead, stress assignment can be characterized on a 'templatic' basis, where a template, such as an ĹH 'template', is formed on the basis of syllable weight.

To account for the stress patterns using a derivational account, two separate sets of rules are needed. The rules applicable to disyllabic words are listed in (6).

(6) Rule 1:   Stress the leftmost superheavy (trimoraic) syllable; super-heavy syllables constitute feet
     Rule 2:   Mark the final mora as extrametrical
     Rule 3:   Stress the head of the leftmost foot

A derivation of the ĹH pattern can be seen in (7). How the rules in (6) operate with respect to foot construction and stress assignment is shown in (8).

(7) pé.laa   'before/earlier'

(8)
ĹH	$(\acute{\sigma}_\mu \, \sigma_\mu)_{<\mu>}$		ĤH	$(\acute{\sigma}_{\mu\mu}) \, \sigma_{\mu<\mu>}$
ŚH	$(\acute{\sigma}_{\mu\mu\mu}) (\sigma_{\mu\mu})$		ŚS	$(\acute{\sigma}_{\mu\mu\mu}) (\sigma_{\mu\mu\mu})$
LŚ	$\sigma_\mu (\acute{\sigma}_{\mu\mu\mu})$		HŚ	$(\sigma_{\mu\mu}) (\acute{\sigma}_{\mu\mu\mu})$

Rule 1 blocks the application of Rules 2 and 3. Additionally, there is a preference for stressing superheavy syllables. Other languages which stress superheavy syllables include Hindi (Pandey 1989), Estonian (Hayes 1995), various dialects of Arabic (Hayes 1995), and St. Lawrence Island Yupik (Hayes 1995). Due to this preference, stress assignment requires a 'look-ahead' property such that, rather

than assign stress in a serial fashion, the entire word must be surveyed to detect superheavy syllables.

Among the languages requiring a similar 'look-ahead' property are Turkish (Inkelas 1994, Sezer 1981), Hindi (Hayes 1995, Pandey 1989), and Sindhi (Walker 1997). Regarding Turkish, Inkelas (1994) outlines what is known as the 'Sezer' stress pattern in which an antepenultimate syllable is stressed if it is heavy and the penultimate syllable is light; otherwise, the penultimate syllable is stressed. With respect to Hindi,[5] Hayes (1995) provides weight-based rules for words with three or more syllables. Hayes' first rule is to stress a heavy penult. If a heavy penult is not present, then a heavy antepenult is stressed. If neither of these conditions can be met (i.e. for words ending in LLσ) then the preantepenult is stressed if the final syllable is light or the antepenult is stressed if the final syllable is heavy or if the word is trisyllabic. According to Hayes' rules, it is necessary to 'look ahead' to determine the weight of the syllables within the word and potentially the number of syllables in the case of trisyllabic words.

Sindhi (Walker 1997) operates in a manner very similar to that of Hindi. The rules governing stress assignment in Sindhi are such that, if there is only one heavy syllable in a word, it is stressed. Otherwise, the rightmost heavy syllable is stressed, skipping the last. If there are no heavy syllables, the penultimate syllable is stressed. In Sindhi, the 'look ahead' property is necessary first to detect whether heavy syllables are present and second to detect the number of heavy syllables.

Returning to Punjabi stress, (9) outlines the set of rules for trisyllabic words. A derivation of the ĹHS stress pattern is presented in (10). How the rules in (9) operate with respect to foot construction and stress assignment is shown in (11).

(9)   Rule 1:   Mark final trimoraic feet as extrametrical
           Rule 2:   Stress the head of the penultimate foot
           Rule 3:   If no such foot exists, stress a degenerate foot in strong metrical position

(10)   mí.ɽaa.kɔɔl   'near/next to me'

(11)   ĹLH $(\acute{\sigma}_\mu\ \sigma_\mu)(\sigma_{\mu\mu})$ H́LH $(\acute{\sigma}_{\mu\mu})\ \sigma_\mu\ (\sigma_{\mu\mu})$
       H́HS $(\acute{\sigma}_{\mu\mu})(\sigma_{\mu\mu}) < \sigma_{\mu\mu\mu}>$ ĹHS $(\acute{\sigma}_\mu)(\sigma_{\mu\mu}) < \sigma_{\mu\mu\mu}>$
       HH́H $(\sigma_{\mu\mu})(\acute{\sigma}_{\mu\mu})(\sigma_{\mu\mu})$ LH́H $\sigma_\mu(\acute{\sigma}_{\mu\mu})(\sigma_{\mu\mu})$
       LŚH $\sigma_\mu(\acute{\sigma}_{\mu\mu\mu})(\sigma_{\mu\mu})$ HŚH $(\sigma_{\mu\mu})(\acute{\sigma}_{\mu\mu\mu})(\sigma_{\mu\mu})$

---

[5] A great deal of disagreement exists regarding the patterns of stress assignment in Hindi (Hayes 1995, Pandey 1989, Mohanan 1979, Ohala 1977, Kelkar 1968). However, Pandey (1989) attributes the reported differences in stress assignment to the particular dialects being examined.

As the final mora is extrametrical for the disyllabic stress system, the trisyllabic system instead considers final superheavy (trimoraic) syllables to be extrametrical. Latin and Palestinian Arabic also employ moraic trochees (Hayes 1995). Latin considers entire final syllables extrametrical in particular contexts and Palestinian Arabic at times considers rightmost feet extrametrical. Thus it is entirely plausible for Punjabi to consider final trimoraic syllables extrametrical.

The main argument for degenerate feet in strong metrical positions being counted in the foot inventory for Punjabi is derived from the same phenomenon occurring in Auca (Hayes 1995). Auca constructs syllabic trochees from left to right and the strong position is the rightmost position. If a syllable in strong position cannot be paired with another to form a trochee, then that syllable is allowed to constitute a degenerate foot which is then counted in the foot inventory and is capable of bearing stress. Thus for Punjabi, it is perfectly reasonable for degenerate feet in strong metrical positions (i.e. the position of the second foot from the right edge) to be counted in the foot inventory.

Unlike Auca, which allows degenerate feet to comprise part of the foot inventory if they are in the rightmost position, trisyllabic words in Punjabi require a 'foot count' in order to determine if a degenerate foot will enter the foot inventory. Consequently, the rules in Punjabi can be viewed as being somewhat iterative. First, final superheavy syllables must be considered extrametrical. Then bimoraic and trimoraic (superheavy) feet are constructed and stress falls on the head of the second foot from the right edge of the word. If no such foot exists, then a degenerate foot occupying that position may enter the foot inventory and bear stress, as previously seen in (10).

In assessing the rules necessary to assign stress in Punjabi, although they may prove to be successful in predicting where stress falls, they do not come without some major pitfalls. The largest and most obvious of which is a lack of unification. The derivational approach to Punjabi, as outlined in (6) and (9), requires a different set of rules to derive stress each time a word with a different number of syllables is encountered.

Another issue with the derivational approach is that it yields two very divergent sets of rules. This divergence makes apparent an inconsistency with respect to extrametricality. In disyllabic words, final moras are extrametrical, whereas in trisyllabic words, final superheavy syllables are extrametrical.

Other differences between stress assignment in disyllabic and trisyllabic words become evident in examining the diverging sets of rules. For instance, stressing final syllables in trisyllabic words is avoided, but it is permitted in disyllabic words. Additionally, trisyllabic words do not exhibit the property of quantity sensitivity that disyllabic words display. Under the rules presented in (9), there is no preference for stressing superheavy syllables. Instead, we see an assortment of light, heavy, and superheavy syllables bearing stress.

As stress assignment in disyllabic words is unbounded, it is clearly bounded in trisyllabic words—the head of the *second* foot from the right edge is stressed. According to the rules in (6) and (9), the only similarities between stress assign-

ment in disyllabic words and trisyllabic words are the properties of left-dominance and right-to-left directionality.

In essence, the rules expressed in (6) and (9) neither reveal anything about the system of stress assignment in Punjabi nor provide a means of relating the system to the stress systems of other languages. Despite the success in predicting the location of stress, the derivational approach merely provides a descriptive mechanism for handling stress assignment in Punjabi and lacks any typological force.

3. An Optimality Theoretic (OT) Approach

Ideally, an OT approach will prove to be more successful than the derivational approach discussed in Section 2 by producing a single set of constraints to account for stress assignment in both disyllabic and trisyllabic words.

3.1. Deriving Stress in Disyllabic Words

Recall the stress patterns in (4) for disyllabic words. What is particularly noticeable in these patterns is a strong preference for stressing superheavy and leftmost syllables. What will also become evident later is a tendency for a foot to be constructed at the right edge of the word. These preferences can be characterized by the constraints SUPERHEAVY, LEFTMOST, and ALIGN-FT-RIGHT.

(12) **SUPERHEAVY**
       Superheavy syllables are stressed
(Oostendorp 2002)
(13) **LEFTMOST**
       The head foot is leftmost in PrWd
(14) **ALIGN-FT-RIGHT**
       Every PrWd ends in a foot

Given the pattern ŚS, it is clear that is equally important to stress a superheavy syllable and to stress the leftmost foot. Subsequently, this results in the equal ranking of the constraints SUPERHEAVY and LEFTMOST.

With the exception of superheavy syllables, it is clear that there is a tendency to avoid stressing final syllables. The following constraint characterizes this:

(15) **NONFINALITY**
       The prosodic head of the word does not fall on the word-final syllable
(Prince and Smolensky 2002)

This constraint must be ranked below the equally-ranked constraints SUPERHEAVY and LEFTMOST. This ranking is necessitated by the fact that, in patterns such as LŚ and HŚ, there is a stronger preference for superheavy syllables to be stressed than for avoiding assigning stress to final syllables.

Furthermore, since Punjabi allows degenerate feet, the constraint FT-BIN is necessary.

(16) **FT-BIN**
Feet are binary under moraic analysis

This constraint must be ranked below NONFINALITY since, in the pattern ĹH, a degenerate foot must be constructed to avoid stressing the final syllable.

The ranking of the constraints introduced so far is seen in (17). This ranking accounts for all of the disyllabic patterns, as shown in the tableaux for select patterns in (18) through (20).

(17) **LEFTMOST, SUPERHEAVY, ALIGN-FT-RIGHT >> NONFINALITY >> FT-BIN**

(18)

Input: LH	LEFTMOST	SUPERHEAVY	ALIGN-FT-R	NONFINALITY	FT-BIN
☞(Ĺ)(H)					*
L(Ĥ)				*!	
(L)(Ĥ)	*!			*	*
(Ĺ)H			*!		*

(19)

Input: HH	LEFTMOST	SUPERHEAVY	ALIGN-FT-R	NONFINALITY	FT-BIN
☞(Ĥ)(H)					
H(Ĥ)				*!	
(H)(Ĥ)	*!			*	

(20)

Input: LS	LEFTMOST	SUPERHEAVY	ALIGN-FT-R	NONFINALITY	FT-BIN
☞ L(Ś)				*	*
(Ĺ)(S)		*!			**
(L)(Ś)	*!			*	**

By using the ranking in (17), all suboptimal forms are eliminated by the constraints LEFTMOST, SUPERHEAVY, ALIGN-FT-R, and NONFINALITY. Furthermore, the requirement that final moras be extrametrical in the derivational approach is avoided here. Thus the ranking in (19) effectively captures the tendency to stress either leftmost or superheavy syllables in disyllabic words.

3.2. Deriving Stress in Trisyllabic Words

Deriving a single set of ranked constraints to characterize trisyllabic patterns requires additional constraints to those introduced in Section 3.1. With the exception of the pattern ĹHS, there is a general avoidance of degenerate feet in trisyllabic words. The Weight-to-Stress-Principle (henceforth WSP) characterizes this avoidance by enforcing a preference for stressing heavy or superheavy syllables. Additionally, it is necessary for syllables to be parsed into feet to some extent. For instance, if the pattern ĹHS is not exhaustively parsed into feet such that it contains a degenerate foot, stress will not be assigned to it correctly.

(21) **WSP (W**EIGHT-TO-**S**TRESS **P**RINCIPLE**)**
Heavy syllables receive stress

(22) **P**ARSE-**S**YLLABLE
Syllables are parsed into feet

The ranking of WSP and PARSE-SYL with respect to the constraints introduced in Section 3.1 is fairly simple. WSP cannot be ranked above NONFINALITY, as that would result in suboptimal disyllabic forms being deemed optimal, such as L(H́) being incorrectly predicted as the most optimal outcome over(Ĺ)(H). WSP must be ranked below NONFINALITY and above FT-BIN since it is more important for heavy and superheavy syllables to bear stress when in non-final positions than it is for feet to be binary—as superheavy feet violate FT-BIN since they are ternary. As with WSP, PARSE-SYL must be ranked below NONFINALITY, as it is more important for final syllables in trisyllabic words to avoid bearing stress than it is for all syllables to be exhaustively parsed into feet. PARSE-SYL must also be ranked above FT-BIN, as it would result in suboptimal forms being deemed optimal otherwise. While WSP and PARSE-SYL must be ranked intermediate to NONFINALITY and FT-BIN, their ranking with respect to each other is quite problematic, as neither the ranking in (23) nor the ranking in (24) is successful.

(23) **L**EFTMOST, **S**UPERHEAVY, **A**LIGN-**F**T-**R** >> **N**ONFINALITY >> **WSP** >> **P**ARSE-**S**YL >> **F**T-**B**IN

(24) **L**EFTMOST, **S**UPERHEAVY, **A**LIGN-**F**T-**R** >> **N**ONFINALITY >> **P**ARSE-**S**YL >> **WSP** >> **F**T-**B**IN

While the ranking in (23) can handle a number of the trisyllabic stress patterns, it predicts the incorrect candidate for the pattern ĹHS. While the ranking in (24) predicts the correct candidate for the pattern ĹHS, it predicts the incorrect candidate for LH́H, which requires the ranking in (23). An additional issue involves the pattern HH́H. Under either ranking, a form in which the second syllable of the pattern bears stress is never predicted as being optimal. Instead, the incorrect candidate (H́)(H)(H) is predicted as being optimal by both rankings.

Given the behavior of the patterns ĹHS, LH́H, and HH́H, it is clear that a repair constraint is needed:

(25) **C**ONTOUR **(H́)(H)**
Leftmost footed heavy syllables are stressed in sequences of (H)(H)

With respect to the pattern HH́H, CONTOUR (H́)(H) militates against all three syllables being footed, which would result in stress incorrectly being assigned to the initial syllable. In conjunction with ALIGN-FT-R, the sequence (H́)(H)H is avoided. When immediately dominated by NONFINALITY, CONTOUR (H́)(H) repairs the problems which arise with the patterns LH́H and HH́H and allows for the correct forms to be considered optimal. Subsequently, this allows for a rank-

ing in which PARSE-SYL is ranked above WSP, repairing the problems surrounding ĹHS. The final ranking and supporting tableaux are shown below.

(26) **LEFTMOST, SUPERHEAVY, ALIGN-FT-R >> NONFINALITY >> CONTOUR (H́)(H) >> PARSE-SYL >> WSP >> FT-BIN**

(27)

Input: LHS	LEFT-MOST	SUPER-HEAVY	ALIGN-FT-R	NON-FINALITY	CONTOUR (H́)(H)	PARSE-SYL	WSP	FT-BIN
☞ (Ĺ)(H)(S)		*					*	**
L(H́)(S)		*				*!		*
L(H)(Ś)	*			*!		*		*

(28)

Input: LHH	LEFT-MOST	SUPER-HEAVY	ALIGN-FT-R	NON-FINALITY	CONTOUR (H́)(H)	PARSE-SYL	WSP	FT-BIN
☞ L(H́)(H)						*		
(Ĺ)(H)(H)					*!		*	*
L(H)(H́)	*!			*	*	*		

(29)

Input: HHH	LEFT-MOST	SUPER-HEAVY	ALIGN-FT-R	NON-FINALITY	CONTOUR (H́)(H)	PARSE-SYL	WSP	FT-BIN
(H)(H́)(H)	*!				*			
☞ H(H́)(H)						*		
(H́)(H)(H)					*!			
(H́)(H)H			*!			*		
(H)(H)(H́)	*!			*	**			

In comparison to the derivational approach, the OT approach proves to be superior. Not only is it unified in the sense that only one ranking is necessary to depict the assignment of stress in both disyllabic and trisyllabic words, but it also uses typologically grounded constraints—discussed further in Section 4—and is not merely a descriptive account as the derivational account is. Furthermore, the OT account eliminates other issues which arise with the derivational account such as the lack of unification and the inconsistencies with respect to extrametricality.

The OT analysis offered here reveals many characteristics of Punjabi's system of stress assignment—and these characteristics can further be related to the stress systems of other languages. For instance, the OT analysis reveals that Punjabi has a preference for stressing superheavy syllables, tends to avoid assigning stress to final positions, and prefers sequences of (H́)(H) when faced with two adjacent footed heavy syllables. The analysis also reveals that syllable weight is a significant factor in Punjabi and that there is a preference for stressing heavy syllables.

In addition to these aforementioned characteristics which the derivational account misses, the OT account reveals another general tendency in the manner in which stress is assigned in Punjabi: foot construction occurs from right to left and stops once an appropriate foot has been detected that can bear stress—yielding stress placement on the leftmost foot, as seen in (30) and (31).

(30)   (Ĺ)(H)   (H́)(H)   (Ś)(H)   (Ś)(S)
         L(Ś)   H(Ś)
(31)   (ĹL)(H)   (H́)L(H)   (H́)(H)(S)   (Ĺ)(H)(S)
         H(H́)(H)   L(H́)(H)   L(Ś)(H)   H(Ś)(H)

While the OT analysis is able to make the generalization that foot construction begins at the right edge and continues until an appropriate stress-bearing foot has been detected and constructed, the derivational approach misses this, as evidenced by the stress patterns it yields for words with sequences of HŚ, HH́H, or HŚH, as seen in (8) and (11). In sum, the derivational approach to Punjabi stress proves to be rather undesirable.

4.   Establishing the CONTOUR (H́)(H) Constraint

CONTOUR (H́)(H) is essentially an alignment constraint which aligns stress with a left-edged footed heavy syllable. Constraints of this nature are not atypical within OT. For instance, Inkelas (1994) proposes the constraint CONTOUR *HĹ for Turkish which prohibits the sequence of a heavy unstressed syllable followed by a stressed light syllable. Kager (1992) proposes the constraint *(ĹH) which prohibits L-H trochaic feet. According to Kager, the *(ĹH) constraint is necessary for Finnish and the Australian languages Yindjibarndi, Guugu Yimidhirr, and Gooniyandi.

While CONTOUR (H́)(H) can be argued to simply be another member within a family of CONTOUR constraints, it still requires typological force. In which case, examination of Hindi, Sindhi, and Urban Hijazi Arabic is essential.

Like Punjabi, the stress system of Hindi (Kelkar 1968) and a subsection of the stress system of Urban Hijazi Arabic (Al-Mohanna 2004) possess a three-way syllable weight distinction, exhibit right-to-left directionality with respect to foot construction, have a preference for stressing superheavy syllables, and tend to avoid final stress. Sindhi (Walker 1997) possesses the same characteristics with one exception. Sindhi, which exhibits a two-way syllable weight distinction between light and heavy syllables, has a preference for stressing heavy syllables instead. The most notable characteristics all three languages share with Punjabi are that they all contain the stress patterns H́H and HH́H and foot them in the same manner. All three languages only foot what is necessary starting from the right edge and continue until an appropriate stress-bearing foot has been detected and constructed, resulting in stress placed on the leftmost foot.

According to the dialect of Hindi examined by Kelkar (1968), the rules for stress assignment stipulate that 1) superheavy syllables are stressed, 2) in sequences where multiple superheavy syllables exist, the rightmost non-final superheavy syllable is stressed, 3) if a superheavy syllable is not present, the heaviest syllable from the right edge is stressed, and 4) if a superheavy syllable is not present and the remaining heaviest syllables are equivalent in weight, the rightmost non-final syllable is stressed. Given these rules, the similarities between the stress systems of Hindi and Punjabi become quite evident. With respect to

only footing the necessary material and placing stress on the leftmost foot, this characteristic can be seen in the following footed stress patterns for Hindi:

(32) (H́)(H)   (Ś)(S)   L(H́)   L(Ś)   H(Ś)
      L(H́)(H)   S(Ś)(S)   (Ś)(H)(S)   (Ś)(H)(H)   L(ĹL)
      LH(Ś)   HL(Ś)   H(H́)(H)   L(H́)(H)   HHL(Ś)

Given these patterns and the similarity in stress systems between Punjabi and Kelkar's Hindi, it appears that Hindi uses the same constraints as Punjabi and essentially the same ranking, but with one main difference: the placement of NONFINALITY and WSP within the ranking is reversed, as seen in (33).

(33)   **LEFTMOST, SUPERHEAVY, ALIGN-FT-R >> WSP >> CONTOUR (H́)(H) >> PARSE-SYL >> NONFINALITY >> FT-BIN**

In Sindhi (Walker 1997), if a word only contains one heavy syllable, then it receives stress regardless of the location of the heavy syllable, as seen in (34). If there are multiple heavy syllables, the rightmost non-final heavy syllable receives stress, as seen in (35). If no heavy syllables are present, then the rightmost non-final foot is stressed, as seen in (36). Again, the leftmost foot bears stress.

(34) L(H́)   (H́)L   L(H́)L   (H́)(LL)   LL(H́)LL
(35) (H́)(H)   H(H́)(H)   (H́)L(H)   (H́)(LL)(H)   HL(H́)(H)
      HHH(H́)(LL) HHHH(H́)(H) HHHHH(H́)L
(36) (ĹL)   L(ĹL)

The stress system of Urban Hijazi Arabic shares a number of characteristics with the systems of Punjabi, Hindi, and Sindhi and so it too requires the use of CONTOUR (H́)(H), as evidenced by the following footed patterns:

(37) (ĹL)   (Ĺ)(H)   L(Ś)   H(Ś)   (H́)L
      (H́)(H)   H(H́)(H)   (H́)L(H)   (Ĺ)(LL)   (ĹL)(H)
      H(H́)(LL)

As has been demonstrated, CONTOUR (H́)(H) belongs to a family of CONTOUR constraints and is typologically attested. The applicability of CONTOUR (H́)(H) to both Indo-Aryan and non-Indo-Aryan languages indicates that the necessity of the constraint reaches beyond a small group of related languages.

5.   Conclusion

What has been presented here is the system of stress assignment in Punjabi—a system which at first appears quite unusual but is actually rather typical when compared to the systems of other related languages. Characterizing the stress system of Punjabi within Optimality Theory yields an analysis in which general-

ized properties of the system become evident—and it is these properties which can be related to other languages in order to assess some degree of similarity.

References

Al-Mohanna, Faisal M. 2004. Paradoxical Non-finality: Stress Assignment in Three Arabic Dialects. Ms., King Saud University.

Arun, Vidya B. 1961. *A Comparative Phonology of Hindi and Panjabi.* Ludhiana, India: Panjabi Sahitya Akademi.

Bhatia, Tej K. 1993. *Punjabi: A Cognitive-Descriptive Grammar*. London: Routeledge.

Hayes, Bruce. 1995. *Metrical Stress Theory: Principles and Case Studies.* Chicago: University of Chicago Press.

Inkelas, Sharon. 1994. Exceptional Stress-Attracting Suffixes in Turkish: Representation vs. the Grammar. Presented at the Workshop on Prosodic Morphology, Utrecht University.

Kager, René. 1992. Shapes of the Generalized Trochee. *WCCFL* 11:298-312.

Kelkar, Ashok R. 1968. *Studies in Hindu-Urdu, Part I: Word Phonology.* Poona, India: Deccan College.

Mohanan, K. P. 1979. Stress in Malayalam, Hindi, and Gujarati. Ms., MIT.

Ohala, Manjari. 1977. Stress in Hindi. In L. Hyman, ed., *Studies in Stress and Accent, Occasional Papers in Linguistics* 4, 327-338. Los Angeles: University of Southern California.

Oostendorp, Marc van. 2002. The Phonological and Morphological Status of the Prosodic Word Adjunct. *Linguistische Berichte* 11:209-236.

Pandey, Pramod K. 1989. Word Accentuation in Hindi. *Lingua* 77:37-73.

Prince, Alan and Paul Smolensky. 2002. Optimality Theory: Constraint Interaction in Generative Grammar. Ms., Rutgers University and Johns Hopkins University.

Sezer, Engin. 1981. On Non-Final Stress in Turkish. *Journal of Turkish Studies* 5:61-69.

Vijayakrishnan, K. G. 2003. Stress and Tone in Punjabi. *CIEFL Occasional Papers in Linguistics,* Vol. 10. Hyderabad: CIEFL.

Walker, Rachel. 1997. Mongolian Stress, Licensing, and Factorial Typology. Ms., University of California, Santa Cruz.

Rajdip Dhillon
Department of Linguistics
Yale University
370 Temple Street, Rm. 204
New Haven, CT 06520-8366

rajdip.dhillon@yale.edu

The Interaction of Tones and Vowels in Fuzhou

CATHRYN DONOHUE
Australian National University

1. Introduction

The goal of this paper is to investigate the coincident changes of tones and vowels in Fuzhou. There has been considerable work on understanding the phonetic effects of segments on tone and on the influence of tone on segments (e.g. Maddieson 1977, 1984, 1997, Zee 1984 and others). Such phonetic effects are often the consequence of speech production and as such are relatively imperceptible. However, less attention has been given to effects of tone and segments that are not automatic phonetic changes, but rather changes that result from the phonology. In this paper I present data from the Fuzhou dialect of Chinese. I argue that the phonological tone is responsible for the segmental effects, rather than the reverse, but that the phonological segments may nonetheless play a role in the tonal outputs. I argue this point using acoustic data from Fuzhou.

2. Fuzhou

Fuzhou is a Min dialect of Chinese spoken in north-eastern Fujian province, China. There are seven citation tones in Fuzhou, but previous work differs enormously on the actual shape of the contours. Table 1 presents the tonal representations available in the literature. The contour descriptions are given using the Chao tone letters, which typically uses a scale of 1–5, where 5 is the highest and 1 is the lowest pitch. The underlining indicates that the tone occurs with a 'stopped' syllable, which in Fuzhou implies a glottal stop coda, found with tones 4 and 7.

In this table we see a lot of minor variation, such as the exact height of tone 1, which is clearly a high level tone. But there is more worrying variation for other tones, such as tone 2, which is possibly a mid or low tone, and is level or falling. Tone 3 is represented as a mid-rise, a dipping tone, a low-rise, a low level, and a mid-fall. Tone 4 is always a low(ish) rising tone (ending in the glottal stop), and tone 5 is clearly a high falling tone. Tone 6 is a convex tone, but varies between low, mid and high rise-fall. Tone 7 is clearly a high tone (with a glottal closure), but how high it is and whether there is a slight rise is not clear.

Table 1. Previous descriptions of Fuzhou tones.

Author	Year	Tone 1	Tone 2	Tone 3	Tone 4	Tone 5	Tone 6	Tone 7
Chen	1985	44	32	213	<u>13</u>	51	131	<u>5</u>
Chen	1967	44	22	312	<u>24</u>	52	232	<u>5</u>
Corbato	1945	44	21	25	<u>24</u>	52	232	<u>5</u>
Ergerod	1956	55	33	13	<u>13</u>	52	242	<u>55</u>
Lan	1953	55	33	11	<u>13</u>	61	242	<u>56</u>
Jiang-King	1999	44	31	213	<u>23</u>	53	242	<u>5</u>
Nakajima	1979	55	33	31	<u>23</u>	52	242	<u>55</u>
Norman	1988	55	22	13	<u>24</u>	41	342	<u>55</u>
Tao	1930	55	31	13	<u>34</u>	52	342	<u>5</u>
Yip	1980	44	22	12	<u>13</u>	52	242	<u>4</u>
Yuan	1980	44	31	213	<u>23</u>	52	353	<u>4</u>

This sort of variation is conceivably dialectal variation or between-speaker variation, but it certainly illustrates the need to work from quantified data. In Table 2, I have summarized the Fuzhou tones impressionistically, and in Section 4 I present Donohue (1992a)'s normalized F0 contours for Fuzhou tones.

Table 2. An impressionistic description of the Fuzhou tones.

Tone 1	High level with a slight rise
Tone 2	Mid level with a slight fall
Tone 3	Low level with a slight fall
Tone 4	Low rising stopped tone (final glottal stop)
Tone 5	High fall, starting higher than the high level tone
Tone 6	Low rise-fall
Tone 7	High stopped tone (final glottal stop), notably shorter than the others

3.   Tone-vowel interaction

The tone-vowel interaction in Fuzhou has to do with changes internal to a phonological vowel that are coincident with tonal changes. The phonological vowels are determined based on what are historically the same vowel and what are synchronically realized as the same vowel in other dialects of Chinese. The vowels are often described as 'high' and 'low', and the vowel pairs are illustrated in Table 3.

Table 3. Examples of alternating vowel pairs in Fuzhou.

	Set A: Tones 1, 2, 5, 7	Set B: Tones 3, 4, 6
	i	ei
	ei	ai
	u	ou
	ou	au
	y	øy
	øy	θy
but	a	a

Fuzhou tone sandhi is right dominant, which means that it is the final syllable in a given domain that remains unchanged. All the prepausal syllables retain their citation tones and vowels; however, in sandhi (non-final) position, the tone changes and the vowel also changes. Consider the examples in (1)–(3) below. The first two sets of examples illustrate that when a syllable with an underlying tone from 'Set B' (tone 3, 4, 6) is in prepausal position or alone (the (a) examples), the 'lower' of the vowel pairs—its so-called underlying vowel—is realised. However, in sandhi position, we see that not only has the tone changed, the vowel has also changed to the 'higher' variant from Set A. (3) illustrates that the vowel in a syllable from the 'set A' tones (1, 2, 5, 7) remains unchanged in sandhi position.

(1) Tone 6:   [**tou**]   'think'
    T6 + T6:   [**tu** 42 kei 231]   'imagine'

(2) Tone 3:   [**khei**]   'air'
    T3 + T4:   [**khi** 52 aʔ 13]   'air pressure'

(3) Tone 7:   [**tu**ʔ 5]   'poison'
    T7 + T6:   [**tu** 33 tau 231]   'poison bean'

It is worth noting that vowel height is clearly not the key difference between these two sets of vowels, especially when you have a pair of vowels: [ou]–[au], with [ou] in Set A and [au] in Set B. The difference looks somewhat like monophthong/diphthong pairings, but this characterization clearly won't account for all vowels, given the monophthongal [a] that remains the same between groups. Let us turn to phonological accounts for these vowel alternations, by discussing two previous works that have addressed this issue in some depth.

3.1. Yip 1980
Yip (1980) is an extensive study of tonal phonological phenomena in a range of Chinese languages. Her analysis of Fuzhou is that the Set B vowels are raised when they co-occur with tones that are [+upper] register. To account for this, she provides a rule, shown in (4).

(4)   V[αlow] → [–low, –αhigh] / [+upper]

This elegant rule, however, fails to capture the simplification of diphthongs, nor does it readily account for the fact that some vowels, such as [a], are constant in ALL tonal contexts. Another shortcoming of this approach is that it results in a rather unusual vowel inventory, lacking [i, y, u], which are all necessarily considered derived vowels in this approach.

3.2. Jiang-King 1999

Jiang-King (1999) presents a study of the tone/vowel interaction in Northern Min, including Fuzhou. Jiang-King, following Hyman (1988 and elsewhere) includes in her tonal representation the moraic structure of the syllable, and relates the vowel alternations to the tonal changes by appealing to the syllable weight. She refers to the difference, not in terms of 'height' as Yip did, but rather in terms of 'tightness', whereby the Set A vowels are considered 'tight syllables' and the Set B vowels, 'loose'. Jiang-King's 'prosodic anchor hypothesis' (p. 77) captures this covariation by postulating, relatively noncontroversially, that tight syllables have one mora, while loose syllable have two. The leftmost mora is considered the head, and it can host up to two tones, while non-head morae can host only one tone. This captures the bigger picture that is Jiang-King thesis, that the moraic structure determines tone/vowel possibilities. There are other rules included to change the actual quality of the vowel.

    This is a very neat proposal, drawing nicely on previous typologically tested work to inform the hypothesis, but runs into difficulty when accounting for vowels whose form, unlike, e.g. the [y]–[øy] pair, does not change according to the moraic structure of the syllable consistent diphthongs in a pair (e.g. [ei]–[ai]), or the monophthong [a] noted above.

    In contrast to these two proposals, I claim that there is no need to predict the actual phonetic shape of the vowel, just the phonological shift. I also claim that the reason for this shift is perceptual enhancement, found elsewhere in Fuzhou. The next sections present new data for Fuzhou that has been quantified and normalized across speakers, before discussing specifically the factors involved in perceptual enhancement in Fuzhou, including the tone/vowel alternations.

4.   Quantified Fuzhou data

This section presents Fuzhou data from Donohue (1992a, forthcoming-a) taken from a single variety that has been quantified and normalized across four speakers (two male, two female).

    Using three sets of tones with [i,a,u] as their nuclei, Donohue measured 3 tokens per vowel set, with two repetitions per token, going through the sets 3 times each in a randomized order (18 tokens per vowel set per speaker, which is 54 tokens per vowel per speaker). The tonal contours were then normalized across speakers using a z-score transform (Rose 1987). To try to limit sources of error,

only syllable types with voiceless unaspirated plosive onsets were used, without nasal codas.

4.1. Tones

The normalized F0 contours for each of the seven citation tones are given below on the left hand side of Figure 1. The right hand side of the figure shows the normalized tone contours after determining that there were onset and offset perturbations, which were found to be 50 msecs and 5% of the tonal duration, respectively.
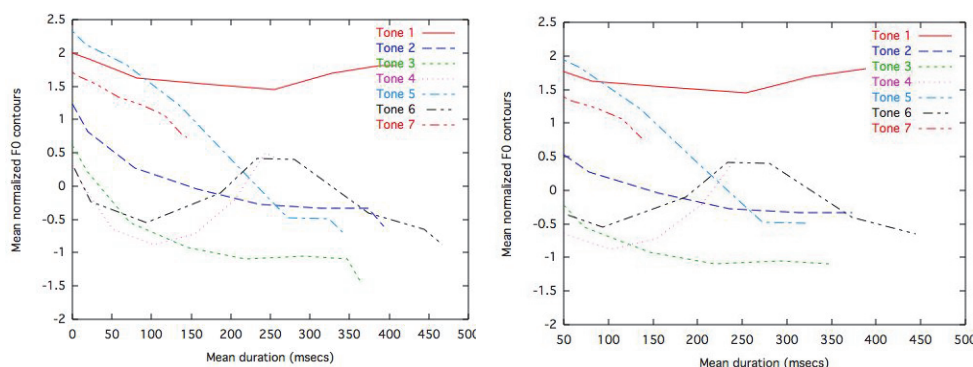

Figure 1. **Left**: Normalized tones. **Right**: Normalized tones in Fuzhou without on- and off-set perturbations.

To represent these tones phonologically, I will use the reasonably standard features for register ([±upper]) and tonal contour features ([±high] (e.g. Bao 1990, Snider 1999). There is some question of the definition of register, but following Donohue (1992b), I assume that it is a bifurcation of the pitch range. As such, assigning tonal features to the contours is relatively straightforward, with the exception of tone 2: should it be considered a high tone in the lower register or a low tone in the higher register, given that it starts just above the mid-range point and drops into the lower register. If one were to assume that it is a [–upper] register, [+high] tone, then one could say that lower register tones fall slightly, as tone 3 does as well, whereas upper register level tones rise slight (like tone 1). However, we could also describe this as maximally distinguishing not the register features but the tonal features, thus a [+upper] register [–high] tone, and claim that all [–high] tones fall slightly, while [+high] tones rise slightly. I will assume that it is a [+upper, –high] tone, as it is then grouped with the other [+upper] tones forming a natural class for the Set A vowels. The feature assignment for the tones that I will assume is given in Table 4. The abbreviations use upper case for register features and lower case for tonal contour features.

Cathryn Donohue

Table 4. Tonal feature assignment in Fuzhou.

Tone	Features: Register, Tone	Abbreviated features
Tone 1	[+upper], [+high]	H, h
Tone 2	[+upper], [–high]	H, l
Tone 3	[–upper], [–high]	L, l
Tone 4	[–upper], [–high, +high]	L, <u>lh</u>
Tone 5	[+upper], [+high, –high]	H, hl
Tone 6	[–upper], [–high, +high, –high]	L, lhl
Tone 7	[+upper], [+high]	H, <u>h</u>

4.2. Phonation
Another finding of Donohue (1992a) is that Fuzhou has a consistent non-modal phonation change coincident with tones 3, 4 and 6—ALL THE LOWER REGISTER TONES. Tone 2 also shows some non-modal phonation, suggesting that perhaps it could have to do with the syllable starting with [–high]. These are summarized in Table 5.

The phonation changes consistently to a creaky voice in the lower register, but tone 2 also shows some deviation from modal phonation. I claim that this change in phonation is to perceptually enhance the change in tonal features used, with the lower register [–high] onset tones being produced in all creak, and the upper register [–high] getting only a slight breathiness.

Table 5. Phonation changes in Fuzhou.

Tone	Phonation
Tone 1	modal
Tone 2	slightly breathy
Tone 3	breathy/creaky voice
Tone 4	creaky voice
Tone 5	modal
Tone 6	creaky voice
Tone 7	modal

4.3. Vowel quality
It is worth noting that the same vowel can occur in both Sets A and B. Consider the pairs previously presented (Set A–Set B), we have [i]–[ei] and [ei]–[ai]. We also observe [u]–[ou] and [ou]–[au]. Moreover, the monophthong is consistent across all tones. Understanding the vowel alternations is thus not a question of which vowel type is more suited to the moraic structure of the tone, or which are 'lower' or 'higher' in the relevant register. My claim is that it is a question of having the perceptual enhancement of the upper register through these regular

vowel alternations, not a question of deriving the vowel alternations based on dynamic tonal assignment or tone/moraic structure.

4.4. Tone sandhi
To justify the claim that the vowel alternations and phonation changes serve to perceptually enhance the tone, it is necessary to explain that the full tonal paradigm and coincident changes of phonation and vowels only occur in citation/isolation form. That means that in sandhi position you find neither the vowel changes nor the phonation changes. This is perhaps not surprising, as sandhi tones are often only two-thirds the duration of non-sandhi tones. That is, non-sandhi tones, which are at the end of the domain in Fuzhou, or prepausal position, can be up to 1.5 times longer in duration. This is clearly a context in which it is much more feasible to enhance the perception of the tones by adding the vowel and phonation cues. For historical origins of the vowel forms, see Donohue Forthcoming-b.

5. Concluding remarks
The main point of this paper is to claim that the vowels and tones are not dynamically interacting, but rather are merely co-occurring in a context that is seen to be a good one for perceptual enhancement. The Set B vowels indicate [–upper] register, and the phonation indicates a tone starting with a [–high] feature.

References

Chan, Marjorie. 1985. Fuzhou Phonology: A non-linear analysis of tone and stress. Ph.D. dissertation, University of Washington.

Chen, Leo. 1967. Foochow reduplication. *Tsing Hua Journal of Chinese Studies* 6:200–213.

Corbato, Hermenegildo (ed.). 1945. *Manual of the Foochow dialect*. Los Angeles: UCLA.

Donohue, Cathryn. 1992a. The phonetics and phonology of Fuzhou tones. Honours thesis, Australian National University.

Donohue, Cathryn. 1992b. The phonetics of register in the Fuzhou dialect of Chinese. *Proceedings of the Fourth Australian International Conference on Speech Science and Technology*, 602-607. Brisbane: University of Queensland Press.

Donohue, Cathryn. Forthcoming-a. *Fuzhou tonetics and tonology*. Munich: Lincom Europa.

Donohue, Cathryn. Forthcoming-b. Tones and vowels in Fuzhou revisited. In Wolfgang Kehrein and Björn Köhnlein (eds), *Tone and Segmental Structure*. Amsterdam: Niemeyer Linguistische Arbeiten.

Ergerod, Søren. 1956. *The Lungtu dialect: A descriptive and historical study of a south Chinese idiom*. Copenhagen: Ejnar Munksgaard.

Hyman, Larry M. 1988. Syllable structure constraints on tonal contours. *Linguistique Africaine* 1:49-60.

Jiang-King, Ping. 1996. An optimality account of tone-vowel interaction in northern Min. PhD dissertation, University of British Columbia.

Lan, Ya-Shiu. 1953. Phonetic system of Foochow. *Bulletin of the College of Arts, National Taiwan University* 5:241-331.

Maddieson, Ian. 1977. Tone effects on consonants. *University of California Working Papers in Phonetics* 36:91-110.

Maddieson, Ian. 1984. The effects on F0 of a voicing distinction in sonorants and their implications for a theory of tonogenesis. *Journal of Phonetics* 12(1):9-15.

Maddieson, Ian. 1997. Phonetic universals. In W. Hardcastle and J. Laver, eds., *Handbook of Phonetic Sciences*, 619-639. Oxford, Blackwell Press.

Nakajima, Motoki. 1979. A comparative lexicon of Fukien dialects. *Ajia-Afurika Gengo Bunka Kenkyu* (*Research in Asian-African Language and Culture)* 18:220-245.

Norman, Jerry. 1988. *Chinese*. Cambridge, Cambridge University Press.

Rose, Philip. 1987. Considerations in the normalisation of the fundamental frequency of linguistic tone. *Speech Communication* 6(4):343-352.

Snider, Keith. 1999. *The geometry and features of tone*. Dallas, Dallas SIL and University of Texas, Arlington.

Tao, Yu-Min. 1930. Phonetics of the Foochow dialect. *Minyin Yanjin* 1(4):445-470.

Yip, Moira. 1980. The tonal phonology of Chinese. PhD dissertation, Massachusetts Institute of Technology.

Yuan, Jia-Hua. 1980. *Hanyu Fangyan Gaiyao (A study of Chinese dialects)*. Beijing, Wenzi Gaige Chubanshe.

Zee, Eric. 1984. Peak intraoral air pressure in [p] as a function of F0 in Chinese. *Language and Speech* 27(4):381-390.

Zhiming, Bao. 1990. On the nature of tone. PhD dissertation, Massachusetts Institute of Technology.

Department of Linguistics
College of Asia & the Pacific
Australian National University
Canberra 0200 AUSTRALIA

cathryn@donohue.cc

Tolowa Peak Pitch Alignment: Perspectives from an Autosegmental-Metrical Framework[1]

CHRISTOPHER S. DOTY and SUSAN G. GUION
University of Oregon

0.   Overview

The preliminary results of an investigation into the alignment of lexical pitch accents in Tolowa (Athabaskan) within an autosegmental-metrical framework are reported. Of specific interest were the peaks of prominent rising-falling pitch contours which are found to occur on some stressed syllables, and how the peaks of those contours are aligned within the syllable. Further, potential effects of segmental structure on the alignment of the peak were investigated. We begin with a brief introduction to Tolowa prosody and peak pitch-accent alignment before turning to the results of the study.

0.1   Background on Tolowa

Tolowa is an Athabaskan language spoken in an area straddling the Oregon-California border along the Pacific coast. Only three speakers of the language remain, although revitalization efforts are currently underway.

Despite being a member of the Pacific Coast Group of the Athabaskan family—a group of languages which have traditionally been thought of as non-tonal—Tolowa was first described as having pitch accent, which was realized as high pitch on various syllables (Bright 1964). Subsequent work, however, seemed to indicate that Tolowa was perhaps better thought of as having stress accent, and

---

the high pitch present on some syllables was simply an acoustic correlate of this stress (Tuttle 1990).

Although it appears that Bright and Tuttle were describing the same phenomenon, as their analyses often agree about where high pitch/stress occurs, it seems that each may have been considering only one of the phenomena actually present in Tolowa. Our examination of stressed syllables indicated that there are two distinct types of Bright's "high" pitch accent which can occur: 1) a high, level pitch which is maintained for the entire voiced portion of the syllable or 2) a rising-falling pitch accent (henceforth "contour pitch accent") which peaks at about mid-syllable, and then falls to the end of the syllable. Example F0 contours for each of the two types of pitch accent can be found in Figure (1).

(1) Pitch tracks for *see* [seː] 'stone' (top, high flat pitch accent)
and *sree* [ʂeː] 'sap' (bottom, contour pitch accent) from speaker AB.
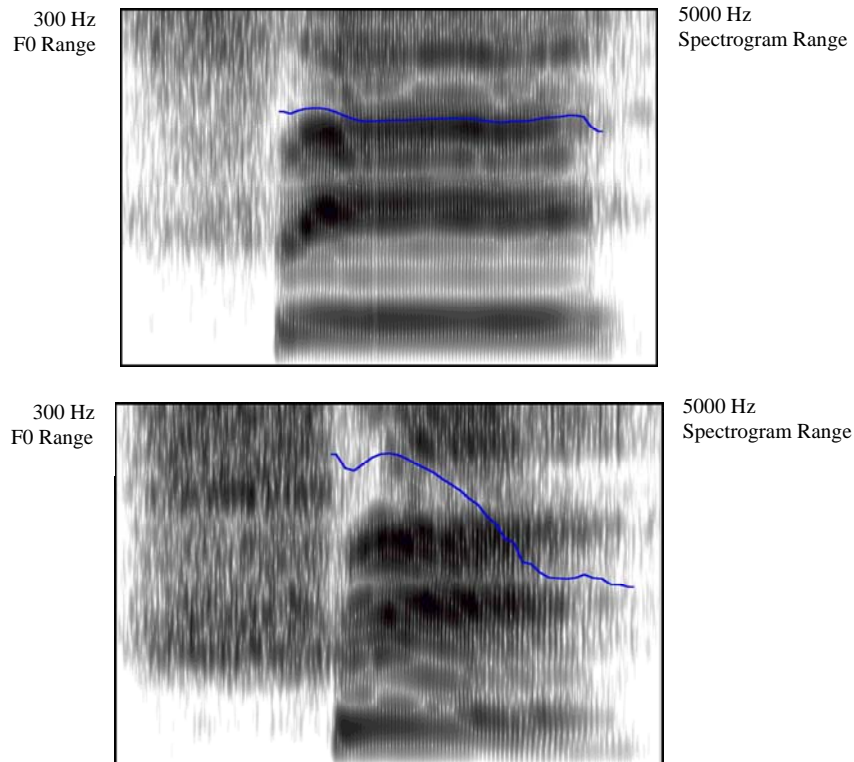
Furthermore, a preliminary analysis of unstressed syllables indicated that they do not carry pitch accent. Given this, it appears that both stress and pitch accent may be relevant for a full description of Tolowa prosody. However, the present study was not focused on the realization of stress, but instead sought to examine the alignment of the peaks of the contour pitch accent in stressed syllables.

0.2   Background on Peak Pitch Alignment

In recent years, many researchers have examined the ways in which pitch accent peaks and valleys align with the segmental string. Much of the work in this area has been conducted within an autosegmental-metrical framework. This school (described thoroughly in Ladd 1996) asserts that rises and falls in pitch are not themselves targets, but are simply the result of transitions between various level pitch targets (that is, the target itself occurs at a specific height). It is these targets that are the primary unit of pitch contours, and any movement in pitch is simply the result of linking two targets together across a given temporal distance. The utility of this view is that it allows what at first appear to be highly variable pitch contours to be shown to be very precisely aligned with a given point in the segmental string when various effects, such as the temporal distance between the targets and the segmental structure at the location of the alignment, are taken into account. Of the many factors which have been shown to effect the alignment of the peak, two specific considerations will be addressed for the Tolowa data: 1) whether the domain of alignment is the rhyme or syllable and 2) what the effect of segmental structure on that alignment might be. Although previous work within this framework has examined the alignment of both high and low targets, only the alignment of the high will be discussed here as it is most relevant to the examination of Tolowa which follows.

In one of the first studies to specifically address the alignment of peak pitch accent, Silverman and Pierrehumbert (1990) found that, in a model designed to predict the alignment of high targets in English, the proportion of the rhyme had more predictive power than a proportion calculated from the duration of the entire syllable. Further, they demonstrated that a proportion served as a better modeling tool than raw duration. Arvaniti, Ladd and Mennen (1998) present a similar result for Modern Greek. They found that the alignment of the peak of the high target of a given pitch accent occurs just after the onset of the following syllable's vowel, and thus seems to be aligned with the rhyme (albeit of a different syllable).

However, studies on other languages have found that the raw duration of the entire syllable is best able to describe the alignment of the pitch peaks. Prieto, Santen and Hirschberg (1995) found that, when potential confounds such as stress clash are carefully controlled, the duration of the syllable provides the best description of peak pitch alignment in Mexican Spanish, rather than a proportion of either the entire syllable or of only the rhyme.

In addition to addressing the issue of syllable or rhyme, some studies have also examined the effect that different segmental contexts can have on the alignment of the peak. Arvaniti *et al*. (1998) found that, in situations of peak delay (i.e., where the high peak of a pitch accent is actually aligned just after the beginning of the syllable following the accented syllable), following syllables that begin with nasals saw an earlier alignment of the peak, while those with fricative onsets saw a relatively later peak, though both occurred during the following syllable's vowel. Stops patterned with either one or the other, depending on speaker. These differences were attributed to the fact that the nasals were shorter

than the fricatives (although it is not clear if the difference in stop patterning by speaker can be explained by the length of the segments).

Based on this background of peak pitch alignment in other languages, two research questions were posed for Tolowa in order to determine to what extent peak pitch alignment in an Athabaskan language is similar to or different from what has been seen in Indo-European languages. First, in what way does the peak of the contour pitch accent align with the segmental string, and is the rhyme or the entire syllable the domain for the alignment of the peak? Second, how does the segmental structure of the syllable affect the alignment of the peak?

1.   Method
1.1.   Selection of Tokens

Three types of stressed syllables with contour pitch accents were selected for analysis. The first type consists of open syllables with long vowels (CVV). All word-internal open syllables contain long vowels in Tolowa. Oral and nasalized vowels were grouped together in the analysis, as none of the statistical tests which were used indicated that there was a significant difference between the two vowel types. The second syllable type considered is closed by a nasal (CVN). Finally, syllables closed by a voiceless obstruent (CVO) were considered. In Tolowa, the only obstruents allowed syllable finally are voiceless fricatives or aspirated stops.

The words analyzed were selected from recordings made by several linguists beginning in the 1950s. Five speakers were selected for analysis based on the number of overall words produced on the recordings as well as the quality of the recordings in order to ensure that accurate pitch tracks could be obtained. One additional, living speaker—Loren *Me'-lash-ne* Bommelyn, who has been extremely active in preserving Tolowa culture and language for more than thirty years and who has an M.A. in linguistics—was also recorded for inclusion in the analysis, for a total of six speakers.

Because the words were selected from a variety of old recordings, it was not possible to match words across all six speakers. Thus, words were simply sorted into the three syllable types (CVV, CVN, CVO). A set of example tokens for each speaker is presented in Table (1) below in both the IPA and the tribal orthography presented in Bommelyn (2006). A total of 217 words (76 CVV, 33 CVN and 108 CVO) were used for the present analysis.

In cases where speakers produced more than one repetition of the word, the first clear repetition was used. All words were pronounced in isolation, except for the productions by the living speaker, LB, which were collected in the carrier phrase *Dii-dvn* _____ *xee-naa-ghitlh-yash* [ˈtiː.tʌn _____ ˌxeː.nɑː.ˈɣit͡ɬ.jɑʃ] 'Now _____ we are saying'.

(1) List of sample words for each syllable type from each speaker. Boldface indicates the stressed, contour pitch-accented syllable used in the analysis.

	CVV		CVN		CVO	
	IPA	Tribal	IPA	Tribal	IPA	Tribal
SL	miː.neʔ	**mii**-ne'	nɑn.t͡sʼʌn	**nan**-ts'vn	kɑʔ.ʂʌʂ	ga'-**srvsr**
	'back'		'mountain'		'crab'	
HS	tuː.ma	**duu**-ma	kʷʼʌn.ʃã	**k'wvn**-sha~	ɬukʰ	**lhuk**
	'sea anemone'		'raccoon'		'salmon/fish'	
ER	meː.neʔ	**mee**-ne'	ɬnin	**lhnin**	metʰ	**met**
	'house'		'raw'		'stomach'	
LB	kɑː.si	**gaa**-si	ʃʌm	**shvm**	k'ɑː.t'ʌʂ	k'aa-**t'vsr**
	'acorn straining basket'		'good'		'ant'	
MW	ʂeː	**sree**	mɑn.t͡ʃɑʔ	**man**-cha'	ʂʌʂ	**srvsr**
	'(tree) sap'		'(white person) dress'		'wood'	
AB	χiː	**xii**	ʂwʌn	**srwvn**	tɑː.ɣʌʃ	daa-**ghvsh**
	'spruce tree'		'dirty'		'snake'	

1.2. Procedure & Measurements

Syllables were isolated in Praat (Boersma and Weenik 2006), and the duration of the rhyme and of the entire syllable were measured, as well as the duration (in ms) from the onset of both the syllable and rhyme to the temporal point at which the peak occurred. The height of the peak (in Hz) was also measured, as was the height of the low at vowel onset. Vowel onset was chosen as the location to measure the low due to the fact that many of the tokens in the current data set had voiceless onset consonants, making any measurement before vowel onset impossible. For the sake of consistency, then, F0 was measured at vowel onset, even when the initial consonant was voiced and the low occurred before the onset of the vowel. In cases where F0 fell slightly after vowel onset before rising to the peak, however, the actual low was measured.

Duration of the rhyme was measured from the beginning of the vowel through the end of the syllable. The onset of the vowel as measured at the zero-crossing of the first clearly-repeating voicing cycle that coincided with the onset of second formant (F2) energy. Duration of the syllable was measured from the beginning of the onset consonant through the end of the syllable.

In order to determine syllable offset in a consistent manner, the following criteria were used for each syllable type. For CVV syllables, the end of the rhyme was taken to be the end of clear F2 energy that coincided with the end of voicing. For CVN syllables, the end of the nasal was considered to be the end of voicing in the case that the nasal was followed by a voiceless consonant or was word-final. If the nasal was followed by a voiced segment, offset was placed at the abrupt change in amplitude and formant structure between the nasal and the following segment. For CVO syllables closed with fricatives, offset was placed at the end of

the high-frequency aperiodic noise associated with the fricative. In CVO syllables closed by stops, syllable offset was placed at the end of the burst and aspiration of the stop release. Because syllable-final stops are uniformly aspirated in Tolowa, this always included a period of aspiration.

2. Results and Discussion
2.1. Domain of Peak Pitch Alignment

Before presenting the results, it should be noted that the peak in both CVN and CVO syllables was seen to occur just slightly before the onset of the coda consonant. With CVV syllables, there was no such pattern, with the peak occurring in a seemingly arbitrary position during the vowel.

Based on the measurements taken, two proportions were computed for each token: one with the peak location calculated as a percentage of the duration of the syllable, and one with peak location calculated as a percentage of the rhyme. Means of the two proportions of peak location for both syllable and rhyme are presented in Tables (2) and (3), respectively.

(2) Results for peak location as a proportion of syllable duration.

	Speaker						
	SL	HS	ER	LB	MW	AB	Total
Mean	41%	49%	49%	67%	46%	49%	50%
Range (%)	19-68	25-70	17-80	21-65	22-61	17-75	17-80
SD	10.7	10.7	17.1	13.4	9.3	14.2	15.0
n	38	46	47	35	28	23	217

(3) Results for peak location as a proportion of rhyme duration.

	Speaker						
	SL	HS	ER	LB	MW	AB	Total
Mean	23%	32%	25%	26%	30%	24%	28%
Range (%)	11-37	21-53	12-52	16-45	19-50	11-35	11-53
SD	7.8	7.8	9.1	6.7	8.1	7.0	8.6
n	38	46	47	35	28	23	217

Examining the means for syllable duration, it appears that the peak aligns, on average, at the middle of the syllable—an intuitively appealing result, especially when compared to the alignment based on rhyme duration, which seems rather arbitrary at 28%. However, in looking at the overall ranges for each syllable type, we see that the rhyme proportions have a range from 11% to 53%, which is a rather tighter range than that for the syllable proportions of 17% to 80%. This indicates that the rhyme provides a tighter fit for the location of the peak. This conclusion is supported by examining the standard deviations of the two

proportions. The alignment by syllable duration has a standard deviation [SD=15.0] almost twice as large as the standard deviation of the alignment-by-rhyme group [SD=8.6]. An F-test on the variance of the syllable duration group [σ^2=225.39] and the rhyme duration group [σ^2=73.12] was computed which indicated that peak delay calculated as a proportion of the duration of the rhyme was significantly less variable than the proportion computed based on the duration of the entire syllable [$F(216,216) = 3.08$, $p<.001$].

Due to the fact that there is less variability in the alignment of the peak pitch in terms of the proportion of the rhyme than of the syllable, it appears that the rhyme is the domain of peak alignment in Tolowa. This mirrors the finding of Silverman and Pierrehumbert (1990) for English and Arvaniti *et al*. (1998) for Modern Greek but stands in contrast the findings of Prieto *et al*. (1995) for Mexican Spanish.

2.2. Effects of Segmental Structure

We now turn to an examination of the second question raised above: is the alignment of the peak affected by the structure of the syllable with which it is aligned? Of specific interest was the role that coda consonants play in alignment of the peak, as the peaks in CVN and CVO syllables often occurred quite close to the end of the vowel, and thus just before the beginning of the coda consonant. Because the above results demonstrated that a proportion based on rhyme duration is the best predictor of peak delay, only this proportion will be considered in the analysis that follows. The same tokens used above are also used here; however, tokens were separated into different groups based on syllable type (CVV, CVN, & CVO). Mean proportions for each type of syllable by speaker are presented in Table (4).

(4) Means, standard deviations, and number of tokens for peak alignment by syllable type and speaker.

		SL	HS	ER	LB	MW	AB	Total
				Speaker				
CVV	**M**	28%	38%	31%	28%	35%	26%	**31%**
	SD	6.0	11.0	9.6	6.1	6.2	7.0	**8.5**
	n	16	11	18	16	7	8	**76**
CVN	**M**	21%	34%	32%	28%	28%	27%	**28%**
	SD	7.5	6.1	2.3	8.2	3.0	4.1	**6.4**
	n	5	4	3	7	7	7	**33**
CVO	**M**	19%	30%	20%	21%	29%	18%	**24%**
	SD	7.6	5.6	5.4	4.0	10.1	5.8	**8.1**
	n	17	31	26	12	14	8	**108**

In examining the peak alignment data presented in Table (4), CVV and CVN syllables appear relatively similar, with means of 31% and 29%, respectively, while peaks in CVO syllables occur slightly earlier, at 24% of the length of the rhyme. To test whether these differences were significant, the data were submitted to a two-way GLM ANOVA, with speaker (six levels) and syllable type (three levels) as independent factors and proportion of the rhyme duration at which the peak occurred as the dependent variable. The effect of both speaker [$F(5,199)=9.332$, $p<.001$] and syllable type [$F(2,199)=27.034$, $p<.001$] were significant. The interaction between the two factors, however, was not significant [$p=.399$]. This indicates that speakers were relatively consistent in their differentiation of the syllable types in terms of peak alignment.

Tukey's HSD tests were conducted to determine which levels of syllable type were significantly different from each other. The tests indicated that CVO syllables [M=24%, SD=8.1] had a peak which occurred significantly earlier than both CVV syllables [M=31%, SD=8.5] and CVN syllables [M=28%, SD=6.4], [$p=.001$ and .012, respectively]. The difference between CVV and CVN syllables was not significant [$p=.154$].

Based on these results, it appears that the type of coda in a given syllable affects the alignment of the pitch-accent peak, with peaks in CVO syllables occurring earlier than peaks in syllables with other types of codas. Given that all stops and fricatives in this position are voiceless in Tolowa, one might suspect that this earlier alignment of the peak is related to the fact that the peak cannot be realized during the voiceless portion of the rhyme, and the high target is thus moved closer to the beginning of the syllable. This sort of time pressure would not be a problem in CVV and CVN syllables, as voicing continues throughout the rhyme. A look at the mean durations of the rise in all syllable types—measured from vowel onset to the peak—indicates that CVN syllables [M=85 ms], although slightly shorter than CVV syllables [M=93 ms], are still longer than CVO syllables [M=75 ms]. It follows, then, that if this time pressure has indeed forced the high target at the peak to be realized earlier in CVO syllables, then we also ought to see a steeper slope to the rise in CVO syllables than in CVV or CVN syllables, as the rise now has less time to be completed (see below).

2.3. Slope of the Rise

Because the peak in CVO syllables occurs significantly earlier than in CVV or CVN syllables, the autosegmental framework predicts that the F0 contour in CVO syllables will have a steeper slope. This is due to the fact that the distance between the low target at the beginning of the syllable and the high target during the rhyme has been reduced. Thus, if the slope of a pitch contour is simply an extrapolation between two targets, we would expect the slope to become steeper as the distance between the two targets decreases (as has been found in several previous studies, e.g., Prieto *et al.* 1995).

In order to test this prediction, a measurement of the slope was calculated as follows. The duration of the rise in milliseconds (time of high minus time of low),

and the difference between the peak and the low (in Hz) was calculated. From these two numbers, the slope of the rise in F0 was calculated (Hz/ms). A slope of, for example, .25 represents a one-quarter Hertz rise in pitch for every millisecond that the contour lasts. Higher numbers thus indicate a steeper slope.

Means and standard deviations for each syllable type by speaker are shown in Table (5). As is clear from the table, CVV syllables appear to have a slope that, with a rise of .241 Hz/ms, is less steep than both CVN and CVO syllables, with slopes of .341 and .299 Hz/ms, respectively.

(5) Slope of the F0 contour by speaker and syllable type.

		Speaker						
		SL	**HS**	**ER**	**LB**	**MW**	**AB**	**Total**
CVV	**M**	.199	.170	.169	.315	.393	.304	**.241**
	SD	.09	.10	.07	.14	.09	.10	**.13**
	n	16	11	18	16	7	8	**76**
CVN	**M**	.248	.242	.223	.359	.531	.308	**.341**
	SD	.09	.15	.06	.16	.26	.07	**.18**
	n	5	4	3	7	7	7	**33**
CVO	**M**	.244	.254	.196	.445	.471	.408	**.299**
	SD	.12	.10	.10	.12	.21	.14	**.16**
	n	17	31	26	12	14	8	**108**

These data were submitted to a GLM ANOVA with speaker and syllable type as independent factors and the slope of the pitch contour from vowel onset to peak pitch as the dependent variable. Results of the ANOVA indicated that the effects of both speaker [$F(5,199)=18.010$, $p<.001$] and syllable type [$F(2,199)=7.715$, $p=.001$] were significant. The interaction of speaker and syllable type was not significant [$p=.658$], indicating that speakers were consistent in their production of the slope of the contour by syllable type.

Tukey's HSD pair-wise comparisons were conducted on the slope measurements to determine which syllable types were significantly different from each other. CVV syllables [M=.241, SD=.13] were found to have slopes which were significantly more shallow than the slopes of both CVN syllables [M=.341, SD=.17, $p<.001$] and CVO syllables [M=.299, SD=.16, $p=.005$]. The difference between CVN and CVO syllables was not significant [$p=.208$].

Although CVV syllables are realized with a more shallow slope than CVO syllables as predicted by autosegmental theory, CVN syllables pattern not with CVV syllables in terms of their alignment, but rather with CVO syllables. This is despite the fact that previous findings indicated that CVV and CVN syllables clearly pattern together in terms of the peak's alignment within the rhyme. This discrepancy is represented graphically in Figure (2).

(2)   Grouping of CVV, CVN and CVO syllable types based on two criteria: peak alignment and slope of rise.
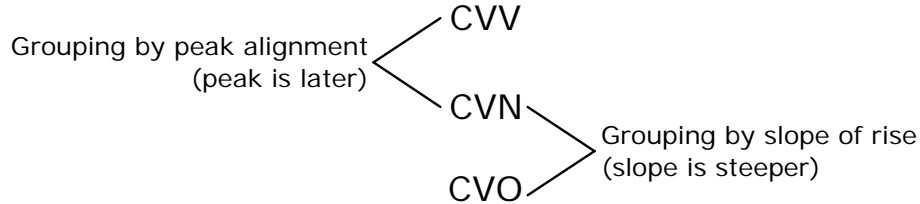
One possible explanation presents itself based on the mean durations of the rise presented above in Section 2.2. Recall that these means showed that CVN syllables were closer to CVV syllables than CVO syllables in terms of the length of the rise. However, it now seems that, despite the fact that CVN syllables are closer to CVV syllables in terms of the duration of the rise [M=85 ms and M=93 ms, respectively] than to CVO syllables [M=75 ms], the shorter duration of the rise in CVN syllables is sufficient to cause an increase in the slope of the rise such that CNV syllables pattern with CVO syllables.

However, this still does not explain why the peak alignment in CVN syllables matches that in CVV syllables. If the duration of the rise is shorter, it seems that we ought to have seen peaks which were earlier as well, but this was not the case. We now turn to the General Discussion & Conclusion, where we will offer one speculative possibility to explain these data further.

3.   General Discussion & Conclusion

The preceding investigation has provided a first look at peak pitch-accent alignment in stressed Tolowa syllables. To summarize, the results were as follows. First, the rhyme rather than the syllable was shown to be the domain for peak pitch alignment, with a proportion based on the duration of the rhyme providing the best description of the alignment of the peak. Second, it was demonstrated that peaks align significantly earlier in CVO syllables than in CVV or CVN syllables. It was proposed that this earlier alignment is the result of time pressure to realize the high target at the peak prior to the voiceless obstruent coda. Finally, it was shown that the slope of the rise in CVO and CVN syllables is significantly steeper than the rise in CVV syllables. These findings are presented in Table (6).

Although some questions about peak pitch accent alignment in Tolowa have been answered, additional questions have been raised by apparently conflicting results. Given than CVN syllables have a peak which is aligned like that of CVV syllables, we would expect these two syllable types to have similar slopes; there thus seems to be no obvious explanation for the fact that CVN syllables have a steeper slope than CVV syllables and pattern like CVO syllables. Although the durations of the rises may have given us a hint as to why the slope is steeper in

CVN syllables, it remains unclear why the peaks in these cases would then align like CVV syllables.

(6)   Summary of the results of the present study.

Findings
Rhyme is domain of peak alignment
Peaks align earlier in CVO than CVV or CVN
Slopes in CVN and CVO steeper than in CVV

One possible explanation for this result is that the presence of any coda consonant is taken into account when calculating where to align the peak pitch target; that is to say that in both CVN and CVO syllables, there may be a certain pressure to realize the pitch target before the coda consonant begins—regardless of whether that consonant is voiced or voiceless—which could cause the peak to be aligned earlier. This could then lead to both CVN and CVO syllables having a steeper slope. However, this account would not then be able to explain why the peaks of CVN syllables actually align like the peaks of CVV syllables, unless the voicing of the nasal coda allows a certain amount of flexibility in aligning the peak, which is why it is seen to occur later than it might otherwise. This may be somewhat supported by the fact that the duration of the rise in CVN syllables is intermediate between CVV and CVN syllables. Further investigation is warranted in order to determine if this explanation might help to account for these disparate data.

One additional point ought to be considered in a similar vein. Given that the alignment of the peaks in CVO and CVN syllables appears to be close to the end of the vowel, one might be tempted to analyze this as the location with which the peak is aligned. A problem with this analysis becomes apparent when CVV syllables are considered. However, recall that all open syllables are phonologically lengthened in Tolowa. It might be the case that the alignment of the peak in CVV syllables is a historical remnant of a time prior to this lengthening rule, when the peak perhaps aligned with the end of the vowel in *CV syllables. Further comparative work would be needed to substantiate this hypothesis.

References

Arvaniti, Amalia, Robert D. Ladd, and Ineke Mennen. 1998. Stability of tonal alignment: the case of Greek prenuclear accents. *Journal of Phonetics* 26:3-25.
Boersma, Paul, and David Weenik. 2006. *Praat: doing phonetics by computer.*

Bommelyn, Loren. 2006. *Taa-laa-waa Dee-ni' Wee-ya'*. Smith River, CA: Smith River Rancheria.

Bright, Jane O. 1964. The Phonology of Smith River Athapaskan (Tolowa). *International Journal of American Linguistics* 30:101-107.

Ladd, Robert D. 1996. *Intonational Phonology*. Cambridge: Cambridge University Press.

Ladd, Robert D., Ineke Mennen, and Astrid Schepman. 2000. Phonological conditioning of peak alignment in rising pitch accents in Dutch. *Journal of the Acoustical Society of America* 107:2685-2696.

Prieto, Pilar, Jan van Santen and Julie Hirschberg. 1995. Tonal alignment patterns in Spanish. *Journal of Phonetics* 23:429-451.

Silverman, Kim E. A., and Janet B. Pierrehumbert. 1990. The timing of prenuclear high accents in English. In J. Kingston and M. E. Beckman, eds., *Papers in Laboratory Phonology 1*. New York: Cambridge University Press.

Tuttle, Siri G. 1990. Stress and Vowel Length in Tolowa. M.A. thesis, University of Washington.

Christopher S. Doty
Department of Linguistics
1290 University of Oregon
Eugene, OR 97403-1290

cdoty@uoregon.edu

Marking Aspect and Mood and Inferring Time in Mam (Mayan)

NORA C. ENGLAND
University of Texas at Austin

Mayan languages have generally been considered to mark aspect and mood rather than tense on verbs (e.g., Kaufman 1990, Bohnemeyer 2002), or to have combined tense/aspect systems (e.g., Larsen 1988). Mam has usually been analyzed, by me and others (e.g., England 1983, Pérez and Jiménez 1997), as having a somewhat hybrid system of tense/aspect marking, with aspectual information generally more prominent than temporal information. Here I argue that morphological marking on verbs refers entirely to aspect or mood in Mam, examine how temporal information is inferred, and show how time is conveyed in texts.

1.   Background: Clause Structure

Mam has two basic types of clauses: those headed by verbs and those headed by nonverbal predicates (statives, locatives, existentials, or equatives). Both verbs and nonverbal predicates mark their main arguments according to an ergative pattern of person agreement – the subjects of transitive verbs are indicated by one set of morphemes (Set A) while objects of transitive verbs, subjects of intransitive verbs, and subjects of nonverbal predicates are marked by another (Set B[1]).

(1)   ma   **chin**   etz   **t**-tzyu-'n-a[2]   'you grabbed me'
         PROX   B1s   DIR   A2p-grab-DS-2s/1s[3]

---

[1] The forms of Set B that are used for the subjects of nonverbal predicates are slightly different from Set B in other contexts, but are clearly derived from Set B and not from Set A.

[2] Examples are from texts or my notes. If they are from texts they are followed by (T). I have used many of the examples before, principally in England 1983. Unless otherwise indicated, they are from Ixtahuacán. Symbols in the Mam alphabet used here have the expected values, except VV=long vowel, ' =glottal stop, ch= alveopalatal affricate, j=uvular fricative, ky=palatal stop, tx=retroflexed affricate, tz=alveolar affricate, x= retroflexed fricative, xh= alveolpalatal fricative.

[3] Abbreviations are: A=Set A, ABST=abstract noun, AFF=affirmative, AGT=agent, AGTV=agentive, AP=antipassive, B=Set B, CLS=classifier, CPL=completive, DAT=dative, DEM=demonstrative, DEP=dependent, DIR=directional, DISP=displacement, DS=directional suffix, EMPH= emphatic marker, EXCL=exclusive, EXIST=existential, IMP=imperative, IMPF= imperfect, INALIEN=inalienable, INC=incomplete, INF=infinitive, INST=instrumental, MIR= mirative, NEG=negative, NOPOT=non-potential, p=plural, PART=participle, PAS=passive,

(2)   ma   **tz'**-etz   **n**-tzyu-'n-a   'I grabbed you'
         PROX B3p-DIR   A1s-grab-DS-1s/2s

(3)   ma   **chin** b'eet-a   'I walked'
         PROX B1s   walk-1s

(4)   siky-naj **qiin**-a   'I am tired'
         tire-PART B1s-1s

    Split ergativity occurs in a number of different contexts, including temporal (when) clauses. In such clauses all arguments are marked ergatively. (5) gives a transitive verb with a directional where both arguments are marked ergatively, (6) is a transitive verb without a directional, and (7) is an intransitive verb.

(5)   ok   **t**-ku'-x   **ky**-awa-'n   xjaal kjo'n . . .
         when:POT A3s-DIR-DIR   A3p-plant-DS person cornfield
         'When the people plant the cornfield . . .'

(6)   Ok   qo   tzaalaj-al   ok   **t-q**-il   u'j
         POT   B1p   be.happy-POT when:POT A3s-A1p-see   book
         t-e   yool t-e   I'tzal.
         A3s-RN:POSS word RN:POSS Ixtahuacán
         'We will be happy when we see the Ixtahuacán dictionary.'

(7)   aj   **t**-qoqaax . . . (T)
         when:NOPOT A3s-night.falls
         'when night fell . . .'

    Verbal predicates normally[4] take aspect markers, while nonverbal predicates never do. In examples (1) - (3) the verbs are marked with the proximate aspect morpheme *ma*, while the nonverbal predicate in (4) has no aspect marker. (8) shows that aspect marking is ungrammatical with a nonverbal predicate:

(8)   *ma   siky-naj qiin-a
         PROX tire-PART B1s-1s
         Intended meaning: 'I was tired'

PAT=patient, PERF=perfect, PL=plural, POSS= possessive, POT=potential, PROX=proximate, REFL=reflexive, RES=resultative, RN=relational noun, s=singular, TERM=specific termination, VB=verbalizer.

[4] There are a number of contexts in which verbal predicates have no aspect marking. These include: all contexts in which there is split ergativity, after temporal adverbs, after negative or affirmative particles, and in clauses headed by the quotative verb *–chi* or that are headed by or are complements of the verb *–aj* 'want'.

Both kinds of predicates can take temporal adverbs. Their unmarked position with verbal predicates is first, where they replace aspect markers (9a)[5]. They can also be last in the clause but then require dependent aspect markers (9b). Temporal adverbs usually occur after a nonverbal predicate, but they can also occur before it, and require no structural changes in either position (10, 11).

(9) a. **eew**   tz-ul   aaj   nan   yaa'
      yesterday B3s-DIR   return ma'am grandmother
      'Grandmother came yesterday.'

    b. ø-ø-ul   aaj   nan   yaa'   **eew**
      CPL.DEP-B3s-DIR   return ma'am grandmother   yesterday
      'Grandmother came yesterday.'

(10)   at-ø   jun aq'uuntl **ojtxa** (T)
      EXIST-B3s a   work   before
      'There was work before.'

(11)   **ja'la**   aa-∅-qa-tzan (T)
      now   DEM-B3s-PL-well
      'well, now these are them'

2.   Aspect and Mood Marking on Verbs

Mam has six proclitics, several suffixes, and one enclitic that together express categories of aspect or mood. The proclitics occur first in the verb and distinguish completive, incompletive, potential, and what I am calling "proximate" aspects. The completive and proximate aspects are each marked by two different morphemes, one for certain dependent clauses, the other for independent clauses.

---

[5] Adverbs such as *ja'la* 'now' that indicate the present in fact indicate an immediate future in first position and the present in final position:

   i.   Tz-uul   taat   ja'la.   ii.   Ja'la   tz-uul   taat.
      B3s-come   father   now   now   B3s-come   father
      'Father is coming now.'   'Now father is about to come/will come.'

(12) ma   proximate (inceptive) action, independent clause
      x-   proximate (inceptive) action, dependent clause[6]
      o   completive, independent clause
      ø   completive, dependent clause[7]
      n-   incompletive (progressive, habitual)
      (ok) potential

The forms with vowels are phonologically independent, while those without vowels are bound. The potential marker *ok* is optional, but potential is also obligatorily marked by suffixes. A default temporal context is inferred from the aspect markers. The proximate is understood as a recent past in its default interpretation, the completive is understood as an ordinary past referring to any time before the present day, the default interpretation of the incompletive is present progressive, and the potential is understood as future:

	Transitive Verb		Intransitive Verb
(13)	ma chi wila	(13')	ma chin b'eeta
	'I saw them (a little while ago)'		'I walked (a little while ago)'
(14)	xhi wila	(14')	xhin b'eeta
	x-chi		x-chin
	'when I saw them (a little while ago)'		'when I walked (a while ago)'
(15)	o chi wila	(15')	o chin b'eeta
	'I saw them (before today)'		'I walked (before today)'
(16)	ø-i wila	(16')	ø-in b'eeta
	'when I saw them (before today)'		'when I walked (< today)'
(17)	nchi wila	(17')	nchin b'eeta
	'I am seeing them, I see them'		'I am walking, I walk'
(18)	(ok) chi wila'ya	(18')	(ok) chin b'eetala
	'I will see them'		'I will walk'

---

[6] The dependent forms of the completive and proximate aspects are used in clauses after focused and fronted nominals or after focused time adverbs, in clauses subordinated to a clause with the imperfect *–taq* in the non-potential, in temporal clauses without a temporal subordinator that indicates a specific time, and after the manner adverb *mes* 'suddenly, unintentionally'.

[7] This morpheme is real. Verbs in the completive in dependent clauses lack the first consonant of Set B markers, which follow aspect marking in the verb complex. Thus *chin* 'first person singular' becomes *in*, *qo* 'first person plural' is *o, chi* second/third person plural is *i*, and all of the audible forms of second/third person singular (*tz-, tz'-, t-*) are omitted.

Verbal suffixes that indicate (aspect or) mood are different depending on whether the verb is intransitive, transitive, or transitive with an accompanying directional. They mark two verbal categories: potential and imperative, and therefore are used in irrealis situations. Given that these are the only two categories that are marked with suffixes, and because the potential indicates uncertain future events, the suffixes basically mark mood in Mam. They are:

(19)   Potential   Imperative
        intransitive: -l[8]   - - -
        transitive: -a'   -m
        transitive with directional: -l (on directional) -n

Examples are:

(20)   (ok) chin b'eeta**l**a
        'I will walk'

(21)   (ok) tlaq'**a'**ya
        'you will buy it'

(22)   (ok) ktzaja**l** tlaq'o'na
        'you will buy it'

(23)   b'eeta
        'walk!'

(24)   q'ii**m**a
        'take it!'

(25)   q'ii**n**xa
        'take it (there)!'

The enclitic –*taq* is the final element that marks aspect morphologically. It combines with verbs, nonverbal predicates and certain adverbs and, depending on the type of base it combines with and the aspect proclitics if the base is verbal, it indicates either perfect or imperfect. When it is combined with the aspect marker *ma*, usually with the incompletive marker *n-* at the same time, it indicates that an action has been begun (imperfect) (26), but in combination with the completive *o* it indicates that an action has or will have been completed with regard to some other action (perfect) (27). When –*taq* is combined with manner adverbs it indicates that an action has begun (imperfect) (28), but when it is combined with

---

[8] If an intransitive verb is accompanied by a directional, the potential marker goes on the directional.

time adverbs it indicates that some specific time has gone by (perfect) (29). With nonverbal predicates it is ambiguous; it indicates that something is in a particular state, but it is unkonown whether it still is in that state (imperfect) or it is interpreted as being in that state because it had gotten to that state (perfect). Translations reflect the ambiguity, as in (30). Thus this enclitic in general fits the perfect in terms of anteriority, but differs from it in that sometimes it indicates stativity (perfect) but sometimes it does not (imperfect).

(26) Maa-**taq** n-chin b'eet-a s-ok   n-kii-n
  PROX-IMPF INC-B1s walk-1s PROX.DEP.B3s-DIR A1s-see-DS
  w-iib'-a   t-uk'   jun xjaal.
  A1s-RN:REFL-1s A3s-RN:with a person
  'I was walking when I met a person (and may have continued).'

(27) Oo-**taq** ø-b'aj t-qeeta-n Luuch t-tzii'. (T)
  CPL-PERF B3s-DIR A3s-cut-DSPedro A3s-mouth
  'Pedro had cut their mouths (when some other event occurred).'

(28) ch'ix-**taq**-tzan t-pon kaana-n yaa'yj, (T)
  almost-IMPF-well A3s-DIR meet-AP grandmother
  'the grandmother was almost on the point of arriving (she has begun the process that will lead to her arrival but has not finished)'

(29) Yaa kwanda kab'-a oora-**taq** ky-ku-leen teen-q'a
  now when two-? hour-PERF A3p-go.down-ABST be-CLS
  t-uk'   ky-q'aaq'-q'a (T)
  A3s-RN:with A3p-fire-CLS
  'Now when two hours had passed that they spent with their fire'

(30) q'an-ø-**taq**   chulal
  ripe-B3s-IMPF/PERF zapote (a fruit)
  'the zapote was ripe' or 'the zapote had ripened'

3. More on Aspect Proclitics

The aspect proclitics convey something of temporal information, so the question arises as to whether they are truly aspects or at least in part tenses. A more careful examination of their context of use shows that the temporal information they convey is secondary to the aspectual information and can be overridden in specific contexts. The temporal information is a matter of default inference.

  The most clearly aspectual of the proclitics is *n-* 'incompletive'. The default meaning that this marker conveys is present progressive (31). However, it is also used for ongoing habitual actions (32) and can be combined with specific time adverbs to indicate the progressive in times other than the present (33, 34).

(31)　**n**-ø-poon　　a'
　　　INC-B3s-arrive water
　　　'the water is arriving'

(32)　**nn**-ø-eel　　　ch'in-ni　　　q-chiky'-eel　　　ky-u'n-jal (T)
　　　INC-B3s-go.out　a.little-DIM　A1p-blood-ABST　A3p-RN:by-CLS
　　　'they take a little of our blood' (speaking of fleas)

(33)　yaa　　**n**-ø-poon　　a'
　　　just.now　INC-B3s-arrive water
　　　'the water was just arriving'

(34)　ojtxa　**n**-ø-poon　　　a'
　　　before　INC-B3s-arrive water
　　　'the water was arriving before'

　　　When *–n* is used with *maataq,* it marks clauses in the imperfect (35).

(35)　maa-taq　　**n**-chin　　yoola-n-a　　xhin-tzaj　　　txako-'n-a
　　　PROX-IMPF　INC-B1s　talk-AP-1s　PROX.DEP.B1s-DIR call-DS-1s
　　　'I was talking when they called me.'

　　　Furthermore, as will be seen in the text analysis, *n-* is customarily used in narrative to mark progression in the text, even when there is no implication of progressive or habitual action (36).

(36)　**n**-ø-tzaj-tzan　　ky-laq'o-'n　　aryeeral　　ja'la (T)
　　　INC-B3s-DIR-well　A3p-buy-DS　mule.driver　now
　　　'so the mule-drivers bought it'

　　　Lastly, the temporal context of other clauses in a text can determine the temporal context of *n-* (37).

(37)　Aa-tzan　　ø-ø-ok　　　　　**n**-b'i-'n-a　　　kuxi'
　　　DEM-well　CPL.DEP-B3s-DIR　A1s-hear-DS-1s　every.little.while
　　　n-ø-jaaw　　　nimaal. (T)
　　　INC-B3s-go.up　DEM
　　　'According to what I heard, every little while it tore/was tearing.'

　　　The marker *o* indicates completed action and usually is interpreted as an ordinary past, which includes roughly anything that occurred before today (38). It can also be used for former habitual actions; that is, habitual actions in the past that have come to some conclusion or which are no longer relevant (39).

(38)   Ntii',   nti'   **o**-ø-t-maa   ch'in   nee'. (T)
       NEG   NEG   CPL-B3s-A3s-say   a.little small
       'No, he didn't say anything.'

(39)   b'ix   nim   **o**-ø-b'eet   t-witz   tx'otx'. (T)
       and   a.lot CPL-B3s-walk A3s-RN:on land
       'and he walked a lot in the countryside.'

As has been seen, *o* in combination with –*taq* indicates a perfect (40). If such a form occurs with a clause in the potential, it indicates a future perfect (41).

(40)   **Oo-taq**   ø-b'aj   waa-'n   ø-ø-xi   q'o-'n   t-k'aa'.
       CPL-PERF   B3s-DIR   eat-DS   CPL-DEP-B3s-DIR give-DS   A3s-drink
       'He had eaten when they gave (him) his drink.'

(41)   **Oo-taq**   ø-b'aj   waa-'n ok   t-tzaj   q'o-'n   t-k'aa'.
       CPL-PERF   B3s-DIR   eat-DS when.POT A3s-DIR   give-DS   A3s-drink
       'He will have eaten when they give (him) his drink.'

Given that the use of *o* is not confined to the past, it seems clear that it marks completive aspect rather than any tense. Its default interpretation as a past is because completed events have usually already occurred, and its default interpretation as a past that occurred before today is due to the space that is reserved by *ma*, the proximate aspect marker.

I analyzed *ma* for many years as a recent past marker, and Pérez and Jiménez analyzed it as a recent completive marker (1997:155-156). I no longer think either statement is completely correct. It is true that the default interpretation of *ma* is of an action that was at least begun in the recent past (any time today). For instance, a narrator of a tale says the sentence in (42) as he is finishing his story.

(42)   Aa-tzan   jun kol-jo   **ma**-a'   ø-txi   n-kaa'we-n-a. (T)
       DEM-well   a   theme-DEM   PROX-EMPH   B3s-DIR   A1s-reason-DS-1s
       'Well, this is a story I just told.'

However, *ma* does not imply that the action has necessarily ended. The clause in (43) contains an idiomatic expression for 'we understand' which literally means 'our thoughts go out'. The phrase is interpreted as a continuing process of understanding.

(43)   kee aa-tzan-jo   **ma**-a'   tz'-eel   q-niiky'   t-i'j (T)
       that DEM-well-DEM   PROX-EMPH B3s-go.out A1p-thought A3s-RN:theme
       'well, this is what we now understand about it'

Furthermore, José Pérez says (p.c.) that if the verb is durative, then there is less security about whether the action was finished, but if the verb is punctual, then it was finished almost as soon as it began:

(44) **ma**   chin   waa-n-e' (Cajolá dialect)
       PROX B1s   eat-AP-1s
       'I ate' (I ate something, but may not have eaten well, or a whole meal)

45)   **ma**   ø-kub'   n-pa-'n-e' (Cajolá dialect)
      PROX B3s-DIR   A1s-break-DS-1s
      'I broke it' (the action was completed)

The use of *ma* with *–taq* emphasizes the inceptive part of its meaning, since together they indicate an imperfect meaning, as in (46), where the explanation given was that the act of speaking was beginning at the moment of being called.

(46) **Maa-taq** n-chin   yoola-n-a   xhin   tzaj   txako-'n-a.
       PROX-IMPF INC-B1s   speak-AP-1s   PROX.DEP.B1s DIR   call-DS-1s
       'I was speaking when (they) called me.'

In addition, *ma* can be used for actions that occur in the more distant past when they are being related to some other proximate event, and not just to the moment of speaking. For instance, in (47) the event that is marked by *ma* (sunrise) took place in the remote past of the story, but is related to the immediately consequent action of the people saying "let's go".

(47) **Ma**-tzan ø-jaa'w-al   q'iij, "qoo-qa"   chi-chi-tzan xjaal.
       PROX-well B3s-go.up-TERM   sun let's.go-1pEMPH B3p-say-well people
       '(When) the sun came up, "let's go" said the people.' (T)

Finally, *ma* uncharacteristically indicates an action that is about to begin when it is used with the intransitive verb of motion *xi'* 'go' and is ambiguous when it is used with the intransitive verb of motion *aa(n)j* 'return there':[9]

(48) **ma** t-xi'   'he will go'
      ma tz'-aanj   'he returned' or 'he will go (returning)'

The explanation for this unusual interpretation lies in the grammaticalization of the intransitive verbs of motion as directional auxiliaries on verbs. The directional *xi'* primarily marks trajectory ('away') but secondarily marks incipient action (aspect). Several contexts show its aspectual function. First, it is almost always used with the 'resultative' morphemes *–'kj* 'resultative indicative' and

---

[9] Data in (48) are from José Pérez, and represent the speech of Cajolá.

-b'aj 'resultative passive'. These morphemes indicate that an action occurs because someone moves to do it. Thus (49) indicates that the fox went somewhere to bite something:

(49)   N- ø-**xi'**   t-tx'a-**'kj**   weech. (T)
       INC-B3s-DIR   A3s-bite-RES   fox
       'The fox went to bite it.'

Xi' is also often used with the potential, even when the verb does not necessarily require this directional. Compare the directional in (50b) with that in (50d). The verb is the same, but when it is in the potential the narrator uses *xi'* while when it is not in the potential she uses *ku'*.

(50)a.   At-ø   jun kweent (T)
        EXIST-B3s   a   story
        'There is a story'

    b.   ø-**x-el**   n-q'ama-'n-a ja'la,
        B3s-DIR-POT   A1s-tell-DS-1s now
        'that I will tell now,'

    c.   at-ø   jun t-yool   n-yaa'-ya
        EXIST-B3s   a   A3s-word   A1s-grandmother-1s
        'it is a story of my grandmother's'

    d.   **ø-ø-ku'**   t-q'ama-'n   t-uk'u-x   n-txuu-ya.
        CPL.DEP-B3s-DIR   A3s-tell-DS   A3s-RN:with-always A1s-mother-1s
        'that she told with my mother.'

Xi' is also used by itself to indicate incipient action. In (51) the verb 'hide' is not a separate predicate (for instance, an infinitive) in Mam, and the directional serves to indicate that the subject has initiated the action of hiding.

(51)   n-ø-**xi'**   t-ee'wa-n   naaj   t-iib'-jal   t-uj
       INC-B3s-DIR   A3s-hide-DS   be.lost   A3s-RN:REFL-CLS A3s-RN:in
       tzmaal   weech. (T)
       A3s.hair   fox
       'it went to hide in the hair of the fox./it became lost in the hair of the fox.'

The aspectual meaning of *xi'* thus overrides that of *ma*. Presumably *aa(n)j* behaves like *xi'* because it overlaps in meaning ('return there' means 'go returning'). Since the meaning overlap is partial, this leads to an ambiguous interpretation of *ma* + *aa(n)j*.

In summary, *ma* does not always indicate completed action and it does not always indicate recent action as measured from the moment of speaking. Its meaning seems to center more on actions that have begun (or are about to begin) and that are proximate to some event that is not necessarily the act of speaking. I have chosen to label it 'proximate' in accordance with what seems to be its most prominent meaning.

The potential is optionally marked with the proclitic *ok* and obligatorily marked with a suffix on the verb stem or on an associated directional. There is very little to distinguish the potential from a future tense, except that, as shown, some uses of *ma* imply an immediate future, so not all of the possible 'future' space is marked by the potential markers. Furthermore, as has been seen, future completives are indicated by *ootaq* rather than a potential marker. Thus both the completive and the proximate markers can make reference to future events in certain contexts. Therefore the better descriptive term for these morphemes is 'potential'. This is the only proclitic that is optional and is paired with a required suffix. This may reflect its ambiguous status – on the one hand it conveys something of aspect, like the other proclitics, but on the other hand it conveys something of mood, like the other suffixes. (52) provides an example of the potential.

(52)   tqal-tzan   **k**-ø-t-aq'-**al**-a   q-ee-ky' (T)
        what-well POT-B3s-A2s-give-POT-2s A1p-RN:DAT-1pEXCL
        'what will you give us?'

It has been demonstrated that each of the aspect proclitics principally marks aspect (or mood) and not tense. Temporal information that is conveyed by these markers results from inference, or is only partial, and in several instances is overridden by contextual factors. None of the markers corresponds to a definite and well-defined temporal interval. (53) summarizes the information that has been presented about the aspect markers.

(53) Uses of Aspect Proclitics

proclitic	aspect	default temporal meaning	other meanings	+-taq	+-taq + pot. clause	+ *xi', aa(n)j*
n-	incompletive	present progressive	progressive in other times, progression in text, ongoing habitual	- - -	- - -	no effect
o/ø	completive	past	completed, past habitual	perfect	future perfect	no effect
ma/x-	proximate	recent	proximate to some other event, inceptive	imperfect (± *n-*)	- - -	future (inceptive)
(ok) + suffixes	potential	future	may occur	- - -	- - -	no effect

4.   More on Aspect and Mood

In addition to the suffixes on verbs there are two other classes of function words in Mam that indicate mood (understood here as imperative and potential): negative particles and two of the temporal subordinators. Verbal predicates are negated by *mii'n* in the imperative and potential, without the potential proclitic (54, 55), but are negated by *nti'* along with other aspect markers in the nonpotential (56).

(54)   **Mii'n** ø-tzaaj   jb'aal ja'la.
       NEG   B3s-come rain   today
       'It will not rain today.'

(55)   **Mii'n** b'eet-a.
       NEG   walk-2s
       'Don't walk!'

(56)   **Nti'**   o   tz'-e-tz   n-laq'o-'n-a.
       NEG   CPL   B3s-DIR-DIR A1s-buy-DS-1s
       'I didn't buy it.'

Mam has four temporal subordinators ('when'), two of which make a distinction between potential and nonpotential. *Ok* is used in the potential (57), while *aj* is used in the nonpotential (58). The other two, *ela'* and *kwanto/kwando,* are used in any aspectual or temporal context; the default sense is completive (59, 60). In general, the 'when' clause does not take aspect proclitics and shows split ergativity (the verb is marked with all ergative markers for person). However, there are two exceptions to this generalization. A clause with *aj* can co-occur with the incompletive marker in a generic statement (61), and a clause with *kwanto* can occur optionally with aspect proclitics (62). In either case, if there is an aspect proclitic, agreement is the normal ergative pattern. An explicit subordinator is not required in a temporal clause; any clause without an aspect marker and with split ergativity is understood as a 'when' clause (63).

(57)   **Ok**   t-b'ant   ky-k'ooj-a. . . (T)
       when:POT A3s-make   A2p-mask-2p
       'When your masks are made. . .'

(58)   O   ø-tzaalaj   xjaal t-i'j   t-paa   **aj**
       CPL   B3s-be.happy person A3s-RN:theme A3s-bag   when:NOPOT
       t-kan-eet   priim-x.
        A3s-find-PAS early-still
       'The person was happy about his bag when it was found early.'

(59) **Ela**   t-b'aj   meq't n-ø-xi'   t-waa'-n xjaal.
when A3s-DIR   heat   INC-B3s-DIR A3s-eat-DS person
'When he finished heating (it), the person ate it.'

(60) Entoonse **kwanda**-tzan t-eel   t-pokb'-aal. . . (T)
then   when-well A3s-go.out   A3s-explain-ABST
'Well, when the news went out. . .'

(61) **Aj**   nti'   n-qo-kaamb'a-n t-i'j   scha-b'al
when:NOPOT NEG   INC-B1p-win-AP A3s-RN:theme play-INST
n-qo-jaw   b'iisa-n.
INC-B1p-DIR sad-AP
'When we don't win the game we are sad.'

(62) **Kwanto**   s-ook-l   tzluu'. . .
when   PROX.DEP.B3s-enter-DIR here
'When it got here. . .'

(63) N-q-ee-x-tzan-tl-a   q'amaa-l t-e
INC-A1p-go.out-DIR-well-again-1p tell-INF   A3s-RN:DAT
ky-ee   q-uuk'al-a,
A3p-RN:DAT A1p-buddy-1p
'When we went out to tell our buddies,'

The negatives and temporal subordinators make a clear distinction between irrealis and realis; the same distinction that is made by the intersection of aspect proclitics and mood suffixes in Mam. The table in (65) summarizes the aspect and mood categories in Mam.

(64) Aspect and Mood

		proclitic	suffix	negative	'when'
irrealis	imperative	no	yes	mii'n	- - -
	potential	optional *ok*	yes	mii'n	ok
realis	completive	*o/ø*	no	nti'	aj
	incompletive	*n-*	no	nti'	aj
	proximate	*ma/x-*	no	nti'	aj

5. Time in Discourse

Mam is not a tensed language. In addition to the fact that all of the morphological markers that have something to do with time indicate either aspect or mood, these markers are not required in all clauses. Nonverbal predicates have no aspect or mood marking, except for –*taq*. Verbal predicates in a number of different contexts also lack aspect or mood marking. In fact, in a count of 706 clauses in four

narrative texts, only 42% had aspect or mood marking at all, and only 4% of the remaining clauses had time adverbs, leaving 54% of the clauses without any marking for time. Furthermore, over half of the clauses with aspect or mood marking were marked with the incompletive aspect proclitic, the least temporally explicit of the proclitics. If only verbal clauses are considered, then 45% of these still lack aspect/mood marking, and only 3% have time adverbs.

The question then becomes: how is time indicated, inferred, or understood in discourse? Here I will limit my analysis to narrative. The only mechanisms for directly indicating time are lexical. One of the temporal adverbs, *ojtxa* 'before, a long time ago' has the special function of introducing all narratives of the folktale type. This adverb will always be used within the first few clauses of the story, and signals the type of tale as well as situating it in the distant past. In this context it is equivalent to 'once upon a time'. In example (65) it appears in the first clause of a folktale and in (66) it appears in the second clause of another story.[10]

(65)   Juun   xjaal-ø   **ojtxa**   Luuch-ø   t-b'ii, (T1)
        a   person-B3s before   Pedro-B3s   A3s-name
        'Once upon a time there was a person named Pedro,'

(66)a. Chi-chi-tzan   xjaal,
        B3p-say-well   person
        'The people tell'

   b.   tza'n   ø-ø-kan-eet   axi'n   **ojtxa**. (T4)
        how   CPL.DEP-B3s-find-PAS corn   before
        'how corn was found once upon a time.'

Once the temporal context of a story has been established with *ojtxa*, that context is maintained in succeeding clauses and in fact throughout the tale. In general most clauses in the narrative that are marked for aspect use the incompletive marker *n-*. For instance, after the introduction to a text about an orphan in which the remote context is established, the first section begins with a nonverbal predicate (67a), continues with two clauses in the incompletive (b, c), which are then followed by a set of three clauses with nonverbal predicates (d, e, f), and then the section ends with three more clauses in the incompletive (g, h, i).

(67)a. Kye   at-ø   jun meeb'a,
        that   EXIST-B3s a   orphan
        'There was an orphan,'

---

[10] The texts that are cited in this section are four folktales, for convenience identified as T1, T2, T3, and T4, and a long conversation (T5).

b. **n**-ø-xi'   pasyaa'ra-l   t-uj   tzii'   maar.
   INC-B3s-go   spend.time-INF   A3s-RN:in A3s.RN:edge   sea
   'who went to spend time at the edge of the sea.'

c. Entoonse   **n**-ø-xi'   t-ki-'n
   then/so   INC-B3s-DIR   A3s-see-DS
   'Then he saw'

d. at-ø   jun tal   alemaj,
   EXIST-B3s onesmall   animal
   'that there was a small animal,'

e. per masaat-ø   t-b'ii,
   but deer-B3s   A3s-name
   'called a deer,'

f. t-ø-a'   t-uj   xjaaw.
   EXIST-B3s-DISP   A3s-RN:in   moon
   'that was in the moon.'

g. Entoons   despwees **n**-ø-ku'   t-pensaa'ra-n   t-i'j,
   then/so   then   INC-B3s-DIR A3s-think-DS   A3s-RN:theme
   'So then he thought about it,'

h. entoons   **n**-ø-xi'-tzan,
   then/so   INC-B3s-go-well
   'so he went,'

i. **n**-ø-xi'   uub'a-l   t-e   t-ee,   tal
   INC-B3s-go   shoot.with.blowgun-INF   A3s-RN:PAT A3s-RN:PAT   small
   masaat t-uj   xjaaw. (T3)
   deer   A3s-RN:in   moon.
   'he went to shoot it, the small deer in the moon.'

Clearly not all of the clauses marked with the incompletive refer to progressive or habitual actions. The verb can refer to a durative action, as in (67g), but it can also refer to a punctual action, as in (68), where a progressive interpretation is not permitted and where the action is a one-time event and clearly not habitual.

(68)   **N**-ø-xi'   ky-xoo'-n   xjaal squk' t-i'   weech, (T4)
       INC-B3s-DIR   A3p-throw-DS person louse   A3s-RN:on fox
       'The people threw the louse on the fox,'

What is in process is the narrative itself. The use of the incompletive in most of a narrative (any kind of narrative, not just folktales) indicates that the narration is developing little by little and is still progressing.

Another lexical mechanism that helps develop the narrative is the use of conjunctions. Some, such as *b'ix* 'and' or *per* 'but', usually indicate overlapping, simultaneous, or time irrelevant events, as in (69c) and (d). The pot is boiling at the same time that the protagonist is meeting the mule-drivers, and also at the same time there isn't any firewood or fire under it.

(69)a. At-ø-tzan   juun q'iij
   EXIST-B3s-well one day
   'Well, one day'

 b. n-ch-ok   nooj txqan aryeeral t-witz   t-miij   b'ee,
   INC-B3p-DIR fill group mule.driver A3s-RN:on A3s-middle road
   'he met a group of mule-drivers in the middle of the road,'

 c. **b'ix** luu n-ø-loqa-n   t-xaar
   and DEM INC-B3s-boil-AP A3s-pot
   'and there his pot was boiling'

 d. **per** nti'-ø   sii'   b'ix-mo q'aaq' t-i'j,
   but NEG-B3s firewood and-or fire A3s-RN:for
   'but there wasn't any firewood or fire for it,'

 e. t-jon-aal-x   xaaq n-ø-loqa-n   weena. (T1)
   A3s-one-ABST-alone pot INC-B3s-boil-AP a.lot
   'the pot was boiling a lot by itself.'

Sequences of events are indicated by other conjunctions, such as *despwees* 'then, after' (70) and *entoonsa* 'then, so', or the enclitic *–tzan* 'then, well' (70, 71) which functions exactly like the borrowed word *entoonsa* and is often adjoined to it. It marks the continuation of a text when there is a change of topic or activity, and indicates that the new activity follows after the previous activity. For instance, in example (71) the narrator of this story shifts from talking about one of the protagonists, Pedro, to talking about the others, the mule-drivers.

(70) **Despwees** nn-ø-uul-**tzan**   meeb'a t-uk'a
   then   INC-B3s-come-well orphan A3s-RN:with
   meb'a-yi-l   t-ee, (T3)
   orphan-VB-AGTV A3s-RN:PAT
   'Then the orphan came to his foster-parents,'

(71)   *In the preceding clauses, Pedro ties himself in a sack with the cord at his*
        head. Then:

        N-chi   tzaj-**tzan** yoqpaj   aryeeral (T1)
        INC-B3p   DIR-then   gather   mule-driver
        'Then the mule-drivers gathered together'

However, there need not be an explicit marker for the sequencing of events.
Normally, if no indication to the contrary is given, an event in a clause is unders-
tood to temporally follow the event in the preceding clause. (72) contains a series
of clauses, all marked with the incompletive, in which part of the process of
building a piped water system is described; each action is understood to follow
after the preceding action.

(72)a.   aa-tzan   **n**-ø-xi'-tzan   q-ii-'n   jun rooye mangeer,
         DEM-well   INC-B3s-DIR-well A1p-take/bring-DS   a   roll   hose
         'we took a roll of hose,'

    b.   **n**-ø-ku'-x-tzan   q-maqu-'n-a,
         INC-B3s-DIR-DIR-well A1p-bury-DS-1pEXCL
         '(and then) we buried it,'

    c.   **n**-ø-poon-tzan   ch'iin a', (T5)
         INC-B3s-arrive.here-well a.little water
         '(and then) a little water arrived,'

There are times when the action in one clause does not follow that of the
previous clause. In these instances, the perfect marker, *oo + -taq* is used to show
that the expected order of events does not apply, as in (73) and (74).

(73)a.   n-ø-xi'   ky-xoo-'kj   t-uj   a',
         INC-B3s-DIR   A3p-throw-RES   A3s-RN:in water
         'they went to throw it (the sack) in the water,'

    b.   b'ix   **oo-taq**-pa-la   ø-jaa-tz   Luuch t-uj   saaka, (T1)
         and   CPL-PERF-hasta-MIR   B3s-go.up-DIR Pedro A3s-RN:in sack
         'and Pedro had gotten out of the sack,' (before it was thrown in the water)

(74)a.   nti'-ø-tl   ky-b'aq'   ky-witz,
         NEG-B3s-other A3p-seed   A3p-face
         'they didn't have their eyes,'

b. **oo-taq**   ø-jaa-tz   t-b'aq'   ky-witz   t-u'n
CPL-PERF B3s-go.up-DIR A3s-seed A3p-face A3s-RN:AGT
xk'otk'aj witz (T2)
"eye.taker"
'the eye-taker had taken out their eyes,' (by when they didn't have them)

Furthermore, some clauses are marked to show that an event depends more specifically on the occurrence of another event, in which instance a 'when' clause is used. In (75) the speaker is saying that the action in the second clause depends on completing the action in the first clause.

(75)a. **Ok**   t-b'ant   ky-kooj-a,
     when:POT A3s-make A2p-mask-2p
     'When your masks are made,'

b. esta ween qo   taan-x-tzan. (T2)
  it.is good B1p   sleep-always-well
  'we can sleep.'

Temporally dependent clauses usually do not take any aspect markers, as has been seen. Another way to indicate that one action is temporally consequent on another is by using the proximate aspect *ma*. By inserting *ma* into a section of discourse that is otherwise marked by the incompletive *n-* or some other aspect, the speaker shows that the event in the clause with *ma* is more proximate to the events in another clause. For instance, in the segment in (76) the first clause is marked with the incompletive *n-*, as is typical of narratives in process, but the second is marked with the proximate *ma*, showing that what the protagonist found in the third clause is consequent on her arrival in the second.

(76)a. nn-ø-el   tzoqpaj Xpi'xh lo-l   kab' t-iiyaj.
     INC-B3s-DIR escape   Xpi'xh see-INF two   A3s-seed
     'Xpi'xh went to look for some seeds.'

b. **Ma**-ø-kaana-n   Xpi'xh,
  PROX-B3s-find-AP Xpi'xh
  '(When) Xpi'xh arrived,'

c. tii   noq   ni   mu'p-ø-ta, (T4)
  that   only   DIM   dust-B3s-3sEMPH
  'there was only a little dust,'

In narrations of stories, there are two contexts in which the narrative is interrupted: for the insertion of quoted dialogue (stylistically required) or the insertion of commentary by the narrator. In both of these situations the time frame shifts

from that of the narrative in general to that of the presumed moment of speech in the quote or the actual moment of speech in a commentary. Typically, aspect or mood markers in their default temporal interpretations are used in these segments, clearly setting them off from the narrative itself, which is mostly in the incompletive. In example (77) the quote uses the potential in the first clause and the imperative in the second. In (78) the first clause is marked with the proximate aspect, as is the second, since they refer to the result of an event that had just happened when the quoted segment was spoken.

(77)a. "Qa   ø-x-**el**   ky-laq'o-'n-a,
     if   B3s-DIR-POT   A2p-buy-DS-2p
     ' "If you want to buy it,'

    b. ø-ky-laq'oo-**n**-x-a!" (T1)
      B3s-A2p-buy-IMP-DIR-2p
      'buy it!" '

(78)a. "Aj   **ma**-a'-l-pa   tz-iky'   w-n-yaab'   t-i'j,
     DEM   PROX-EMPH-MIR-even B3s-pass   1sEMPH-A1s-illness A3s-RN:theme
     ' "Now I'm bored with this,'

    b. **ma**-a'-l-pa   tz'-ok-b'aj   w-n-tzii'-ki-na,
     PROX-EMPH-MIR-even B3s-DIR-finish 1sEMPH-A1s-mouth-?-AFF
     'even my beak has been used up," ' (T4)

In commentary by the narrator, aspect and mood markers other than the incompletive are used where appropriate. In (79) the perfect is used in the first clause and the completive in the following clauses, since the actions in the story are in the past with respect to the moment of telling and commenting about it. In (80) the commentary starts out with a potential marker (b) and continues in c) with no aspect marking and d) with the incompletive to indicate a habitual action.

(79)a. b'ix   aa-l-pa-la-jo   **oo-taq**   ø-ku'-x   t-tetz'o-'n
     and   DEM-?-until-MIR-DEM CPL-PERF B3s-DIR-DIR   A3s-insert-DS
     Luuch t-uj-aj   saaka
     Pedro A3s-RN:in-DEM   sack
     'and that was because Pedro had put them in the sack,'

    b. **ø-ø-xi'**   ky-xoo-'kj   xjaal.
     CPL.DEP-B3s-DIR A3p-throw-RES   person
     'that the people went to throw.'

c. Noq-tzan ø-i-jaw   mees-j
   only-well CPL.DEP-B3p-DIR surprise-PAS
   'Well, they were surprised'

d. b'ix   ø-i-jaw   ooq' t-i'j   ky-saqb'aaq. (T1)
   and   CPL.DEP-B3p-DIR cry   A3s-RN:theme A3p-rope
   'and cried about their ropes.'

(80) *The people have spoken to the flea to convince it to follow the fox and discover where it is getting corn. The flea has bargained for a little human blood in payment.* (T4)

a. Toons n-Ø-tzaaj,
   then   INC-B3s-come
   'Then he came,'

b. aax-tzan   Ø-x-**el**   q-na-'n   t-i'j,
   same.well B3s-DIR-POT A1p-think-DS A3s-RN:theme
   'we will think the same,'

c. ax   b'a'n ky-ky'aq chi-choo-n   q-i'j,
   also   good   A3p-flea B3p-eat-AP   A1p-RN:PAT
   'and the fleas eat us,'

d. **nn**-Ø-eel   ch'in-ni   q-chiky'-eel   ky-u'n-jal.
   INC-B3s-go.out   a.little-DIM   A1p-blood-ABST A3p-RN:AGT-CLS
   'they take a little of our blood.'

Finally, when an episode of a story or the whole story ends, the narrator usually marks the end by switching back into some aspect other than incompletive. Sometimes a simple ending phrase that is marked with the completive is used, as in (81). At other times the ends of stories may have complex conclusions, but there will always be a clause marked with a non-incompletive aspect (82, 83).

(81) b'ala ax   o-ø-b'ant   iky-jo, (T1)
      maybe the.same CPL-B3s-do   like.this-DEM
      'maybe it happened like that,'

(82)a. Aa-ø-tzan   jun kol-jo
       DEM-B3s-well a   theme-DEM
       'Well, this is a theme'

    b. **ma**-a'   ø-txi   n-kaa'we-n-a. (T2)
        PROX-EMPH B3s-DIR A1s-reason-DS-1s
        'that I just narrated.'

(83)a. o'kx-san   ø-teen-jo
        only-well B3s-be-DEM
        'only this'

    b. ø-x-**el**   n-q'ama-'n-a. (T3)
        B3s-DIR-POT A1s-say-DS-1s
        'is what I will say.'

6.   Conclusions

To summarize, Mam marks aspect and mood on verbs and in part through predicate negatives and temporal subordinators. A distinction is made between irrealis, which includes potential and imperative, and realis, covering completive, incompletive, and proximate. Time is inferred from aspect, unless it is indicated directly by time adverbs, which are, however, not very frequent. The default temporal inferences are future with the potential, present progressive with the incompletive, recent past with the proximate, and ordinary or remote past with the completive marker. Temporal overlap or simultaneity is shown by the use of conjunctions, especially *b'ix* 'and', and temporal sequencing is shown by other conjunctions, including *despwees* 'after, then', *entoonsa* 'then', and *–tzan* 'then, well'. The proximate aspect *ma* also indicates a temporal connection between two clauses, where the second clause is consequent on the action in the first clause, marked with *ma*. The perfect *ootaq* marks temporal inversion. Clauses that are unmarked or only marked with the incompletive *n-* are interpreted in linear order; the action in each follows the action in the preceding clause.

    Whenever the temporal context is established through a direct marker such as an adverb or the default interpretation of an aspect marker, that context holds over a number of clauses, until it is changed by some other specific marker. In stories, the remote past that is established in the opening lines holds for the entire story and may never need to be reestablished. Narratives of any sort typically use the incompletive after the temporal context is established at the beginning, interrupting it only as necessary to establish more local temporal dependencies. Mam has plenty of resources to establish and maintain temporal context, without tense.

References

Bohnemeyer, Jürgen. 2002. *The grammar of time reference in Yukatek Maya.* Lincom Studies in Native American Linguistics 44. Muenchen: Lincom Europa.

England, Nora C. 1983. *A Grammar of Mam, a Mayan Language.* Austin: University of Texas Press.

Kaufman, Terrence. 1990. Algunos rasgos estructurales de los idiomas mayances, con referencia especial al K'iche'. In N. England and S Elliott, eds., *Lecturas sobre la lingüística maya*, 59-114. Antigua, Guatemala: CIRMA.

Larsen, Thomas W. 1988. Manifestations of Ergativity in Quiché Grammar. Ph.D. diss., University of California, Berkeley.

Pérez, (B'aayil) Eduardo and (Ajb'ee) Odilio Jiménez. 1997. *Ttxoolil qool Mam: Gramática Mam*. Guatemala City: Cholsamaj.

Nora C. England
University of Texas at Austin
1 University Station B5100
Austin TX 78712-0198

nengland@mail.utexas.edu

Towards a Substantively Biased Theory of Learning

SARA FINLEY and WILLIAM BADECKER
Johns Hopkins University

0.   Introduction

There has recently been much debate concerning the nature of representations of phonological objects, particularly with regard to the role of abstract phonological constructs such as features and natural classes. This debate has extended to include differing notions about how phonological knowledge is learned and represented in the mind. The goal of this paper is to provide evidence for the psychological reality of abstract representations, including distinctive features. We argue for a theory of substantively biased learning in which learners are biased towards phonological patterns that are abstract, general, and correlate to cross-linguistic tendencies.

We review how the poverty of the stimulus paradigm for artificial grammar learning can be used to reveal that knowledge of vowel feature dependencies (height and tenseness) can lead to substantive biases about the level of generality in rule formation. This paper provides further data that substantive biases are abstract, and derived from constraints on the inventory of phonological segments.

This paper proceeds as follows. Section 1 provides background on the nature of vowel harmony and the type of substantive biases that are likely to form in vowel harmony systems. Section 2 discusses substantive biases in greater detail, including how it is possible to tap into the adult learner's biases. Section 3 describes the (Artificial Grammar) POVERTY OF THE STIMULUS PARADIGM, and the results of an experiment on height harmony. Section 4 presents and discusses the results of an experiment testing for generalization to novel suffixes in vowel harmony. Section 5 concludes with prospects for future experiments.

1.   Vowel Harmony

Vowel harmony is a process whereby adjacent vowels are compelled to share the same value of a particular feature. There are several types of vowel harmony, each involving different features: height (Menomini (Cole and Trigo 1988)), back, round (Turkish (Kaun 2004)), tense/ATR (Lango (Archangeli and Pulleyblank 1994, Smolensky 2006)). Most harmony systems involve a single feature, however, there are some systems that involve multiple features, where one feature is

dependent on the presence of some other feature. For example, round harmony in Turkish applies only to high vowels. In Yalwelmani, round harmony applies only if the vowels already agree in height. In Menomini, height harmony is conditioned by tenseness; only tense vowels undergo harmony (Cole and Trigo 1988). This type of feature dependency in harmony is referred to as parasitic harmony, and it is not arbitrary. The features that can be parasitic on one another can only be features that are dependent on some dimension. For example, height and rounding are phonetically correlated such that the higher the vowel, the more likely it is to be round. Height and ATR are also phonetically correlated; low vowels are preferably lax ([−ATR]), and high vowels are preferably tense ([+ATR]). Phonetic correlations of features lead to markedness effects (Archangeli and Pulleyblank 1994) that in turn create restrictions in vowel harmony. The correlation of height and ATR produces parasitic harmony. In some languages with both tense and lax vowels, height/raising harmony applies only to tense vowels. Further, features that share little phonetic dependence, such as height and backness, do not interact parasitically in harmony systems. In the next section we provide some detail as to how these facts can manifest themselves as substantive biases in the learner.

2.   Substantive Biases

Constraints on the typology of vowel harmony raise the question of whether or not the substance that forms these constraints is psychologically real. Following Wilson (2006), we define substance as "the system of categories that figure into the mental representation of linguistic knowledge" (945).   This includes abstract representations that are used to describe phonological processes such as distinctive features, natural classes, as well as the basic vocabulary for describing phonological units: the syllable, prosodic word, stress, consonant, and vowel. Substance also refers to the psychological instantiation of theoretical notions that may be specific to a particular phonological framework, such as constraints in Optimality Theory (Prince and Smolensky 1993/2004).

Substantive biases guide learners towards phonological processes that conform to the substantive knowledge of the learner, acting as a prior on learning; the learner forms hypotheses about the training data based on knowledge of what phonological processes should look like. If language learners have knowledge of features and natural classes, they will be biased to posit rules that make use of these features and natural classes. Further, if learners have knowledge about what makes a proper grammatical process, then they should be biased towards learning natural phonological processes.

2.1.   Testing for Substantive Biases

Substantive biases are but one way to explain linguistic universals. An alternative account is offered in Evolutionary Phonology (Blevins 2004). According to Evolutionary Phonology, there is no need to posit independent knowledge of the constraints that govern cross-linguistic typology. As languages are learned, ease of articulation and misperception guide the learner. Because languages evolve by

universal constraints on misperception, languages evolve in very similar ways, and what looks like universal grammatical knowledge is actually epiphenomenal. Since language can be described in terms of misperception at the learning stage, it is redundant to assume that abstract representations of language are encoded in the minds of language learners.

One fruitful source of evidence for substantive biases in learning is the artificial grammar learning paradigm. In this paradigm, participants are exposed to a single morphophonological process of a novel language. This paradigm is efficient because it can be used to test a variety of hypotheses involving learning biases. For example, Wilson (2006) tested for substantive biases by training participants on a language game involving velar palatalization (e.g., [ki] → [tSi]). Half of the participants were exposed to high vowels only ([i]), and the other half of the participants were exposed to mid vowels only ([e]). Cross-linguistically, velar palatalization participates in an implicational relationship: if mid vowels trigger palatalization, then high vowels must also trigger palatalization, but not vice versa. If language learners have knowledge of this universal implication, then exposure to mid vowels should lead to generalization to high vowels, but exposure to high vowels need not lead to generalization to mid vowels. This precisely what happened in Wilson's experiments— learners generalized to high vowels but not mid vowels. This result provides evidence that learners have substantive knowledge of perceptual and articulatory constraints even if their native language does not provide them with specific knowledge of the phonological rule that the constraints govern.

The asymmetric generalization found in Wilson's experiments supports the hypothesis that learners are biased towards perceptually natural processes. The fact that learners appear to be biased towards learning natural rules does not entail the inability to learn unnatural rules. However, the naturalness bias does suggest that the more a rule conforms to substantive knowledge, the easier it will be to learn. Conversely, the more a rule deviates from substantive biases, the more difficult that process will be to learn. Partial evidence for this can be found in Pycha et al.'s (2003) experiments in which a vowel harmony alternation was taught to three sets of participants. One group learned a phonologically natural pattern: vowel harmony. A second group was exposed to a phonetically natural but phonologically less natural pattern of disharmony, and a third group was exposed to a completely arbitrary morphophonological pattern. Evidence of learning was found in the phonologically and phonetically natural conditions, but there was no evidence of learning in the arbitrary condition. This supports the substantively biased learning hypothesis because the pattern that least resembled a well-formed grammatical process was the process that learners had the most difficulty learning.

The results of experiments testing directly for naturalness effects point in favor of substantive biases; no experiment has shown a bias towards learning an unnatural pattern over learning a natural pattern. However, because of difficulties in interpreting null results, a more promising source of evidence for biases can be

found in tests for generalization to novel forms (Wilson 2006). Testing for generalization allows the researcher to make inferences about what hypotheses the learner has made. If the substantively biased learning hypothesis is correct, generalization to novel forms should reflect that fact.

The poverty of the stimulus paradigm (Wilson 2006) tests for substantive biases by specifically impoverishing the training set, and then testing learners on a novel, more enriched data set. The paradigm has the same logic as artificial grammar learning experiments that explore natural versus unnatural patterns. The difference is that in the poverty of the stimulus paradigm, the training in each condition is equally natural, but the predictions about generalization to novel forms may be different. In one condition, substantive biases may predict generalization to novel forms; in the other condition, substantive biases may predict no generalization to novel forms.

While the term 'poverty of the stimulus' is typically made in reference to arguments for nativist learning mechanisms, the poverty of the stimulus method for testing for substantive biases is compatible with both nativist and non-nativist accounts of learning. These biases could be learned or reflect innate constraints; in no way does the substantively biased hypothesis entail that these biases are present from birth.

In the next section, we describe how the poverty of the stimulus paradigm can be used to test for substantive biases in vowel harmony, particularly for biases based on feature dependence.

3.   The Poverty of the Stimulus Paradigm and Height Harmony

As mentioned in Section 2, feature dependence can lead to cross-linguistic typologies of parasitic vowel harmony. Height harmony can be parasitic on ATR because these features are phonetically correlated, but because height and backness are not phonetically correlated, height harmony systems are much less likely to be parasitic on backness. If language learners have knowledge of feature dependencies between height and ATR, then this should be reflected in their generalizations to novel segments in an artificial grammar learning setting.

Finley and Badecker (2007) tested exactly this question. They trained participants on a height harmony rule that was either conditioned by tense vowels or conditioned by front vowels. In the Lax Hold-Out condition, participants were trained using only tense vowels ([i, u, e, o], e.g., [pigu, pigumi], [bego, begome]). After training, these participants were given a forced choice test that compared Old Items (items that were exactly what were given in training (e.g., [begome]), New Stem Items (items that contained the same vowels heard at training, but were not heard in training (e.g., [godeme]), and New Vowel Items (items that contained vowels not heard in training (e.g., [gIdImi]). The novel vowel items contained lax vowels ([I, E]) that were not heard at training. If participants who were exposed only to tense vowels hypothesize a general height harmony rule, they should extend the pattern to these lax vowels. However, if participants make use of their knowledge that height and tenseness are dependent features, they may posit a

145

parasitic harmony rule in which only tense vowels undergo height harmony. If this is the case, they will not generalize to lax vowels. In the Back Hold-Out condition, participants were exposed to the same stem-suffix alternation as in the Lax Hold-Out condition. The difference is that these participants only heard front vowels, ([I, E, i, e]). If participants make use of their knowledge that phonological processes tend to be general, and that height and back are not co-dependent features, then learners should posit a general height harmony rule, and extend the harmony pattern to novel vowels ([u, o]).

Results indicated exactly that; participants extended the harmony pattern to back vowels but not to lax vowels. This supports the substantively biased learning hypothesis because knowledge of feature dependencies allowed learners to make differentiating hypothesis about the specificity of the height harmony rule that they were exposed to. Interestingly, generalization to one set of vowels over another cannot be explained in terms of acoustic distance to exemplars. The back vowels [u, o] that participants were able to generalize to are acoustically far from the training set vowels [i, e], whereas the lax vowels [I, E] that participants failed to generalize to are acoustically close to the training set vowels [i, e]. If generalization were based on acoustic distance, then the opposite pattern would be expected.

The interpretation of these results relies on the assumption that substantively-biased learning is general. If learning were specific (e.g., segment-based), then one should expect no generalization to novel segments when features were not dependent. The next section provides further support for the assumption that learners form generalizations through substantive biases. We present data from a new experiment that further supports the hypothesis that learning is both general and abstract.

4.   Generalization to Novel Suffixes

The substantively biased learning hypothesis states that learners have access to knowledge about features, as well as more abstract linguistic principles, such as the fact that phonological processes tend to be general, applying to a wide variety of morphemes. If this is an accurate characterization of the knowledge that is brought to learning, then learners in the poverty of the stimulus paradigm should be able to generalize beyond the initial phonological process they are exposed to. In the vowel harmony experiments of Finley and Badecker (2007), participants were exposed to stem and stem + suffix alternations, with just one suffix exemplar (e.g., in the height harmony experiment discussed above, participants were exposed to the alternation of [-mi]/[-me]). If learners are able to form abstract vowel harmony rules from a single suffix alternation, they should be able to generalize to novel suffixes. In the present experiment, participants are exposed to a round harmony rule with a single suffix alternation, and are then tested on their generalization to a suffix with a novel vowel (e.g., from [-mi]/[-mu] to [-ge]/[-go]).

An alternative grammatical interpretation of the result that learners form hypotheses for phonological processes in line with typological predictions (Finley and Badecker 2007; Wilson 2006) is that learners have direct knowledge of typlogical frequencies (e.g., in the form of statistical proballilities for rankings of particular constraints in an optimality theoretic grammar). Because the factors that lead to typological distributions (articulatory ease, perceptibility, learnability, etc.) are so tightly linked to typological frequencies themselves, it is possible that learners actually encode the probabilities of relative typological frequencies.

In the present experiment, it is possible to differentiate between these two grammatical hypotheses. High vowels are probabilistically better targets for round harmony than mid vowels. If this typological information is directly encoded in substantive biases, then language learners should generalize to high vowel suffixes, but not to mid vowel suffixes. However, the typological generalization that high vowels are better targets for round harmony is based on the fact that languages are more likely to have high round vowels in their vowel inventory than mid round vowels (Kaun 2004). If biases are derived from substantive constraints, such as the segmental inventory of the language, then language learners should generalize to both mid and high vowel suffixes, as long as the inventory contains both high and mid round vowels. In this experiment, all participants are trained with stems that contain both mid and high round vowels. When participants are exposed to mid vowel suffixes for the first time, they should already know that mid round vowels are allowed in the inventory of the novel language, and should have no restriction on whether mid vowels participate.

If substantive biases are based on inventory constraints, then participants should generalize to both high and mid vowel suffixes. Alternatively, if biases are based on knowledge of typological frequencies, then we should expect learners to behave differently in the two target hold-out conditions. In particular, they should generalize to novel high vowel suffixes, but not to novel mid vowel suffixes. In this experiment, we test substantive biases towards high targets to round harmony. Participants are exposed to round harmony where both mid and high vowel stems trigger harmony to either a high vowel suffix or a mid vowel suffix. Participants are then tested on their generalization to novel suffix vowels, either high or mid, depending on their training.

4.1. Method
4.1.1. Participants
All participants were adult native English speakers with no knowledge of a vowel harmony language and did not participate in previous harmony experiments. Sixty-one Johns Hopkins undergraduate students participated for extra course credit. Participants were randomly assigned to one of three training groups: a Control group containing mixed harmony stems, a High Vowel Suffix condition and Mid Vowel Suffix condition. Final analyses included 20 participants in each group. All participants were screened based on a perceptual (AXB) task. Those

participants scoring less than 75 percent on this task were removed from the study. This occurred for one participant.

4.1.2. Design

The experiment consisted of a training phase followed immediately by a forced-choice test. All phases of the experiment were presented using PsyScope (Cohen et al. 1993). The training consisted of 24 pairs of stems and stem plus suffix items in the experimental conditions (High and Mid Suffix Hold-Out conditions). Examples are provided in Table 1 below. The Control condition (mixed harmony stems) had 48 stems (this was double the number of stems so that Control training could consist of stems in the Mid and Low Hold-Out conditions, as well as disharmonic stems). Participants heard each stem-suffix pair five times, in one of two randomized orders. Training was followed by a 36-item forced-choice test. One item was harmonic (e.g., [bigimi]), while the other was disharmonic (e.g., [bigimu]). Each test item was from one of three conditions: Old Stems, New Stems, or New Suffix. The Old Stems condition contained items that appeared in training. New Stems items did not appear in training, but were drawn from the same vowel and consonant inventory as the training items. New Suffix test items consisted of an old stem suffixed with both a vowel and a consonant that did not appear in the training suffix.

(1) Table 1: Stimulus Design and Examples

	Training Suffix	Novel Suffix	Training Examples
Mid Hold-Out	[-mi]/[-mu]	[-ge]/[-go]	[bodo-bodomu]
	[-gi]/[-gu]	[-me]/[-mo]	[bodo-bodogu]
High Hold Out	[-ge]/[-go]	[-mi]/[-mu]	[bodo-bodoge]
	[-me]/[-mo]	[-gi]/[-gu]	[bodo-bodogu]
Control	X	[-gi]/[-gu], [-me]/[-mo]	[bodo, bido]
	X	[-mi]/[-mu], [-ge]/[-go]	[bodo, bido]

In the present experiment participants were randomly assigned to one of three conditions: Control, Mid Suffix Hold-Out and High Suffix Hold-Out. In the Control condition, participants were exposed to 24 harmonic and 24 disharmonic two-syllable stems. In the Mid and High Hold-Out conditions, all stems contained the same vowel (e.g., [budo], [pimi], etc.). This eliminated the potential confound that learners might generalize to novel suffixes in both hold-out conditions if stem vowels contain evidence of spreading to both mid and high vowels (e.g., [budo] has left to right spreading of high to mid and [bodu] has left to right spreading of mid to high). Participants in each hold-out condition were exposed to one training suffix, and were asked to generalize to one novel suffix. The novel

suffix always contained a different vowel, and a different consonant than the training suffix. For example, if a participant was trained with a [-mi]/[-mu] alternation, they were tested on the [-ge]/[-go] alternation, and vice versa. Participants trained on [-gi]/[-gu] were tested on [-me]/[-mo], and vice versa. The suffix consonant was varied to ensure that generalization to novel suffixes did not depend on similarity to the training suffix (i.e., had the same consonant). Training was counterbalanced such that half of the participants in each condition received a suffix vowel with the bilabial nasal [m] ([-mi]/[-mu] or [-me]/[-mo]) and the other half were trained using suffix involving a velar stop [g] ([-gi]/[-gu] or [-ge]/[-go]). Participants in the Control condition were also counterbalanced to receive test items including [-me]/[-mo] and [-gi]/[-gu], or test items using the suffixes [-mi]/[-mu] and [-ge][-go].

The experiment finished with an AXB perception task as in Finley and Badecker (2007). This task required participants to identify which of two single-syllable words contained the same vowel as the medial vowel. For example, if participants heard [bi, gi, du], the correct answer would be that the first syllable [di] contains a vowel identical to the vowel in the second syllable [gi].

4.1.3. Stimuli

All stimuli were recorded in a sound proof booth at 22,000kHz by a male speaker of American English with basic phonetic training and no knowledge of the experimental design. The intensity for all stimuli was scaled to 70dB. Sound editing was done using Praat (Boersma and Weenkin 2005). All stimuli contained segments drawn from the consonant and vowel inventories: [p, b, t, d, k, g, m, n] and [i, u, e, o].

Suffixed stimuli were created by splicing a pseudo-suffixed form with a central vowel ([´] (stem + [m´]; e.g., [badam´])) and a spliced portion of a suffixed form of a central stem [-mi]/[-mu], [-gi][-gu], [-me]/[-mo] or [-ge]/[-go]. For example, the form [dekemi] was created by crossing the stem portion of [**deke**m´] with the suffix portion of [d´k´**mi**]. This assured that the stimuli in the test condition, which contained both harmonic and disharmonic forms, had identical stem portions, and differed only by the suffix. This ensured that selection of the suffixed form was due to the suffix itself and not to an idiosyncrasy in the stem. The F1 and F2 values for each stem vowel were measured to ensure that proper the acoustic correlates were present.

Two different consonantal skeletons were made for each vowel pair for a total of 24 training words. Consonant skeletons were constructed so that each of the eight consonants ([p, b, t, d, k, g, m, n]) occurred in word initial position three times and word-medial position three times. Vowel pairs were assigned to consonant skeletons randomly with the condition that any word too closely resembling an English word was avoided. Consonant skeletons were created in the same manner as the training for New Stems and New Suffix test conditions. Examples of stimuli used in the experiment are given in Table 1, above.

4.1.4. Procedure

All participants were given written and verbal instructions. They were told that they would be listening to a language they had never heard before, and that they would later be asked about the language, but they need not try to memorize any forms they heard. Participants heard all stimuli over headphones. When training was complete, a new set of instructions appeared on the monitor. Participants were told that they would hear two words, one of which was from that language they just heard, and their task was to identify which word belonged to the language. Participants were told to respond as quickly and accurately as possible, and to make their responses after hearing both items. Participants were given a debriefing statement upon completion of the experiment (which took approximately 15 minutes). Although we did not probe participants as to whether they noticed the purpose of the experiment or obtained explicit knowledge of the phonological process, pilot subjects reported that they remained unaware of the purpose of the experiment, and had no explicit knowledge of the phonological rule. Participants were given a short break before beginning the AXB task after testing.

4.2. Results

Percent of harmonic responses were recorded for each subject for each of the training conditions. The mean responses for each test condition are presented in Figure 1, below.

(2) Figure 1: Percent of Harmonic Responses by Hold-Out Condition
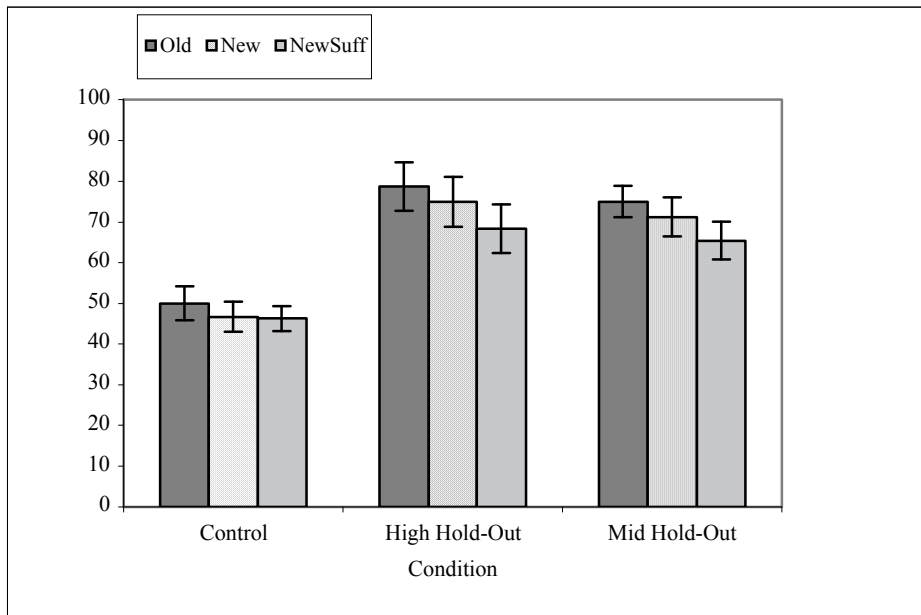
Participants in each of the training conditions were compared to participants in the Control condition via a separate mixed design two-factor analysis of variance (ANOVA) with alpha set at $p = 0.05$. The between-subjects factor was Training, with two levels in each ANOVA: the Control group and each Hold-Out condition. Test Items (Old Stems, New Stems, New Suffix) was a within-subjects factor nested under the between-subjects factor Training. All conditions involved between-item comparisons. 95% confidence intervals (CI) are presented for each condition (Masson and Loftus 2003).

For the ANOVA comparing Controls to the High Hold-Out condition, there was a significant effect of Training ($F_{(1, 38)} = 652.70$; $p < 0.001$), in that participants in the High Hold-Out condition (mean = 70.56, CI = ±11.80) were more likely to choose the harmonic option than participants in the Control condition (mean = 47.63, CI = ± 4.63). There was no effect of Test Item ($F_{(2, 38)} = 2.41$; $p > 0.05$), and no interaction between these factors ($F_{(2, 76)} = 1.36$; $p > 0.05$).

For the ANOVA comparing Controls to Mid Hold-Out, there was a significant effect of Training ($F_{(1, 38)} = 19.01$; $p < 0.001$); participants in the Mid Hold-Out condition (mean = 74.03, CI = ± 8.50) were more likely to choose the harmonic candidate than participants in the Control condition. There was no effect of Test Item ($F_{(2, 38)} = 2.53$; $p > 0.05$) and no interaction ($F < 1$).

For the ANOVA comparing High Hold-Out to Mid Hold-Out, there were no effects for Training ($F < 1$), and no interaction ($F < 1$). There was an effect of Test Item ($F_{(2, 38)} = 8.45$; $p < 0.001$).

To assess generalization to novel suffixes, a t-test was performed comparing the New Suffix condition of the Control condition to the New Suffix condition for each training condition. There was a significant difference between New Suffix test items and Controls for the High Hold-Out condition ($t = 3.46$; $p < 0.01$) as well as the Mid Hold-Out condition ($t = 3.31$; $p < 0.001$) in that participants were more likely to select the harmonic choice for New Suffix test items compared to Controls.

4.3. Discussion

Participants appear to have learned a general, robust round harmony rule, and were able to extend this rule to novel suffixes. These results provide evidence that learners form abstract, general hypotheses about the phonological processes that they are exposed to.

Participants generalized to both mid vowel and high vowel suffixes, indicating that learning is sensitive to inventory constraints, rather than a more direct encoding of typological frequencies (e.g., listings of probabilities of particular constraint rankings). This result leaves open the possibility that at least some portion of substantive biases are acquired rather than innately specified (and vice versa). The finding that language learners are not always sensitive to cross-linguistic frequencies of patterns has important implications for phonological theory. In particular, they suggest that a psychologically real theory of phonology need not directly encode typological frequencies in the grammar (e.g., in the form of

probability of specific constraint rankings). Rather, these frequencies can be derived from other substantive facts such as inventory constraints and perceptibility.

5. Conclusion

The results of the experiment presented in this paper, along with the results of previous experiments (Finley and Badecker 2007; Wilson 2006) support a substantively biased theory of learning. In this theory, learners are biased to form rules that are abstract, general and conform to typological generalizations. Learners are sensitive to inventory constraints, phonetic and phonological markedness as well as feature dependencies. They are also biased towards forming abstract rules, which are general and rely on feature-based representations.

What exactly is contained in substantive biases is still largely undiscovered. More research is needed to determine the precise nature of grammatical knowledge. Our future research will further investigate how typological predictions made by Optimality Theory (Prince and Smolensky 1993/2004) for vowel harmony manifest themselves in artificial grammar learning. Such issues include dominance and directionality in vowel harmony.

References

Archangeli, Diana, and Pulleyblank, Douglas. 1994. *Grounded Phonology*. Cambridge, MA: The MIT Press.

Beckman, Jill. 1997. Positional Faithfulness, Positional Neutralisation and Shona Vowel Harmony. *Phonology* 14:1-46.

Blevins, Juliette. 2004. *Evolutionary Phonology: The Emergence of Sound Patterns*. Cambridge: Cambridge University Press.

Boersma, Paul, and Weenink. 2005. Praat: Doing phonetics by computer.

Cohen, Jonathan, MacWhinney, Brian, Flatt, Matthew, and Provost, Jefferson.1993. PsyScope: A New Graphic Interactive Environment for Designing Psychology Experiments. *Behavioral Research Methods, Instruments and Computers*. 25:257-271.

Cole, Jennifer, and Trigo, Loren. 1988. Parasitic Harmony. In N. Smith and H. van der Hulst, eds., *Features, Segmental Structures and Harmony Processes*, 19-38. Dordrecht: Foris.

Finley, Sara, and Badecker, William. 2007. Artificial Language Learning

and Feature-Based Generalization. Ms, Johns Hopkins University.

Kaun, Abigail. 2004. They Typology of Rounding Harmony. In B. Hayes and D. Steriade eds., *Phonetics in Phonology*, 87-116. Cambridge: Cambridge University Press.

Masson, Michael E, and Loftus, Geoffrey R. 2003. Using Confidence Intervals for Graphically Based Data Interpretation. *Canadian Journal of Experimental Psychology* 57:203-220.

Prince, Alan, and Smolensky, Paul. 1993/2004. *Optimality Theory: Constraint Interaction in Generative Grammar*. Cambridge: Blackwell.

Pycha, Anne, Nowak, Pawel, Shin, Eurie, and Shosted, Ryan. 2003. Phonological Rule Learning and its Implications for a Theory of Vowel Harmony. *WCCFL* 22:101-113.

Smolensky, Paul. 2006. Optimality in Phonology II: Harmonic Completeness, Local Constraint Conjunction, and Feature-Domain Markedness. In P. Smolensky and G. Legendre eds., *The Harmonic Mind: From Neural Computation to Optimality-Theoretic Grammar, Volume II*, 453-535. Cambridge, MA: The MIT Press.

Wilson, Colin. 2006. Learning Phonology with Substantive Bias: An Experimental and Computational Study of Velar Palatalization. *Cognitive Science* 30:945-982.

Sara Finley
Johns Hopkins University
Department of Cognitive Science
3400 N. Charles St.
Baltimore, MD 21818

finley@cogsci.jhu.edu

William Badecker
Johns Hopkins University
Department of Cognitive Science
3400 N. Charles St.
Baltimore, MD 21818

badecker@jhu.edu

Interpreting Intra-Regional Southern Vowel Distinctions

VALERIE FRIDLAND
University of Nevada, Reno

Recognizing that linguistically and socially meaningful speech is formed within locally defined and constructed communities, recent research has high-lighted the importance of pushing beyond descriptive accounts of local speech to a fuller understanding of the perceptions and attitudes behind speakers' linguistic realizations. Gaining insight into fundamental questions involving the origin, diffusion and meaning of sound changes requires integrating examination of what speakers do productively, what they hear perceptually and what they believe attitudinally.

Many studies have sought to record or examine the types of phonological, morpho-syntactic and lexical differences that separate Southern dialects from others nationally, resulting in a number of very good descriptive studies about the features used in various Southern locales. Still, research on such varieties and their speakers is only beginning to examine how complex ideological positioning regionally interacts with and determines the use of non-standard Southern fea-tures. Rarely have studies synthesized descriptive work with perception studies and attitudinal surveys drawn simultaneously from the same population to provide a more comprehensive look at language use and language choices.

Adding more layers of complexity to our understanding of speech in the modern South is the fact that many Southern dialects are currently being affected by a series of vowel shifts known collectively as the Southern Vowel Shift, or SVS. In this shift, often characterized as a chain shift, the long tense front vowels lower and centralize, while the short lax front vowels raise and peripheralize. This 'reversal' so to speak results in a system that is acoustically very different from that found elsewhere in the U.S., leading to discussion about growing divergence across U.S. regional vowel systems. However, there is also another set of vowel shifts affecting vowels in the South in which the high back vowels are fronting acoustically, or being realized farther forward in the mouth. These changes, though, are not unique to the South and are in fact found in every major U.S. dialect region. Thus, vowels may not be leading us as far apart regionally as we might at first believe. What has become clear is that speech in the modern South is changing in ways that both bring it closer to and further away from speech

155

elsewhere in the U.S. This begs the question of how such changes might reflect ideological shifts in Southern and national self-identification.

My work in Memphis, Tennessee over the past seven years attempted to examine the nature of speech in that region, both productively in terms of the actual acoustic position of the Southern vowel system and perceptually, in terms of how local speakers view these regional differences, particularly in terms of competence and solidarity measures. This paper attempts to characterize some elements from this work that bear on what life-long Southerners living in Memphis, TN believe about their own speech and that spoken around them and how they reconcile their competing membership in both local and larger speech communities.

Production samples taken in the late 1990s established that Memphians did indeed show evidence of a number of aspects of the Southern Vowel Shift (Fridland 2001, 2006). While the high front vowels did not show a true reversal of the tense and lax tokens, they were often overlapping and well defined in acoustic space. The mid front vowels, on the other hand, were completely reversed acoustically in almost every speaker, Black and White, analyzed from the Memphis area. Similarly, all speakers showed extensive fronting of the high back vowel classes, suggesting that back vowel fronting was quite active in local speech.

If, as it appears to be, Southern speech is being affected by specifically local (Southern) shifts AND at the same time non-localized global shifts such as back vowel fronting, a natural question, it would seem, is what role are these changes serving for Memphians? Are they serving a sociolinguistic or purely linguistic purpose? Since back vowel fronting is so widespread, found not only among most American dialects but in many other languages as well and seems to be accounted for by fairly uniform and natural processes (drift), it seems an unlikely candidate for social marking. Changes to the front vowels, on the other hand, are much more localized, with the different U.S. regions showing strikingly different acoustic positioning for these vowels. Thus, my research attempted to explore whether speakers perceived these shifts positively or negatively and whether these impressions changed depending on the nature of shift involved, namely local or global.

Using vowel tokens synthesized to show various degrees of Southern shifting for the front vowels and various degrees of fronting for the back vowels, a two-part perception test was designed to probe these questions (Fridland, Bartlett and Kreuz 2004, 2005). In one part of the study, participants were asked to rate vowel tokens (played individually in monosyllabic word contexts) on scales from 1-3 measuring the perceived level of education and pleasantness of the speaker. In general, listeners rated more Southern shifted tokens less educated **and** less pleasant than tokens which had not been shifted toward Southern norms, as indicated in Table 1 below.

Table 1: Education and pleasantness mean ratings by vowel sub-system (Front vowels vs. back vowels) on a 1 (worst) - 3 (best) scale.

	Education	Pleasantness
SVS shifted Front vowels	1.67	1.72
Non-Shifted Front vowels	1.86	1.77
Fronted Back vowels	2.11	1.89
Non-fronted Back vowels	2.14	1.99

In terms of whether listeners showed any differences in awareness of local shifts compared to global shifts, Memphians found that SVS shifted front vowels were less educated and less pleasant sounding than fronted or non-fronted back vowels. While this could suggest that it is not local shifts that are salient on such scales, but global shifts which socially are more highly regarded, this is an unlikely interpretation. In another part of the study asking the same participants to pick out the most 'Southern' sounding vowels when played two tokens synthesized for different degrees of shift, back vowel shift differences were not very salient as Southern markers, with most participants scoring around chance when selecting between fronted and non-fronted back vowel tokens. However, they were much better at recognizing Southern shifted front vowels as more 'Southern' sounding. Thus, it is the Southern shifted front vowels, not the fronted (or peripheral) back vowels that apparently are being noticed by participants as more familiar in terms of local speech. Thus, since shifted front vowels are more salient to listeners in this regard, it is likely it is this 'Southern association' which is pulling down competence and solidarity ratings for Southern shifted front vowel tokens, not any prestige associated with back vowels more generally. Instead, back vowel fronting seems to have crept into the Southern vowel system essentially unnoticed and unmarked for localness, education or pleasantness scales. Front vowels, on the other hand clearly are recognized as local variants. This Southern uniqueness subsequently seems to create a negative context within which these variants are viewed on education and pleasantness. Variants recognized as more Southern are perceived as less educated and less pleasant than those without Southern associations.

Such linguistic insecurity, perhaps, is not unusual among groups whose varieties have long been the subject of extreme comment and ridicule. But, the fact is that Southern speakers continue to use these variants in their speech and clearly see these variants as locally identifying. However, this type of task specifically drew speakers' attention to specific linguistic items rather than their more general perceptions of local speech. So, in some way, Memphians' broader sociolinguistic identity must be mediated by intra-Southern affiliations and local pride, which outweigh some of the negative beliefs they hold about their own speech.

This lead to the question of what types of folk linguistic beliefs surround Southerners and how these stereotypes have become part of their own discourse. Unfortunately, you do not need to look very hard to discover the kinds of images that are routinely drawn about the South, nor is it surprising that such portrayals are notorious within the Tennessee or larger Southern community. In fact, an article in a Tennessee based newspaper, *The Tennessean*, ran with the headline "Southern stereotypes prove tough to shed: Region's past is sometimes all that rest of nation sees (Tennessean.com 1/2/2002)". The text discusses the common and endearing images of the South as backward, ignorant and racist, particularly by those living outside the region.

How are such negative portrayals of the South deflected by those who live there? Clearly, negative stereotypes about the inhabitants of the South abound and locals are certainly not impervious to these images. What is particularly interesting though are the different tactics Southerners use to try and fight these unflattering representations. In several cases, locals tried to point out the positive attributes of their states or attempted to provide facts about their community that disputed those more widely believed. In other words, they try to defend themselves in the face of these stereotypes by disputing that they carry any widespread validity. More interesting, though, was the second strategy that was often adopted, that of redirecting the negative stereotypes to other areas of the South that they see as responsible for the images. Both approaches are exemplified in the following quote from Mark Potok, director of the Southern Poverty Law Centers Intelligence project, which appeared in an online article:

> "People think that the Klan and white supremacist groups in general are Southern artifacts, but that simply is not the truth….We see as many hate groups, and certainly as many hate crimes, in Northern and even coastal states." But even Mr. Potok couldn't help taking a fun jab at Mississippi: "Over here in Alabama, we say, 'Thank God for Mississippi' or else we'd be last in everything (Bookerrising.com 2006)."

Similarly, in the article cited above that ran in *The Tennessean*, Mississippi is mentioned several times as a state that has a particularly bad rap in a quote appearing from local author John Egerton:

> "A movie like Mississippi Burning sticks in people's minds….The FBI was virtuous and the law enforcement of Mississippi were evil…There's enough truth in all of that to convince some people that everybody must be that way (Tennessean.com 1/2/2002)."

Further shedding light on the question of how modern Southerners view themselves are the results of a study performed by University of North Carolina sociologist Larry Griffin (2003) which suggested that fewer and fewer Southerners self-identify as Southern. In his research based on poll data, Griffin found that Southerners from every ethnic, gender and age group were less likely to self-identify as Southerners than they were a decade before. He attributes this decline

to two predominant factors: one, the core 'Southern identifying' constituency of the South is being dispersed due to migration and increased national rather than local identity and two, the images associated with being Southern are less positively perceived than in years past while national consciousness is being heightened due to the threat of terrorism and war. Similarly, research by Reed et al. (1990) comparing the number of entries for 'Southern' vs. 'American' named businesses in the South as reported in the local yellow pages showed a similar attrition. In peripheral areas of the South, this ratio has shown a declining number of 'Southern' identifying listings with a corresponding increase in 'American' or 'National' listings. Like Griffin, the authors believe these results suggest greater national identification at the expense of local Southern identification.

My research question was how this competing local and national identity is reconciled for Memphians when evaluating the speech around them on correctness and pleasantness scales. To approach this question, Memphians were given the folk dialectology task designed by Dennis Preston (1986, 1989, 1993) in which they were asked to rate speech in all fifty states on correctness, pleasantness and degree of difference scales. While regional contrasts are widely discussed in such folk dialectology work, intra-regional ratings are not as often explored. This aspect of the research, therefore, was primarily interested in examining how Memphians viewed themselves linguistically compared to other states within their region, particularly in light of the widespread stereotypes surrounding the region. Table 2 shows Memphians' ratings for Southern states, going from states with the lowest scores to those with highest scores on all three surveyed dimensions.

Table 2: Memphians' mean ratings for each state within the South on three constructs, ordered from lowest (0) to highest scores (9) in the folk dialectology study.

Correctness (0-9)		Pleasantness (0-9)		Difference (0-3)	
State order		State order		State order	
Mississippi	m= 2.68	Arkansas	m= 3.85	Tennessee	m= .54
Arkansas	m= 2.77	Alabama	m= 3.93	Arkansas	m= .99
Alabama	m= 2.85	Mississippi	m= 4.04	Mississippi	m= .86
Louisiana	m= 3.10	Louisiana	m= 4.61	Georgia	m= 1.10
Kentucky	m= 3.87	Oklahoma	m= 4.70	Alabama	m= 1.15
Texas	m= 3.93	Kentucky	m= 4.74	Kentucky	m= 1.16
Georgia	m= 4.11	Texas	m= 4.93	Texas	m= 1.31
Tennessee	m= 4.25	W. Virginia	m= 5.26	So. Carolina	m= 1.51
Oklahoma	m= 4.63	So. Carolina	m=5.27	No. Carolina	m=1.55
So. Carolina	m= 4.71	Georgia	m= 5.40	Florida	m= 1.56
Florida	m= 5.07	No.Carolina	m=5.47	Louisiana	m= 1.67
No.Carolina	m= 5.11	Tennessee	m= 5.50	Oklahoma	m= 1.67
W. Virginia	m= 5.27	Virginia	m= 5.58	W. Virginia	m= 1.83
Virginia	m= 5.61	Florida	m= 5.62	Virginia	m= 1.83
DC	m= 6.64	DC	m=5.90	DC	m= 2.23

Compared to other regional constructs, Memphians did find the Southern region significantly less correct than the other larger U.S. regions, the North and the West ($F(1,179) = 229.967$, $p < .001$ and $F(1,179) = 194.875$, $p < .001$, respectively) on the map rating task. Given what we know about how non-Southerners tend to view the South, it is not so surprising that Memphians have been affected by these negative stereotypes. However, if we examine the intra-Southern ratings a little bit more closely (Table 2), we will find that perhaps Memphians do not buy into such stereotypes wholesale. Instead, they seem to draw some very interesting intra-Southern distinctions, with some Southern states faring much better than others on both correctness and pleasantness scales. The two most salient areas for Memphians seem to be the more Southwestern states of Mississippi, Arkansas, Alabama and Louisiana, which Memphians view as least correct and least pleasant, and the coastal Southeastern states including the Virginias, the Carolinas and Georgia, which they view as quite correct and generally more pleasant. Florida and D.C. are also viewed high on correctness and pleasantness ratings, though these states are less 'Southern' in population and therefore may be getting a ratings boost from being relatively indefinable regionally. Tennessee, where Memphis is located, is less tainted than some of the other Southern states, although most of the coastal states do much better than the raters' own home state.

So, what differences among these focal Southern areas are Memphians tuning into and what does this intra-regional division suggest about Memphians own

self-image? First, it is interesting to explore the states Memphians see as least correct more carefully. Part of these state's downgrading may simply be related to one key factor: location, location, location. All four of these 'core incorrect' states are, along with Tennessee, located in the Mississippi River Delta, and, in fact, MS and AR (the two lowest rated states in both categories) sit directly on the border with Memphis.

Memphis is located in the southwest most (and lowest) corner of Tennessee and it is commonly referred to as the 'Tri-state' area, since there is a great deal of in and out flow between Shelby county (containing the Memphis area) and DeSoto and Crittenden counties (containing the MS and AR border areas, respectively). In fact, 85% of Shelby county's in and out migration was to other adjacent local counties in the 1990's according to Census data. Thus, these three states have a pretty fluid local population, with many people living in border towns (Horn Lake, MS and West Memphis, AR) in Mississippi and Arkansas while working in Memphis. This tri-state kinship is signaled by Memphians ratings of these two state's speech as most similar to their own. But, this kinship does not seem to extend to their opinion of how correct and pleasant the speech spoken in these states is, which they rate significantly lower than speech spoken in Tennessee (Correctness: Compared to MS, $F(1,182) = 135.064$, $p < .001$, and AR, $F(1,182) = 124.284$, $p < .001$; Pleasantness: Compared to MS, $F(1,181) = 95.259$, $p < .001$, and AR $F(1,181) = 95.161$, $p < .001$). This pattern of ratings seems contradictory- on one hand they find speech in Tennessee, Mississippi and Arkansas extremely similar, but, on the other hand, they separate the speech spoken in these areas by a large divide on correctness and pleasantness ratings. So why the split personality?

Memphians appear to recognize a 'core' South, one that roughly approximates an area often referred to as the 'deep' South. Owing to their adjacency to parts of MS and AR and the fact that many of the participants in this study have family from these surrounding areas, Memphians had a hard time separating themselves linguistically in terms of distance from that spoken across the border, but they seem to have little difficulty in separating themselves ideologically from the 'deep South', an area particularly tainted by offending stereotypes. All the negative images of the Southern states – rurality, poverty, racism – are often uttered about this area in particular, despite the prevalence of these problems in many other Southern states. The fact that Memphians are located so close to the heart of the devil itself may make the identification of differences more palpable and more necessary.

On the flip side, Memphians see the states that form the Eastern seaboard as faring much better in terms of relative regional correctness and pleasantness, a fact that may be partially related to their increased distance and unfamiliarity to Memphians. However, several other folk dialectology studies (Fought 2002, Niedzielski and Preston 2000) have also found these coastal states to be rated on par with other non-Southern regions in terms of correctness, suggesting that Memphians elevated view of this sub-region spawns from something greater than

sheer distance. One factor that may come into play is that the states on the Eastern seaboard have higher overall population and economic growth than other Southern States as reported in a study on the shifting patterns of Black migration in the U.S. (Fuguitt, Fulton, and Beale 2001). Also mentioned in that paper, this coastal area has had a greater net migration gain from the North and the West, perhaps leading to the perception of this area as being, like Florida and DC, affected by external (non-Southern) dialects. In addition, a sociology study (Shortridge 1987) found an increasing number of residents from this Southern coastal region identifying themselves not as residents of Southern states but of Eastern states. The author attributes this identity shift to greater affinity for the more liberal cultural values associated with the Eastern states rather than those traditionally associated with the South, prompted in part by increasing non-Southern migration into the coastal region. Although it may be doubtful that Memphians have direct access to such detailed population characteristics, their ratings elevation for this area is probably based on a relative lack of negative stereotypes for the South Atlantic states compared to those in the Mississippi River Delta along with their closer proximity to these, in their view, less prestigious state.

In conclusion, this research into the Southern psyche suggests that there is increasing dissatisfaction with an association with traditional definitions of Southern identity and this is reflected in part by Memphians tendency to separate themselves from other 'less' educated and pleasant areas of the South such as Alabama, Arkansas and Mississippi. Still, Memphians recognize themselves as part of the larger South, though this South now includes a number of states that are emerging with more positive images the farther away from traditional Southern stereotypes they are able to move. I believe what we are tapping into in such language attitude studies is a time of shift in the modern South, with locals in a state of redefinition in terms of what it means to be Southern. This reinvention of the Southern self-concept has the effect of fracturing the traditional relationship among the Southern states, as some more successfully than others navigate the newly defined Southern seas.

References

Bookerrising.com. 2006. Fighting Stereotypes about Mississippi. http://bookerrising.blogspot.com/2006/12/fighting-stereotypes-about-mississippi.html.

Fridland, Valerie. 2006. The Social and Linguistic Conditioning of Back Vowel Fronting Across Ethnic Groups in Memphis, TN. *English Language and Linguistics* 10: 1-22.

Fridland, Valerie. 2001. Social Factors in the Southern Shift: Gender, Age and Class. *Journal of Sociolinguistics* 5. 233-53.

Fridland, Valerie, Bartlett, Kathryn and Roger Kreuz. 2005. Making Sense of Variation: Pleasantness and Education Ratings of Regional Vowel Variants. *American Speech* 80:366-387.

Fridland, Valerie, Bartlett, Kathryn and Roger Kreuz. 2004. Do You Hear What I Hear? Experimental Measurement of the Perceptual Salience of Acoustically Manipulated Vowel Variants by Southern Speakers in Memphis, TN. *Language Variation and Change* 16:1-16.

Fought, Carmen. 2002. California Students' Perceptions of, You Know, Regions and Dialects? In Dennis Preston and Daniel Long, eds. *Handbook of Perceptual Dialectology*, Volume 2. 113-134. Amsterdam: Benjamins.

Fuguitt, Glenn, John Fulton and Calvin Beale. 2001. The Shifting Pattern of Black Migration From and Into the Nonmetropolitan South, 1965-95. Economic Research Service/USDA Report No. ERSRDRR93.

Griffin, Larry and Ashley Thompson. 2003. Enough About the Disappearing South. What About the Disappearing Southerner. *Southern Cultures*. 51-64.

Labov, William. 1994. *Principles of Linguistic Change: Internal Factors*. Massachusetts: Blackwell.

Niedzielski, Nancy and Dennis Preston. 2000. *Folklinguistics*. New York: Mouton de Gruyter.

Preston, Dennis. 1986. Where the Worst English is Spoken. In Edgar W. Schneider, ed. *Focus on the USA*. 297-360. Amsterdam: Benjamins.

Preston, Dennis. 1989. *Perceptual Dialectology*. Dordrecht: Foris.

Preston, Dennis. 1993. Folk Dialectology. In Dennnis Preston, ed. *American Dialect Research*. 333-378. Englewood Cliffs, N.J.: Prentice Hall.

Reed, John Shelton, James Kohls and Carol Hanchette. 1990. The Dissolution of Dixie and the Changing Shape of the South. *Social Forces*. 321-378.

Shortridge, James (1987). Changing Usage of Four American Regional Labels. *Annals of the Association of American Geographers* 77:325-336.

U.S. Department of Commerce. 2001. *2000 Census of Population General Population Characteristics: Tennessee.*

Valerie Fridland
Associate Professor
Department of English
Mailstop 0098
University of Nevada, Reno
Reno, NV 89557

fridland@unr.edu

Object Case and Event Type:
Accusative-Dative Object Case Alternation in Japanese*

SHIN FUKUDA
University of California, San Diego

0.   Introduction

A small group of Japanese verbs allows for their object to be case marked with either accusative *–o* or dative *–ni* (Kuno 1973).

(1) a. Gakusei-ga   yama-o/ni   nobor -ta
        student-NOM   mountain-ACC/DAT   climb -PERF[1]
        'Students climbed the mountain.'

   b. Kodomo-ga   kabin-o/ni   sawar -ta
       children-NOM vase-ACC/DAT touch -PERF
       'The children touched the vase.'[2]

I refer this alternation as *Acc-Dat alternation*, and the verbs that participate in the alternation as *the alternating verbs*. As originally noted in Kuno (1973) and also in Sugamoto (1982), the Acc-Dat alternation is accompanied by contrasts in the interpretation of the arguments and the event type of the sentences. First, with the alternating verbs, an accusative object is interpreted as a *path* argument, while a dative object is interpreted as a *goal* argument (Kuno 1973). Second, the alternating verbs with an accusative object denote *durative* events, whereas the same verbs with dative object denote *instantaneous* events (Sugamoto 1982).

---

[1] Abbreviations: ACC = accusative,   BY = by-phrase, CL = classifier, DAT = dative, IMPERF = imperfect, LOC = locative, NOM = nominative, PERF = perfective, PL = plural
[2] Following Sadakane and Koizumi (1995), I take the fact that *–ni* in (1a) and (1b) can host a stranded numeral quantifier as an indication that it is dative case, not a postposition.

(i)   Gakusei-ga   yama$_i$-ni   2-tsu$_i$ nobor -ta
         student-NOM   mountain$_i$-DAT   2-CL$_i$ climb   -PERF
         'Students climbed two mountains.'

Third, as argued in this paper, subjects are interpreted as *agent* and *theme* with an accusative and a dative object, respectively. In this paper, I first present evidence from three language-specific diagnostics for unaccusativity that the Acc-Dat alternation is a case of *unergative/unaccusative alternation*, where the core argument of a verb is realized as either the external (unergative) or internal (unaccusative) argument. I then propose a syntactic analysis of the Acc-Dat alternation, according to which the alternating verbs are mapped into two different syntactic structures which determine (i) how the arguments of the verbs are interpreted (ii) how they are case-licensed, and (iii) the aspectual specification of resulting sentences. I also argue that the proposed analysis accounts for behavior of a group of Japanese verbs whose internal argument must be marked with dative case, providing an independent motivation for the proposed analysis.

1. Three Contrasts that Accompany the Acc-Dat Alternation
1.1. Interpretation of Objects: Path vs. Goal
According to Kuno (1973), when a verb allows for the Acc-Dat alternation, accusative case indicates that 'the motion designated by the verb takes place covering entire dimension of the NP', while dative case indicates that 'the NP is the goal of the motion designated by the goal' (Kuno 1973: 97). He convincingly shows this contrast by using objects that strongly favors one of the readings due to our pragmatic knowledge. Objects which can only be natural as path, such as *kaidan* 'stairs', are compatible only with accusative case (2a), whereas objects which can only be natural as goal, such as *yane* 'roof', are compatible only with dative case (2b).

(2) a. Gakusei-ga   **kaidan-o/#ni**   nobor -ta
       student- NOM   stairs- ACC/#DAT   climb - PERF
       'Students climbed the stairs.'

    b. Gakusei-ga   **yane-#o/ni**   nobor -ta
       student- NOM   roof-#ACC/DAT   climb - PERF
       'Students climbed to the roof.'

1.2. Interpretation of Event Type: Durative vs. Instantaneous
Another contrast accompanying the Acc-Dat alternation is that of event type. A sentence with an alternating verb has a *durative* interpretation with an accusative marked object, while it has an *instantaneous* interpretation with a dative marked object. Evidence for this claim can be found in Sugamoto (1982), who shows that the alternating verbs are compatible with completive aspect verbs, such as *kir* 'complete', only with an accusative marked object.

(3)   Gakusei-ga   **yama-o/#ni**   nobori **kir**   -ta
       student-NOM   **mountain-**ACC/#DAT climb complete   -PERF
       'Students finished climbing the mountain.'

Likewise, adverbials that imply a durative interpretation are only compatible with an accusative marked object, as in (4).

(4) Kodomo-tachi-ga   [te-ni-motte]   **kabin-o/#ni**   sawar -ta
     child-PL- NOM   [hand-LOC-have] **vase-**ACC/#DATtouch -PERF
     'The children touched the vase while holding it.'

Since both completing an event and an action of holding an object necessarily imply duration, the dative marked object, which forces an instantaneous interpretation of events, is infelicitous in (3) and (4).

1.3.   Interpretation of Subjects: Agent vs. Theme

The third and previously unnoticed contrast with the Acc-Dat alternation involves a change in interpretation of subjects between *agent* and *theme*. The contrast can be seen by manipulating the animacy of the subject. As can be seen in (5) below, inanimate subjects can only be natural with an dative marked object, suggesting that an accusative marked object forces the subject to be interpreted as agent.

(5) Sukaato-ga   **yuka-#o/ni**   sawar -ta
     Skirt- NOM   floor-#ACC/DAT   touch -PERF
     'The skirt touched the floor.'

Even when the subject is animate, the contrast can be seen with adverbials that are sensitive to volitionality. Non-volitional adverbials are natural only with a dative marked object.

(6) Kodomo-ga   atsui-**yakan-#o/ni**   *ukkari*   sawar -ta
     child-NOM   hot- kettle-#ACC/DAT by.mistake   touch -PERF
     'The child touched the hot kettle accidentally.'

1.4.   Summary of the Alternations

The three contrasts with the Acc-Dat alternation are summarized in the table 1.

(7)   Table 1: Three contrasts accompanying the Acc-Dat alternation

	object's role	*event type*	*subject's role*
Accusative case	path	durative	agent
Dative case	goal	instantaneous	theme

2.   The Acc-Dat Alternation is an Unergative/unaccusative Alternation

In this section, I argue that the Acc-Dat alternation is a case of an *unergative/unaccusative alternation*, a phenomenon previously described in languages such as Dutch (Perlmutter 1978, Hoekstra and Mulder 1990), English (Leven and Rappaport Hovav 1989, 1995), German (Grewendorf 1989), Italian

(Rosen 1984), Hebrew (Borer 1994), Caucasian (Dixon 1994), Mayan (Zavala 2007), and also Japanese (Tsujimura 1994). The evidence comes from three language-specific diagnostics for unaccusativity: (i) interpretation of *takusan* 'a lot', (ii) interpretation of *te-iru* construction, and (iii) distribution of stranded numeral quantifiers.

2.1   Interpretation of *takusan* 'a lot' (Kageyama 1993)

The first diagnostic test involves a modifier *takusan* 'a lot', adopted from Kageyama (1993). Kageyama argues that interpretation of *takusan* 'a lot' can be used to differentiate uuaccusative and unergative verbs. With unergative verbs, *takusan* can only modify the activities that these verbs denote (8a). With many unaccusative verbs, however, it can modify the quantity of the arguments as well as the activities that they denote (8b).

(8)   a.   Kodomo-ga   *takusan*   aruk/asob   -ta
            child-NOM   *lot*   walk/play   - PERF
            'The child(ren) walked/played a lot.'(**amount of the activities**)
            '#Many children walked/played.'(quantity of the argument)

       b.   Gakusei-ga   *takusan*   toshokan-ni   ik   -ta
            student-NOM   *lot*   library   go   -PERF
            'The student(s) went to the library a lot.'(**amount of the activities**)
            'Many students went to the library.'(**quantity of the argument**)

Kageyama suggests that this contrast can be accounted for by analyzing *takusan* 'a lot' as a VP modifier. With unergative verbs, the subjects are external arguments by definition. Thus, *takusan* can only modify the verbs, resulting in the amount of activities reading. With the unaccusative verbs, on the other hand, *takusan* can modify either the subjects, which are assume to be base-generated as internal arguments, or the verbs themselves, allowing for both readings. Interestingly, the interpretation of *takusan* 'a lot' changes with the case marking on the object of the alternating verbs. It can only modify the amount of the activity with an accusative object (9a), while it is ambiguous between the quantity of the subject and the amount of the activity reading with a dative object (9b).

(9)   a.   Gakusei-ga   **yama-o**   *takusan*   nobor -ta
            student-NOM   mountain-ACC lot   climb -PERF
            'The student(s) climbed mountains a lot.' (**amount of climbing**)
            '#Many students climbed the mountain(s).'(quantity of the students)

       b.   Gakusei-ga   **yama-ni**   *takusan*   nobor -ta
            student- NOM   mountain-DAT   lot   climb -PERF
            'Many students climbed mountains.'(**quantity of the students**)
            'The student(s) climbed the mountains a lot.'(**amount of climbing**)

Thus, interpretation of *takusan* as a diagnostic test for unaccusativity suggests that the Acc-Dat alternation is a case of an unergative/unaccusative alternation.

2.2   *Te-iru* Construction (Kindaichi 1976, Jacobson 1997 among others)
Te-iru construction is roughly the Japanese equivalent of the English progressive, as it provides an on-going interpretation of verbs denoting activities, as in (10).

(10)   Kodomo-ga   aruk/asob   -te   -i   -ru
      child-NOM   walk/play   -TE   -I   -IMPERF
      'The child(ren) are walking/playing.' (**progressive**)

However, *te-iru* construction can also create a perfective reading, with verbs that denote instantaneous events, such as *umare* 'be born' and *ik* 'go'.

(11)   a.   Kodomo-ga   umare   -te   -i   -ru
             child-NOM   be_born   -TE   -I   -IMPERF
             'The child(ren) have been born.'   (**perfective**)
             '#The child(ren) are being born.'   (progressive)

      b.   Gakusei-ga   toshokan-ni   ik   -te   -i   -ru
             student-NOM   library-DAT   go   -TE   -I   -IMPERF
             'The student(s) have gone to the library.'(**perfective**)
             '#The students are going to the library.'(progressive)

As pointed out in Jacobson (1997), when *te-iru* construction attaches to the alternating verbs, it creates a progressive interpretation with an accusative object and a perfective reading with a dative object.

(12)   Gakusei-ga   **yama-o/ni**   nobor -te   -i   -ru
      student-NOM   mountain-ACC/DAT   climb -TE   -I   - IMPERF
      Accusative object ='The students are climbing the mountain.'(**progressive**)
      Dative object = 'The students are on the top of the mountain.' (**perfective**)

Given the well-known generalization that unaccusative verbs tend to denote telic events whereas unergative verbs tend to denote atelic events (van Valin 1990, Tenny 1994, Levin and Rappaport Hovav 1995), *te-iru* construction can be an indirect diagnostic test for unaccusativity. Under such an assumption, the fact that *te-iru* construction creates either a progressive or perfective interpretation depending on the object case marking further supports the hypothesis that the Acc-Dat alternation is an unergative/unaccusative alternation.

2.3   Stranded Numeral Quantifier Phrases (Miyagawa 1989)
Since Miyagawa (1989), stranded numeral quantifier phrases (NQPs) have been used as a diagnostic test for unaccusativity in Japanese. Subjects of presumed

unaccusative verbs can license a NQP stranded in the preverbal position (13a), while subjects of presumed unergative verbs cannot (13b).

(13)　　a.　　**Gakusei_i-ga**　ohisu-ni　　　　**5-nin_i**　ki　　　-ta
　　　　　　　student_i-NOM　office-LOC　　　**5-CL_i**　come　-PERF
　　　　　　　'Students, five of them, came to the office.'

　　　　b.　　***Gakusei_i-ga**　geragerato　　**5-nin_i**　waraw -ta
　　　　　　　student_i-NOM　loudly　　　　　**5- CL_i**　laugh　-PERF
　　　　　　　'Students, five of them, laughed loudly.'

Miyagawa accounts for the contrast in (13) by assuming that an NQP and the licensing NP must c-command each other at their base-generated positions. According to this analysis, the subject of an unaccusative verb can license an NQP stranded in the preverbal position because it is based-generated at the internal argument position, where it forms a constituent with the NQP (14a). The subject of an unergative verb, on the other hand, cannot license a stranded NQP, because it is an external argument and never c-commanded by the NQP (14b).

(14)　　a.　　TP　　　　　　　　　　　　b.　　*TP
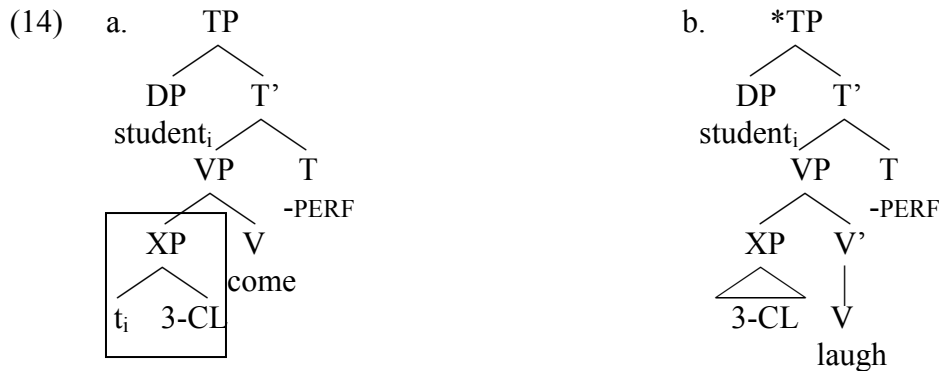
With the alternating verbs, a NQP following the object can be associated with the subject only if the object is marked with dative case.

(15)　　Gakusei_i-ga　yama-*o/ni　　　　　　5-nin_i　nobor -ta
　　　　student_i- NOM　mountain-*ACC/ DAT　5-CL_i　climb　-PERF
　　　　'Students, five of them, climbed the mountain.'

This contrast can be accounted for under the proposal that Acc-Dat alternation is an unergative/unaccusative alternation. When an object is dative marked, the alternating verbs are unaccusative. Thus, the subject originates in the internal argument position, where it licenses the preverbal NQP.

2.4   Summary

In this section, I have argued that the Acc-Dat alternation is a case of unergative/unaccusative alternation, based on three language specific diagnostic tests for unaccusativity. Although the unergative/unaccusative alternation has been attested in different languages including Japanese, what is unique to the case under discussion is that the alternation manifests as different object case marking.

3.   Proposal: Deriving the Alternation in Syntax

In this section, I present a syntactic analysis of the Acc-Dat alternation. According to the proposed analysis, lexical entries of the alternating verbs only specify what arguments these verbs require. Crucially, they do not specify how these arguments are realized in syntax (cf. Borer 1994). Instead, the alternating verbs are mapped into two distinct syntactic structures which determines (i) how the arguments are interpreted, (ii) how the arguments are case-licensed, and (iii) the aspectual specification of a given sentence.

3.1   Unaccusative

With an unaccusative instance of the alternating verbs, the subject is derived, as it is base-generated as an internal argument, and it is interpreted as *theme*. Also, the distribution of stranded NQPs suggests that the *goal* argument, which has dative case, is base-generated in a position higher than that of the base-generated position of the derived subject. In the proposed analysis, these observations are accounted for in the following way. First, the theme argument is generated as the internal argument, while the goal argument is generated as the specifier of VP. This VP is embedded under a functional head *v*, which case-licenses the goal argument. Thus, a sentence with the unaccusative instance of an alternating verb *nobor* 'climb' (17a) has the structure in (17b).

(17) a.   Gakusei$_i$-ga   yama-ni   t$_i$ nobor -ta
            student$_i$-NOM   mountain-DAT t$_i$ climb -PERF
   'Students climbed the mountain(s).'

        b.
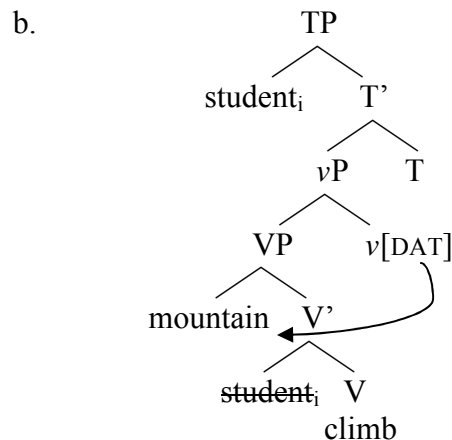
Since the *v* case-licenses only the goal argument, the theme argument would be case-less if it remains in situ. This forces it to move to [Spec, TP], accounting for the observation that the subject is derived with a dative marked object.

3.2 Unergative

In the unergative case, the alternating verbs have agentive subjects and their object is accusative marked. One way to account for the observation that the presence of agent often corresponds to the presence of accusative case, known as Burzio's generalization, has been to assume that the *v* that introduces an agent also introduces accusative case (Krazter 1994, 1996, Chomsky 1995). Assuming that this particular *v* is present in the unergative structure accounts for the fact that the subject is agent when the object is accusative marked. As for the difference in event types, I propose that the unergative structure involves another functional projection found between *v* and VP, called *aspect phrase* (Travis 1991), which adds duration to an event. Under this analysis, the difference in the event type between unaccusative and unergative instances of the alternating verbs is due to the presence or absence of aspect phrase. The unergative instances of the alternating verbs denote durative events, since their syntax includes aspect phrase; the unaccusative instances of the same verbs can only denote instantaneous events, since their structure lacks it. Finally, I assume that the path argument is base-generated as an internal argument, and it moves to [Spec, aspect phrase] where it (i) specifies the duration of an event therefore receives the path interpretation (Tenny 1994) and (ii) is licensed by accusative case provided by *v*.

(18)   a.   Gakusei-ga   yama-o   nobor -ta
            student-NOM   mountain-ACC climb -PERF
            'Students climbed the mountain(s).'

b.
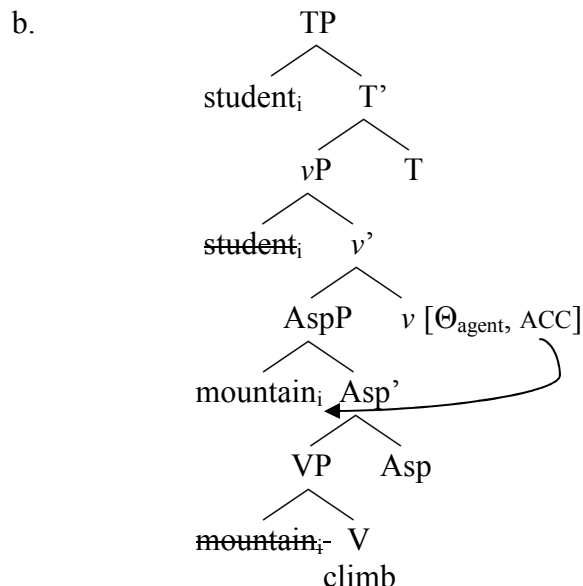
4.   Supporting Arguments

In this last section, I provide supporting arguments for the proposed analysis. First I show that the proposed analysis correctly predicts that the unaccusative instances of the alternating verbs do not undergo causativization or passivization. I also argue that the proposed analysis accounts for some peculiarities of 'dative object' verbs, whose internal argument must be marked with dative case.

4.1   Unaccusative-causative Alternation

It has been noted in the literature that while many unaccusative verbs have their causative counterparts ('the butter melted.' vs. 'Bill melted the butter.'), not all of them do ('the package arrived.' vs. '*Bill arrived the package.')(Levin and Rappaport Hovav 1995 and references therein). In Japanese, many unaccusative verbs have morphologically related causative counterparts (*ore* 'break' vs. *or* 'cause to break'), but not all of them do (see Jacobson 1992 for an extensive list of the verbs that undergo the morphological alternations). Importantly, the alternating verbs under discussion do not have the causative counterparts.

There are two types of analyses available to account for the unaccusative-causative alternation. The alternation has been analyzed as causativization of unaccusative bases (i.e. Williams 1981, Brousseau and Ritter 1991, Hale and Keyser 2002) or decausativization of causative bases (i.e. Levin and Rappaport Hovav 1995, Reinhart 2002).[3] Under the proposed analysis, unavailability of the causative forms of the alternating verbs has a simple account, if we adopt the causativization analysis of the alternation. Assuming that the causer external argument is introduced by a kind of v (i.e. v_{cause} in Folli and Harley 2005), the causer external argument cannot be added to the unaccusative structure because the position of v is already occupied (17b). On the other hand, unaccusative verbs that undergo the unaccusative-causative alternation can be assumed to consist of a simple VP. Thus, the causer can be added with the appropriate v.

4.2   Passivization

The alternating verbs resist passivization when the subject of the active counterpart is only compatible with dative case (i.e. inanimate).

(19)   a.   *Yuka-ga   sukaato-ni/niyotte   sawar -are -ta
              floor-NOM   skirt-BY/BY   touch -PASS –PER
              'The floor was touched by the skirt.' (cf. (5))

       b.   Kabin-ga   kodomo-tachi-ni/niyotte   sawar -are   -ta
              vase-NOM   child-PL-BY/BY   touch -PASS -PER
              'The vase was touched by the children.'

---

[3] See Alexiadou et al (2005) for an approach that is different from the two approaches discussed here.

The proposed analysis offers an account for the badness of (19a). Assuming that passive sentences involve the *v* head lacking accusative case (Krazter 1994, 1996), passivization of the unergative structure is unproblematic, since it simply promotes the path argument to be the subject where it is case-licensed with nominative case (20a). In contrast, passivization of the unaccusative structure would promote the goal argument to be the subject while leaving the theme argument case-less in situ (20b), causing the ungrammaticality.

(20)   a.   [$_{TP}$ Path [$_{vP}$ [$_{VP}$ ~~Path~~   V]   PASS]] (unergative)
        b.   *[$_{TP}$ Goal [$_{vP}$ [$_{VP}$ ~~Goal~~ Theme V]   PASS]] (unaccusative)

4.3   Dative Object Verbs

There are Japanese verbs which require their internal argument to be marked with dative case, such as *aw* 'meet', *butsukar* 'run into', and *dekuwas* 'come across'.

(21)   Keiko-ga   Takeshi-ni/*o aw/butsukar/dekuwas   -ta
        K-NOM   T-DAT/*ACC   meet/run.into/come.across   -PERF
        'Keiko met/ran into/came across Takeshi.'

These 'dative object verbs' share characteristics that are not shared by the verbs that take an accusative object, which, to my knowledge, have not received any account. First, these verbs never passivize (22a). Second, they always denote instantaneous events (22b).

(22)   a.   *Ken-ga (Keiko-ni)   aw/bustukar/dekuwas   -are   -ta
             K-NOM (K-BY)   meet/run.into/come.across   -PASS -PERF
             '*Ken was met/run_into/come_across by Keiko.'

       b.   Ken-ga   Taro-ni (*2-jikan) aw/bustukar/dekuwas   -ta
             K- NOM   T-DAT   (*2-hour) meet/run.into/come.across -PERF
             'Ken met/ran into/came across Taro (*for two hours).'

These behaviors of the dative object verbs can be accounted for, if we assume that these verbs have the same underlying structure as the proposed structure for the unaccusative instances of the alternating verbs. Under this assumption, the fact that they do not passivize can be accounted for in the same way in which the unaccusative instances of the alternating verbs cannot passivize. The fact that they are restricted to denote instantaneous events also follows from the presumed absence of aspect phrase. In fact, this analysis correctly predicts that subjects of the dative object verbs license a stranded numeral quantifier phrase:

(23)   Kuruma$_i$-ga   ano-biru-ni   3-dai$_i$ butsukar   -ta
        car$_i$-NOM   that-building-DAT   3-CL$_I$ run.into   -PERF
        'cars, three of them, ran into that building.'

5.   Conclusion

In this paper, I have argued that the Acc-Dat object case alternation attested with a small group of Japanese verbs is an instance of unergative/unaccusative alternation and proposed a syntactic analysis for it. According to the proposed analysis, the lexical entries of the alternating verbs only specify what arguments these verbs require, and it is the syntactic structure that decides (i) how the arguments are interpreted, (ii) how they are case-marked, and (iii) the event type of resulting sentences. I have also argued that the proposed analysis provides an account for the previously unanalyzed peculiar behaviors of a group of Japanese verbs that requires a dative object, or the dative object verbs. According to the proposed analysis, the dative object verbs are unaccusative verbs with two arguments, just like the unaccusative instances of the alternating verbs.

References

Alexiadou, Artemis, Elena Anagnostopoulou, and Florian Schäfer. 2005. The properties of anticausative crosslinguistically. In M. Frascarelli (ed.), *Phases of Interpretation*. 187-211. Berlin: Mouton de Gruyter.

Borer, Hagit. 1994. The projection of arguments. In E. Benedicto and J. Runner (eds.), *Functional projections: University of Massachusetts Occasional Papers*17: 19-48.

Brousseau, Ann-Marie, and Elizabeth Ritter. 1991. A non-unified analysis of agentive verbs. *WCCFL* 10: 53-65.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass: MIT Press.

Dixon, R.M.W. 1994. *Ergativity*. Cambridge, Cambridge University Press.

Folli, Raffaella, and Heidi Harley. 2005. Flavors of *v*: consuming results in Italian and English, In P. Kempchinsky and R. Slabakova (eds.), *Aspectual Inquiries*. 95-120. Springer: Dordrecht.

Grewendorf, Günther. 1989. *Ergativity in German*. Dordrecht: Foris.

Hale, Ken, and Samuel Keyser. 2002. *Prolegomenon to a Theory of Argument Structure*. Cambridge, Mass: MIT Press

Hoekstra, Teun, and René Mulder. 1990. Unergatives as copular verbs: locational and existential predication. *The Linguistics Review* 7: 1-79.

Jacobson, Wesley M. 1992. *The Transitive Structure of Events in Japanese*. Tokyo: Kuroshio.

Jacobson, Wesley M. 1997. Agentivity and aspect in Japanese. In A. Kamio (ed.), *Directions in Functional Linguistics*. 83-116. John Benjamins.

Kageyama, Taro. 1993. *Bumpo to gokeisei* [Grammar and word formation]. Tokyo: Hitsuji shoboo.

Kindaichi, Kyosuke. 1976. *Nihongo Dooshi no Asupekuto* [Aspect of Japanese Verbs]. Tokyo: Mugi shobo.

Kratzer, Angelika. 1994. On external arguments. In E. Benedicto and J. Runner (eds.), *Functional Projections: University of Massachusetts Occasional*

Papers 17, 103-130.

Kratzer, Angelika. 1996. Severing the external argument from the verb. In J. Rooryck and L. Zariing (eds.), *Phrase Structure and the Lexicon.* 109-137. Dordrecht: Kluwer.

Kuno, Susumu. 1973. *The Structure of Japanese*. Cambridge, Mass. MIT Press.

Levin, Beth, and Malka Rappaport-Hovav. 1989. An approach to unaccusative mismatches. *NELS* 19: 314-328.

Levin, Beth, and Malka. Rappaport-Hovav. 1995. *Unaccusativity: at the Syntax-Lexical Semantics Interface*. Cambridge, Mass: MIT Press.

Miyagawa, Shigeru. 1989. Light verbs and the eargative hypothesis. *Linguistics Inquiry* 20. 659-668.

Perlmutter, David. M. 1978. Impersonal passives and the unaccusative hypothesis. *BLS* 4. 157-189.

Reinhart, Tanya. 2002. The theta-system - an overview. *Theoretical Linguistics* 28: 229-290.

Rosen, Carol. G. 1984. The interface between semantic roles and initial Grammatical relations. In D. Perlmutter and C.G. Rosen (eds.), *Studies in Relational Gramma*r 2. 38-80. Chicago: The University of Chicago Press.

Sadakane, Kumi, and Masatoshi Koizumi. 1995. On the nature of the "dative" particle *ni* in Japanese. *Linguistics* 33: 5-33.

Sugamoto, Nobuko. 1982. Transitivity and objecthood in Japanese. In P. J. Hopper and S. A. Thompson (eds.) *Syntax and Semantics* 15: *Studies in Transitivity*. 423-447. New York: Academic Press.

Tenny, Carol. L. 1994. *Aspectual roles and the syntax-semantics interface*. Dordrecht: Kluwer.

Tsujimura, Natsuko. 1994. Unaccusative mismatches and resultatives in Japanese. In M. Koizumi and H. Ura (eds.), *Formal Approaches to Japanese Linguistics* 1. *MIT Working Papers in Linguistics* 24: 335-354.

Travis, Lisa M. 1991. Derived object, inner aspect, and structure of VP. Paper presented at *NESL* 22.

van Valin, Robert. D. 1990. Semantic parameters of split intransitivity. *Language* 66: 221-260.

Williams, Edwin. 1981. Argument structure and morphology. *The Linguistic Review* 1: 81-114.

Zavala, Roberto. 2007. Split intransitives and agentivity in Cholan and other Mayan languages. Paper presented at *BLS* 33.

Shin Fukuda
Department of Linguistics
University of California, San Diego
9500 Gilman Dr.
La Jolla, CA, 92093-0108

fukuda@ling.ucsd.edu

The Bounds of Subjecthood: Evidence from Instruments[*]

SCOTT GRIMM
Stanford University

Canonical subjects of eventive predicates are agentive and animate—so goes one of the overarching, and idealized, generalizations of argument realization. As robust as this generalization is, caveats are always made (e.g. Comrie 1989:107,128), in part due to a set of recalcitrant counter-examples, known as "instrumental subjects", which violate this generalization on both counts. A paradigm case of the phenomenon is shown in (1): the entity which appears as an instrument in (1a) also appears as a subject in (1b), although it is neither agentive nor animate.

(1)　　a.　Marvin hit the horse with a stick.

　　　　b.　The stick hit the horse.　　　　　　　　　(from Schlesinger 1989)

Inasmuch as theories of argument realization base themselves on the generalization *tout court* that agents are subjects, "instrumental subjects" straightaway pose difficulties. I will demonstrate that a more articulated and systematic approach to argument structure dissolves the difficulties posed by "instrumental subjects" and their kin. An analysis is developed in which the restrictions on the realization of instrumental subjects are a natural consequence of a novel approach to modeling argument structure, loosely based on the proto-role theory of Dowty 1991. In this framework, such subjects ultimately need not be viewed as anomalies, but simply as possible subjects, albeit often the limiting case.

1.　Delimiting Inanimate Actors

A consensus has emerged that while instruments are perhaps a class of arguments,

the classification of certain subjects as "instrumental subjects" is amiss; DeLancey 1991, for one, claims the notion of "instrumental subject" is a "spurious class", essentially an unwanted artifact of theoretical assumptions from the early days of Case Grammar. For the present, it suffices to notice that there is not an equivalence between NPs which appear as instruments, i.e. in a 'with' phrase, and those which can be realized as subjects. First, the putative class of instrumental subjects is not determined by the entities able to occupy the canonical instrument position—some instruments simply cannot be realized as subjects, as shown in (2).

(2)   a. Carl ate spaghetti with a fork.

        b. *The fork ate spaghetti.   (from Levin and Rappaport Hovav 1988)

In the other direction, the instrumental subject class cannot be characterized by the set of non-agent entities realized as subjects of eventive predicates, for these need not be instruments. For instance, natural forces, as in (3), neither share the syntactic behavior of instruments, i.e. do not appear in a 'with' phrase, nor are they conceptually similar to canonical instruments.

(3)   The wind opened the door.   (from Fillmore 1968)

Therefore, the class of permissible inanimate subjects does not correspond to the class of instruments, and a more general solution is needed.

In coping with these phenomena, the last decades have seen a number of distinctions arise, all of which are in some sense correct, but none of which alone has proven sufficient. First, as (4) demonstrates, what can be realized as a subject of a verb depends in part upon the nature of the entity.

(4)   a. The worker moved the dirt with the crane/shovel.

        b. The crane/*shovel moved the dirt.   (modified from Levin 1993)

A distinction has been made between "intermediary" and "facilitating" instruments (see Levin and Rappaport Hovav 1988 and references therein as well as the "primary"/"secondary" tool distinction of Nilsen 1973). Intermediary instruments designate entities able "to perform the action independently", whereas facilitating instruments designate those without such abilities. Under this account, certain verbs would permit intermediary instruments as subjects, e.g. (4), while others select only for facilitating instruments, e.g. (2), thus the acceptability patterns of (4) and (2) follow.

Yet, even more factors play a role, as in (5), where the same entity qualifies as a subject of one predicate, but not of another.

(5)   The bullet killed/*murdered the president.   (from Schlesinger 1989)

The acceptability pattern of (5) does not hinge on whether an instrument can perform the action independently, rather on expectations associated with the predicate, namely that 'murder' involves some degree of intentionality. Accordingly, while a bullet can be held responsible for a death, it is less easily conceived that a bullet can be held responsible for a murder.

A third point of discussion has been the overlap between causes and instruments. Some accounts have claimed that sentences such as those below possess "instrumental" subjects.

(6)   The bomb suddenly exploded.   (Nilsen 1973)

(7)   The rust has eaten away at the lock.   (Schlesinger 1989)

(8)   The wind opened the door.   (Fillmore 1968)

While DeLancey 1991 is correct in asserting that such examples are simply not instruments, there is an affinity between these inanimate subjects and the standard "instrumental subject", e.g. (1b). More generally, Comrie 1989:59 has noted that agents, forces, instruments, as well as patients partake of a continuum of control, "the labels representing different points along this continuum." Accordingly, any proposed solution of instrumentals should demonstrate how they are related to the other notions of forces and agents as well as patients.

The above data indicate the desiderata a solution to this problem should satisfy. First and foremost, the patterns of distribution should be accounted for: we should be able to predict which inanimate entities can become subjects of which eventive predicates. Second, the solution should be related to larger issues of argument realization, such as how inanimate actors are related to more canonical agents and under what conditions inanimate actors can take priority as subjects. I now provide an analysis which attempts to meet these two criteria explicitly.

2.   The Lattice of Agency

The above discussion motivated the need for a framework capable of modeling the interaction of the verbal and nominal domain with respect to argument realization. Such a system has been previously developed in Grimm 2005 where it was applied to account for case-marking patterns. Case systems are found to be sensitive to both agency, e.g. in ergative systems (Mohanan 1994), and animacy, e.g. in differential object marking systems (see Aissen 2003 and references therein). Thus, while the system presented below is independently motivated for treating case systems, as a corollary it yields a resolution to the problem of the instrumental subject.
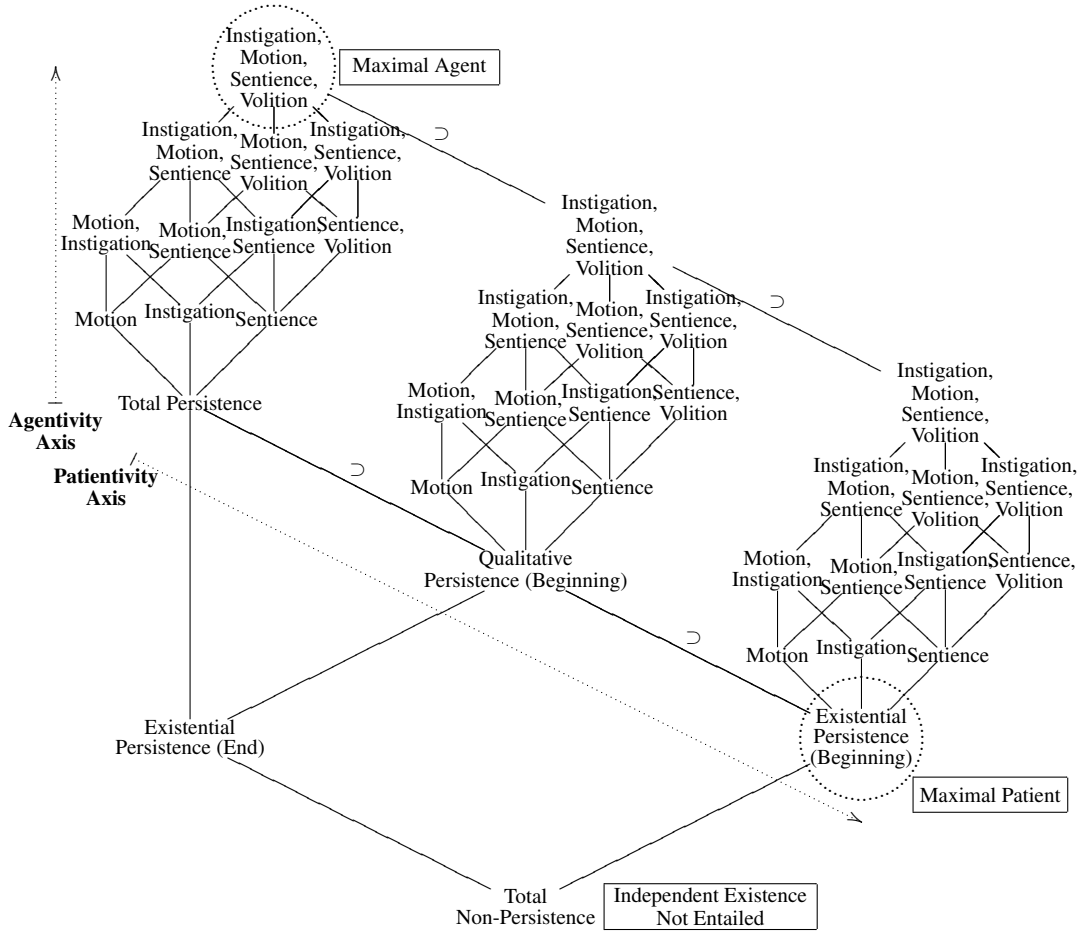
2.1.   Agency and the Verbal Domain

Figure 1: The Agency Lattice

The model of argument structure developed here assumes a set of event-based properties entailed by the verb referring to modes of participation in events: *instigation*, *motion*, *sentience*, *volition*, and different degrees of *persistence*. A predicate entails *instigation* only when the event described is necessarily brought about by one of its arguments. *Motion* is entailed just in case an argument is required to be in motion. *Sentience* designates conscious involvement in the event while *volition* designates deliberate engagement in the event. Agents, then, will typically possess one or more of these properties.

Persistence tracks how entities change throughout the event. An entity can persist in two ways: existentially, that is, it exists perpetually throughout the event/state, or qualitatively—i.e., it persists in all its particulars. Either of these can obtain at the

beginning and/or the end of the event, giving the following set of properties: *existential persistence (beginning)*, *existential persistence (end)*, *qualitative persistence (beginning)*, and *qualitative persistence (end)*.

The above properties are represented as features in privative opposition. Logical entailments among the eight features constrain the combinations possible. For instance, *volition* entails *sentience*, since only sentient beings are capable of volition, and −*existential persistence (end)* entails −*qualitative persistence (end)*, since if an entity does not exist at the end of the event, clearly none of its qualities do either. Consequently, if an entity possesses *qualitative persistence (end)*, it persists entirely throughout the event and thus possesses all four *persistence* features, referred to as *total persistence* for convenience. The remaining combinations can then be given greater structure. Ordering the properties and their combinations by inclusion, modulo the mentioned impossibilities, yields a partial order, which can be further structured as a lattice, shown in figure 1, referred to henceforth as the agency lattice.

This lattice exhibits the possible space of argument types with respect to agency. The particular argument structure of a given predicate can be mapped upon this space. The opposition between agents and patients falls out from this feature system in that agents will possess *total persistence* along with a number of other agency properties while patients will generally possess no properties save *existential persistence (beginning)* and possibly *qualitative persistence (beginning)*. The agency lattice delivers several additional properties. First, the privative opposition is conspicuous in the structure: the highest node contains all the features, corresponding to a full agent possessing all the properties, while the lowest contains none, not entailing even independent existence, corresponding to, e.g. arguments of negative existence statements or incorporated/cognate objects ("sing a song"). Second, agents are upwards closed in the lattice while patients are downward closed. That is to say, if some node *x* of the agency lattice is considered an agent (patient) relative to a given predicate, then all the connected nodes higher (lower) than *x* are as well. Thus what counts as an agent or a patient is characterized by a region, which directly addresses the fact that the agent position of a given predicate can be instantiated by a variety of types of "agentive" participants, as was seen in the examples of the last section. Finally, subject selection is accomplished merely by selecting the argument which has more entailments, i.e. if argument A lives on a node which dominates argument B, then argument A is selected as subject. In sum, given a specified set of entailments for each argument of a predicate, this structure outputs the connected region consistent with those arguments and the structural relation that

holds between the arguments of the predicates (if more than one) corresponding to their relative semantic prominence, in turn determining subject and object selection.

2.2. Animacy and the Nominal Domain

A compatible structure for the nominal property of animacy can be constructed. Along with the standard distinction between humans, animals, and inanimates, it is helpful to distinguish between immobile entities (e.g. locations) and mobile objects, i.e. those capable of moving or being moved. The features human, sentient and mobile differentiate between humans and non-humans, animates and inanimates, and inanimates which can move or be moved and those which cannot, respectively. Further, (4) showed the necessity of distinguishing inanimates capable of (semi-)autonomous activity. Such a distinction has been observed independently of the instrumental subject literature and I will be adopting the broader notion of potent from Chafe 1970, defined for an entity which "has, or is conceived to have, its own internal power" (Chafe 1970:109).

The same procedure that was used in the verbal domain to provide structure can be applied here: these distinctions are represented by features which are then given greater structure. Various entailments constrain the possible combinations: human entails sentient which in turn entails both potent and mobile. These properties and their possible combinations form a partial order, which corresponds to a version of the familiar animacy scale:

(9) $\{\emptyset\} \subset \{\text{mobile}\}, \{\text{potent}\} \subset \{\text{mobile, potent}\} \subset \{\text{mobile, potent, sentient}\}$
     $\subset \{\text{mobile, potent, sentient, human}\}$

(10) inanimate < mobile inanimate, potent inanimate < mobile and potent inanimate (e.g. natural force, autonomous machine) < animate < human

This animacy scale can then be combined with the agency lattice (formally, taking their cartesian product; informally, inserting the agency lattice on each node of the animacy structure). The unified agency and animacy structure, of which the *total persistence* branch is shown in figure 2, establishes the possible instantiations of argument structure property combinations by nominal entities. The conjunction of the two structures is constrained by removing incompatible feature sets. For example, *instigation* by definition requires an argument which is capable of bringing about the event designated by the predicate. If an entity is powerless to bring about the event, then it can not satisfy the *instigation* entailment. Therefore, any entity which is to satisfy an *instigation* entailment must qualify as potent in a sense relevant to the predicate. As a consequence, no node of the lattice will contain *instigation* without potent. By similar reasoning, the lattice will not contain *motion* without mobile,
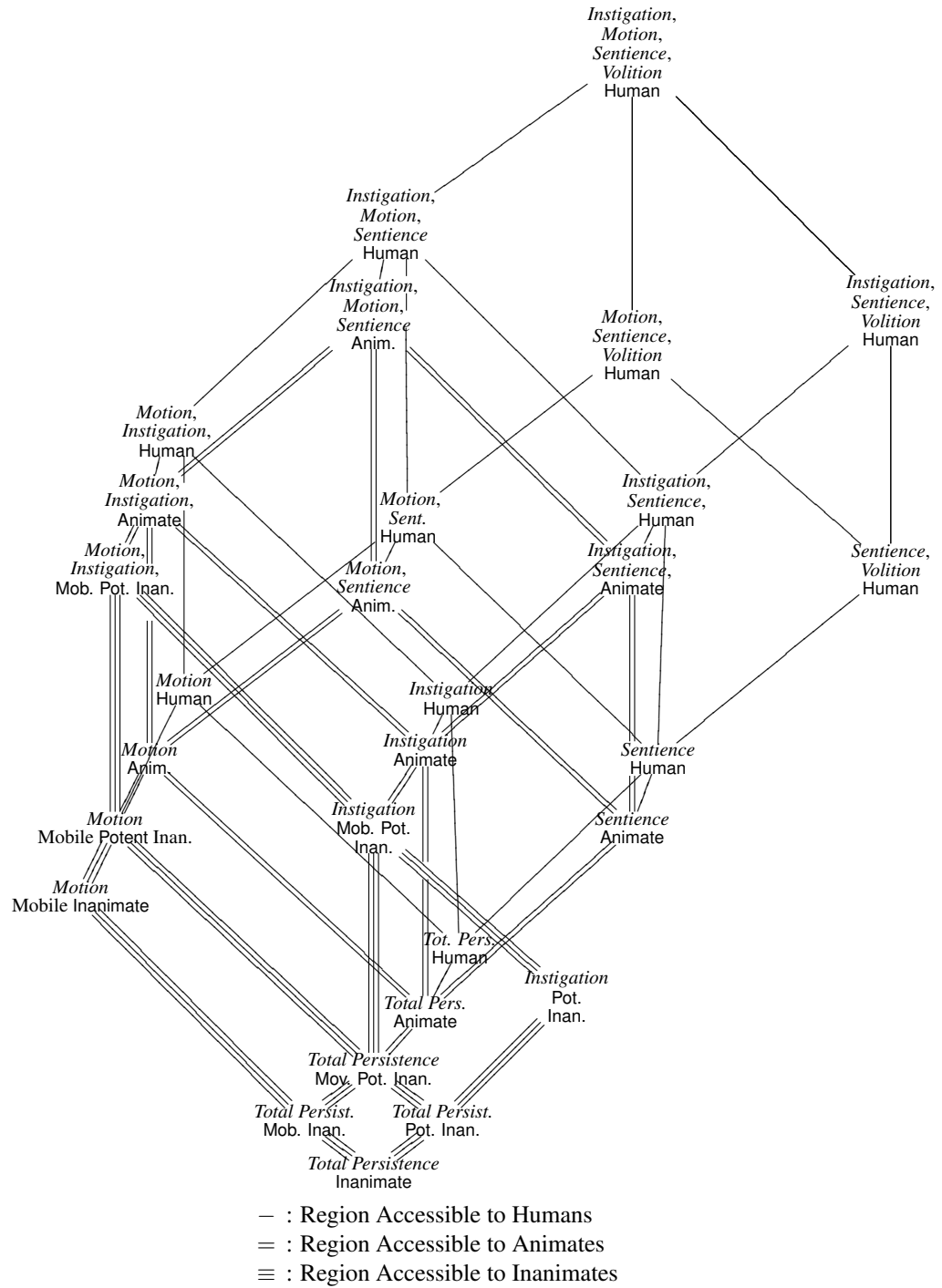
Figure 2: Product of Agency Lattice and Animacy Hierarchy

sentience without sentient, nor *volition* without human. In general, the higher in the lattice, the fewer entities qualify to instantiate.

This structure then produces the acceptability patterns of the instrumental subject data. Broadly, a given verb puts a set of entailments into play for its arguments; if the given entity possesses the features needed to satisfy the entailments on the argument, then the entity can serve as a subject, otherwise not. In terms of the lattice, the argument structure of a predicate restricts the region of the lattice its subject may inhabit by the properties that the predicate entails. This in turn restricts the types of nominals satisfying the predicate's requirements to just those which are consistent with the region of the lattice corresponding to the predicate's subject. Canonical instruments, as well as other inanimate actors, are limited to one connected region of the lattice. When a predicate's entailments coincide with this region, then such instruments may be realized as subjects.

3.   An Account of Inanimate Actors

The framework developed above can now be put to work on the problems outlined in section 1. First, it can be demonstrated under what circumstances inanimate actors appear, as in the first example discussed, repeated here as (11).

(11)   a. Marvin hit the horse with a stick.
        b. The stick hit the horse.

The nominal 'stick' possesses the feature mobile, thus it is compatible with the region of the structure indicated by the dotted line in figure 3, the relevant sublattice of figure 2. In examining the entailments of the predicate, it is sufficient to note that the subjects of 'hit' typically are in motion and are unaffected by the event, thus entailing the feature *motion* and *total persistence*. Since the focus is on the impact, *instigation* is not at issue[2]. Thus, as figure 3 graphically describes, the region established by the entity's properties coincides with the predicate's entailments, and therefore the combination is acceptable.

The next example, repeated here as (12), holds the predicate constant while the nominal varies, displaying the manner in which the properties of the nominal entity determine its acceptability as a subject.

---

[2] While most occurrences of "hit" implicate a degree of *instigation*, this is not strictly entailed, as examples of the following sort illustrate:

(1)   "The tank accidentally backed into a tree and a branch hit the mounted, unmanned machine gun, causing it to fire, Curtin said."
       www.signonsandiego.com/uniontrib/20050911/news₁n11armydead.html

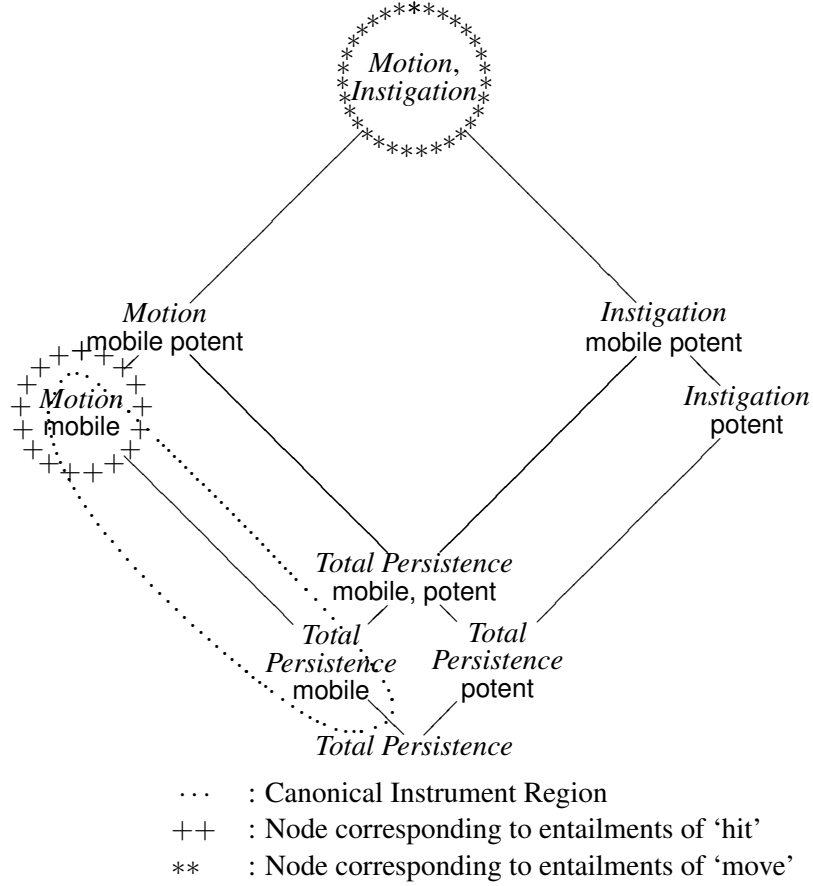In these cases, tests of prior activity such as "what the branch did was hit the gun" fail.

Figure 3: Sublattice of Unified Agency and Animacy Lattice

(12) a. The worker moved the dirt with the crane/shovel.

 b. The crane/*shovel moved the dirt.

The properties of 'shovel' are identical to those of 'stick', only possessing the feature mobile. 'Crane', however, as a semi-autonomous machine qualifies for both mobile and potent. The verbal entailments for 'move' clearly include *motion* and *total persistence*. Further, the transitive use of 'move', *move X from Y to Z*, requires some sustained activity bringing about the determined relocation, thereby entailing *instigation*. To satisfy the *instigation* entailment, an entity must possess the feature potent, which 'crane' does and 'shovel' fails to do, as seen in figure 3.

A third example, repeated as (13), holds the entity constant, demonstrating how minimally different predicates determine the acceptability of inanimate subjects.

: Canonical Instrument Region

>> : Node corresponding to entailments of 'murder'

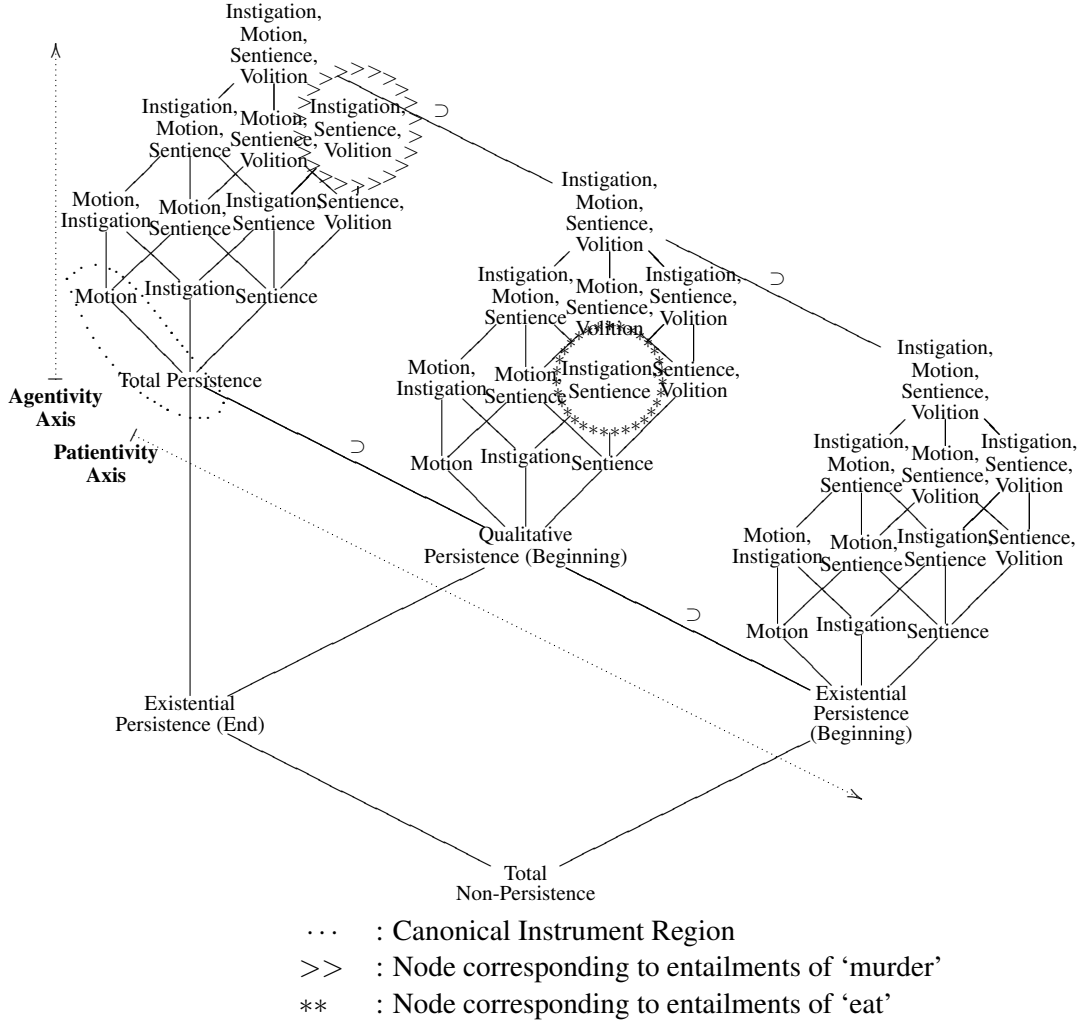** : Node corresponding to entailments of 'eat'

Figure 4: Entailments for 'murder' and 'eat'

(13)   The bullet killed/*murdered the president.

As a projectile, 'bullet' is clearly mobile, but also, if construed as in motion, it qualifies as possessing a type of 'internal power', viz. the force associated with its kinetic energy, thereby qualifying for potent (see Kearns 2000:241). However, 'murder' has more stringent requirements than 'kill', for 'murder', as has long been observed, entails *volitionality*. While 'bullet' clearly fulfills the requirements of 'kill', since it cannot satisfy the *sentience* entailment, and in turn the *volitionality*

entailment, it fails to fulfill the requirements for 'murder', shown in figure 4.

A similar situation holds in (14), repeated from above.

(14)   a. Carl ate spaghetti with a fork.

        b. *The fork ate spaghetti.

Previous analyses claimed the unacceptability of (14b) stemmed from the fact that verbs such as 'eat', as well as 'see', only select for facilitating instruments, such as 'fork'. Yet, this explanation leaves open the question of why this particular set of verbs does not select for instrumental subjects. In terms of the lattice, ingestive verbs clearly entail *sentience* and are also among the set of verbs requiring an affected agent (see Saksena 1980), along with perceptual and psychological verbs. Such verbs locate their subject argument on the *qualitative persistence (beginning)* branch of the lattice (i.e. qualitatively affected). Since the properties and lattice location of 'fork' are equivalent to those of 'shovel' or 'stick', it clearly cannot satisfy the entailments of 'eat', as figure 4 illustrates.

The analysis developed here provides an explanation which grounds these verbs' inability to take instruments as subjects in their overall semantics. To qualify as a subject the argument must be sentient and affected in the relevant manner. No canonical, or readily conceivable, instrument is able to be affected in place of the affected agent. Consequently, instruments do not qualify as subjects of these verbs.

Having established an analysis for what have been the traditional core cases of instrumental subjects, this same machinery can account for causes and natural forces, such as those repeated in (15)-(17).

(15)   The bomb suddenly exploded.

(16)   The rust has eaten away at the lock.

(17)   The wind opened the door.

Causes, such as in (15) and (16), possess the feature potent. Natural forces are capable of both autonomous activity and motion, possess the features potent and mobile, and may serve as subjects of predicates such as 'open', 'move', etc. Thus, causes, instruments and natural forces are all contiguous, demonstrating that indeed such notions can be thought of as a continuum.

4.   Conclusion

The problem of instrumental subjects has endured in part because of a need for a sufficiently fine-grained system. Recasting the approach of Dowty 1991 into one set of features and hierarchized in a lattice has led to a structured framework able

to interact with the animacy hierarchy, accounting for the heterogeneous set of restrictions on subject selection and predicting the distribution of inanimate subjects.

References

Aissen, Judith. 2003. Differential Object Marking: Iconicity vs. Economy. *Natural Language and Linguistic Theory* 21:435-483.

Chafe, Wallace. 1970. *Meaning and the Structure of Language*. Chicago: University of Chicago Press.

Comrie, Bernard. 1989. *Language Universals and Linguistic Typology. Second Edition*. Chicago: University of Chicago Press.

DeLancey, Scott. 1991. Event Construal and Case Role Assignment. In L. A. Sutton, C. Johnson, and R. Shields, eds., *Proceedings of Berkeley Linguistics Society* 19:338-53.

Dowty, David. 1991. Thematic Proto-Roles and Argument Selection. *Language* 67:547-619.

Fillmore, Charles. 1968. The Case for Case. In E. Bach and R. Harms, eds., *Universals in Linguistic Theory*, 1-88. New York: Holt, Rinehart and Winston.

Grimm, Scott. 2005. The Lattice of Case and Agentivity. Master's Thesis. Institute for Logic, Language and Computation: Universiteit van Amsterdam.

Kearns, Kate. 2000. *Semantics*. London: Macmillan Press.

Levin, Beth. 1993. *English Verb Classes and Alternations: A preliminary investigation*. Chicago: University of Chicago Press.

Levin, Beth and Malka Rappaport Hovav. 1988. Nonevent *-er* Nominals: A Probe into Argument Structure. *Linguistics* 26:1067-1083.

Mohanan, Tara. 1994. *Argument Structure in Hindi*. Stanford, CA: CSLI.

Nilsen, Don. 1973. *The Instrumental Case in English*. The Hague: Mouton.

Saksena, Anuradha. 1980. The Affected Agent. *Language* 56:812-826.

Schlesinger, I. M. 1989. Instruments as Agents: On the Nature of Semantic Relations. *Journal of Linguistics* 25:189-210.

Scott Grimm
Stanford University
Department of Linguistics
Stanford CA 94305-2150

sgrimm@stanford.edu

An Explanation of Base TETU Effects in Kwak'wala and Cupeño

ERIN FLYNN HAYNES
University of California, Berkeley

1.   Introduction

Kwak'wala, formerly known as Kwakiutl, is a Northern Wakashan language of northern Vancouver Island, Canada. It presents what appear to be a number of disparate reduplication patterns that exhibit Base-TETU effects and therefore pose a problem for Base-Reduplicant Correspondence Theory (hereafter BRCT) (McCarthy and Prince 1999). These data were thought to be so unruly that Struijke (2002) proposed a whole new family of constraints to account for them called Existential Faithfulness constraints. However, I will show that new constraints are unnecessary because the data can be successfully analyzed using widely applicable faithfulness and markedness constraints.

This analysis of Kwak'wala has implications for other languages, too. Struijke (2002) reports that Base-TETU effects occur in Bella Coola, Tohono O'odham, and Klamath. The current analysis precludes the need for Existential Faithfulness constraints to solve the problems posed to BRCT by these types of languages. I will present data from the Uto-Aztecan language Cupeño exhibiting similar Base-TETU effects, and show that the current analysis can be extended to these forms as well. The Cupeño data have not been previously analyzed in this context.

2.   Base-Reduplicant Correspondence Theory

Base-Reduplicant Correspondence is the name given to McCarthy and Prince's theory of reduplication which seeks to replace the copy-and-association model with a constraint-based correspondence model. In the Basic Model of BRCT, correspondence relationships are assumed between the Input and Output (termed IO-Faithfulness), and between the Base and Reduplicant (termed BR-Identity). (1) illustrates these relationships (McCarthy and Prince 1995, McCarthy and Prince 1999):

(1)   *Input*   /RED + STEM/
                                              ↕

        Output   RED ⟷ BASE

Erin Haynes

Constraints hold between the stem and the base, or between the base and the reduplicant, but not between reduplicant and stem. These relationships predict that TETU (The Emergence of the Unmarked) effects should arise in reduplicants rather than the base, and that emergent TETU effects in the base must also occur in the reduplicant. The universal ranking in (2), proposed by McCarthy and Prince (1999), yields the predicted results.

(2)   I-O Faithfulness >> markedness constraints >> B-R Identity

This ranking guarantees that markedness effects that appear in the reduplicant are not visible elsewhere in the language; in general they are outranked by faithfulness constraints between the input and the output.

3.   Variable-TETU effects in Kwak'wala *-mut* Reduplication

In her analysis of Kwak'wala, Struijke (2002) argued that the language exhibits Reduplicant-TETU effects, Base-TETU effects, and both Reduplicant- and Base-TETU effects in reduplication associated with the suffix *-mút* 'useless, refuse'. Examples (3)-(5) show examples from the language exhibiting each effect (all data in these examples are from Boas (1947:339-340)).[1] In each example, the reduplicant identified by previous researchers is double underlined. In example (3), the reduplicant is a reduced copy of the base, as is predicted by BRCT. In example (4), however, it is the base that is reduced. Finally, in example (5), both the base and the reduplicant are reduced. Examples (4) and (5) are unpredicted by BRCT.

(3)   Reduplicant-TETU effects

Root	*RED+Root+mút*	
ts'əm'	ts'əts'ə́m'əmút	'left after melting'
mendz	məméndzəmút	'leavings after cutting kindling'
c'ʷəml'	c'ʷəc'ʷə́ml'əmút	'remains of burning'
k'ʷa:l'	k'ʷək'ʷá:l'əmút	'embers'

(4)   Base-TETU effects

Root	*RED+Root+mút*	
wən	wə́nwəmút	'refuse of drilling'
səl	sə́lsəmút	'what is left after drilling'
dəj	dé:dəmút[2]	'refuse of wiping'
xəw	xó:xəmút	'refuse of splitting wood'

---

[1] Boas (1947) also presents examples of what he calls "expansion", which are cases where *-mút* causes a change to the base vowel rather than reduplication. This process occurs in monomoraic bases, and while space does not allow a treatment of these examples here, they can be subsumed under the analysis presented in Section 4, but with the addition of a mora rather than a consonant.

[2] əj → e: and əw → o: syllable-finally by regular phonological rules (Boas 1947:212).

(5)   <u>Base-TETU and Reduplicant-TETU effects</u>
        Root   *R*ED+*Root*+*mút*
        c'a:xʷ   <u>c'á:</u>c'axʷm'út   'shavings'
        ts'a:s   <u>ts'á:</u>ts'əsm'út   'old eel-grass'
        jənt   <u>já́n</u>jatm'út   'knawings (not of mouse)' *sic*.
        cəmt   <u>cə́m</u>catm'út   'leavings after cleaning berries'

Struijke (2002) argues that reduplication is mediated by stress assignment in the language. Zec (1995) has previously demonstrated that sonorant codas are moraic in Kwak'wala, while obstruent codas are not (with the exception of glottalized sonorant codas, which are also not moraic). She bases her argument on stress rules in the language, in which all heavy syllables are stressed, including those with long vowels and those ending in sonorant consonants. Stress feet are iambic (Zec 1988). Based on these generalizations, Struijke (2002) demonstrates that the constraint *CLASH (example (6)) is active in reduplicated forms, but not in unreduplicated forms.

(6)   *CLASH: Adjacent heads of feet are prohibited.
        (Struijke 2002:56, citing Prince 1983)

This constraint explains the varying shape of the reduplicant (and the base); their shapes are determined by whether or not they will incur a *CLASH violation. Note that there are no adjacent stressed syllables in the reduplicated forms in examples (3) through (5). However, Struijke (2002:57) gives the examples in (7) and (8) of non-reduplicated Kwak'wala words from Boas (1947). In these words, stress may occur on adjacent syllables.

(7)   ts'ó:l'ə́my'á: 'longer on one side'

(8)   té:nó:stá:lá: 'to pole up river'

When we attempt to use the universal constraint ranking in (2) (here, I-O FAITHFULNESS >> *CLASH >> B-R IDENTITY), we find that it cannot account for all of the data. In the tableau in (9), the constraint ranking works for a word with Reduplicant-TETU effects.

(9)

	RED + k'ʷa:l'-mút	FAITH-IO	*CLASH	FAITH-BR
Unfaithful base	i. <u>k'ʷá:</u>k'ʷəl'əmút	*!		
	☞ii. <u>k'ʷə</u>k'ʷá:l'əmút			*
Adjacent stress	iii. <u>k'ʷá:l'</u>k'ʷá:l'əmút		*!	

The attested candidate (ii) emerges because its base is faithful to the input and it doesn't violate *CLASH as (iii) does. However, in tableau (10), the constraint ranking fails for words with Base-TETU effects. Here, candidate (ii) wins, and the attested candidate (iii) fails because the stem is unfaithful to the base.

(10)

	RED + wən-mút	FAITH-IO	*CLASH	FAITH-BR
Adjacent stress	i. wə̰wə́nmú:t		*	*!
	☞ ii. wə́nwə́nmú:t		*	
Unfaithful base	☞ iii. wə́nwəmú:t	*!		

Only by ranking *CLASH higher than I-O FAITHFULNESS can the unattested result in (10) be avoided. However, this ranking is undesirable because *CLASH is not active in unreduplicated words (e.g. examples (7) and (8)). To circumvent this ranking paradox, Struijke (2002) introduces a new family of constraints called Existential Faithfulness. However, in the next section I will show that the Kwak'wala data can in fact be accounted for without new constraints.

4.   Rethinking the Reduplicant

The apparent variability seen in Kwak'wala reduplication can be successfully analyzed within the parameters of the BRCT predictions if we discard the assumption that the reduplicant is always a prefix. In fact, a reanalysis of the data suggests that what is happening in Kwak'wala is actually single-segment copying. In this section, I will demonstrate that a segment is copied from the left edge of the word and then either prefixed or infixed according to interactions between active faithfulness and markedness constraints. This analysis is consistent with an emerging body of work demonstrating similar approaches to partial reduplication (e.g. Hendricks 2001, Inkelas and Zoll 2005, Kawu 2000, Riggle 2004, Yu 2005).

(11)

Root	Copied Segment	Previously Assumed Reduplicants
ts'əm'	t̲s̲'-əts'ə́m'əmút	t̲s̲'ə̲-ts'ə́m'əmút
mendz	m̲-əméndzəmút	m̲ə̲-méndzəmút
c'ʷəml'	c̲'̲ʷ̲-əc'ʷə́ml'əmút	c̲'̲ʷ̲ə̲-c'ʷə́ml'əmút
k'ʷa:l'	k̲'̲ʷ̲-ək'ʷá:l'əmút	k̲'̲ʷ̲ə̲-k'ʷá:l'əmút
wən	wə́n-w̲-əmút	w̲ə̲́n̲-wəmút
səl	sə́l-s̲-əmút	s̲ə̲́l̲-səmút
dəj	dé:-d̲-əmút	d̲é̲:̲-dəmút
xəw	xó:-x̲-əmút	x̲ó̲:̲-xəmút
c'a:xʷ	c'á:-c̲'̲-axʷm'út	c̲'̲á̲:̲-c'axʷm'út
ts'a:s	ts'á:-t̲s̲'̲-əsm'út	t̲s̲'̲á̲:̲-ts'əsm'út
jənt	jə́n-j̲-atm'út	j̲ə̲́n̲-jatm'út
cəmt	cə́m-c̲-atm'út	c̲ə̲́m̲-catm'út

Table (11) presents the proposed copies in the middle column, with the previously assumed reduplicants in the right-hand column (from examples (3)-(5)). Under the current analysis, an empty C-slot is triggered by the suffix *-mút*. The C-slot is aligned and filled according to the interaction of ranked, violable constraints. With this simple assumption, all of the paradoxical Base-TETU effects disappear because the base actually remains unchanged.

The only challenge faced by this assumption is in positioning the C-slot correctly. The empty segment is left aligned to the base due to the constraint in (12).

(12) ALIGN-L$_{BASE}$ (C, R, BASE, L): Align the right edge of the segment to the left edge of the base. *'Be a prefix'*

However, alignment to the base is violable for the higher ranking *CLASH. Other constraints may also interfere with its alignment, such as (13) and (14).

(13) *COMPLEX ONSET (*$_\sigma$[CC): No complex syllable onset.

(14) *STRUCTURE-SYLLABLE (*STRUC): Each syllable in the output incurs a penalty. *'Minimize syllables.'*

In addition, the segment must be aligned with the left edge of the syllable to avoid unattested forms like *wəẃnəmút*. Left alignment is guaranteed by the highly ranked constraint in (15).

(15) ALIGN-Lσ (C, R, σ, L): Align the right edge of the segment to the left edge of a syllable. *'Be an onset.'*

Tableau (16) demonstrates the interaction of these constraints in a word with apparent Base-TETU effects.

(16)

	C+ wən-mút	ALIGN-Lσ	*CLASH	*$_\sigma$[CC	*STRUC	ALIGN-L$_{BASE}$
Adjacent stress	i. wə́nwə́nmút		*!		***	
Adjacent stress	ii. wəwə́nmút		*!		***	
Adjacent consonants	iii. wwə́nmút			*!	**	
	☞iv.wə́nwəmút				***	***
Too many syllables	v. wəwə́nəmút				****!	
Not an onset	vi. wə́wnəmút	*!			***	**

195

Candidates (i) and (ii) fail because they violate *CLASH. Candidate (iii) has a complex onset and loses. Candidate (v) loses because it has one more syllable than the winning candidate (iv), violating *STRUC. The reduplicant in candidate (vi) doesn't form the onset of a syllable. Despite numerous violations of ALIGN-L$_{BASE}$, candidate (iv) emerges victorious.

Further constraints are required to ensure that the added consonant is a copy of the first consonant. Copying constraints are given in (17)-(19):

(17)   ANCHOR-L (C, WORD): The added C has a correspondent at the left periphery of the input word. *'Copy the left-most consonant.'*

(18)   DEP-C: Don't epenthesize a consonant.

(19)   INTEGRITY: No element of S$_1$ has multiple correspondents in S$_2$. *'Don't copy.'* [3]   (McCarthy and Prince 1995:372)

Finally, all reduplicants have an epenthesized vowel to avoid violations of *CLASH and *COMPLEX ONSET. By ranking DEP-V, (20), below INTEGRITY, the reduplicant vowel is epenthesized rather than copied.[4] The ranking in (21) makes it better to copy a consonant than to epenthesize one. ANCHOR-L further ensures that the copied consonant is the left-most consonant in the base.

(20)   DEP-V: Don't epenthesize a vowel.

(21)   ANCHOR-L, DEP-C >> INTEGRITY >> DEP-V

Tableau (22) demonstrates the constraint ranking in a word with apparent Base-TETU effects:

(22)

	C+ wən-mút	ANCHOR-L	DEP-C	INTEGRITY	DEP-V
Copy of wrong segment.	i. wə́n<u>mə</u>mút	*!		*	*
Epenthesized segment.	ii. wə́nʔəmút		*!		*
	☞iii. wə́n<u>wə</u>mút			*	*

---

[3] This constraint was used by Yu (2005) in his analysis of Washo reduplication. It has also been used by Kawu (2000) in his analysis of Yoruba gerundial affixation, Temiar simulfactive affixation, and Makassarese coda condition effects.

[4] The epenthesized vowel is always realized as /a/ or /ə/. Boas (1947:207) notes that all surface realizations of /ə/ are underlyingly /a/, but does not give the conditioning environments. Bach (1975:footnote 9) states that he has encountered difficulties discovering the environmental contrasts based on Boas' transcriptions.

Candidate (iii) in (22), which doesn't epenthesize a consonant or copy from the wrong portion of the word, emerges as the winner. All three candidates violate DEP-V, but this constraint is low-ranked and has no effect on the final outcome.

Tableaux (24) and (25) demonstrate the current analysis for apparent Reduplicant-TETU and Base- and Reduplicant-TETU examples. For (24), another constraint must be included dictating against unreleased glottalized consonants (see the constraint in (23)).

(23)   *C'C: A glottalized consonant cannot be followed by a consonant.

(24)

	C + kʷa:l'-mút	*CLASH	*C'C	*STRUC	ALIGN-L
Adjacent stress	i. k̲ʷ̲á̲:̲l̲'̲kʷá:l'mút	*!		***	
	☞ii. k̲ʷ̲ə̲kʷá:l'əmút			****	
Glottalized C followed by C	iii. kʷá:l'k̲ʷ̲ə̲mút		*!	***	***
Too many syllables	iv. k̲ʷ̲á̲:̲l̲'̲əkʷá:l'əmút			*****!	

In (24), the winning candidate (ii) doesn't have an infixed reduplicant as in tableau (16) because it's not needed to prevent violations of *CLASH. However, the reduplicant must be reduced. Candidate (iv) demonstrates that epenthesizing multiple vowels to avoid *CLASH creates too many violations of *STRUC and the output fails.

(25)

	C + jənt-mút	*CLASH	*σ[CC	*STRUC	ALIGN-L
	☞i. jə̲n̲j̲atm'út			***	***
Adjacent stress	ii. j̲a̲jántm'út	*!		***	
Too many syllables	iii. j̲a̲jántəm'út			****!	
Too far away from left edge of word	iv. jəntj̲a̲m'út			**	****!

In (25), the winning candidate's reduplicant appears between the two coda consonants of the first syllable of the base, avoiding a *CLASH violation. Candidate (iv) also avoids *CLASH, but fails because it has too many violations of ALIGN-L.

Under the current analysis, the base is always more faithful to the input than the reduplicant is, as predicted by BRCT. Crucially, the reduplicant is not always a prefix, but rather a copied consonant whose alignment varies according to markedness constraints.

5. Variable-TETU effects in Cupeño Reduplication

The solution presented for Kwak'wala is also successful in the Uto-Aztecan language Cupeño. Cupeño is a language of southern California belonging to the Takic branch of Uto-Aztecan. Like Kwak'wala, Cupeño exhibits apparent variable-TETU effects in one type of reduplication. This type of reduplication most often occurs as prefixing, as described by Hill (2005). I will refer to it here as CV-prefixing reduplication, as this appears to be what is occurring at first glance. Examples are in (26)-(28):

(26)   CVC-base: <u>kú</u>kup 'lie around in bed' (< kúp-Ø 'sleep')   (Hill 2005:142)

(27)   CVV-base: <u>pú</u>ßulim 'doctors' (< púu-l-m 'doctor')   (Hill 2005:31)

(28)   CV-base: <u>nə́</u>ntam 'chiefs, lineage heads' (< nə́-t-m 'chief') (Hill 2005:30)

Only (26) is not a counterexample to the predictions made by BRCT. If we are to analyze CV-prefixing reduplication as a prefixing phenomenon, we will have to say that in (27), the base's vowel is shortened. In (28), the base's vowel is lost, while the reduplicant's vowel remains intact. However, it is unusual in Cupeño for prefixation to cause the deletion of a root vowel, stressed or unstressed. Hill (2005:31) states, "Cupeño prefixes … have no effect on the shape of the root, even when, in the case of a prefix with a stressless root, the stress is on the prefix and the root vowel is unstressed."

I propose an analysis similar to the one proposed for Kwak'wala. The reduplicant is actually an empty C-slot that is aligned and filled according to the interactions of ranked, violable constraints. The proposed reduplicant positions for (27) and (28) are double-underlined in (29) and (30):

(29)   pú<u><u>ß</u></u>ulim

(30)   nə́<u><u>n</u></u>tam

The relevant constraints are the same as in Kwak'wala. The proposed constraint ranking is in (31):

(31)   ANCHOR-L, $*_o$[CC >> DEP >> INTEGRITY >> ALIGN-L$_{BASE}$

The ranking is exemplified for (29) and (30) in the tableaux in (32) and (33). In (32), candidate (ii) has the fewest violations of more highly ranked constraints. Candidate (i) exhibits a complex onset and candidate (vi) fails to anchor the copied material to the left edge of the word. Candidate (iv) crucially violates DEP by epenthesizing a segment rather than copying material, making it a worse candidate than both (ii) and (iii). Candidate (ii) emerges victorious over candidate (iii) because it has one less ALIGN-L$_{BASE}$ violation.

(32)

puu-l + C (+m)	ANCH-L	*$_\sigma$[CC	DEP	INTEG	ALIGN-L$_{BASE}$
Adjacent consonants	i) **p**puul-im		*!	*	*	
	☞ ii) pu**p**ul-im			*	*	**
Too far away from left edge of word	iii) puu**p**l-im			*	*	***!
Epenthesized segment.	iv) pu**ʔ**ul-im			**!		**
Copy of wrong segment.	vi) pu**l**ul-im	*!		*	*	**

In (33), candidate (i) meets the Align-L constraint perfectly, but ultimately fails because it creates a complex onset. Candidate (ii) fails because the morpheme is too far away from the left edge of the word. Candidate (iv) copies material from the right edge of the word, crucially violating ANCHOR-L. Candidates (iii) and (v) are equal in every respect except that candidate (v) epenthesizes a segment rather than copying it, violating DEP. Because DEP is ranked before INTEGRITY, (iii) wins. (Note that DEP is violated at least one time by every candidate to prevent the suffix from forming a heavy syllable. Hill (2005) notes that Cupeño avoids ending words with CC sequences and syllables with CCC sequences.)

(33)

nət + C (+m)	ANCH-L	*$_\sigma$[CC	DEP	INTEG	ALIGN-L$_{BASE}$
Adjacent consonants	i) n̲nət-am		*!	*	*	
Too far away from left edge of word	ii) nət n̲-am			*	*	***!
	☞iii)nə n̲t-am			*	*	**
Copy of wrong segment.	iv) nə m̲t-am	*!		*	*	**
Epenthesized segment.	v) nə ʔ̲t-am			**!		**

This analysis also works for the example in (26), though there is further involvement with regular stress rules in the language. Though initially it would seem that the reduplicant in (26) is a prefix without violation of the predictions of BRCT, Hill (2005) indicates that a shift in lexical stress is avoided. We must therefore assume that the proper reduplicant alignment is the one given in (34).

(34)   kú<u>ku</u>p

Hill's statement about stress prompts the constraint in (35).

(35)   *STRESSSHIFT (*STRSH): Lexical stress corresponding to a syllable A in S_1 corresponds to syllable A in S_2. '*Don't shift stress.*'

This constraint is highly ranked compared to the other constraints. The constraint against heavy syllables also comes into play (example (36)).

(36)   *HEAVY-σ (*H-σ): No heavy syllables.

Both constraints are highly ranked, yielding the tableau in (37).

(37)

	kup + C	*STRSH	*H-σ	*σ[CC	ALIGN-L
Adjacent consonants	i) **k**kúp			*!	
Heavy syllable	ii) kú**k**p		*!		**
Stress shifted	iii) **kú**kup	*!			
	☞v) kú**ku**p				**

Candidates (i), (ii), and (iii) in (37) are eliminated for violating the highly ranked constraints against complex onsets, heavy syllables, and shifting stress, respectively.

At first glance, Cupeño CV-"prefixing" reduplication exhibits both Reduplicant-TETU and Base-TETU effects, a situation not predicted by BRCT. However, a reanalysis of what constitutes the reduplicant has allowed for an explanation of all three types of reduplication that is both within the bounds of BRCT and that employs commonly exploited constraints. Note that this analysis has relied on phonological copying constraints similar to those proposed in Riggle (2004) and Yu (2005). However, the data do not preclude an analysis using RED=C, FAITH-BR, and other familiar reduplication constraints. What is important here is that the reduplicant is actually an infixed copied consonant, but the method of copying may fall under either a reduplication or a phonological copying analysis.

6.   Conclusion

This paper has presented an analysis of apparent variable-TETU effects in both Kwak'wala and Cupeño without the addition of special constraints to the theory. In each case, the interaction of ranked, violable and widely applicable constraints determines the alignment of material copied from the edge of the base. However, in order to preserve the predictions made by BRCT it is necessary to abandon the presupposition that partial reduplication is an edge-in phenomenon (i.e. prefixing or suffixing). By allowing the reduplicant to be an infix, the prediction that the base is always more faithful to the input than the reduplicant is preserved in languages that otherwise appear to have Base-TETU effects.

This analysis precludes the need for special constraints like those of Existential Faithfulness (Struijke 2002) to explain Base-TETU effects in Kwak'wala. Furthermore, I have shown that this analysis is applicable in a non-related language, Cupeño, which exhibits similar apparent Base-TETU effects. Other languages exhibiting Base-TETU effects include Bella Coola, Tohono O'odham, and Klamath. Thus, the current analysis has potentially broad applicability in the examination of reduplication processes.

7.   Acknowledgments

References

Bach, Emmon. 1975. Long Vowels and Stress in Kwakiutl. *Texas Linguistic Forum* 2:9-19.

Boas, Franz. 1947. *Kwakiutl Grammar.* Philadelphia, PA: Transactions of the American Philosophical Society 37.

Hendricks, Sean. 2001. Bare-Consonant Reduplication without Prosodic Templates: Expressive Reduplication in Semai. *Journal of East Asian Linguistics* 10(4):287-306.

Hill, Jane. 2005. *A Grammar of Cupeño.* California: University of California Press.

Inkelas, Sharon, and Cheryl Zoll. 2005. *Reduplication: Doubling in Morphology.* New York: Cambridge University Press.

Kawu, Ahmadu Ndanusa. 2000. Structural Markedness and Nonreduplicative Copying. *Proceedings of the North East Linguistic Society* 30(1):377-388.

McCarthy, John, and Alan Prince. 1995. Faithfulness and Reduplicative Identity. *ROA* 60.

McCarthy, John, and Alan Prince. 1999. Faithfulness and Identity in Prosodic Morphology. In R. Kager, H. van der Hulst, and W. Zonneveld, eds., *The*

Prosody Morphology Interface, 218-309. Cambridge: Cambridge University Press.

Prince, Alan. 1983. Relating to the Grid. *Linguistics Inquiry* 14:19-100.

Riggle, Jason. 2004. Nonlocal Reduplication. *ROA* 693.

Struijke, Caro. 2002. *Existential Faithfulness: A Study of Reduplicative TETU, Feature Movement, and Dissimilation.* New York: Routledge.

Yu, Alan. 2005. Quantity, Stress, and Reduplication in Washo. *Phonology* 22:437-475.

Zec, Draga. 1988. Sonority Constraints on Prosodic Structure. PhD diss., Stanford University.

Zec, Draga. 1995. Sonority Constraints on Syllable Structure. *Phonology* 12(1):85-129.

Erin Haynes
University of California, Berkeley
Department of Linguistics
1203 Dwinelle Hall
Berkeley, CA 94720-2650

hayneser@berkeley.edu

The Proto-Uto-Aztecan Cultivation Hypothesis: New Linguistic Evidence

JANE H. HILL
University of Arizona

0.   Introduction

The Uto-Aztecan (UA) language family extends from Idaho to El Salvador. Most scholars, following Fowler (1983), locate the Proto-Uto-Aztecan (PUA) homeland in the uplands of the Gila River drainage in Arizona, New Mexico, Chihuahua, and Sonora. Glottochronological estimates date this protocommunity to between 4800 (Hale 1958-59) and 6000 (Miller 1983) years ago.[1] At this time period all people in this region were hunter-gatherers.

Archaeologist Peter Bellwood (1997) interrupted this consensus with an alternative hypothesis: that UA geographical distribution resulted from a 'Neolithic spread' of a community of 'first farmers', from a PUA homeland located in Mesoamerica, where maize cultivation dates to about 5600 years ago. At the same time, archaeologists learned that maize cultivation in the U.S. Southwest began much earlier than had been thought. Maize (which exists only as a cultivated plant) has now been radiocarbon dated to over 4,000 years ago in the Tucson Basin (Mabry and Thiel 2006), the Gila River drainage near Safford, Arizona (B. Huckell 2005, L. Huckell 2005), and in the Four Corners region by 3500 years ago (Wills 1995).

In Hill (2001), in support of Bellwood's hypothesis, I presented cognate sets and PUA reconstructions for a 'maize complex': the plant and its parts, its cultivation and cuisine. I proposed that a UA migration was a central mechanism in the spread of maize cultivation to the U.S. Southwest. This proposal remains controversial. Linguists have challenged the reconstruction (e.g., Campbell 2003). Some archaeologists doubt that migration was a major mechanism of cultural change in the Late Archaic in the U.S. Southwest (e.g., Wills 1995). Many specialists in the northern Uto-Aztecan peoples find extremely dubious the idea that these groups are former cultivators who abandoned maize cultivation in favor of hunting and gathering after their arrival in the Southwest.

---

[1] At the risk of scandal, I cite glottochronological estimates, which correspond surprisingly well with what we know of the archaeology. New dates on maize have resolved the conflict noted in Hill (2001).

Jane H. Hill

Some Mesoamericanists (again see Campbell 2003) reject the implication that 'Corachol-Aztecan' (Campbell and Langacker 1978) has deep roots in Meso-american prehistory rather than being recent in the region. However, my claims about PUA origins do not bear directly on the question of the origins of the Nahua, who have been argued to be a poor fit within the Mesoamerican linguistic area (Campbell, Kaufman and Smith-Stark 1986). While it would be parsimoni-ous to think of the geographical distribution of the subgroups of Uto-Aztecan that we know from the early historic period as directly reflecting the dynamics of the initial dispersal more than 4,000 years ago, from then until 1521 is a very long time, permitting much reshuffling of peoples and new ethnogenesis. But new evidence is accumulating in support of the idea that Aztecan peoples are old in Mesoamerica. Dakin and Wichmann (2000) and Dakin (2004) have presented linguistic evidence for an Aztecan presence during the early stages of the emer-gence of Mesoamerican complex societies. Macri and Looper (2003), Macri (2000, 2005, 2006), and Grofe (2006) have identified new epigraphic evidence for involvement of Nahua speakers in the Mesoamerican areal system by the 5th century A.D. Genetic samples from Nahua speakers exhibit the same distribution of frequencies of mtDNA haplogroups as do other Mesoamerican peoples (Re-sendez and Kemp 2005), and recent work on ancient DNA from a pre-contact cemetery at Tlatelolco (Resendez and Kemp 2005) finds that Aztecs buried there are indistinguishable from other Mesoamerican populations. Recent research has identified Mesoamerican features in northern Uto-Aztecan languages. Montes de Oca (2001) has identified the presence of Mesoamerican-type *difrasismos*, ritual couplets, in Luiseño, and I have found examples in the other Takic languages. The SOV word order characteristic of Uto-Aztecan was thought by Campbell, Kauf-man and Smith-Stark (1986) to be definitively non-Mesoamerican. However P'urhepecha, located in the northwestern region that I consider to be the probable homeland for PUA, is strongly post-positional and may have V-final word order (Villavicencio 2006).[2] Furthermore, grammatical features in Classical Nahuatl (CN) such as V-initial order (Hill and Hill 2004), noun classifiers and body-part locatives suggest involvement in the Mesoamerican areal system. Cora tends to right-shift topics, yielding V-initial order (Vásquez Soto 2001). Further considera-tion of this important issue is beyond the scope of this paper, but these facts suggest that research into the Uto-Aztecan problem may permit us to contribute a more delicate historicization for the emergence of the various features of the Mesoamerican areal system.

The present paper summarizes the major results of my research since Hill (2001). These include new cognates in the northern languages for forms in the PUA maize lexicon, a set of possible loans between Proto-Northern Uto-Aztecan (PNUA) and Proto-Kiowa-Tanoan (PKT) suggesting the presence of maize cultivation in the PNUA community, and a few hints that some PUA maize

[2] In discussion of this paper, Roberto Zavala (personal communication Feb. 9, 2007) pointed out that Mixe-Zoquean languages are largely verb-final. Among the Mesoamerican language families, Otomanguean, Mayan, and Totonacan are all strongly verb-initial.

205

vocabulary may originate in Otomanguean languages, linking PUA more firmly to a Mesoamerican homeland.

1.   New Maize Vocabulary in the Northern Languages

In Hill (2001) my reconstructions of maize vocabulary to a PUA stage depended almost entirely on Hopi. This left open the possibility that maize vocabulary represented a very early diffusion of maize lexicon into Hopi, rather than descent in Hopi from the PUA ancestral vocabulary. Hill (2001) included no cognates for any of the Takic languages. I have now identified what I believe to be two likely, and one possible, Takic reflexes in the PUA maize vocabulary. I have also identified a new item in Tübatulabal. These are seen in (1-9) below, which amends the cognate sets in Hill (2001).[3]

The first new item is Gabrielino *ṣoŋ-á:xe-y* 'tortilla' in (1), from J. P. Harrington's field notes. Gabrielino *o* and *u* are not distinguished in unstressed syllables, so the form could be a reflex of set (2); set (1) seems a more likely source since reflexes in set (2) refer to non-edible (but see note 9) parts of the maize plant. I also suggest the possibility of the Kitanemuk form *-hukaʔ* 'corn cob, corn stalk' in (1); it lacks the nasal, but a word in the maize domain with initial *hu*, from PUA **su* by regular sound change in this language, looks suspicious. The second element of the Kitanemuk form may be a reflex of the PUA 'dry' word **ka-*, also seen in Hopi *qa:ʔö* 'dry ear of corn' in set (5). Tübatulabal *paca:h- ~ apaca:h* 'to shell it', *paca:hil* 'shelled pine nuts' (from Voegelin 1958) in (3) adds a second Northern Uto-Aztecan (NUA) cognate for this set. I believe that the semantic shift is from the 'maize' domain to the 'pine-nut' domain, and not vice versa; this is argued in more detail (for Hopi *qa:ʔö* 'dry ear of corn, pine cone') in Hill (2003). In set (3), I cite for the first time a usage in Classical Nahuatl from Sahagún (1981:64) where CN *a:č-*, usually 'seed' in general, distinguished from *λao:lli* 'corn kernels after shelling', clearly refers to the corn kernel, and does so in a piece of ritual language that may very well attest to archaic usage. This constitutes a partial reply to the challenge of Campbell (2003 and personal communications) that the word in (3) does not attest to PUA cultivation, but to a shift of meaning to 'corn kernel' at some post-PUA stage in some languages. The form is now attested in the meaning 'corn kernel' in Nahuatl, Cora, Yaqui, and Hopi, making a post-PUA semantic change less likely. In (4), Luiseño *ṣá:xi-š* 'wheat', from Elliott (1999), is a more convincing northern-language cognate for this set than is Tübatulabal *a:-sagɨ:* 'to roast', hitherto the only NUA reflex. In (5) I have added a new Numic resemblant form, Comanche *hani woʔora* 'corncob' (Robinson and Armagost 1990).[4] Item (6), PUA ***sura* 'embryo of corn, tender ear of green

---

[3] I give here only the sets that I have recently amended and/or corrected, or that must be mentioned in connection with arguments in this paper. Complete sets and references for the reflexes that are not new to this paper can be found in Hill (2001).

[4] The Comanche word *hani* means 'corn'; it is probably the same word as Hopi *ha:ni* 'corn flour, ground fine', and is, I suspect, a cognate rather than a loan. See example (10).

maize', is recently identified by Manaster Ramer (2000). I also note a few corrections from the 2001 data; these are bolded, as are the other new materials.

(1) *sunu* 'corn ear, maize': PTP *hu:nu-i*, EU *sunú-t*, GU *sunú*, TA *sunú*, MA *súnnu* 'cornfield', NA *sin-λi/*sen-λi*; PNUA *suŋu* : [HO *soŋowɨ* 'sand grass (*Calamovilfa gigantea*)'], **GA ṣoŋ-á:xe-y 'tortilla' (literally, 'corn-put.in.mouth-non.possessed.noun.suffix'), KI -huka? 'corn cob, corn stalk' (?)**[5]

(2) *sono* 'maize byproducts such as cobs, leaves, cane': EU *sonó* 'corn leaf', PTC *sono* 'corn element' (TA *sonó* 'corn stubble', GU *sonó* 'corn stubble', *sonógola* 'corn crib'), TU [*sonó* 'cane'], *sonovoLi-t* 'straw storage bin', but *hona-Li-t* 'corn stubble'; PNUA *soŋo* 'grass, tinder/hay, corn cob': [Mono *sona* 'hay' (Fowler 1972:326 comments 'may be borrowing'); Tümpisa Shoshone *soni* 'grass' (archaic); Owyhee Shoshone *soni-pɨ* 'grass', *soni-pi* 'rye grass' (Fowler 1972:83); CO *soni* 'grass'; Southern Paiute *šoni* 'tinder'], HO *sö:ŋö* 'corn cob'

(3) *pa?ci* 'corn ear, corn kernel, seed': PTC *paci* 'seed, green corn ear' (YA *baci*, MA *bácia* 'seed', [GU *pahcí* 'seed (but not of corn)']), CR *hací* 'green corn ear', [NA *a:č-λi* 'seed'], **but note CN šin-a:č-iwa 'to plant corn seeds taken from images of the maize gods'**; PNUA *pa:ca*: HO *pa:cama* 'hominy', **[TB paca:h- ~ apaca:h 'to shell it', paca:hil 'shelled pine nuts']**

(4) *saki* 'popcorn, parched corn, to make parched corn or popcorn': PTP *ha:ki* 'parched grain', EU *sakít* 'parched corn, esquite', PTC *sakɨ-/saki* 'to toast, parch' (GU *sagilá* 'comal', MA *sá:ki* 'esquite'), CR *šahčéh* 'popcorn', HU *sak(:)kí* 'esquite', Aztecan *saki/ɨ* 'parched corn, esquite'; **Luiseño ṣá:xi-š 'wheat',** [TB *a:-sagɨ:* 'to roast']

(5) *o?ra/*o?ri* 'ear of corn, cob': TA *o?na/ko?ná* 'corncob', GU *wohna* 'corncob'; NA *o:lo:-λ* 'corncob'; [Kawaiisu *ono-ci* 'hooked stick used to pull down pinyon cones', Tümpisha Shoshoni *onno-cci* 'pine cone harvesting hook'], **CO hani wo?ora 'corncob'**; HO *qa:?ö* 'dried ear of corn', *ö:vi(-?at)* 'butt end of the corn cob, proximal end of cob' (probably from *ö:* 'cob' + with combining form -*vi* from *pi:hɨ* 'breast, teat'). (Here, the common element may be *o?-*, possibly in the word for 'bone'; HO lacks the thematic element -*ra/i* so is not strictly speaking cognate; the interest

---

[5] Key to abbreviations not defined in text: CO Comanche, CR Cora, EU Eudeve, GA Gabrielino, GU Guarijio, HO Hopi, HU Huichol, KT Kiowa-Tanoan, MA Mayo, NA Nahuatl, PTC Proto-Taracahitic, PTP Proto-Tepiman, TA Tarahumara, TU Tubar, YA Yaqui. Forms in square brackets are cognate but not semantically within the maize complex.

lies in the common formative element, compounded in HO with *qa:-*, probably 'dry'.)

(6)   ***sura* 'embryo of corn, tender ear of green maize': EU *surát* 'kernel, seed'; NA *ši:lo:-λ* 'tender ear of green maize before it solidifies'; HO *soona(ʔat)* 'kernel, edible part of any seed, meat of pinyon nut, embryo of corn, the nutriment of a plant as contrasted with its form' (probably PUA ***sura* 'heart', attested throughout the family, but shifted to the maize domain at the PUA stage in several languages)**

(7)   **ku:mi/u* 'to nibble small pieces of food, especially corn on the cob or popcorn': TO *ku:m* 'to eat, chew on something that comes in little pieces', *ku:mi-kuḍ* 'corncob'; GU *kuʔmi-ná/-má* 'to chew on something small and hard like parched corn', TA *gumí* 'to eat something in little bites, like parched corn or corn on the cob', MA *kú:me* 'to chew', CR *má-h-ki-ʔi-ma-ka* 'they eat it', HU *ki-mé* 'to chew little bites', [NA *kimič-in* 'mouse']; PNUA **kuma* 'corn': Southern Paiute *qumia* 'old Indian name for corn, rarely used now'; San Juan Paiute *kumwi* '*Zea mays*', *kumut* '*Amaranthus caudatus*'; Southern Ute *kɨmˊy* 'corn'; Kaibab Paiute *kó-mi* 'corn', Ute *ku-mi-up* 'corn', *ku-ma* 'corn', *kūm-wi* 'seed of corn', *ku-muʔ-i-vai-a* 'corn cob'; CO *kukɨme-pɨ* 'parched corn, toasted maize'; HO *kokoma* 'dark red, almost purple corn', [*komo* '*Amaranthus cruentus*' (a dye plant)]

(8)   **wika* 'digging stick': PTP **gi:kai* 'dibble stick, plow', PTC **wika* 'coa', HU *wiká/wi:.ká* 'pichueca'; HO *wì:kˊa* 'digging stick'; **TB *wi:ginat/ ʔiwi:gin* 'to stir', given in Hill (2001) may be related not to this word, but to the California word **wi:wi-* 'acorn gruel'**

(9)   **ʔica* 'to plant': PTP **ʔɨsa* 'to plant'; PTC **e:ca* 'to plant', HU *ʔe-* 'to plant placing seeds in the earth', (NA *e-λ* 'bean' (??)); PNUA **ɨya* 'to plant': Northern Paiute *ɨappɨ*, Shoshone *iʔapɨ* '*Chenopodium* spp.' (Fowler 1972:188), Tümpisa Shoshone *iah* 'to plant', Kawaiisu *ʔiʔa* 'to plant', Southern Paiute *ia* 'to plant', Ute *ʔɨáy* 'to plant', HO *i:ya* 'to plant'. **Northern Paiute *masɨa* 'plant', given in Hill (2001) is not related to this set.**

2.   Indirect Evidence for PNUA Cultivation

Many anthropologists consider that the abandonment of cultivation in favor of hunting and gathering as a subsistence strategy is very rare and unusual, thus throwing into doubt the proposal that the PNUA community included maize cultivators. In Hill (2003) I pointed out that cultivation is attested from the earliest historic period for several NUA groups, including the Owens Valley Paiute, the Agua Caliente Cahuilla, the Shoshone at Walker River, and for Southern Numic

groups throughout their distribution from the Chemehuevi in the west to several Ute bands in the east. While this cultivation may result from diffusion from Yuman cultivators along the Colorado River (for the Cahuilla and Chemehuevi) and from the Hopi (for the Southern Paiute and Ute), there is some linguistic evidence for the alternative hypothesis, that these cultivation complexes trace to cultivation among the PNUA.

First is a pair of words shared by Hopi and Comanche. The Comanche, a Central Numic group, were on the Great Plains by the historic period. While they were primarily buffalo hunters, they may have done some cultivation, and they traded for maize with cultivators. Their maize vocabulary shares at least two words, not with the Tanoan and Keresan peoples of the upper Rio Grande who were their raiding victims and trading partners, but with Hopi, two hundred miles to the west. While the Comanche did not raid as far west as Hopi, an anonymous referee for Hill (2007) pointed out that Ute bands did raid Hopi and were in contact with the Comanche, so that Hopi words might have reached Comanche by way of the Utes. However, the words in (10) and (11) are not found in the attested lexicon of Southern Ute (either in Givón (1979) or Charney (1996)). Thus the possibility remains open that they represent a residue of a common NUA maize vocabulary that does not survive in the attested lexicons of other NUA languages. The Hopi form *ho:ma* 'ceremonial cornmeal' is, I believe, a reflex of PUA **u:ma*, seen also in Nahuatl *i:ma-*, an element that appears in a number of words having to do with 'respect, prudence, seriousness, fear'.[6]

(10)   HO *ha:ni* 'corn flour ground fine'; CO *haniíbi* 'maize' (with combining form *hani-* in many compound expressions)

(11)   HO *ho:ma* 'ceremonial cornmeal'; CO *homopɨ* 'powder, flour'

The second set of evidence is the presence of a series of resemblances between PNUA and PKT. Whorf and Trager (1937) and Davis (1989), used some of these to argue for a common ancestor of the two groups, 'Proto-Azteco-Tanoan.' However, a claim that this ancestor included words for maize is obviously anachronistic. Instead, these resemblances may date to an exchange of vocabulary that took place in the Four Corners region of the Colorado Plateau about 3500 years ago, originally identified by archaeologist R. G. Matson. Matson (1991) proposed that the Western Basketmaker II (WBM II), immigrant cultivators on the Colorado Plateau in the second millennium B.C., with many connections to the south, were probably Uto-Aztecans. The Eastern Basketmaker II (EBM II), hunter-gatherers located as far west as the Four Corners region, exhibit continuities from the Archaic period on the Colorado Plateau. This external evidence suggests a context of immigrant cultivators new to the Colorado Plateau, struggling to

---

[6] Also of great interest is Luiseño *humáhma-š* 'worthless, nothing, nonsense, bogus, invalid, ridiculous, absurd, wrong' — a semantic reversal from the Hopi and Nahuatl meanings of 'sacred, prudent', etc.

survive there, obtaining information about local flora and fauna from indigenous hunter-gatherers, and in turn sharing their knowledge of maize cultivation. Although initially only the WBM II groups cultivated maize, by about 2500 years ago the EBM II cultivate also. The linguistic evidence for this exchange,[7] summarized in (12-15) and (16-24), is discussed in detail in Hill (2007) and complete argumentation and sources can be found there.

The first set of items, that I believe were loaned from PNUA into PKT, are shown in (12-15). I give the KT reflexes; the NUA reflexes can be found in (1-9) above. For the KT forms, where Whorf and Trager (1937) or Davis (1989) give reconstructions, these are listed, but I also give reconstructions following the proposals by Hale (1962, 1967) where there is enough KT material, in my view, to take this step. In these examples, if Hale actually proposed a reconstruction, this is given with a full citation.

(12)   PNUA *ɨya* 'to plant' (see example (9)); PKT *ʔia* 'corn' (Davis 1989:363); *ʔV_g* in Hale's system): Northern Tiwa ʔia and Southern Tiwa ʔie; cf. Taos ʔia-ʔane 'corn' (from ʔia-ʔia-ne, where -ne is a noun class suffix), Southern Tiwa ie-mapa-ru 'corn-ear.of.corn-noun.class, cotton-wrapped corn ear bundle', ie-tainin 'corn people'; Kiowa ʔé: 'corn', e.g., (a) ʔé: 'duoplural' of the following two forms, ʔé:-gɔ́ 'fruit, seed' (singular) and ʔé:-bɔ́ 'fruit, vegetable, edible seed, loaf of bread, bread' (with variant inverse suffix); (b) ʔé:-tʰáttɔ̀ 'grain of corn' (singular), ʔé:-tʰâl 'grain of corn, ear of corn, plant of corn' (duoplural); (c) ʔé:-góp 'corn plant, corn stalk'; (d) ʔé:-k'óp 'to plant'

(13)   PNUA *kuma* 'corn' (see example (7)); PKT *kʰə (Whorf & Trager 1937:621, No. 21), *kʰu̧, *kʰə 'corn, seed' (Davis 1989:370): Arizona Tewa (AZT) kʰu̧lu̧ŋ 'corn',[8] Rio Grande Tewa (RGT) kʰu̧(ŋ) 'corn, corn-cob'; Taos xə (W&T 1937:621, given without gloss); Picuris xəʔene 'seed'; RGT kʰe 'grains'; AZT kʰili 'grain, corn grain'

(14)   PNUA *paʔca* 'corn kernel, hominy' (see example (3)); PKT *p'əa 'fresh corn' (Davis 1989:369); *p'V_s* in Hale's system: Taos (Northern Tiwa) p'ɨa 'corn'; Picuris (Northern Tiwa) p'ù- 'corn in field'; Isleta (Southern Tiwa) p'a 'fresh corn', p'ɨ 'green corn (on cob)'; Jemez p'ò: 'green corn, corn on cob'; RGT p'è: 'fresh corn'; Kiowa p'ɔ́:gyá 'young, immature, green'

---

[7] I thank Laurel Watkins for checking the KT materials and for providing lexical material from her own collections and from handwritten notes developed by Ken Hale.
[8] The incremented -IV- in AZT is a regular feature of this language (see correspondence sets in Kroskrity 1993:229-236)

(15)   PNUA *soŋo 'corn by-products' (see example (2)); PKT *sV 'grass, grass seed' (in Hale's system): Taos *(p'ǫ̀n)-ɬi* 'pasture grass'; Isleta ɬi 'grass, hay', *ɬị-(ta)* 'wheat'; Jemez *tʸị́:* 'grass'; Kiowa *són* 'grass'[9]

   In PKT, the items in (12-15) are all very short words — in fact, on the Hale reconstruction the only genuinely reconstructed element is the initial consonant. On this evidence alone, we should perhaps attribute these resemblances to chance.[10] However, the case for identifying these as loans from PNUA is enhanced by another set of resemblances between PKT and PNUA in words for important economic plants and game animals of the Colorado Plateau. These words are all restricted to NUA within UA. Examples (19) and (21) have possible morphological analyses in KT, but not in NUA, suggesting that if these are loans, they are from PKT into PNUA. The plants are all either restricted to, or much more widely distributed and important on, the Colorado Plateau as compared to the deserts to the south. These novel economic plants would be crucial to the survival of immigrant cultivators in a context where their maize yields were probably drastically reduced compared to those they had achieved at lower altitudes.

(16)   PNUA *tɨpat 'pinyon pine, pinyon nut'; PKT *t'ou (Davis 1989:370), *t'V₂ in Hale's system

(17)   PNUA *kʷinV- ~ kʷiyV 'oak spp.'; PKT *kʷę 'oak, hard' (Davis 1989:371), *kʷV₃ 'oak, hard material' (Hale 1967:116)

(18)   PNUA *si:wi 'Wild onion'; PKT *sV₉(wV) in Hale's system: Taos *ɬíw-*; Isleta ɬiw; RGT *si* 'wild onion, onion', AZT *siʔu* 'Allium recurvatum, wild onion' ; Jemez *tʸíwé* 'onion'; Kiowa *sôl* (singular), *sô:tɔ̀* (inverse) 'wild onion'

(19)   PNUA *yampa 'Carum gairdneri'; RGT *nam-pʰu* 'earth-swelling, potato' where Tewa *nam* 'earth' < PKT *dam

(20)   PNUA *siko 'Calochortus spp., sego lily'; RGT *sægobe* 'domestic potato, white-flowered plant with small edible tubers'

(21)   PNUA *siban-pV 'Chrysothamnus spp., rabbit brush'; possibly PKT *sV-pʰV₃-pʰV 'rain-cloud-Chrysothamnus, rain-cloud-plant'

---

[9] The loan of this word may reflect the use of the sweet stalks of corn as a food source, which Smalley and Blake (2003) have suggested may have been important in the early history of maize domestication.

[10] Although these resemblances would constitute a fairly high percentage of reconstructible maize vocabulary, which for the major Mesoamerican languages ranges from 11 (for Otomanguean) to 17 (for Mayan), with 12 for Uto-Aztecan and 13 for Mixe-Zoquean (Hill 2006)

(22)   PNUA **tɨhɨ-* 'deer'; PKT **tə* 'elk' (Davis 1989:369), **tV₃* 'elk' in Hale's system

(23)   PNUA **tɨhɨnV-* 'pronghorn'; PKT **t'V₂* 'pronghorn' (Hale 1962, 1967)[11]

(24)   PNUA **pa:ʔa-ta* 'mountain sheep'; PKT **pe̜* 'deer' (Davis 1989:368), **pˌV₃* in Hale's system

3. The Otomanguean Connection

Some of the PUA maize vocabulary listed in (1-9) may be borrowed from Western Otomanguean, at a stage no later than Proto-Oto-Chinantecan (POCh). Kaufman's (1990) breakup date for Western Otomanguean, 4500 years ago, is close to Hale's (1958-59) oldest UA separation date of 4733. Kaufman locates POCh in the highlands of west-central Mexico, in a crescent from Morelos through Toluca to Querétaro. This is an excellent candidate region for the location of PUA, which I have already proposed originated in northwest Mesoamerica. This region is largely pine-forested highlands, with the same flora and fauna, at the generic level, that Fowler (1983) reconstructed for a PUA homeland in the Gila River uplands.

Campbell (1979:949) suggested that Uto-Aztecan ***sunu* 'corn' is 'almost certainly a loan from Otomanguean.' Such a loan must be into PUA, since, as shown in (1) above, ***sunu* reconstructs to the protolanguage. Campbell's source is the Proto-Otomanguean (POM) form seen in (25), as reconstructed by Rensch and Kaufman.[12]

(25)   a. ***se(n)* (Rensch 1976, #285) 'ear of corn, corncob, masa, corn flour'
        b. ***sa(aʔ)ai(n)* 'ear of corn' (Kaufman 1990)

Additional similarities between Otomanguean and PUA can be identified. Taube (2000) observed a set of iconographic connections linking maize to two of the most important Mesoamerican prestige goods, greenstone and iridescent green quetzal feathers. An obvious metaphoric link between maize, jadeite, and quetzal feathers is the color green. Within both PUA and POM, the words for 'corn' and 'green' as well as green things like grass, leaves, and willow trees, resemble one another. This is seen in (26) and (27). Furthermore, we can see that across the two families, the words are also resemblant. There is no linguistic evidence of this kind of metaphoric link except in Uto-Aztecan and Otomanguean. In the other Mesoamerican families, both present-day and proto-language words for 'corn' and 'green/grass/leaf/etc.' are entirely distinct.

---

[11] 'Pronghorn' and 'deer' may be related words; however the full cognate sets look quite different from one another (see Hill 2007).
[12] Rensch gives no POM glosses; the glosses given here are drawn from the meanings that Rensch gives for cognates in the daughter languages.

(26)   PUA words for 'corn' and 'green'
         a. **sunu 'corn ear, maize'; **suu- : NA šiwi- 'green, jade, turquoise'
         b. **sono 'maize byproducts such as cobs, leaves, cane'; **so- : in 'grass'
         throughout family; NA soso:wik 'something green, raw'
         c. *saki 'parched corn, popcorn'; **sa- : PNUA *sakwa 'green, glue, color
         of turquoise', PUA **sawa 'leaf'; PUA **saka 'willow, grass'

(27)   POM words for 'corn' and 'green'
         a. **se(n) (Rensch 1976, #285) 'ear of corn, corncob, masa, corn flour';
         **se(n)$^{1/2}$ 'grass, hay' (Rensch 1976, #272)
         b. **sa(aʔ)ai(n) 'ear of corn' (Kaufman 1990); **sa(n) 'green, raw'
         (Rensch 1976, #303); **(n)sa 'green' (Kaufman 1990) (Suárez (1980:59)
         reconstructs **Ysa)

So far I have shown only corn words with initial *s in PUA and POM. How-
ever, in both proto-languages, alongside the words for 'corn' and 'green' with
initial *s, there are also words for 'corn' and 'green' with initial *kʷ or *ku
(simply *k in the Uto-Aztecan form for 'green'). These are seen in (28) and (29).

(28)   PUA words for 'corn' and 'green' in initial *ku, *k : **ku:mi/u 'to eat
         food that comes in little pieces, especially corn and popcorn; corn' (in
         PNUA only); *kan- 'willow' (PNUA only): Numic *kahna-, HO qahavi,
         Tübatulabal ha:-l, Cahuilla qá:nki-š

(29)   POM words for 'corn' and 'green' in initial *kʷ : **kʷe 'corn, ear of corn,
         masa, atole, corn kernels' (Rensch 1976, #177), **kʷau 'corn' (Kaufman
         1990); **kʷe 'green, blue, raw' (Rensch 1976, #174) / **w(y)e7 'green,
         blue' (Kaufman 1990) (but note Proto-Popoloca *šę ~ kwhę7; Proto-
         Otopame *poe-th in support of Rensch's initial stop); POM *kʷa 'bush,
         leaf, forage, etc.'

If these resemblances are the result of contact, the initial consonant alternation
*s ~ *kʷ locates their origin in Otomanguean, where such alternations among
initial consonants are broadly productive throughout the lexicon for Proto-
Otomanguean and several subfamilies (Bartholemew 1965, Gudschinsky 1959,
Longacre 1957, Rensch 1976, Suárez 1980). Rensch (1976:31-34) proposed six
sets of consonant alternations for Proto-Otomanguean; of interest here is *kʷ ~ *y
~ *s. The Otomanguean 'corn/green' words do not have any examples of initial
*y, but they attest **kʷ ~ **s in pairs like *se(n) ~*kʷe 'corn' and *sa(n) 'green'
~ *kʷa 'bush, leaf, forage, etc.' seen in (27) and (29). Among the various Oto-
manguean consonant alternations, the *kʷ ~ *s alternation does not reconstruct
for the ancestor of Oto-Pamean, the most northerly subgroup within Otoman-
guean. Chinantecan does preserve the relevant etyma with reflexes of initial *kʷ

(Kaufman 1990:103) and shows the *k^w* ~ *s* alternation (Rensch 1976:335 (n. 14)). Thus, if PUA words with alternating *s* and *k* are in fact borrowed from Otomanguean, this borrowing could not date later than the POCh stage, and would place PUA well within the boundaries of Mesoamerica, no further north than approximately Queretaro, ruling out a northern homeland.

4.   Conclusion

Linguistic evidence for the Mesoamerican cultivator origin of the UA peoples is not yet decisive. Questions remain about the details of phonological reconstruction of several items in the maize vocabulary, and better attestation of maize vocabulary in the northern languages is needed. Campbell (2003) suggests that parallel semantic changes — grass > corn, seed in general > corn seed, grass as building material and tinder > non-edible parts of maize plant, seed cake > corn cake — could have moved all of these items into the maize domain independently in many Uto-Aztecan languages after the breakup of the proto-language, as maize cultivation diffused through UA communities. Many conundrums remain for the PNUA-PKT connection, quite apart from the problems reconstructing PKT. For instance, PNUA exhibits *$ʔo:$*- 'mesquite', attested in all NUA groups except Hopi. 3500 years ago mesquites were probably not found on the Colorado Plateau east of the headwaters of the Virgin River (although they are found immediately south of the Rim in the drainages of the Verde and Salt Rivers), so the reconstruction of this word challenges the Four Corners location for PNUA suggested in Section 2. While the complex interlocking resemblances between Proto-Otomanguean and PUA maize/green words are suggestive, it remains possible that these are the result of coincidence, so it is important to find more resemblant forms attesting to the hypothesized episode of contact. Contributions and critique from experts on Otomanguean will be required to advance this line of research.

While the linguistic evidence has many problems and weaknesses, it is consistent with recent findings in archaeology and epigraphy. The appearance of maize in the U.S. Southwest only 1500 years after it is first identified in southern Mexico, and the cultural discontinuity between late-archaic hunter-gatherers and late-archaic cultivators in the Southwest, is consistent with a migration. Uto-Aztecans are the most obvious candidates for the agents of such a process. While the evidence from human genetics (e.g., Smith et al. 2000, Kemp 2006) is far from definitive, it does not contradict the hypotheses suggested here. Furthermore, linguistic and epigraphic evidence is accumulating for the antiquity of a Uto-Aztecan presence within Mesoamerica.

In spite of the many unanswered questions, the evidence identified thus far suggests that the hypothesis of Uto-Aztecan origins and prehistory is worth pursuing. By relocating the probable PUA homeland, the hypothesis especially invites the involvement of specialists in Mexican languages. Uto-Aztecan, rather than being a marginal latecomer to the linguistic prehistory of Mesoamerica, might turn out to be absolutely central to it, requiring us to rethink many long-established ideas about Mesoamerican linguistic and cultural dynamics. However

all this turns out, continuing to test these ideas should at the very least help us refine our understanding of this ancient and endlessly fascinating context.

References

Bartholomew, Doris. 1965. *The Reconstruction of Otopamean (Mexico)*. University of Chicago Ph.D. Dissertation (cited in Rensch 1976).

Bellwood, Peter. 1997 Prehistoric Cultural Explanations for Widespread Linguistic Families. In P. McConvell and N. Evans, eds., *Archaeology and Linguistics: Aboriginal Australia in Global Perspective*, 123–134. Melbourne: Oxford University Press.

Campbell, Lyle. 1979. Middle American Languages. In L. Campbell and M. Mithun, eds., *The Languages of Native America: Historical and Compatative Assessment*, 902–1000. Austin and London: University of Texas Press.

Campbell, Lyle. 2003. What Drives Linguistic Diversification and Language Spread? In P. Bellwood and C. Renfrew (eds.), *Examining the Farming/Language Dispersal Hypothesis*, 49–64. Cambridge: McDonald Institute for Archaeological Research.

Campbell, Lyle, Terrence Kaufman, and Thomas C. Smith-Stark. 1986. Meso-America as a Linguistic Area. *Language* 62:530–570.

Campbell, Lyle and Ronald A. Langacker. 1978. Proto-Aztecan Vowels. Parts I, II, III. *International Journal of American Linguistics* 44:85–102, 197–210, 262–279.

Charney, Jean. 1996. *Ute Dictionary*. Copy distributed by the author, from the library of William Bright.

Dakin, Karen. 2004. Nahuatl *-ka* Words: Evidence for a Proto-Uto-Aztecan Derivation. *STUF — Sprachtypologie und Universalienforschung/Language Typology and Universals* 57:6–22.

Dakin, Karen and Søren Wichmann. 2000 Cacao and Chocolate: A Uto-Aztecan Perspective. *Ancient Mesoamerica* 11:55–75.

Elliott, Eric Bryant. 1999. Dictionary of Rincón Luiseño. Ph.D. dissertation, University of California, San Diego.

Fowler, Catherine. 1972. Comparative Numic Ethnobiology. Ph.D. dissertation, University of Pittsburgh.

Fowler, Catherine. 1983. Lexical clues to Uto-Aztecan prehistory. *International Journal of American Linguistics* 49:224–257.

Givón, Talmy. 1979. *Ute Dictionary* (Preliminary Edition). Ignacio, CO: Ute Press.

Grofe, Michael J. 2006. The Nahua Origin of a Classic Period Maya Deity. Paper presented to the 105th Annual Meeting of the American Anthropological Association, San Jose, CA, November 18, 2006.

Gudschinsky, Sarah C. 1959. *Proto-Popolocan, A Comparative Study of Popolocan and Mixtecan.* Indiana University Publications in Anthropology and Linguistics, num. 5. Baltimore, MD: Waverly Press.

Hale, Kenneth L. 1958–59. Internal Diversity in Uto-Aztecan, I–II. *International Journal of American Linguistics* 24:101–7, 25:114–21.

Hill, Jane H. 2001. Proto-Uto-Aztecan: A Community of Cultivators in Central Mexico? *American Anthropologist* 103:913–34.

Hill, Jane H. 2003. Proto-Uto-Aztecan Cultivation and the Northern Devolution. In P. Bellwood and C. Renfrew, eds., *Examining the Farming/Language Dispersal Hypothesis*, 331–40. Cambridge: McDonald Institute for Archaeological Research.

Hill, Jane H. 2006. The historical linguistics of maize cultivation in Mesoamerica and North America. In J. E. Staller, R. H. Tykot, & B. F. Benz, eds., *Histories of Maize: Multidisciplinary Approaches to the Prehistory, Linguistics, Biogeography, Domestication, and Evolution of Maize*, 631–47. Amsterdam & Boston: Elsevier–Academic Press.

Hill, Jane H. 2007. Northern Uto-Aztecan and Kiowa-Tanoan: Evidence of Contact Between the Proto-languages? To appear in *International Journal of American Linguistics*.

Hill, Jane H. and Kenneth C. Hill. 2004. Word Order Type Change and the Penetration of Spanish *de* in Modern Nahuatl. *STUF — Sprachtypologie und Universalienforschung/Language Typology and Universals* 57:23–48.

Huckell, Bruce B. 2005. McEuen Cave and the Origin of Southwestern U.S. Agriculture. Paper presented at the 70th Annual Meeting of the Society for American Archaeology, Salt Lake City, Utah, March 31, 2005.

Huckell, Lisa W. 2005. The Palaeobotanical Record from McEuen Cave, East-central Arizona. Paper presented at the 70th Annual Meeting of the Society for American Archaeology, Salt Lake City, Utah, March 31, 2005.

Kemp, Brian M. 2006. Mesoamerica and Southwest Prehistory, and the Entrance of Humans into the Americas: Mitochondrial DNA Evidence. University of California, Davis Dissertation.

Kaufman, Terry. 1990. Early Otomanguean Homelands and Cultures: Some Premature Hypotheses. *University of Pittsburgh Working Papers in Linguistics* 1:91–136

Kroskrity, Paul V. 1993. *Language, History, and Identity: Ethnolinguistic Studies of the Arizona Tewa.* Tucson: University of Arizona Press.

Longacre, Robert E. 1957. *Proto-Mixtecan.* Indiana University Research Center in Anthropology, Folklore and Linguistics V.

Macri, Martha. 2000. T536 XO From Nahuatl xochitl 'flower'. *Glyphdwellers Report* 11.
(Electronic document at http://www.ucdavis.edu/NALC/glyphdwellers.html)

Macri, Martha. 2005. Nahua Loanwords from the Early Classic Period: Words for Cacao Preparation on a Rio Azul Ceramic Vessel. *Ancient Mesoamerica* 16:321–326.

Macri, Martha. 2006 Nahua Loanwords in Proto-Yucatecan. Paper presented to the 105th Annual Meeting of the American Anthropological Association, San Jose, CA, November 18, 2006.

Macri, Martha and Matthew G. Looper. 2003. Nahua in Ancient Mesoamerica: Evidence From Mayan Inscriptions. *Ancient Mesoamerica* 14:285–297.

Manaster Ramer, Alexis. 2000. Nahuatl (Aztec) Etymologies, I: *xīllantli* 'womb, belly; flank, side (of the body); chest'; *xīlōtl* 'tender ear of green maize before it solidifies'; *ēlōtl* 'a fresh young ear of maize with the kernels already formed, corn on the cob'. Ms. in possession of author.

Miller, Wick R. 1983. Uto-Aztecan Languages. In A. Ortiz, ed., *Handbook of North American Indians, Volume 10, Southwest*, pp. 113–124. Washington, DC: Smithsonian Institution.

Montes de Oca, Mercedes. 2001. Luiseño Couplets: A Naming Strategy. Paper presented at the Friends of Uto-Aztecan meeting, Santa Barbara, CA, July 9, 2001.

Rensch, Calvin R. 1976. *Comparative Otomanguean Phonology*. Language Science Monographs Volume 14. Bloomington: Indiana University.

Reséndez, Andrés and Brian Kemp. 2005. Genetics and the History of Latin America. *Hispanic American Historical Review* 85:283–98.

Robinson, Lila Wistrand and James Armagost. 1990. *Comanche Dictionary and Grammar*. Dallas, TX: Summer Institute of Linguistics.

Sahagún, Bernardino de. 1981. *Florentine Codex, General History of the Things of New Spain.* Book 2: *The Ceremonies*. Arthur J. O. Anderson & Charles E. Dibble, trs. Santa Fe, NM: The School of American Research and Salt Lake City, UT: The University of Utah.

Smalley, John and Michael Blake. 2003. Sweet Beginnings: Stalk Sugar and the Domestication of Maize. *Current Anthropology* 44:675–703.

Smith, D. G., J. Lorenz, B. K. Rolfs, R. L. Bettinger, B. Green, J. Eshleman, B. Schultz, and R. Malhi. 2000. Implications of the Distribution of Albumin Naskapi and Albumin Mexico for New World Prehistory. *American Journal of Physical Anthropology* 111:557–72.

Suárez, Jorge A. 1980. Review of Comparative Otomanguean Phonology (Rensch). *International Journal of American Linguistics* 46:49-54.

Taube, Karl. 2000. Lightning Celts and Corn Fetishes: The Formative Olmec and the Development of Maize Symbolism in Mesoamerica and the American Southwest. In J. Clark and M. Pye, eds., *Olmec Art and Archaeology*, 297–337. Washington D.C. and New Haven CT: National Gallery of Art/Yale University Press.

Thiel, J. Homer and Jonathan A. Mabry, eds. 2006. *Rio Nuevo Archaeology 2000-2003: Investigations at the San Agustin Mission and Mission Gardens, Tucson Presidio, Tucson Pressed Brick Company, and Clearwater Site*. Technical Report No. 2004–11. Tucson, AZ: Desert Archaeology, Inc.

Vásquez Soto, Verónica. 2001. Cora Clause Structure. Paper presented at the 28th Annual Meeting of the Friends of Uto-Aztecan, Santa Barbara, CA July 8, 2001.

Villavicencio, Frida. 2006. *P'orhépecha kaso sïrátahenkwa: Desarrollo del sistema de casos del purépecha.* México: CIESAS/El Colegio de México, Ediciones de Casa Chata.

Voegelin, C. F. 1958. Working Dictionary of Tübatulabal. *International Journal of American Linguistics* 24:221–228.

Wills, W. H. 1995. Archaic Foraging and the Beginning of Food Production in the American Southwest. In T. D. Price and A. B. Gebauer, eds., *Last Hunters, First Farmers: New Perspectives on the Prehistoric Transition to Agriculture*, 215–242. Santa Fe, New Mexico: School of American Research.

Jane H. Hill
Department of Anthropology
University of Arizona
P.O. Box 210030
Tucson, AZ 85721-0300

jhill@email.arizona.edu

Comparative Correlatives – The Case of German

STEFAN HUBER
University of South Florida, Tampa

0.　　Introduction

Comparative correlatives (CCs), i.e. constructions such as the ones in (1), have recently gained increased linguistic attention (cf. the contributions by Beck 1997, Culicover and Jackendoff 1999, Roehrs, Sprouse, and Wermter 2002, den Dikken 2005, Taylor 2006 and others). An obvious feature of CCs is their two-partite structure. In English, these two components are encoded as *the*-clauses containing comparative phrases. In accordance with Culicover and Jackendoff 1999 (= CJ), I will name these parts C_1 and C_2. A related construction type with the inverted order and a somewhat modified morphological make-up will be called CC':

(1)　　a.　CC:　　$[_{C1}$ The more you eat], $[_{C2}$ the fatter you get].
　　　　b.　CC':　$[_{C2}$ You get fatter],　　$[_{C1}$ the more you eat.]

The occurrence of CCs and CC's has been attested cross-linguistically (cf. den Dikken 2005, Taylor 2006). German, too, displays these two types of constructions (cf. Roehrs, Sprouse, and Wermter 2002 = RSW). (2) is the translation of the English examples in (1):

(2)　　a.　CC:　$[_{C1}$ Je　mehr du　　isst], $[_{C2}$ desto　dicker wirst　du].
　　　　　　　　　　the more you　eat　　　　the　　fatter　get　　you
　　　　b.　CC':　$[_{C2}$ Du　　wirst　umso/desto　dicker], $[_{C1}$ je　mehr du　　isst].
　　　　　　　　　　you　get　　the　　　　　fatter　　　　the more you　eat

In this paper, I aim to address the semantics and the syntax of the German constructions anew, showing that two popular claims cannot be upheld. More specifically, I will show that (i) from a semantic perspective, CCs cannot be likened to conditional sentences (as suggested by Beck 1997, Taylor 2006), and that (ii) from a syntactic perspective, German CCs can be derived under standard (generative) assumptions, without claiming that they have to be acquired as "constructions" (as suggested for the English equivalents by CJ). The paper is organized accordingly, i.e. in section 1, the meaning of CCs will be discussed, whereas the

220

morphosyntactic properties of the German constructions will be examined in section 2.

Two general properties of CCs, which play a major role for their understanding, deserve to be mentioned at the very outset: First, note that the comparative phrases in both clauses are fronted in CCs (cf. examples 1a, 2a). This is not so in CC's (cf. 1b, 2b). Second, both comparatives are "implicit" (or "incremental"), i.e. a comparative *than-* or *als*-phrase is considered odd:[1]

(3)   a.   The more you eat ($^?$ than Peter), the fatter you get ($^?$ than him).
       b.   Je mehr du isst ($^?$ als Peter), desto dicker wirst du ($^?$ als er).

Instead, we find a comparison of two correspondingly increasing degrees of properties $x_1, x_2, \ldots x_n$ and $y_1, y_2, \ldots y_n$ at different ordered points of reference $p_1, p_2, \ldots p_n$ (cf. Beck 1997). This observation will become crucial later on (see 1.3.).

1.   The Interpretation of CCs
1.1.   CCs – Correlative or Conditional?
Regarding the meaning of CCs, one finds two contrasting accounts in the literature, which I will label here the "correlative approach" and the "conditional approach", respectively.

As we will see in section 2, den Dikken (2005) strongly advocates a (universal) correlative syntactic structure for CCs. Since he also claims that CCs are properly derived sentences, it follows naturally that the correlative syntactic form corresponds to a correlative reading. Hence, a paraphrase for sentences such as (1a) should be the following:

(4)   To the extent that you eat increasingly more, to that extent you get increasingly fatter.

Beck (1997:257ff.), however, explicitly rejects such a ("functional") account. In her view, a paraphrase like (4) implies two monotonously increasing degrees. Showing potential truth conditions (6) for an example of her own (5), she demonstrates that a parallel development with CCs cannot always be observed:

(5)   Letztes Jahr hat Luise bei den Punktspielen umso mehr
          last   year has L.   at   the league-games the   more
          Tore   erzielt, je wärmer es war.[2]
          goals   scored the warmer it   was.
          'In last year's games, Luise scored more points the warmer it was.'

---

[1] Some speakers (including myself) accept these comparative phrases. Nevertheless, the primary meaning of sentences such as (3) does not focus on the comparison between *you* and *Peter*.
[2] Beck's example (1997:261) is a CC'.

(6)   Game   Temperature   Number of Goals

Game	Temperature	Number of Goals
1	15° C	1
2	20° C	2
3	25° C	3
4	25° C	4
5	25° C	4
6	30° C	5
7	35° C	7

The compared properties are the increasing temperature and the increasing amount of goals scored by Luise. The crucial point is the difference between the games 3 and 4, where the temperature did not rise, but the number of goals did. Since the truth conditions in (6) are compatible with the CC in (5), it appears that a correlative paraphrase along the lines of (4) is incorrect.

Instead, Beck favors an approach, in which the proposition of C_1 is treated as a condition for the proposition of C_2, rendering the following paraphrase for a sentence like (1a):

(7)   If you eat more and more, you get fatter and fatter.
          (roughly formalized: $\forall p_1 p_2$ [you eat more in p_2 than in p_1]
                                    $\Rightarrow$ [you get fatter in p_2 than in p_1])

Among the empirical arguments that support her proposal, Beck mentions the licensing of so-called "donkey anaphors", i.e. pronominal anaphors in the main clause that can be bound by referential (de dicto) expressions situated in the conditional clause. This type of anaphors can be found in conditionals and CCs alike:

(8)   a. Je mehr Anna einen Esel$_i$ liebt,   desto mehr schlägt sie ihn$_i$.
           the more Anna a   donkey loves the   more beats she him
           'The more Anna loves a donkey, the more she beats it.'
       b. Wenn Anna einen Esel$_i$ liebt, (dann) schlägt sie ihn$_i$.
           if   Anna a   donkey loves, then   beats   she him.
           'If Anna loves a donkey, she beats it.'

Beck's approach has been very influential and almost all recent contributions adopt some version of it. However, on a closer view the conditional reading of CCs seems problematic: Note, e.g., that the purported similarity between conditionals and CCs should also lead to a parallel regarding the distribution of negative polarity items. This prediction is not borne out, i.e. CCs do not allow for NPIs:

(9)   a. The more you (*ever) eat, the fatter you get.
       b. If you (ever) eat more and more, you get fatter and fatter.

Also, true conditionality always requires some degree of potentiality and/or irreality. As becomes evident from CCs in the past, no such potential or irreal reading is required:

(10)   The more Peter ate, the fatter he got.

This sentence states that Peter in fact did eat more and more and that he did get fatter and fatter. There is no doubt about this, i.e. the proposition is presented as a real event.

Thus, also the conditional approach makes the wrong predictions and must be met with some skepticism.

1.2.   A Modified Correlative Account

In order to understand the semantic nature of CCs, it is imperative to recall that they contain incremental comparatives, in which increasing degrees of a property are compared to each other at subsequent points of reference. It is noteworthy, however, that incremental comparatives do not necessarily have to obey strict monotony. For instance, the basic meaning of a sentence like (11a) is something like 'throughout the week in question, the temperature rose continuously.' It is not required, though, that the growth in temperature be monotonous, as the suitable truth conditions in (11b) demonstrate:

(11)   a.   That week, it got hotter and hotter.

b.	Day	Temperature
	1	10º C
	2	15º C
	3	20º C
	4	25º C
	5	25º C / 22 º C
	6	30º C
	7	35º C

The important point is the difference between the days 4 and 5: Not only does the temperature not have to rise between day 4 and day 5 (i.e. it can stay at 25º C), but it can even decrease (i.e. lower to 22º C) without making the conditions incompatible with the statement. Thus, incremental comparatives do not require a monotonous growth, as long as the outcome shows a higher degree than the original one and a certain gradual growth can be ascertained.

Returning to CCs, then, Beck's argument against the correlative approach (see above) can be easily refuted: Containing incremental comparatives, CCs do not have to imply parallel increases in both properties and a correlative approach can still be upheld. This is indeed what I would like to suggest here: The "correlation"

is there, although it might be vague. For an example such as (1a), probably the best paraphrase includes the conjunction *as* (as suggest by CJ), cf. (12).[3]

(12)   As you eat more and more, you get fatter.

Finally, the ostensible argument in favor of a conditional reading, i.e. the licensing of donkey anaphors, is compatible with true correlative constructions as well:

(13)   Was Anna einem Freund$_i$ erzählte, sagte   sie ihm$_i$ im Vertrauen.
         what Anna a   friend   told,   said   she him   in confidence
         'What Anna told a friend, she told him in confidence.'

Therefore, it is plausible to maintain a correlative semantic analysis of CCs.

2.   The Syntax of CCs

Within the syntactic investigations of CCs, the main question is whether they are constructions *sui generis* that must be acquired separately (CJ) or whether they can be derived without any stipulative ado (den Dikken 2005, Taylor 2006). In this section, I will show that German CCs are "well-behaved", i.e. that they follow regular syntactic mechanisms and do not have to be learned. It is questionable, though, if this analysis can be extended to English as there are crucial differences between the morphosyntactic properties of CCs in these two languages.

2.1.   The Controversy – "Bad" vs. "Good" CCs

In their provocative work from 1997, CJ suggest that CCs should be treated as syntactically coordinated but semantically subordinated (i.e. conditional) structures. In claiming this, they build on a previous hypothesis about constructions whose syntactic structure strongly diverges from their interpretation (Culicover and Jackendoff 1997). In particular, syntactic coordinations can imply conditional readings, as CJ demonstrate in examples like (14):

(14)   a.   You drink another glass and I'll leave.
         b.   If you drink another glass, I'll leave.

---

[3] Other, more temporally colored paraphrases (i a,b) are a bit misleading since the points of reference do not have to be ordered points of time but could also be different settings or varying individuals from the same set (ii; cf. Beck 1997):
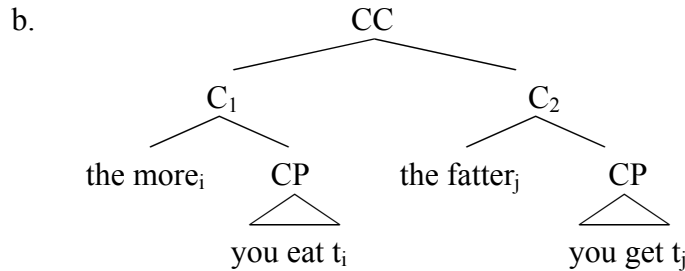(i)   a.[?]   You eat more and more, and (simultaneously) you get fatter.
          b.[??] While you eat more, you get fatter.
(ii)   The slimier an advocate is, the more money he makes.
Example (ii) can have a temporal interpretation, in which the same (generic) lawyer increases in sliminess. However, the comparison of various lawyers is equally plausible.

Thus, although not morphosyntactically encoded as such, (14a) can be paraphrased by the conditional sentence (14b). This is the very structure CJ ascribe to CCs:

(15)   a.   The more you eat, the fatter you get.

        b.

$$CC$$

with C_1 dominating the more_i and a CP ($\text{you eat } t_i$), and C_2 dominating the fatter_j and a CP ($\text{you get } t_j$).

CJ corroborate their claim by showing that although C_2 in some respects behaves like a main clause and C_1 as a subordinate clause – for example, subjects of tag questions can only be borrowed from C_2, not C_1 (16) –, extractions are possible out of both clauses (17), which makes a paratactic approach plausible:

(16)   a.   [$_{C1}$ The more we eat], [$_{C2}$ the angrier you get], don't you?
        b.   [$_{C1}$ The more we eat], [$_{C2}$ the angrier you get], * don't we?

(17)   a.   [$_{C1}$The sooner you solve this problem], [$_{C2}$ the more easily you'll satisfy the folks up at corporate headquarters].
        b.   This is the sort of problem which$_i$ [$_{C1}$ the sooner you solve t_i], [$_{C2}$ the more easily you'll satisfy the folks up at headquarters].
        c.   The folks up at headquarters are the sort of people who$_i$ [$_{C1}$ the sooner you solve this problem], [$_{C2}$ the more easily you'll satisfy t_i].

CJ also present some further interesting observations: First, it is possible to insert *that* into both C_1 and C_2:[4]

(18)   The more (that) you eat, the fatter (that) you get.

This observation lends one to believe that English CCs are structures comprising of two subordinate clauses. Another odd property is that the comparative phrase in C_2 must be moved to the front for no obvious reason. In light of these peculiarities, CJ claim that CCs have to be learned as separate constructions.
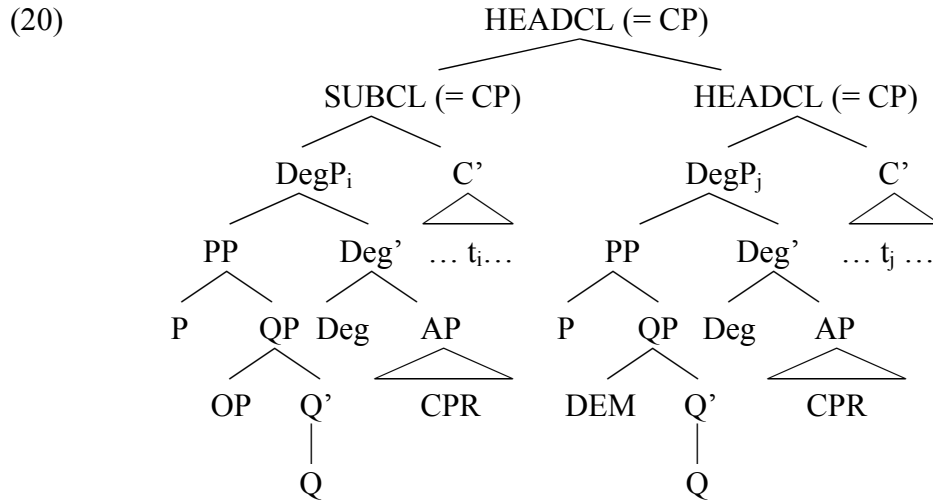
    Den Dikken (2005) rejects CJ's paratactic account, claiming that the extraction data in (18) could also be used as an argument against a coordination account: True coordinations should only allow across-the-board (ATB) extractions,

---

[4] As CJ and Taylor (2006) note, speakers vary considerably as to the various realizations of *that*-enhanced CCs. However, most speakers seem to be able to accept at least one occurrence of *that*.

and not individual ones from either clause. In fact, den Dikken (2005:504) shows that ATB movement is compatible with CCs (19c).

(19) a. a person who [the more you meet t],   [the more you hate him]
      b. a person who [the more you meet him], [the more you hate t]
      c. a person who [the more you meet t],   [the more you hate t]

In general, den Dikken takes a contrary stand regarding the syntax of CCs: Not only does he assume that (English) CCs can be acquired in compliance with standard assumptions, but he also proposes a universal structure for CCs, as illustrated in (20). The basic assumption is that CCs follow a correlative operator-demonstrative pattern (OP-DEM), according to Srivastav's (1991) analysis:

(20)

```
                              HEADCL (= CP)
                     /                          \
            SUBCL (= CP)                    HEADCL (= CP)
           /          \                    /            \
       DegP_i          C'              DegP_j            C'
       /   \          /\               /   \            /\
     PP    Deg'   … t_i …            PP    Deg'     … t_j …
    /  \   /  \                     /  \   /  \
   P   QP Deg  AP                  P   QP Deg  AP
       / \     /\                     / \      /\
     OP  Q'   CPR                   DEM  Q'   CPR
         |                               |
         Q                               Q
```

Den Dikken (2005:516) tries to "flesh out" his theoretical proposal with a wide array of different (stages of) languages, e.g. Archaic and Modern English, German and Dutch:

(21)   [DegP [PP P [QP OP/DEM Q]] [Deg' Deg [AP CPR]]]

		P	OP/DEM	Q	CPR
a.	Archaic English	by	how/so	much	the
b.	Modern English	–	Ø	Ø	the
c.	German	–	je	Ø	Ø
		GEN[5]	des	Ø	-to
		um	so	Ø	Ø
d.	Dutch	GEN	des	Ø	te
		–	hoe	Ø	Ø

---

[5] By using the term *GEN*, den Dikken apparently assumes covert prepositions assigning specific (lexical) cases. For details see den Dikken (2005:516ff.).

Den Dikken's ambitions to show that CCs are "well-behaved", however, face some empirical problems: Structure (20) does not explain the obligatory fronting of the comparative phrase in C_2, nor does it allow for a possible *that*-insertion into C_2 (the "head" clause in den Dikken's theory). Finally, the option of extraction out of either clause, including ATB extraction, cannot be accounted for, since the Spec,CP positions of both clauses are occupied by DegPs, which should prevent successive-cyclic movement. [6]

2.2. CCs in German
2.2.1. Some Basic Facts

(High) German CCs and CC's come in a variety of morphological shapes, which are illustrated in (22): [7]

(22)   a. $[_{C1}$ Je/$^?$umso/$^{??}$desto mehr du isst], $[_{C2}$ desto/umso/$^?$je dicker wirst du].
                the   more you eat   the   fatter get you.

        b. $[_{C2}$ Du wirst umso/$^?$desto/$^?$je dicker], $[_{C1}$ je/$^?$umso/$^{??}$desto mehr du isst].
                you get the   fatter   the   more you eat.

Note that the comparative phrases in C_1 are preferably introduced by *je*. However, at least *umso* may be used as well, whereas *desto* seems to be more restricted. In C_2 all these items appear to be acceptable (pace RSW).

From a morphosyntactic point of view, C_1 is clearly marked as a subordinate clause as it displays V-last. This fact becomes particularly evident when using complex tense forms, such as the future tense in (23): The auxiliary appears clause-finally after the dependent infinitive.

(23)   Je mehr du   essen wirst, $[_{EP}$ desto   dicker wirst   du werden].
            the more you   eat   will   the   fatter will   you get
            'The more you will eat, the fatter you will grow.'

C_2, on the other hand shows the verb in a raised position: In CC's we find V_2, in CCs V_3 (cf. the positions of *wirst* in 22a vs. 22b). C_1 as a whole is placed in the extraposition field in CC's, which is the position after the final verbal element in

---

[6] Taylor (2006), too, tries to derive the structure of CCs from basic minimalist assumptions. In order to account for the extraction data, she applies a new type of movement ("sideward movement", cf. Nunes 2004) and analyzes *the* as a complementizer (head). However, besides the fact that "sideward movement", i.e. the parallel merging of trees, is utterly stipulative, Taylor cannot avoid den Dikken's problem either, namely the question how two subordinate clauses can be merged into one (main) sentence.

[7] In my native dialect Swabian, which is spoken in Southwest Germany, two subordinate (i.e. V-last) *je*-clauses can be used to form a CC. The additional complementizer *dass* can be inserted into either clause. For a sentence like (1a), this renders the following output:

(i)   Je   mehr (dass) da isch,   je   dicker   (dass) da   wirsch.
              the more that   you eat   the fatter   that   you become

the main clause (marked EP in 23). In CCs, on the other hand, C_1 seems to be in a left-dislocated position, triggering V_3. Note that V_2 in CCs is not licit (24a). In this fronted position, C_1 must be followed by the comparative phrase of C_2; nothing else can occur in this position (24b):

(24)   a. Je mehr du isst, {*wirst} desto dicker {wirst} du.
          b. *Je mehr du isst, du wirst umso dicker.

These facts, i.e. the rather rigid word order of German CCs, need a proper explanation, which will ensue in section 2.2.

    Extractions are never allowed out of C_1, but only out of C_2 (and in this case only out of C_2 of CC's; contra den Dikken 2005):[8]

(25)   a. Je   öfter   du   Schokolade isst,
             the   more-often you chocolate   eat,
             desto mehr bedauerst du   dein Gewicht.
             the   more   regret   you your weight
             'The more often you eat chocolate, the more you regret your weight.'
        b. * … Schokolade, die   je öfter   du   *t* isst,
             chocolate   which the more-often you   eat
             du   desto mehr dein Gewicht bedauerst
             you the   more   your weight   regret
        c. [#] … dein Gewicht, das, je öfter   du   Schokolade isst,
             your weight   which the more-often you chocolate   eat
             du   desto mehr *t*   bedauerst[9]
             you the   more   regret

(26)   a. Du   bedauerst dein Gewicht umso mehr,
             you regret   your weight the   more
             je   öfter   du   Schokolade isst.
             the   more-often you chocolate   eat

---

[8] Den Dikken tries to show that also in German CCs, movement out of C_2 is possible and uses the following example:

(i)   [?(?)] ein Sänger, *den*, [$_{C1}$je öfter   du ihn   hörst],
           a   singer whom the more-often you him   hear
           [$_{C2}$du *t* desto mehr treffen möchtest]
              you   the   more meet would-like
           'a singer, who the more you hear him, the more you would like to meet'
However, such a sentence can only be realized if the *je*-clause is isolated by intonational breaks and if it has a focus-background domain of its own, i.e. if it forms a parenthesis. Thus, (i) is basically an example of a truncated CC only consisting of the main clause (C_2). RSW (2002) run into a similar problem.

[9] The pound sign indicates that the sentence is only acceptable if C_1 is analyzed as a parenthesis (see the preceding footnote).

b. … dein Gewicht, das du umso mehr *t* bedauerst,
   your weight which you the more regret
   je öfter du Schokolade isst
   the more-often you chocolate eat

c.* … Schokolade, die du umso mehr dein Gewicht bedauerst,
   chocolate which you the more your weight regret
   je öfter du *t* isst
   the more-often you eat

Finally *dass* can usually not be inserted into CCs. While some speakers accept *dass* in C_1, it is not allowed in C_2, mainly because *dass* competes with the finite verb for this position. The overt realization of a complementizer would trigger V-last, which generally is not accepted:

(27)   * Je mehr ($^{\%}$*dass*) du isst, desto dicker {**dass du wirst*} {^{OK} wirst du}.

This all makes the analysis of C_2 as the main clause plausible, whereas C_2 must be regarded as a subordinate clause.

2.2.2. The Correlative Nature of *je* and *umso/desto*
To explain the syntactic oddity of German CCs, recall the correlative reading of CCs suggested above. At this point, I would like to propose that this interpretation is triggered by the morphosyntactic components. I will follow Srivastav (1991) and den Dikken (2005) in assuming that CCs contain demonstratives that correspond to (relative) *wh*-clauses, as is the case with other correlatives:

(28)   a. Ich mache das so$_{DEM}$, [wie ich es immer gemacht habe]$_{WH}$.
           I do that so as I it always done have
           'I will do it the way I always did.'
        b. Ich arbeite so lange$_{DEM}$, [wie ich muss]$_{WH}$.
           I work so long as I must.
           'I will work as along as I have to.'

Moreover, in accordance with den Dikken (2005), I will analyze the comparative phrase in C_2 as the demonstrative part, while C_1 represents the *wh*-part. As RSW and den Dikken correctly point out, *umso* and *desto* (and probably *je*) are prepositional phrases. In these phrases a preposition and a clause-substituting element have been merged. The clause they substitute is C_1.

Now note that in German, complement clauses of prepositions can never be preposition-adjacent. Instead, they must be replaced by pro-forms, e.g. *da*-compounds. The clause itself is normally extraposed:

(29) *Maria besteht *auf/^{OK}darauf dass Helga morgen abspült.[10]
      Maria insists   on   on-it   that Helga tomorrow dish-washes
      'Maria insists that Helga do the dishes tomorrow.'

If the complement clause is to be fronted, the pro-form must be right- or left-adjacent to the moved element:

(30) a. * [Dass Maria morgen abspült],   besteht Helga darauf.
      b. Darauf, [dass Maria morgen abspült], besteht Helga.
      c. [Dass Maria morgen abspült], darauf   besteht Helga.

Now, assuming that *umso/desto* are similar prepositional pro-forms, we expect the same distributions. This prediction is borne out:

(31) a. * Du wirst um [$_{C1}$ je mehr du isst] dicker.
      b. Du wirst umso/desto dicker, [$_{C1}$ je mehr du ist].
      c. * [$_{C1}$ Je mehr du isst], wirst du umso/desto dicker.
      d. Umso/desto dicker, [$_{C1}$ je mehr du isst], wirst du.
      e. [$_{C1}$ Je mehr du isst], umso/desto dicker wirst du.

Thus, "regular" German CCs display some sort of a left-dislocation. I suggest the following structural analysis:

(32)
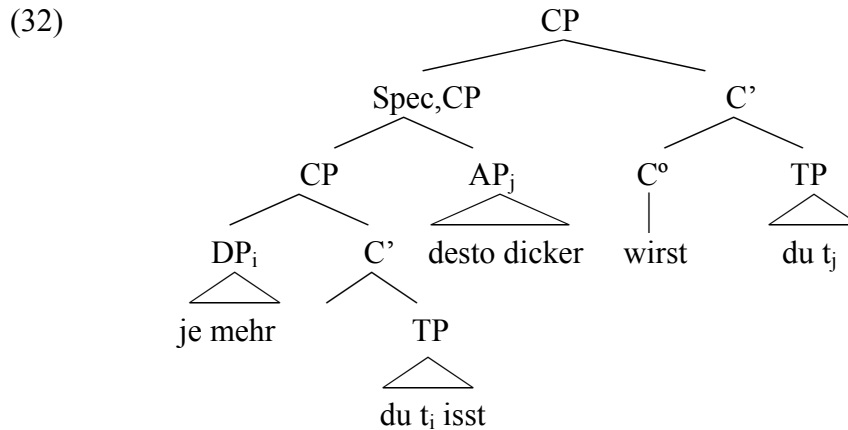
Note the right-adjunction of the *umso/desto*-phrase to the highest Spec,CP. In this way a c-commanding relationship between the "head" AP and C_1 can be maintained, which is meant to reflect the "relative" character of the structure.

---

[10] Example taken from RSW (2002).

3.   Concluding Remarks

It seems, then, that German CCs are truly well-behaved and follow the usual pattern of constructions with prepositional complement clauses.

The question is whether such an analysis is suitable for English as well. One possible argument favoring such a view might be obtained from the fact that C_2 cannot host *the* in CC's (33). If one adopts the idea that *the* in English is a prepositional element such as *umso* and *desto* in German, this ban could be construed as a parallel to the ban on overt prepositions if their complements are clauses (34).

(33)   [$_{C2}$ You get (* the) fatter] [$_{C1}$ the more you eat].

(34)   a.   I insist ($^{??/}$* on) that you stay here.
        b.   I insist on you staying here.
        c.   I insist on that.

But one would still have to explain the extraction data and the possible *that*-insertion into C_2.

Thus, if there is any conclusion to be drawn after this short exercise then it is that some languages realize CCs according to their regular syntactic mechanisms (German), whereas others do not (English).

References

Beck, Sigrid. 1997. On the Semantics of Comparative Conditionals. *Linguistics and Philosophy* 20: 229-271.

Culicover, Peter, and Ray Jackendoff. 1997. Semantic Subordination despite Syntactic Coordination. *Linguistic Inquiry* 28.2: 195-271.

Culicover, Peter, and Ray Jackendoff (CJ). 1999. The view from the periphery: The English comparative correlative. *Linguistic Inquiry* 30: 543-71.

Dikken, Marcel den. 2005. Comparative Correlatives Comparatively. *Linguistic Inquiry* 36.4: 497-532.

Nunes, Jairo. 2004. *Linearization of chains and sideward movement*. Cambridge, Mass. MIT Press Monograph.

Roehrs, Dorian, Rex Sprouse, and Joachim Wermter (RSW). 2002. The difference between *desto* and *umso*: Some mysteries of the German comparative correlative. *Interdisciplinary Journal for Germanic Linguistics and Semiotic Analysis* 7: 15-25.

Srivastav, Veneeta. 1991. The syntax and semantics of correlatives. *Natural Language and Linguistic Theory* 9: 637-686.

Taylor, Heather Lee. 2006. Out on Good Syntactic Behavior. Ms. University of Maryland.

From Exclusive Particle to Adversative Conjunction:
A Study on the Particle *tasol* in Tok Pisin

AYA INOUE
University of Hawai'i at Mānoa

0.   Introduction

In this paper[1], I show how fine grained pragmatic analysis provides tools for diachronic semantic change and grammaticalization. By featurising pragmatic functions we could better explain semantic change and even make predictions about possible grammaticalization path. I discuss how reanalysis motivated by both syntactic and pragmatic factors plays a role in semantic extension in pidgin/creole languages. The empirical base for this study is synchronic use of the multifunctional particle *tasol* in Tok Pisin, one of the Melanesian pidgins spoken in Papua New Guinea. The functional range of the particle *tasol* covers that of exclusive particle (such as Eng. *only*) and adversative conjunction (such as Eng. *but*). Such a close interrelationship between exclusive particle and adversative conjunction is often observed cross-linguistically. Employing a set of semantic/pragmatic features, I show that the two functions overlap extensively.

1.   Current Usage of *tasol* in Tok Pisin
1.1.   Data

Tok Pisin is an English based pidgin/creole spoken in Papua New Guinea. According to Mühlhäusler et al. (2003), the early form of Tok Pisin was brought to Papua New Guinea by thousands of Bismarck Islanders who worked in the German plantation of Samoa, and who had contact with already existed plantation pidgin spoken by Kiribati workers in the later 1900. Tok Pisin spread back to the villages from the plantation since 1900, and by the late 1920s Tok Pisin had established itself firmly in most areas of New Guinea. As Mühlhäusler et al. (2003) states, "Tok Pisin is a typical example of the fact that pidgin and creole languages have a faster rate of development than 'normal languages'" (Mühlhäusler et al. 2003:5). My

---

[1] This paper is based on the M. A. thesis submitted to the Graduate School of Arts and Sciences at The University of Tokyo in 1998.

analysis is based on the 517 tokens of the particle *tasol* from two published sources. Dutton's (1985) *A New Course in Tok Pisin* (NCTP) is a 400-page textbook with fourteen accompanying tapes. Verhaar's (1995) *Towards a Reference Grammar of Tok Pisin* (TRG) contains numerous examples drawn from a written corpus of 1.6 million words of Tok Pisin.

1.2.   Current Usage of *tasol*

In the Jacaranda dictionary by Mihalic (1971), the word *tasol* is referred to as being derived from English expression 'that's all'. The dictionary divided the usage of *tasol* into two categories: the first usage is translated as *only*, *alone*, *just*. The second usage is translated as *but*, and *however*. In 'Tok Pisin-English vocabulary' which is an appendix in Dutton (1985), *tasol* is glossed as – *but*, *just*, and *only*. These descriptions reveal that both exclusive function and adversative functions are salient in the use of *tasol*, and not that one of them is rather a marginal usage.

Based on 517 tokens, I recognized four major functions in the current usages of *tasol*. First, the expression 'em tasol' is used just like its original use in English 'that's all.'

(1)   Man: Em olgeta kago bilong yu?
                 'Is that all your baggage?'

         Tuptup:Em *tasol*.
                 'Yes'   [NCTP:128]

Em in this expression is a demonstrative pronoun in Tok Pisin. Therefore, notice that 'that's all' is already grammaticalized as it comes after the demonstrative pronoun in Tok Pisin. 'Em tasol' is frequently used at the end of the discourse as in example (2).

(2)   [After talking about the accident]
         Maurice:… Orait mi kam nau mi go bam antap long en. Em *tasol*.
         'And so I came and ran into him. That's all.'   [NCTP:287]

Secondly, *tasol* is used as an exclusive particle that typically modifies the arguments preceding *tasol*. Note that the place of the modifier is different from that in English where the word *only* usually comes before the elements that are modified.

(3)   Yupela i mas yusim Tok Inglis *tasol*.
         'You have to use only English.'   [NCTP:206]

(4)   Dicks: Hamas tok ples yu save long en?
                   'How many languages do you know?'

        Rebecca: Mi save long tripela tok ples *tasol*. Em Inglis, Pidgin na tok ples
                   Bukawa.
                   'I know only three: English, Tok Pisin and Bukawa.' [NCTP:21]

According to Sankoff (1993, 1999), the use of the postposed particles (focus, intensifier, quantifier, reflexives) in Tok Pisin involves one of the most un-English elements. Sankoff (1999:11) notes many Oceanic languages apparently emphasize or focus through the use of postposed affixes or particles.

   The third function is the one as an emphatic particle. In example (5), *tasol* modifies *nau* to emphasize the freshness of the fish that she sells.

(5)   Ol i nupela. Nau *tasol* ol i hukim.
        'They are fresh. They've just been caught.'   [NCTP:30]

(6)   Em i slip long bet na i guria *tasol*.
        'He lies on his bed and just shivers (all the time).'   [TRG:37]

Interestingly, *tasol* sometimes co-occurs with concessive construction as in examples (7) and (8). In Tok Pisin, clauses preceded by *maski* express the idea of concessive structures such as English clauses that start with *although* or *no matter*. Dutton (1985) says that if one wants to strengthen the idea of *even if* or *although*, one merely adds *tasol* to the beginning of the following clause.

(7)   Maski em i hatwok tru, *tasol* em i no save kwiktaim.
        'Even if he works hard at it he won't learn quickly.'   [NCTP:280]

(8)   Maski Papua Niu Gini i kisim independens pinis, *tasol* Austrelia i mas
        halivim em yet.
        'Australia must continue to help Papua New Guinea even though she is
        now independent.   [NCTP:281]

   Finally, there are many examples of *tasol* as adversative conjunction as in (9) and (10).

(9)   A Sanmik i gutpela *tasol* Sanmik em i swit tumas.
        'Ah, San Miguel is good but it is too sweet.'   [NCTP:44]

(10)   Em i laik maritim em *tasol* papa bilong em i no laikim man ya.
        'She wants to marry him but her father doesn't like him.'   [NCTP:181]

In example (9), the conjunction *tasol* combines proposition A (San Miguel is good) and proposition B (it is too sweet) and implicates that there is a contrast between these two propositions. According to Dutton (1985:30), younger better educated speakers are now using *bat* for this usage.

These four functions generally show different syntactic preferences. In idiomatic expression, *tasol* always comes after *em*. *Tasol* as an exclusive particle likes to have an NP in its scope, and emphatic particle likes to have a VP. But exclusive *tasol* sometimes have a VP and emphatic *tasol* could have a NP as well. Emphatic *tasol* could have a clause as its scope when it co-occurs with concessive marker *maski*. *Tasol* as an adversative conjunction takes clause in the scope of *tasol*. NP, VP and Clause respectively correspond to argument, predicate, proposition in the prepositional structure. These are not the extensive lists of all the use of *tasol*, but *tasol* always occurs after its scope. Because of that, unless *tasol* is used in idiomatic expression 'em tasol' or as an exclusive particle modifying NP in subject position, the scope of *tasol* could be difficult to tell.

Below are the example sentences with *tasol* when used as exclusive particle, emphatic particle and adversative conjunction. The scope of *tasol* is marked in square brackets.

Tasol as an exclusive particle (Eng. *only*)
(3)   Yupela i mas yusim [Tok Inglis] *tasol*.
        'You have to use only English.'   [NCTP:206]

Tasol as an emphatic particle (Eng. *just*)
(6)   Em i slip long bet na [i guria] *tasol*.
        'He lies on his bed and just shivers (all the time).'   [TRG:37]

Tasol as an adversative conjunction (Eng. *but*)
(9)   A [Sanmik i gutpela] *tasol* Sanmik em i swit tumas.
        'Ah, San Miguel is good but it is too sweet.'   [NCTP:44]

In example (3), 'tok inglis' is the scope for the exclusive particle *tasol*. Tok inglis is a NP and an argument in the prepositional structure. In example (6), 'i guria' is the scope for emphatic particle *tasol*. It is a verb phrase and serves as a predicate in the prepositional structure. In example (9), 'sanmik i gutpela' is in the scope of *tasol* as an adversative conjunction. 'Sanmikj i gutpela' is a clause and an independent proposition. Notice that the scope of *tasol* varies in association with function difference.

2.   Pragmatic Analysis and Possible Grammaticalization Path
It would be straight forward to discuss lexical polysemy of the particle *tasol*. However, I would emphasize the importance of pragmatic analysis in examination

of conjunctions. According to Sweetser (1990);

> …at least for some conjunctions, a lexical-polysemy analysis is implausible and that pragmatic ambiguity should be taken into consideration when one tries to seize the whole and precise meaning of any given word. (Sweetser 1990)

As it is insufficient to consider semantics to look at synchronic use of the word, in a similar way, it is also important to look at fine grained pragmatics for diachronic account of meaning change.

As tools for the semantic and pragmatic analysis in order to capture the overlap of the senses, I introduce four sets of features that are listed in (11). I employed the first three sets of features from Numata (1986), and I added the last feature.

(11)   4 sets of semantic/pragmatic features (Numata 1986)

1. Focused vs. non-focused
2. Affirmation vs. negation
3. Assertion vs. implication
4. The finite set of values

As for the contrast between focused vs. non-focused, *focused* means focus values for the proposition related, and *non-focused* means complement of the focus value. Affirmation vs. negation means affirmative or negative in relation to the proposition obtained by satisfying the open sentences with a certain variable. Although I use the terms such as assertion and implication here, they simply mean whether they are clearly expressed or not, and the judgment about the status of implication such as entailment, implicature, conventional implicature, and/or presupposition often discussed in the field of pragmatics will be outside the consideration of this paper. The finite set of values is those which are under consideration as values for a propositional scheme. Example (12) is a simple English sentence provided to show how these sets of features are applied.

(12)   I wrote *only* my family name.
        Assertion: Affirmation of focused
                    (I wrote my family name)
        Implication: Negation of non-focused.
                    (I didn't write other names of mine)
                 Existence of a finite set of values.
                    (There exists a certain set of names that I could have written)

For the sentence 'I wrote only my family name', assertion is the affirmation of the

focused value 'my family name' in relation to the proposition 'I wrote X.' Implication is negation of non-focused value, which is all the other names such as 'first name middle name, and maiden name' in terms of the proposition 'I wrote X.' Another implication is that there exists a certain set of names which I could have written including my family name that could be consist of first name, family name, and middle name, for instance.

Now I show some cases where the function of *tasol* is ambiguous between two functions using the above explained four set of features. These cases reveal the extensive overlap in semantic/pragmatic functions among different senses of *tasol*. I consider that such syntactically ambiguous, semantic and pragmatically similar forms as an environment where reanalysis may occur. In example (6), *tasol* is ambiguous and can be interpreted either as an exclusive particle or an emphatic particle.

(6)   Em i slip long bet na i guria *tasol*.
        'He lies on his bed and just shivers (all the time).'   [TRG:37]

Exclusive particle reading
        Assertion: Affirmation of focused
                        (he carried out an action of shivering)
        Implication: Negation of non-focused
                        (he didn't carry out many alternative actions which he
                        could have selected)
                        A finite set of values (all the alternative actions)

Emphatic particle reading
        Assertion: Affirmation of focused
                        (he carried out an action of shivering)

In the exclusive particle reading, assertion would be that he carried out an action of shivering, and implication would be he didn't carry out many alternative actions which he could have selected. In the emphatic particle reading, there is only an assertion 'he carried out an action of shivering' as a pragmatic function.

Example (13) demonstrates the ambiguity between exclusive particle and adversative conjunction.

(13)   Aiwara i ken kam daun long nait *tasol* long moningtaim bai yu amamas
        gen.
        'Perhaps you weep during the night, but in the morning you will be joyful
        again.'

Exclusive particle reading
        Assertion: Affirmation of focused
                        (you will weep during the night)
        Implication: Negation of non-focused
                        (you will not weep during other time)
                        A finite set of values (a certain time period)

Adversative conjunction reading
        Assertion: Affirmation of focused
                        (you will weep during the night)
        Assertion: Negation of non-focused
                        (you will be joyful again in the morning)
        Implication: A finite set of values (a certain time period)

If we read the *tasol* as an exclusive particle, the assertion and implication would be as follows. In exclusive reading, assertion is affirmation of focused (you will weep during the night). Implications are the negation of non-focused (you will not weep during other time), and a finite set of values (a certain time period). In adversative conjunction reading of *tasol*, both affirmation of focused and negation of non-focused values are assertions, and a finite set of values is implication.

    What do these ambiguous sentences suggest in terms of the polysemy of *tasol*? I assume that these ambiguous sentences are showing the possible path for the diachronic semantic change. I propose that the exclusive particle became reanalyzable as an adversative conjunction via a stage as an emphatic particle. This hypothesis is based on what the synchronic pragmatic ambiguity shows us about the diachronic path of semantic expansion. Such semantic link among an exclusive particle and an emphatic particle and an adversative conjunction is not only found in Tok Pisin. There is a cross-linguistic link between these three functions. English *only* and French *seulement* also have these three functions and typically have the similar syntactic preferences. Below is an example of English *only*. In exclusive function, the scope of only tends to be NP. In emphatic function, the scope of only is VP. In adversative function, the scope of only must be a clause.

(12)   I wrote *only* my family name. (Exclusive particle)
        Scope of only → my family name (NP)

(14)   It will *only* make her mad. (Emphatic particle)
        Scope of only → make her mad (VP)

(15)   I'd love to go, *only* I'm too busy. (Adversative conjunction)
        Scope of only → I'm too busy (Clause)

The same observation is obtained in French examples. In French *seulement* examples, exclusive adverb *seulement* likes to have NP as scope. In emphatic function, the scope of *seulement* is VP. And when it is used as adversative conjunction, the scope is a clause.

(16) Il boit *seulement* de l'eau. 'He drinks only water.'
Scope → de l'eau (NP)

(17) Il vient *seulement* d'arriver. 'He just arrived.'
Scope → vient d'arriver (VP)

(18) Tu peux aller le voir, *seulement* ne reste pas trop longtemps.
'You may go to see him, but don't stay too long.'
Scope → ne reste pas trop longtemps (Clause)

Why is it that in many languages the same word such as *tasol*, *only*, *seulement* functions as 'exclusive particle', 'emphatic particle' and 'adversative' functions? Why identical syntactic preference of scope is seen in several languages? It has been pointed out that there is a close inter-relationship between exclusive particles and adversative conjunctions (König 1988, 1991). However, this inter-relationship has been neither described nor discussed precisely.

Table 1 below compares the pragmatic functions of three functions of *tasol*. The three functions have overlapping semantic/pragmatic features. More specifically, between exclusive particle and adversative conjunctions, the only difference is whether the negation of non-focused part is an assertion or an implication. I consider that such semantic/pragmatic overlap reinforce the reanalysis of the structures and eventually promote semantic extension together with the syntactic ambiguity.

(19)   Table 1: Semantic/pragmatic overlap among three functions of *tasol*

	Exclusive particle	Emphatic particle	Adversative conj.
Affirmation of focused	Assertion	Assertion	Assertion
Negation of non-focused	Implication	N/A	Assertion
The finite set of values	Implication	N/A	Implication

Figure 1 below is the representation of the pragmatic overlap of the word *tasol*. This diagram is employed to visually illustrate semantic overlap and pragmatic relations among the senses of *tasol*. Three circles stand for adversative conjunction, emphatic particle, and exclusive particle respectively. Transparent part means it is

an implication rather than an assertion. The space that are filled with lines are for the asserted part. When there is something focused (smaller circle) and there is a finite set of values (the bigger circle) for the items that can be focused, we tend to capture the contrast between the focused part and non-focused part. This diagram reveals the parallel of logical domain and spatial cognition to capture the focused vs. non-focused feature. When a finite set of values (big circle) exists, exclusive affirmation of focused part (small circle) always entails the negation of the non-focused part (small inner gray circle) and the two parts contrast each other.

(20)   Figure 1: Diagram of the pragmatic overlap among the senses of *tasol*
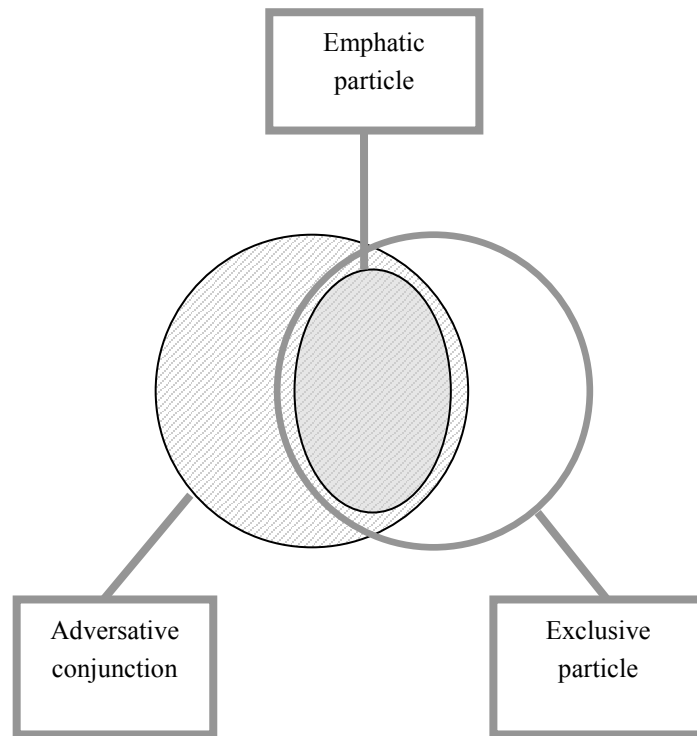
My argument in the present paper is based on the synchronic multifunctionality of the particle *tasol*. Several aspects of the particle *tasol* are remained to be studied in the future. Close examination of attestations of the word *tasol* in early texts of Tok Pisin should support the empirical evidence. Possible influence from substrate languages (Tolai and other Austronesian languages of the South-Western Pacific) and possible influence from the other superstrate language (German) should also be examined. For this point, according to Heine and Kuteva (2005), Jenkins (2002) discussed the case of *tasol* in Tok Pisin as an instance of replica grammaticalization whereby the use of restrictive adverbs is extended to serve as adversative clause markers. Replica grammaticalization is a grammaticalization process that is

transferred from the model language to the replica language. Heine and Kuteva (2005) argued that the Austronesian language Tigak has functionally equivalent form *kisang* which served as a model of Tok Pisin *tasol*. Although the role of substrate language may be playing an important role, the pragmatic analysis still provides the explanation why certain structures are more often replicated than others.

3. Conclusion

I argue that fine grained pragmatic analysis explains possible path for diachronic semantic change (exclusive particle to adversative conjunction). Based on the synchronic multifunctionality of the particle *tasol*, I propose the reanalysis scenario about the multifunctionality of the particle *tasol* in Tok Pisin. It was both syntactic and pragmatic factors that motivate reanalysis. The first is reanalysis of sentence boundaries according to ambiguity of the scope. Since the particle *tasol* is post-posed to its scope, in certain contexts, the scope could be ambiguous whether it is argument, predicates or proposition. The other factor is pragmatic: in certain contexts, the pragmatic function of exclusive expressions and adversative expressions can be evaluated as equivalent. This is due to the fact that where a finite set of values is implicated, exclusive affirmation of focused values always entails the negation of non-focused values.

List of abbreviations

Eng.	English	NP	Noun Phrase
VP	Verb Phrase	Conj.	Conjunction

Acknowledgements

References

Dutton, Tom. 1985. *A New Course in Tok Pisin (New Guinea Pidgin)*. Pacific Linguistic Series D-No.67, Canberra: The Australian National University.

Heine, Bernd, and Tania Kuteva. 2005. *Language Contact and Grammatical Change*. Cambridge: Cambridge University Press.

Jenkins, Rebecca S. 2000. *Language Contact and Composite Structures in New Ireland, Papua New Guinea*. Ph.D. diss., University of South Carolina. Published 2005, Dallas, Texas: SIL International.

König, Ekkehard. 1988. Concessive Connective and Concessive Sentences: Cross-Linguistic Regularities and Pragmatic Principles. In J. Hawkins, ed. *Explaining Language Universals*. Oxford: Blackwell.

König, Ekkehard. 1991. *The Meaning of Focus Particles: A Comparative Perspective.* London: Routledge.

Mihalic, Francis, S.V.D. 1971. *The Jacaranda Dictionary and Grammar of Melanesian Pidgin*. Qeensland: Jacaranda Press.

Mühlhäusler, Peter, Thomas E. Dutton, and Suzanne Romaine. 2003. *Tok Pisin Texts: From the Beginning to the Present*. Amsterdam/Philadelphia: John Benjamins.

Numata, Yoshiko. 1986. Toritate-shi [Focus particles]. In K. Okutsu et al. eds. *Iwayuru nihongo joshi no kenkyuu*. Tokyo: Bonjin-sha.

Sankoff, Gillian. 1993. Focus in Tok Pisin. In F. Byrne and D. Winford, eds., *Focus and Grammatical Relations in Creole Languages*. Amsterdam/Philadelphia: John Benjamins.

Sankoff, Gillian. 1999. *The evolution of focus particles and related morphemes in Tok Pisin, Solomons Island Pidgin and Bislama.* Workshop on Culture and Communicative Practice Special session: Continuity and Innovation in Pidgin and Creole Languages. Northwestern University.

Sweetser, Eve E. 1990. *From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structures*. Cambridge: Cambridge University Press.

Verhaar, John W. M. 1995. *Toward a Reference Grammar of Tok Pisin: An Experiment in Corpus Linguistics.* Honolulu: University of Hawai'i Press.

Aya Inoue
Department of Linguistics
University of Hawai'i at Mānoa
569 Moore Hall
1890 East-West Road
Honolulu, HI 96822

ainoue@hawaii.edu

Variation in Voice Onset Time of Stops: The Case of Chinese Korean[*]

WENHUA JIN
University of Texas at Arlington

0.   Introduction

Despite the abundant research on the Korean language spoken in the Republic of Korea, other Korean varieties spoken in the rest part of the world, especially those spoken in China (hence Chinese Korean), have not received much attention in the linguistic literature.

Considering the relative geographic isolation of the Korean communities in China from Korea and the overall differences in the linguistic, political, and socio-cultural atmosphere between China and Korea, studies on Chinese Korean may reveal important patterns about Korean language variation and change, and also about language variation and change in general under eastern context. As in the case of Brazilian Portuguese where Guy (1981) found that the language has acquired many unique characteristics so that today it is quite different from European Portuguese in many aspects, Chinese Korean, after more than a century's acculturation with the Chinese mainstream Han culture, may manifest independent patterns of variation and change. Alternatively, it is also possible that Chinese Korean undergoes similar patterns of variation and change as those of Korea due to various internal and external factors.

Indeed, as revealed in this study, Chinese Korean manifests similar diachronic shift in voice onset time (VOT) as Seoul Korean reported in Silva (2004, 2006). More specifically, this study on Chinese Korean stops indicates that while older people maintain clearer distinction in VOT to mark the three different types of stops, younger speakers born in 70s and 80s no longer mark the lax and aspirated stops with the difference in VOT. Instead, Fundamental Frequency (F0) and intensity build-up are consistently employed to implement the phonological distinction.

1.   Background
1.1.   The Korean Chinese
With about 2 million people, the Korean people living in China today form the thirteenth largest population among the 55 minorities in China. The majority live in the three northeastern provinces in China: Hēilóngjiāng, Jílín, and Liáoníng. They are immigrants or descendents of immigrants from the Korean Peninsula, who formed different *Chun* (village) according to their different hometown *Gwun* (county) on the Korean Peninsula. Thus, the original features of their dialects were often maintained in the relatively homogenous villages in China (Zhao and Xuan 1986).

However, the current situation of Chinese Korean is more complicated. Due to the political relationship with North Korea, which uses the variety spoken in Phyengyang as the standard, language policies by the Chinese government often followed those of the North Korea especially in the 1960s (Cui and Quan 1993). Also, with the development of modern transportation and economy, the former relatively stable population became more mobile. On one hand, there is language contact between Chinese and Korean, and on the other hand, there is dialect contact between different varieties of Korean, especially since China's reform and opening-up. Thus, today's Chinese Korean preserves some original Korean forms (Zhao and Xuan 1986), manifesting meanwhile some innovations that may be explainable in terms of internal variation or various levels of contact (Silva and Jin 2006).

1.2.   Related Studies on Korean VOT
Korean has been considered as typologically unique for its three-way-contrastive stop consonants: tense, lax, and aspirated. Studies on VOT of these stops of standard (Seoul) Korean suggest a diachronic shift in VOT values and a change in the phonological role played by VOT (Silva 2004, 2006). The landmark work of Lisker and Abramson (1964) is the first to reveal the existence of an overlap in VOT between tense and lax Korean stops, though they both can be distinguished from that of aspirated stops. This finding is confirmed in further studies by C-W Kim (1965), Han and Weitzman (1965), Han and Weitzman (1970), Abramson and Lisker (1971). Follow-up studies in the 90s by Silva (1992), Cho (1996), and Han (1996), however, show that the observed overlap has been replaced with a clear distinction in VOT with the lax stops being more aspirated, thus confirming the major role of VOT in marking the phonological distinction of the three types of stops. The most recent studies by Silva (2004, 2006) reveal that many Seoul Korean speakers born after 1965 neutralize the VOT differences between lax and aspirated stops.

Similar study on Chinese Korean, extremely scant as it is, reveals a different pattern of variation. Zheng and Li's (2005) investigation on six young Korean Chinese in Yánbiān University indicates a tendency of merging in VOT between lax and tense stops, though that of aspirated stops remains distinct from both lax and tense stops. If this is true, then the three-way distinction in Korean VOT is

shifting to a two-way distinction, albeit by two different paths: in Seoul Korean the merger is VOT between lax and aspirated stops while in Chinese Korean it is between the tense and lax stops.

Whether this VOT shift also occurs in other varieties of Chinese Korean among different generations remains a topic meriting further systematic study. Thus, the purpose of this study is to investigate the VOT in stops of Chinese Korean to capture and better understand the patterns of Korean language variation and change.

2.   Methodology
2.1.   Subjects
Subjects for this study are 22 native Chinese Korean speakers from the Korean community of Shěnyáng, China, ranging in age from 20 to 72, including 10 males and 12 females, with four people in each decade (two people for 60s). To avoid any potential variation due to dialect difference, only Phyengan dialect speakers were recruited through social networking approach. In demographic questionnaires, all the subjects self-claimed as speakers of Phyengan dialect with both parents being speakers of Phyengan dialect, and growing up in a community where Phyengan dialect dominated. They are all bilingual, speaking both Chinese and Korean. No subjects reported any difficulty in speech or hearing.

The subjects were asked to participate in an interview with the author for about one hour, which was recorded with a Dell laptop using Cool Edit 2000. An ATR20 Unidirectional Dynamic Microphone attached to the laptop was held by an assistant of the researcher at about 3cm under the chin of the subject. The recordings were saved as wave files for further acoustic analysis with PRAAT.

2.2.   Materials
The materials used here are a subset of the materials designed for a more comprehensive project. For this study, nine isolated three-syllable Korean words (Table (1)) were used with the nine target stops embedded in word initial position. Each of the target stop is immediately followed by the same vowel /a/. These three-syllable words were designed in the original project to be consistent with those three-syllable words where the behavior of the stops in real word-internal position is examined.

These words were printed in Korean script on a piece of paper mixed with other items for the larger project. Subjects were asked to read these words three times each at a normal, comfortable speed. For this study, the second readings were analyzed, yielding a total of 198 tokens.

2.3.   Data Measurement
Acoustic measurements in this study include four categories: VOT of the target stop, F0 onset and offset, intensity build-up and vowel length of the immediately following vowel after the target stop.

(1)   Target Words Employed in This Study[1]

Phonation Type	Place of Articulation		
	Labial	Alveolar	Velar
Lax	바가지 pa.ka.ci 'gourd'	다람쥐 ta.lam.cwi 'squirrel'	가죽신 ka.cwuk.sin 'leather shoes'
Tense	빠르다 ppa.lu.ta 'fast'	따진다 tta.cin.ta 'come unsewn'	까마귀 kka.ma.kwi 'crow'
Aspirated	파뿌리 pha.ppu.li 'shallot root'	타자기 tha.ca.ki 'typewriter'	카나다 kha.na.ta 'Canada'

      VOT was measured from the release point of stop closure to the point where the periodic striation and the first formant (F1) of the immediately following vowel start in the spectrogram. F0 onset was measured at the ending point of VOT, and F0 offset, at the point where the second formant (F2) sets off. Intensity build-up, defined here, is the measurement from the onset of voicing to the point of fullest development of amplitude in the wave form. In cases of uncertainty, intensity contour in the spectrogram was employed for reference. Vowel length was measured as the distance between onset of the voicing to the offset of F1 and F2 formants. All the measurements were subjected to statistical analysis with SPSS 13.0.

3.   Results
3.1.   Patterns of VOT
The examination on VOT values was conducted along two dimensions: place of articulation and phonation type. In terms of place of articulation, the mean VOT range has narrowed down over time.

      In Figure (2), VOT values show a general tendency to decrease over time in all the three places of articulation categories, as captured by the trend lines. However, the three parallel lines suggest that the relative distinction between the three categories is maintained, confirming previous understanding that VOT tends to increase as the point of articulation moves toward the posterior region of the oral cavity (Ladefoged 2003, Silva 2006).

      However, statistical analysis reveals that although the mean VOT values for labial and alveolar stops are not significant at 95% confidence interval (Mean$_{labial}$ VOT 50.0ms, Mean$_{alveolar}$ VOT 56.8ms), Mean$_{velar}$ (68.9ms) is significantly different from both of the former ($p<0.05$). This general pattern is maintained even when phonation types are taken into consideration. For example, mean VOT of /pp/ (14.1ms) is not significantly different from mean VOT of /tt/ (14.7ms), but

---

[1] Under Korean script are forms in Yale Romanization. The syllable boundaries are indicated by a period.

that of /kk/ (25.3ms) is significantly different from those of the former two. One minor exception, though, is mean VOT of /t^h/ is not significantly different form that of /k^h/.

(2)   Mean VOT Values for Different Places of Articulation (ms)
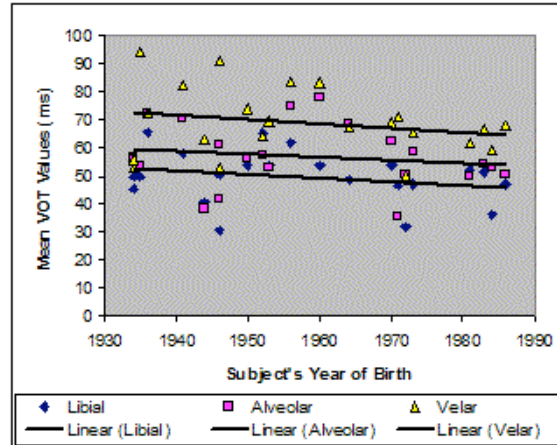
In terms of phonation type, similar shrinking pattern of VOT values was observed. As we see in Figure (3), the overall VOT range decreases for younger subjects. The lowest VOT value remains pretty much the same over time (around 15ms), but the highest VOT value has decreased from as high as 144.6ms for older speakers to as low as 72.1ms for younger speakers. Also, among the older participants, we see a little overlap between tense and lax stops, and greater overlap between lax and aspirated stops, but among younger participants, the overlap between lax and aspirated stops is substantial, with both being clearly distinct from tense stops. One young person, however, shows an overlap between tense and lax stops (see section 4).

(3)   Range of VOT Values for Different Phonation Types (ms)

249
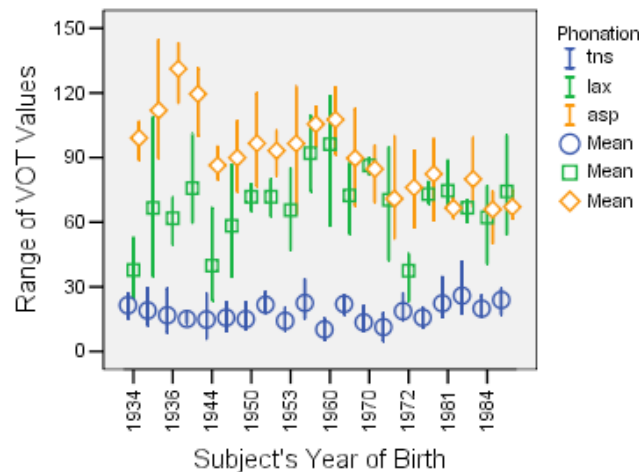
To better capture the apparent shift over time, mean VOT values of the three phonation types for each subject were calculated and plotted at a function of each subject's year of birth (Figure (4)). For older speakers, the mean VOT value for the three phonation types are clearly distinct, with aspirated stops having higher VOT values than lax stops, which in turn show higher VOT values than tense stops. However, for subjects born in and after 1970, we see the emerging of a different pattern where mean VOT values of lax stops are almost as high as or even higher than those of aspirated stops, and there is a substantial overlap between mean VOT values of these two categories.

As indicated by the trend lines, mean VOT values of aspirated stops have decreased over time, while those of lax stops have increased, and those of tense stops remain basically stable. Thus, the change is basically one in the relative difference in mean VOT values between lax and aspirated stops, hereafter referred to as 'delta VOT': $\Delta VOT = Mean\ VOT_{asp} - Mean\ VOT_{lax}$ (Silva 2006:293).

(4)   Mean VOT Values for Different Phonation Type (ms)   (5) Distribution of ΔVOT (ms)
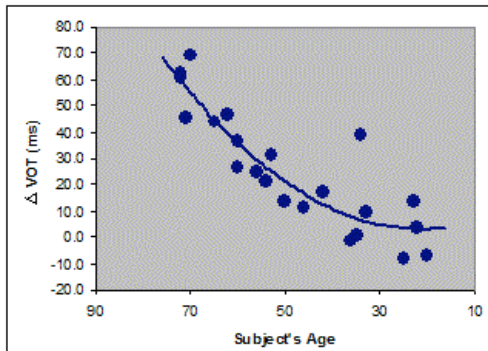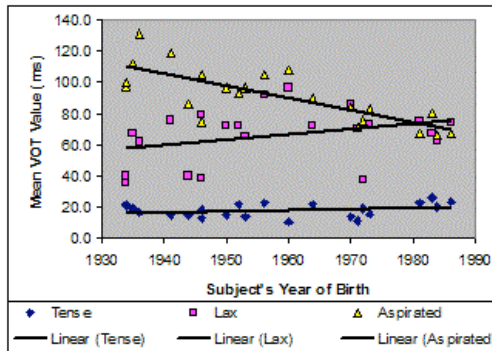
As illustrated in Figure (5), the general pattern observed here is that as subject's age gets younger, ΔVOT becomes lower. More specifically, the difference in mean VOT values between aspirated and lax stops produced by older speakers could be as high as about 70ms, which continuously decreases to around 15ms for middle aged people, reaching the lowest value in the young subjects' performance to negative values. The best fit curve for the data is Quadratic ($R^2 = 0.797$), indicating a non-linear relationship between ΔVOT and subjects' age. Further hierarchical cluster analysis on the data divides the subjects into two major groups: subjects born before 1970 form an older group and subjects born in and after 1970 form a younger group, which matches well with what we observed above in Figure 3 about the point where the new pattern emerges. One subject born after 1970, however, behaves like older group, while two subjects born before 1970 patterns like younger group (see section 4).

To examine the difference between the two groups, mean VOT of three phonation types were calculated for each group. As illustrated in Figure (6), in older group, mean VOT values are significantly different for all three phonation

types, while in younger group, although mean VOT values of tense stops are distinct from those of both lax and aspirated stops, no significant difference was observed between lax and aspirated stops (p>0.05), suggesting a merger in VOT values between these two categories.

(6)   Mean VOT Values for Older and Younger Groups
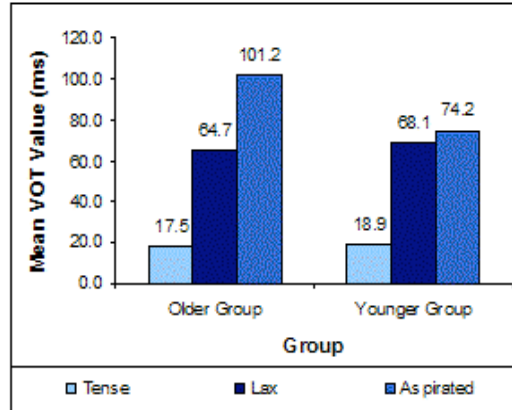
3.2.   Patterns of F0, Intensity Build-up, and Vowel Length

In searching for potential acoustic cues for marking the underlying contrastive stops, F0 onset and offset, intensity build-up, and vowel length were also examined in this study.

For the younger group, both F0 onset and offset values of the vowel immediately following the target stop are highest after aspirated stops ($Mean_{onset}$ 212Hz, $Mean_{offset}$ 196Hz), lowest after lax stops ($Mean_{onset}$ 159Hz, $Mean_{offset}$ 156Hz) and medium after tense stops ($Mean_{onset}$ 191Hz, $Mean_{offset}$ 186Hz). Similar findings were reported in previous studies on Seoul Korean speakers by Han and Weitzman (1970), Cho (1996), Han (1996), Silva (2004). Statistics analysis reveals a significant difference in F0 onset and offset values between after lax and after aspirated stops. The same pattern holds true for the older group. So throughout the data, F0 after aspirated stops constitute the highest register, while F0 after lax stops, the lowest register. As to F0 onset and offset after tense stops, for the younger group they are not significantly different from those after lax or after aspirated stops; for the older group, they are significantly different from those after lax stops, but not from those after aspirated stops.

In terms of intensity build-up, examination on the younger group shows that after aspirated stops, it takes shortest period of time (mean: 27ms) for the vowel to reach the fullest amplitude, while after lax stop, it takes much longer time (mean: 37ms), and the difference between the two time periods is statistically significant. After tense stops, it still takes significantly longer time (39ms) than after aspirated stops, but is not significantly different from that of after lax stops. Again, the same pattern is observed in the older group. Thus, throughout the data,

intensity build-up is fastest after aspirated stops and significantly slower after lax and tense stops, with no apparent change over time.

In terms of vowel length, for the older group, the vowel length after all the three categories are significantly different from each other, with the vowel length after aspirated stop being the shortest (61ms), that after tense stop the longest (126ms), and that after lax stop the medium (93ms). For the younger group, however, although the vowel after aspirated stop (62ms) is shorter than after lax vowel (73ms), they are not significantly different at 95% confidence interval, but they both are significantly shorter than the vowel after tense stop (105ms). Thus, vowel length does not provide itself as a consistent acoustic cue for the distinction of the underlying contrastive stops.[2]

4. Discussion

As early as in the 1960s, studies on Korean pointed out that VOT may well be the single most important measure for separating the three Korean stop categories (Lisker and Abramson 1964). Later studies in the 1990s (Silva 1992, Cho 1996, Han 1996) proved that VOT alone is sufficient to mark the distinction of the three phonation types of the stops. However, recent studies on Seoul Korean (Silva 2004, 2006) revealed a change in the role of VOT as the primary indicator, downgraded now to the secondary level with F0 being promoted to the primary level. Is this a unique phenomenon of Seoul Korean or is it that the Korean language as a whole is undergoing this change? Thus, studies on other Korean variety along the similar line may contribute to a better understanding of Korean language variation and change.

Acoustic and statistic analysis on the Chinese Korean data in this study reveals a diachronic shift in VOT values and a change in the role of VOT in separating the three stop categories in Chinese Korean. As illustrated in Figures (2) and (4) above, VOT values have shrunk over time both in terms of place of articulation and phonation types of the stops, though in the former case the distinction among the three categories are maintained while in the latter case there is a three to two-category VOT shift over time, i.e. while older people show clearer distinction in VOT values for the three phonation categories of stops, younger people born in and after 1970 manifest a merger in VOT values between aspirated and lax stops, suggesting that VOT alone may not be sufficient to mark the distinction of the stops. Further analysis shows that there may be several acoustic features that distinguish the different types of stops, and the relative importance of these features seems to vary from generation group to generation group. These features could be VOT, F0, intensity build-up, etc. For the older group under the current analysis, VOT plays the traditional primary role as documented in the literature; for the younger group, VOT still contributes to the distinction between tense stop and the other two categories, but there must be

---

[2] In this study, the consonant immediately following the vowel is not well controlled, which might contribute to the inconsistent conclusion about vowel length.

another dimension that works with VOT in order to completely distinguish the three categories, and that is to further separate lax stops from aspirated ones. As analyzed above, for the younger group, F0 and intensity build-up consistently mark the difference between lax and aspirated stops, but not between tense and lax stops, which is a perfect complement of the role of VOT. Thus, for the younger group, VOT no longer plays a major role in stop distinction.

This change in VOT was better captured in Figure (5): oldest subjects show the greatest gap in VOT values between lax and aspirated stops, and as the age cohort gets younger, the observed gap becomes smaller, reaching the lowest value for the youngest subjects. Will this trend continue with even younger people than the youngest subjects in this study? The answer is no. As indicated by the best fit quadratic line, ΔVOT for the youngest subjects in the study are stabilized around 0ms. Also, for the younger group, statistical analysis shows no correlation between ΔVOT and age, and every member of the group consistently show no significant VOT difference between lax and aspirated stops. Indeed, in another project of mine, six more subjects who are even younger show similar ΔVOT values as the youngest subjects under this analysis. Along a similar line, should more subjects be added who are older than the oldest subjects here, ΔVOT is not likely to go continuously higher and higher; rather ΔVOT will stabilize somewhere around the highest ΔVOT value under this analysis. Thus, with a little bit of imagination, we can see the observed quadratic line is a component of an s-shaped or z-shaped curve, which is often believed to be indicative of a language change in apparent time (Labov 1994, Guy 2003), with the assumption that different age groups available in the study reflect the language use of young adults of some time in the past.

Being the first systematic study on VOT of Chinese Korean, there is no previous data available for the current analysis to compare to, thus examination of the real time change is not possible at this stage. However, as been verified by many studies on other languages (e.g. Guy et al. 1986, Bailey et al. 1991), we believe this apparent time VOT shift phenomenon reflects the real time course of change in Chinese Korean. A good piece of side evidence, though, might be the similar VOT change pattern observed in Seoul Korean.

As discussed above, similar neutralization of VOT values was reported in the behavior of Seoul Korean speakers living in Dallas area of the United States (Silva 2004, 2006). The fact that the same pattern being observed in Chinese Korean, in a geographically remote area with completely different political and cultural settings may suggest that Korean language is undergoing this internal change. Meanwhile, we also noticed the existence of a different VOT pattern among young Chinese Korean speakers in Yánbiān area in China. Thus we have available three different locations where three different varieties of Korean show two different VOT patterns as illustrated in Figure (7):

(7)   VOT Patterns Observed in Young Speakers from Three Places[3]
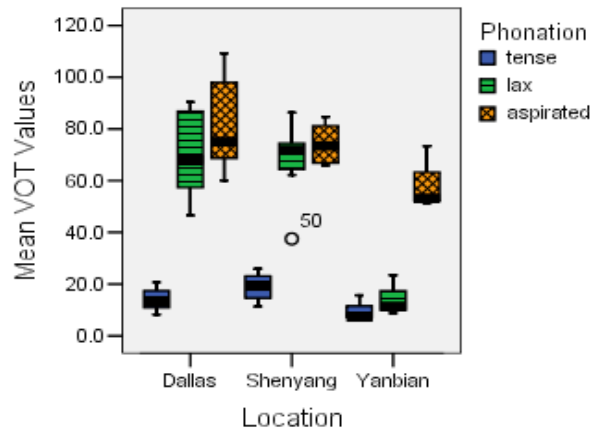
For Seoul Korean spoken in Dallas and Chinese Korean spoken in Shěnyáng, we see the latter is more advanced in the change as the mean VOT range of lax stops completely overlaps with that of aspirated stops, but they share the same pattern in that VOT overlap is between the lax and aspirated categories. For the Chinese Korean spoken in Yánbiān, however, the overlap is between tense and lax stops, with aspirated stops clearly distinct from the former two. We also notice that the mean VOT range of aspirated stops is much lower than the other two varieties. Overall, what they all have in common is that the aspirated stops of Korean are becoming less aspirated, and the three-way VOT distinction has shifted to a two-way distinction.

This general simplification shift may be explained as a result of language internal change to a universally less marked VOT system with the understanding that two-way VOT distinction is more common among world languages. Alternatively, this could be a result of language/dialect contact and influence from some social factors. Korean Chinese are often bilingual in Korean and Chinese. It is possible that Chinese, with its two-way VOT contrast, may influence in the long run the Korean production of Korean Chinese. Also, what has been noticed in this study is that three speakers do not pattern with their age groups: two subjects born before 1970 behaves like younger people, while one subject born after 1970 shows a pattern of older people. Analysis of these subjects' demographic data shows that the former two subjects are different from the rest of their group members in that they have great amount of access to Seoul Korean: one had worked in Korea for ten years, and the other visits Korea frequently. Should Seoul Korean speakers in Seoul speak the same way as the Seoul Korean speakers in Dallas area (still a pending issue due to lack of relevant study), then dialect contact may be a factor in the performance of the two subjects. As to the exceptional young subject, he is a Korean language teacher. His positive attitude

---

[3] The younger speakers included here are all born in and after 1970. Data source for the other two places are from Silva (2004), Zheng and Li (2005).

towards Chinese Korean culture and language may have made him adhere to the traditional pattern, thus language attitude may also be a factor. As to the different VOT pattern between two varieties of Chinese Korean, a tentative explanation proposed here is that being the biggest Korean Prefecture in China, Yánbiān, unlike Shěnyáng, is like an isolated 'speech island' where the Korean language and culture are better preserved than anywhere else in China. Thus, the Korean variety spoken there may maintain the traditional VOT pattern as documented in Korean studies in 1960s and 70s, where the VOT overlap between tense and lax stops was observed. So, we conclude that VOT shift may not be a solely age-related phenomenon; rather it may be a result of combined influence from several internal and external factors.

5.   Conclusion

This study reveals a diachronic VOT shift in Chinese Korean and the change of the role of VOT as the primary marker of stop distinction. More specifically, it reports a merger in VOT values between lax and aspirated stops among younger speakers. Thus, while for older people VOT plays a primary role in separating the stop types, for younger people it may need to work together with other dimensions in the grammar, i.e. F0, intensity build-up, to fulfill the task. Further comparison of different VOT change patterns indicates that across dialects Korean aspirated stops are becoming less aspirated, and VOT is shifting towards a simpler two-way system. These changes may be explained as a result of combined influence from several internal and external factors.

Further studies will need to systematically incorporate more sociolinguistic factors beyond age, and continue with analysis on other Korean varieties spoken in China and also in other countries such as Korea itself, Japan, Russia, Spain, etc. to determine the direction of change and better understand the reasons and the course of Korean language change.

References

Bailey, Guy, Tom Wikle, Jan Tillery, and Lori Sand. 1992. The Apparent Time Construct. *Language Variation and Change.* Cambridge University Press, 3:241-264.
Cho, Taehong. 1996. Vowel Correlates to Consonant Phonation: An Acoustic-Perceptual Study of Korean Obstruents. MA thesis, University of Texas at Arlington.
Guy, Gregory R. 1981. Linguistic Variation in Brazilian Portuguese: Aspects of the Phonology, Syntax, and Language History. Ph.D. Dissertation, University of Pennsylvania.
Guy, Gregory R. 2003. Variationist Approaches to Phonological Change. *The Handbook of Historical Linguistics.* Brian D. Joseph and Richard D. Janda, eds., Blackwell Publishing, 367-400.

Han, Jeong-Im. 1996. The Phonetics and Phonology of 'Tense' and 'Plain' Consonants in Korean. Ph.D. dissertation, Cornell University. Distributed 1996, Ithaca: CLC Publications.

Han, Mieko S. and Raymond S. Weitzman. 1965. *Studies in the Phonology of Asian Languages III: Acoustic Characteristics of Korean Stop Consonants.* Los Angeles: Acoustic Phonetics Research Laboratory, University of Southern California.

Han, Mieko S. and Raymond S. Weitzman. 1970. Acoustic Features of Korean /P, T, K/, /p, t, k/ and /ph, th, kh/. *Phonetica* 22:112-128.

Kim, Chin-W. 1965. On the Autonomy of the Tensity Feature in Stop Classification (with Special Reference to Korean Stops). *Word* 21:339-359.

Labov, William. 1994. *Principles of Language Change: Internal Factors.* Oxford & Cambridge, Mass.: Blackwell.

Ladefoged, Peter. 2003. *Phonetic Data Analysis: An Introduction to Fieldwork and Instrumental Techniques.* Malden, Mass. & Oxford: Blackwell.

Lisker, Leigh and Arthur S. Abramson. 1964. A Cross-Language Study of Voicing in Initial Stops: Acoustical Measurements. *Word* 20:384-422.

Silva, D.J. 1992. The Phonetics and Phonology of Stop Lenition in Korean. PhD Dissertation, Cornell University. Distributed 1992, Ithaca: CLC Publications.

Silva, D. J, Younjeoung Choi and Ji Eun Kim. 2004. Evidence for a Diachronic Shift in the VOT Values of Korean Stop Consonants. Susumu Kuno et al. eds., *Harvard Studies in Korean Linguistics X.* Cambridge, MA: Harvard University, Department of Linguistics, 173-185.

Silva, D.J. 2006. Acoustic Evidence for the Emergence of Tonal Contrast in Contemporary Korean. *Phonology* 23:287-308. Cambridge University Press.

Silva, D.J. and Wenhua Jin. 2006. Chinese Korean Segmental Phonetics: A Field Report. *Harvard Studies In Korean Linguistics XI.* Susumu Kuno et al. eds., Cambridge, MA: Harvard University, Department of Linguistics, Hanshin Publishing Company, 264-277.

郑鲜日，李英浩. 2005. 英，朝塞音的浊音起始时间（VOT）对比及朝鲜族学生习得英语塞音特征研究. *延边大学学报* 第38卷，第4期.

赵习，宣德五. 1986. 朝鲜语六镇话的方言特点，*民族语文* 第5期，第1-13页。

최윤갑, 전학석. 1993. *중국, 조선, 한국에서의 조선어차이에 대한.* 연변인민출판사.

Wenhua Jin
University of Texas at Arlington
Department of Linguistics and TESOL
Hammond Hall 403
Arlington, TX, 76019

jinwenh@hotmail.com

Dative External Possessor Constructions in Sidaama

KAZUHIRO KAWACHI
University at Buffalo, State University of New York

1.   Introduction[1]

This study shows that the existence of the dative external possessor construction (Dative EPC) in Sidaama, a Cushitic language of Ethiopia, challenges König & Haspelmath's (1998; Haspelmath 1999) hypothesis that the Dative EPC is limited to a central and southern area of Europe and is found nowhere else in the world. It also questions the applicability of portions of Haspelmath's (1999) analysis of the polysemy of a dative marker on a semantic map, which is based on the dative markers in a small number of European languages, to the Sidaama dative.

Section 2 reviews crosslinguistic studies of the Dative EPC by König & Haspelmath (1998) and Haspelmath (1999). Section 3 describes the Sidaama Dative EPC. Section 4 looks into the Sidaama dative in general, and demonstrates that unlike some European datives, which occupy a portion of Haspelmath's semantic map of a dative marker, it covers almost all the senses on it. Section 5 examines the relations between the Dative EPC and two other types of dative constructions, the benefactive and judicantis constructions, in this language, and shows how the Dative EPC is related not only to the benefactive construction, as indicated on Haspelmath's semantic map, but also to the judicantis construction. Section 6 concludes the paper.

2.   Previous Studies

An external possessor construction (EPC) is a construction where the possessor is expressed in a constituent external to the possessum NP (e.g., Chappell & McGregor 1996, Payne & Barshi 1999), unlike in an internal possessor construction (IPC), where the possessor is expressed as a dependent of or an affix on the possessum noun. In an EPC, the possessive relation between the two entities is

---

neither morphologically specified nor lexically expressed, but is inferred from the use of the construction. There are various types of EPCs where the possessor NP and the possessum NP exhibit different combinations of grammatical relations. The Dative EPC is a type of EPC where the possessor NP is in the dative case.

König & Haspelmath (1998; Haspelmath 1999) investigated about thirty languages in Europe and found that there are four syntactic patterns of the Dative EPC in those languages, which are shown in (1) (adapted from Haspelmath 1999:110).

(1) (a) Subj V DAT(possessor) Obj(possessum)
    (b) Subj(possessum) V DAT(possessor)
    (c) Subj V DAT(possessor)   PP(possessum)
    (d) Subj V DAT(possessor) Obj   PP(possessum)

According to them, the Dative EPC has to fulfill a strict mental affectedness condition, and can be used only when the possessor is mentally affected by the event. They hypothesize that the mental affectedness condition that has to be met for the use of (not only the Dative EPC but) an EPC in general can be characterized to some extent in terms of the four implicational hierarchies in (2): if an EPC can be used at one point on each of the hierarchies, it can also be used at any higher position on it. An EPC is favored when an item higher on the hierarchy is involved, and there is often a cut-off point below which an EPC cannot be used.

(2) (a) The Animacy Hierarchy (possessor): 1st/2nd p. pronoun ⊂ 3rd p. pronoun ⊂ proper name ⊂ other animate ⊂ *inanimate
    (b) The Situation Hierarchy (predicate): patient-affecting ⊂ dynamic non-affecting ⊂ *stative
    (c) The Inalienability Hierarchy (possessum): body part ⊂ garment ⊂ other contextually unique item
    (d) The Syntactic Relations Hierarchy (possessum): PP ⊂ direct object ⊂ unaccusative subject ⊂ unergative subject ⊂ *transitive subject

König & Haspelmath also found that the existence of the Dative EPC is an areal feature of central and southern European languages, which may or may not be Indo-European languages. They also claim that even though there are different types of EPCs attested in various parts of the world, there is no language outside Europe that has the Dative EPC. The last point is disproved in the next section.

Haspelmath (1999) analyzes various senses of dative markers in different languages on a semantic map shown in Figure 1, where he proposes the possible senses of the dative are arranged based on their conceptual similarity, though he does not provide any explanation of exactly how the senses are related.

predicative possessor — external possessor (Dative EPC)
                    | |
direction — recipient/addressee — benefactive — judicantis
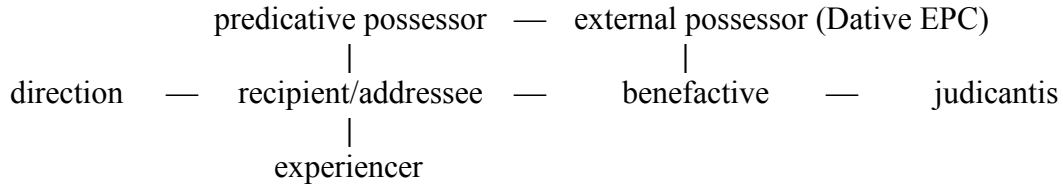 |
            experiencer

Figure 1: Haspelmath's (1999:126) semantic map of a dative marker

Using this map, Haspelmath makes the following claims. First, the dative marker in any language occupies a contiguous area on this map. Second, diachronically, the dative marker in any language develops from the left on the map gradually to the right, and as it acquires new senses on the right, it loses senses on the left. A dative marker cannot be used for too many of the senses on the map, and in order for the Dative EPC to exist in a language, its dative marker has to be sufficiently grammaticalized and desemanticized to the extent that it does not express direction. However, as he admits, this map is based on only a few European languages, and needs to be tested against many other languages. In Section 4, it is shown that the Sidaama dative marker works slightly differently from Haspelmath's hypotheses.

3.   Dative EPC in Sidaama

Sidaama is a Highland East Cushitic language spoken in South Central Ethiopia (Kawachi 2004, 2006a, 2006b, 2007). The word order is predominantly SOV, and the case-marking system is accusative.[2]

For the dative case, Sidaama uses a suffix, which has three allomorphs, *-te*, *-ho*, and *-ra* (glossed as DAT.F, DAT.M, and DAT, respectively) — *-te* and *-ho* are used for feminine and masculine common nouns that are accompanied by neither a dependent nor the possessive pronominal suffix, respectively, and *-ra* attaches to the genitive stems of all the other types of nominals.[3]

The Dative EPC in Sidaama basically covers all the syntactic patterns of the European Dative EPC in (1), though this language uses not adpositions but suffixes.[4] The syntactic patterns comparable to the European patterns, (1a), (1b), (1c), and (1d), are exemplified by (3) and (4), (5) and (6), (7) and (8), and (9) and (10), respectively.[5] Note that as long as the verb comes finally, the word order is flexible, though the possessor NP usually precedes the possessum NP.

---

[2] The accusative case is indicated with high pitch on the final vowel segment of the stem.

[3] The nominative and genitive suffixes, as well as the dative and locative suffixes (which have the same set of allomorphs), take different forms, depending on the gender and the type of the nominal (in the case of a common noun, also whether it is accompanied by a dependent or the possessive pronominal suffix), though every detail is not reflected in the gloss for each allomorph of the suffixes. See Kawachi (2007) for complete descriptions.

[4] There are also a few other patterns. See Kawachi (2007) for details.

[5] Abbreviations. EP: epenthesis, NPC: noun-phrase clitic, PERF: present perfect.

• Pattern (a): Subj DAT(possessor) Obj(possessum) trans.V
(3)   bule   damboow-i-ra
        Bule(NOM.F) Damboowa-GEN.M-DAT
        (a)č'ulunk'á/(b)rodoó/(c)hakk'iččó mur-t-ino.
        nail(ACC)/sibling(ACC)/tree(ACC) cut-3SG.F-PERF.3
        'Bule cut Damboowa's (a)nails/(b)sibling/(c)tree.' (*lit.,* 'Bule cut the
        (a)nails/(b)sibling/(c)tree to Damboowa.')
(4)   bule   hakk'iččo-te siná   mur-t-ino.
        Bule(NOM.F) tree-DAT.F   branch(ACC) cut-3SG.F-PERF.3
        'Bule cut the branches of the tree.' (*lit.,* 'Bule cut the branches to the
        tree.')

• Pattern (b): Subj(possessum) DAT(possessor) intrans.V
(5)   damboow-i-ra   (a)č'ulunk'a/(b)rodoo/(c)hakk'iččo
        Damboowa-GEN.M-DAT   nail(NOM.F)/sibling(NOM.F)/tree(NOM.F)
        seed-d-ino.
        become.long-3SG.F-PERF.3
        'Damboowa's (a)nails became long (and are long now)/(b)sister became
        tall (and is tall now)/(c)tree became tall (and is tall now).' (*lit.,* 'To Dam-
        boowa, the (a)nails became long/(b)sister became tall/(c)tree became
        tall.')[6]
(6)   hakk'iččo-te sin-u   seed-ø-ino.
        tree-DAT.F   branch-NOM.M   become.long-3SG.M-PERF.3
        'The branches of the tree became long (and are long now).' (*lit.,* 'To the
        tree, the branches became long.')

• Pattern (c): Subj DAT(possessor) (possessum)-suffix intrans.V
(7)   ise   isi-ra
        3SG.F.NOM 3SG.M.GEN-DAT
        (a)giwooda-ho/(b)rodoo-te/(c)barč'uma-ho ofol-t-ino.
        lap-LOC.M/sibling-LOC.F/stool-LOC.M   sit-3SG.F-PERF.3
        'She sat on his (a)laps/(b)sister/(c)stool (and is sitting there now).' (*lit.,*
        'She sat at the (a)lap/(b)sister/(c)stool to him.')
(8)   ise   hakk'iččo-te sinčo-ho   ofol-t-ino.
        3SG.F.NOM tree-DAT.F   branch-LOC.M   sit-3SG.F-PERF.3
        'She sat on the branch of the tree (and is sitting there now).' (*lit.,* 'She sat
        at the branch to the tree.')

---

[6] As suggested in the English glosses for some of the examples, Sidaama uses the perfect forms of
state-change verbs to express non-inherent and temporary states as conditions resulting from the
state changes by the state-change verbs (Kawachi 2006b, 2007). Adjectives and nouns are
restricted to inherent properties.

• Pattern (d): Subj_DAT(possessor)_Obj_(possessum)-suffix_trans.V

(9)   ise   buná   isi-ra
       3SG.F.NOM   coffee(ACC)   3SG.M.GEN-DAT
       (a)giwooda-ho/(b)k'aakk'o-te/(c)barč'uma-ho   dun-t-ino.
       lap-LOC.M/baby-LOC.F/stool-LOC.M   spill-3SG.F-PERF.3
       'She spilled coffee on his (a)laps/(b)baby girl/(c)stool.' (*lit.,* 'She spilled coffee at the (a)laps/(b)baby girl/(c)stool to him.')

(10)   ise   buná   hatte   uddano-ra
       3SG.F.NOM   coffee(ACC)   that.F.GEN   clothes(GEN.F)-DAT
       k'ačč'e-te   dun-t-ino.
       edge-LOC.F   spill-3SG.F-PERF.3
       'She spilled coffee at the edge of those clothes.' (*lit.,* 'She spilled coffee at the edge to those clothes.')

The Sidaama Dative EPC has characteristics such as the following. First, any instance of the Dative EPC has an IPC counterpart (or IPC counterparts), where the possessor is expressed with a genitive NP, as in (6'), or the possessive pronominal suffix, as in (7a').

(6')   hakk'ičče-te   sin-i   seed-ø-ino.
       tree-GEN.F   branch-NOM.M   become.long-3SG.M-PERF.3
       'The branches of the tree became long (and are long now).'

(7a')   ise   giwood-i-si-ra   ofol-t-ino.
       3SG.F.NOM   lap-EP-3SG.M.POSS-LOC   sit-3SG.F-PERF.3
       'She sat on his laps (and is sitting there now).'

Second, in a Dative EPC sentence, an animate possessor can be additionally indicated with the possessive pronominal suffix on the possessum noun; in other words, an IPC can be optionally formed within the dative EPC, as in (3').

(3')   bule   damboow-i-ra
       Bule(NOM.F) Damboowa-GEN.M-DAT
       (a)č'ulunk'á-si/(b)rodoó-si/(c)hakk'iččó-si
       nail(ACC)-3SG.M.POSS/sibling(ACC)-3SG.M.POSS/
            tree(ACC)-3SG.M.POSS
       mur-t-ino.
       cut-3SG.F-PERF.3
       'Bule cut Damboowa's (a)nails/(b)sibling/(c)tree.' (*lit.,* 'Bule cut (a)his nails/(b)his sibling/(c)his tree to Damboowa.')

Third, in a Dative EPC sentence, an animate possessor can be additionally indicated with the pronominal object suffix on the verb, as in (5'). Instead of being expressed by a full dative NP, an animate possessor can be indicated only by the pronominal object suffix on the verb. For example, even without *damboow-i-ra*,

the sentences in (5') are grammatical ones, which mean 'His (a)nails became long (are long)/(b)sister became tall (is tall)/(c)tree became tall (is tall)'.

(5')   damboow-i-ra   (a)č'ulunk'a/(b)rodoo/(c)hakk'iččo
        Damboowa-GEN.M-DAT   nail(NOM.F)/sibling(NOM.F)/tree(NOM.F)
        seed-d-ino-si.
        become.long-3SG.F-PERF.3-3SG.M
        'Damboowa's (a)nails became long (and are long now)/(b)sister became tall (and is tall now)/(c)tree became tall (and is tall now).'

The second and third characteristics of the Dative EPC yield a wide variety of subtypes.

    Another property of the Dative EPC in Sidaama is that it usually conveys a beneficial or adversative experience of the possessor from the speaker's point of view, rather than simply expressing the possessive relationship between the two entities. This point is returned to shortly.

    If the Sidaama Dative EPC is placed on König & Haspelmath's hierarchies in (2), it turns out that it is less constrained than its European counterparts. First, it can be used for inanimate as well as animate possessors, as shown in (4), (6), (8), and (10), though it is only when the possessor is animate that the Dative EPC can use the possessive pronominal suffix on the possessum noun or the pronominal object suffix on the verb. Second, the Sidaama Dative EPC can use not only patient-affecting predicates, but also stative predicates. As in (11) and (12), the predicate in the Dative EPC can be an adjective.

• Pattern (b'): Subj(possessum) DAT(possessor) Adj
(11)   damboow-i-ra   (a)č'ulunk'a/(b)rodoo/(c)hakk'iččo
        Damboowa-GEN.M-DAT   nail(NOM.F)/sibling(NOM.F)/tree(NOM.F)
        šiima=te.
        small=NPC.F.PRED
        'Damboowa's (a)nails are/(b)sister is/(c)tree is small.'
        (*lit.,* 'To Damboowa, the (a)nails are/(b)sister is/(c)tree is small.')
(12)   hakk'iččo-te   daraaro   šiima=te.
        tree-DAT.F   flower(NOM.F)   small=NPC.F.PRED
        'The flowers of the tree are small.' (*lit.,* 'To the tree, the flowers are small.')

Finally, the possessum does not have to be inalienably possessed items, but can be alienably possessed items, as in (3c), (5c), (7c), (9c), and (11c). There does not seem to be any restriction on the type of possessum. However, the Sidaama Dative EPC is similar to the European ones with respect to the hierarchy in (2d); the possessum may be a direct object, an intransitive subject, the subject of an adjective predicate, or a locative NP, but can never be a transitive subject, because

the possessor is normally affected by the event or state also in the Sidaama Dative EPC.

4. Dative in Sidaama

The Sidaama dative marker covers almost all the senses on Haspelmath's (1999) semantic map.

• Direction: The allative suffix *-ra*, which marks the goal of a motion, as in (13), has the same form as one of the allomorphs of the dative suffix.

(13) ise　　　　　hakko　　　　god-i-ra　　　　　　ha-ʒ-ino.
　　　3SG.F.NOM　that.M.GEN　cave-GEN.M-ALL　　go-3SG.F-PERF.3
　　　'She went to that cave.'

This suffix attaches to four types of nominals that refer to locations, specifically, masculine common nouns with a dependent or the possessive pronominal suffix whose referents can be regarded as locations, masculine proper nouns for locations, locational nouns (e.g., *giddo* 'inside'), and demonstrative pronouns. (Other types of nominals, when referring to the goal of a motion, are used without *-ra*.) The allative suffix *-ra* is used for roughly the same set of types of nominals as one of the allomorphs of the dative suffix *-ra*, which has the same form as the allative suffix. Because the two other allomorphs of the dative suffix, *-ho* and *-te*, cannot be used as the allative suffix, the dative suffix and the allative suffix are not the same morpheme. Nevertheless, they seem to be related to each other. As Haspelmath argues, the dative may have been grammaticalized to the extent that only one of its allomorphs is still used as the allative suffix, though, to my knowledge, the historical development of this suffix has not been reported in the literature.

• Recipient/addressee: Both recipients and addressees are marked with the dative case suffix, as in (14) and (15), respectively.

(14) isi　　　　　ise-ra　　　　　　sagalé　　　　u-ø-ino.
　　　3SG.M.NOM　3SG.F.GEN-DAT　food(ACC)　give-3SG.M-PERF.3
　　　'He gave food to her.'
(15) be'ro　　　　dangur-i　　　　bule-ra
　　　yesterday　Dangura-NOM.M　Bule(GEN.F)-DAT
　　　"da-ee-mm-o",　　　　　y-ø-ino.
　　　come-IMPRF.1-1SG-M　say-3SG.M-PERF.3
　　　'Dangura said to Bule yesterday, "I (M) will come".'

• Experiencer: Sidaama has a series of transitive verbs or causative verb forms that take an impersonal third-person singular masculine subject and a dative or accusative experiencer. A dative example is shown in (16).

(16)   ise-ra   t'iss-ø-ino.
          3SG.F.GEN-DAT   cause.sickness-3SG.M-PERF.3
          'She is sick.' (*lit.,* '(Impersonal 3SG.M subject) caused sickness to her.')

• <u>Predicative possessor</u>: Sidaama has a predicate possession construction with an existential/locational-verb predicate, where the possessor is in the dative case and the possessum is the subject. The existential/locational verb in Sidaama is a state-change verb 'to come to exist/be located', which is always in the present perfect. In the predicate possession construction, the existential/locational verb has an invariant form *no*, which is a form for a third-person subject. As Haspelmath indicates on his map, this construction is related to the Dative EPC also in Sidaama. In fact, it looks like a variant of the Dative EPC of the syntactic pattern (b) (Subj(possessum) DAT(possessor) intrans.V). Examples are shown in (17) and (18).

(17)   isi-ra   min-u   no.
          3SG.M.GEN-DAT   house-NOM.M   come.to.exist.PERF.3
          'He has a house.' (*lit.,* 'To him, a house came to exist.')
(18)   mine-ho   lam-u   waalč-i   no.
          house-DAT.M two-NOM.M   door-NOM.M come.to.exist.PERF.3
          'The house has two doors.' (*lit.,* 'To the house, two doors came to exist.')

Examples of the benefactive construction and the judicantis construction (König & Haspelmath 1998; Haspelmath 1999; e.g., English: *That is too difficult for me*) are shown in (19) and (20), respectively. These two constructions are discussed in detail in the next section.

• <u>Benefactive</u>

(19)   ise   ane-ra/isi-ra
          3SG.F.NOM   1SG.GEN-DAT/3SG.M.GEN-DAT

          ⎧ (a)   hakk'iččó-se   ⎫
          ⎪   tree(ACC)-3SG.F.POSS ⎬ mur-t-ino.
          ⎨ (b)   hatté   hakk'iččó ⎬ cut-3SG.F-PERF.3
          ⎩   that.F.ACC   tree(ACC) ⎭
          'She cut (a)her tree/(b)that tree for the benefit of me/him.' (She believed that (a)her tree/(b)that cutting her tree would be beneficial to me/him.)

• Judicantis

(20) ise-ra   damboow-i
      3SG.F.GEN-DAT   Damboowa-NOM.M
      (a)t'ur-ø-ino/(b)seeda=ho.
      become.dirty-3SG.M-PERF.3/tall=NPC.M.PRED
      'Damboowa (a)became dirty (and is dirty now)/(b)is tall for her.' (in her
      judgment)

5.   Dative EPC and Two Other Dative Constructions in Sidaama

This section compares the Dative EPC with two other types of dative construc-
tions, specifically the Dative EPC of the syntactic pattern (a) with the benefactive
construction, and the Dative EPC of the syntactic patterns (b) and (b') with the
judicantis construction, and shows the ways that the Dative EPC is related not
only to the benefactive construction, as indicated on Haspelmath's (1999) map,
but also to the judicantis construction.

Hereafter, the referent of the dative NP is called a 'dative entity', and the
directly affected entity undergoing a state change or the entity whose state is
described is called a 'patient/theme entity'. In the benefactive and judicantis
constructions as well as the Dative EPC, a patient/theme entity is expressed as the
direct object of a transitive verb or the subject of an intransitive-verb or adjectival
predicate. Generally, in the subtypes of the Dative EPC that follow the syntactic
patterns (a), (b), and (b'), the possessum NP is a patient or theme, regardless of
whether it is the subject of an intransitive-verb or adjective predicate or the object
of a transitive-verb predicate. In the following discussion, which limits the Dative
EPC to its subtypes with the above three syntactic patterns, structural correspon-
dences between the Dative EPC and the benefactive and judicantis constructions
are presented, and then how they can be distinguished is explored.

The benefactive construction takes one of the forms in (21) — (21a) uses a
transitive verb (e.g., (19)), and (21b) uses an intransitive verb (e.g., 'She came for
the benefit of me/him.') (the order of the constituents in the benefactive construc-
tion is flexible except that the verb has to be final). It is only when the verb of the
benefactive construction is transitive, as in (21a), that a patient/theme entity is
relevant; the object of the transitive verb is normally a patient or theme. In the
benefactive construction with an intransitive verb like (21b), the subject is usually
not a patient or theme, but an agent. Thus, this construction is irrelevant and is
excluded from the discussion hereafter.

(21) a.   Subj   DAT(dative entity)   Obj(patient/theme)   trans.V
      b.   Subj   DAT(dative entity)   intrans.V

The benefactive construction with a transitive verb predicate in (21a) is structural-
ly parallel to the Dative EPC with a transitive verb predicate (syntactic pattern (a)
in section 3: Subj DAT(possessor) Obj(possessum) trans.V).

As exemplified by (20), the other type of dative construction, the judicantis construction (König & Haspelmath 1998; Haspelmath 1999), whose predicate is an intransitive verb or an adjective, expresses a state change or state in the judgment of the dative entity, which is usually animate. It takes the forms in (22), where the order of the subject NP and the dative NP can be reversed.

(22)   a.   Subj(patient/theme)   DAT(dative entity)   intrans.V
       b.   Subj(patient/theme)   DAT(dative entity)   Adj

(22a) and (22b) are structurally the same as the Dative EPC of the syntactic patterns (b) (Subj(possessum) DAT(possessor) intrans.V) and (b') (Subj(possessum) DAT(possessor) Adj), respectively.

There are two additional respects in which the benefactive construction with a transitive verb and the judicantis construction show structural commonalities with the Dative EPC. First, just as the pronominal object suffix that refers to an animate possessor can occur on the verb in the Dative EPC that uses a verb as its predicate, the pronominal object suffix that refers to an animate dative entity can attach to the verb in the benefactive construction with a transitive verb or in the judicantis construction with an intransitive verb (e.g., instead of (19a), *ise isira hakk'iččó-se mur-t-ino-si*). Second, as in the Dative EPC, the dative entity in the benefactive and judicantis constructions may be indicated only by the pronominal object suffix, instead of being expressed by a full NP (e.g., instead of (20a), *damboow-i t'ur-ø-ino-se*).

There are mainly two respects in which the Dative EPC differs from the benefactive construction and the judicantis construction, and thus according to which they can be distinguished.

First, when the Dative EPC is used, the speaker believes that the dative entity is affected by the event either beneficially or adversely.[7] For example, in (3a) (Bule's cutting Damboowa's nails), the speaker believes that the possessor was beneficially affected by the event, whereas in (3b) (Bule's cutting Damboowa's sibling), the speaker believes that the possessor was adversely affected by the event. In (3c) (Bule's cutting Damboowa's tree), the beneficial or adversative interpretation is possible depending on the context. In any of these examples, the agent's performance of the action is independent of his/her intention to cause any effect on the possessor; the agent performs the action not necessarily with a belief that the result of the action affects the possessor. The subject's belief is expressed in the subtypes of the Dative EPC that have the other syntactic patterns as well.

On the other hand, in the benefactive construction, the subject's belief is not expressed. The subject normally performs the action with intentionality, and the

---

[7] This seems to apply even when the possessor in the Dative EPC is inanimate. Sentences like (4), (6), (8), and (10) report the state-change or state as the speaker perceives it, but also convey the speaker's belief that the state-change or state is beneficial or adversative to (the existence or function of) the dative entity.

subject NP usually refers to an agent. What is expressed in this construction is the agent's intended performance of the action with a belief that the action is beneficial to the dative entity. For example, in (19), the agent ('she') performs the action of cutting her/that tree in the belief that the action would be beneficial to me/him. This belief is the agent's, and the event is described from the agent's viewpoint, though the judgment about whether or not the action is really beneficial to the dative entity is ultimately made by the dative entity. As in the English translations of (19), these sentences are neutral as to whether the dative entity wants the agent to perform the action.

In the judicantis construction, the subject's belief is usually not expressed, either; what is expressed in this construction is the dative entity's judgment.[8] In (20a), the patient/theme entity's ('Damboowa's') state change (or resultative state) is depicted in the dative entity's ('her') judgment. Similarly, in (20b), the patient/theme entity's ('Damboowa's') state is described in the dative entity's ('her') judgment.

Another difference between the Dative EPC and the benefactive and judicantis constructions is the inferrability of a possessive relation between the dative entity and the patient/theme entity. In the Dative EPC, a possessive relation can be inferred between the two entities. On the other hand, in neither the benefactive nor judicantis constructions can a possessive relation be inferred between them.

An instance of one of the Sidaama dative constructions that has the structure (21a), (22a), or (22b) is interpreted as an instance of the Dative EPC when the patient/theme entity is expressed with a common noun without any dependent that is not accompanied by the possessive pronominal suffix referring to an entity other than the dative entity. On the other hand, in the benefactive and judicantis dative constructions, the patient/theme NP can be expressed with any type of nominal. Both in (19) and (20), where the patient/theme NP cannot be a possessum NP, Dative EPC interpretations are impossible.

A sentence with the structure (21a), (22a), or (22b), where the patient/theme entity is expressed by an inherently or obligatorily, as opposed to an optionally, possessed noun with neither any dependent nor the possessive pronominal suffix referring to an entity other than the dative entity, can be ambiguous between an EPC interpretation and a non-EPC interpretation, specifically a benefactive interpretation or a judicantis interpretation, though the Dative EPC interpretation is preferred whenever a possessive relation can be inferred. For example, other possible, though less likely, interpretations of (3c) and (5c) are 'Bule cut the tree for Damboowa' and 'The tree became tall in Damboowa's judgment', respectively.

---

[8] However, in the judicantis construction where the dative entity is inanimate (e.g., 'This table is tall for that chair.'), the dative entity's judgment is not present. An inanimate entity normally does not make a judgment, and the subject's judgment is expressed.

## 6.	Conclusion

There are three findings of the present study. First, contrary to König & Haspelmath's (1998; Haspelmath 1999) hypothesis, the Dative EPC exists in Sidaama. Second, the Sidaama dative marker is used for almost all the senses on Haspelmath's (1999) semantic map of a dative marker, where a dative marker is not supposed to occupy too much area. Third, the Sidaama EPC is related not only to the benefactive construction but also to the judicantis construction, and the Dative EPC differs from these two other dative construction in the subject's belief that is expressed and in a possessive relation inferred between the dative and patient/theme entities. A possible future study is an investigation of the uses of the datives in other Cushitic languages and their similarities with or differences from the dative in Sidaama.

References

Chappell, Hilary, and William McGregor. 1996. Prolegomena to a Theory of Inalienability. In Chappell, Hilary, and William McGregor. eds. *The Grammar of Inalienability: a Typological Perspective on Body Part Terms and the Part-Whole Relation*, 3-30. Berlin: Mouton de Gruyter.

Haspelmath, Martin. 1999. External Possession in a European Areal Perspective. In Payne, Doris, and Immanuel Barshi. eds. *External Possession*, 109-135. Philadelphia: John Benjamins.

Kawachi, Kazuhiro. 2004. Middle voice and reflexive in Sidaama. In Adams, Nikki, Adam Cooper, Fey Parrill, and Thomas Wier. eds. *CLS 40, Volume 2: Panels*.

Kawachi, Kazuhiro. 2006a. External Possessor Constructions in Sidaama. In Bunting, Jacqueline, Sapna Desai, Robert Peachey, Christopher Straughn, and Zuzana Tomkova. eds. *CLS 42, Volume 1: the Main Session.* Chicago, IL: Chicago Linguistic Society.

Kawachi, Kazuhiro. 2006b. Feelings in Sidaama. In Reich, Peter, William Sullivan, and Arle Lommel. eds. *LACUS Forum 33.* Houston, TX: Linguistic Association of Canada and the United States.

Kawachi, Kazuhiro. 2007. *A Grammar of Sidaama (Sidamo), a Cushitic Language of Ethiopia.* PhD dissertation, University at Buffalo, SUNY.

König, Ekkehard, and Martin Haspelmath. 1998. Les Constructions à Possesseur Externe dans les Langues d'Europe. In Feuillet, Jack. ed. *Actance et Valence dans les Langues de l'Europe*, 525-606. Berlin: Mouton de Gruyter.

Payne, Doris L., and Immanuel Barshi. 1999. External Possession: What, Where, How, and Why. In Payne, Doris L., and Immanuel Barshi. eds. *External Possession*, 3-29. Philadelphia: John Benjamins.

Kazuhiro Kawachi
kazuhirokawachi@gmail.com, kazuhirokawachi@hotmail.com

Licensing by Information Structure[1]

JENNIFER MACK
Yale University

0.   Introduction

Information structure is the interface between the cognitive organization of discourse and the formal representation of sentences. The view of information structure as an interface level is implicit in the following definitions – "the tailoring of an utterance to meet the particular assumed needs of the intended receiver" (Prince 1981a:224) and "the formal expression of the pragmatic structuring of a proposition in a discourse" (Lambrecht 1994:5) – as well as in Chafe's (1976) term "information packaging". Current research continues to explore the scope of the information structure interface: the set of formal operations driven by the roles that information conveyed by a sentence play in a discourse.

Informational relations influence the formal expression of propositions on the syntactic, morphological and prosodic levels. In the domain of syntax, informational constraints are taken to motivate operations as diverse as displacement (Prince 1981b, Davison 1984, Birner and Ward 1998), dislocation (Lambrecht 1994, Grosz and Ziv 1998), the (non)-expression of syntactically optional arguments (Goldberg 2001), and the conditioning of lexically represented argument structure alternations (Goldberg 1995, Ruppenhofer 2004). This paper demonstrates that the reach of information structure extends to the domain of licensing. The evidence for this claim comes from English topical exclamative (TE) constructions such as the bold sentences in (1)-(3). The present paper is the first exploration to date of TE sentences. The name "TE" reflects the observation that such sentences are instances of the exclamative sentence type (Michaelis and Lambrecht 1996b) that obligatorily express the topic relation.

(1)   **A**: Have you met Madonna or had much to do with her throughout your career to date?

B: No I haven't met her but I would love to, **she's amazing the way she reinvents her image and is always ahead of the bunch.**

(www.femail.com.au/mariewilson.htm)

(2)   People are amazing when you give them the information and the tools they need. **They're amazing the responsibility they'll accept.**

(www.sbnonline.com/National/Article/124/9794/Squeezing_the_tube.aspx)

(3)   **A:** Are you sure the windows are closed?

B: Yeah, of course!

A: No, but it's hard to tell with them. **Those windows are weird the way they close.**   (KM to JM in conversation, 1/20/2007)

In this paper, I demonstrate that the matrix subject is not selected by the main predicate in TE – in fact, the subject is not assigned a semantic role at all. Instead, the subject is licensed to express topicality: the informational relation of "about-ness" that holds between a referent and a proposition (Strawson 1964, Reinhart 1981, Lambrecht 1994). Although the licensing of non-argument topics in extra-clausal, "detached" positions is a well-known phenomenon (Li and Thompson 1976), intra-clausal licensing by information structure is, to the best of my knowledge, previously unattested. This analysis of TE carries implications for the extent to which informational constraints interact with other components of the grammar in determining sentence form. In particular, the phenomenon of licensing by information structure is a challenge to models of language that equate licensing with the projection of lexical argument structure representations.

1.   The English Topical Exclamative Construction

The English TE construction resembles right dislocation (RD; Lambrecht 1994, Grosz and Ziv 1998) and nominal extraposition (NE; Michaelis and Lambrecht 1996a) but is distinct from both constructions with respect to form and informa-tional relations. Examples (4)-(6) display the formal contrasts between the three sentence types, each of which contains an "extraposed" noun phrase (indicated by italics) which follows the main predicate. The term "extraposition" indicates that the post-predicate NP is assigned the semantic role canonically assigned to the subject position (cf. Michaelis and Lambrecht 1996a); it is not meant to imply a movement analysis of extraposition.

(4)   **It**'s annoying, *the way she always cracks her knuckles.* [RD]
(5)   **It**'s annoying *the way she always cracks her knuckles.* [NE]
(6)   **She**'s annoying *the way she always cracks her knuckles.* [TE]

One key distinction is the semantic status of the subject NP, which is indicated by bold font. Across all three sentence types, the initial NP can be identified as the grammatical subject on the basis of morphosyntactic diagnostics: it appears in pre-verbal position, triggers verbal agreement, and receives nominative case (see Keenan 1976 for a discussion of diagnostics for subjecthood). Example (4)

illustrates RD, which is characterized by co-reference between the matrix subject and the post-predicate NP**.** In contrast, the main subject in NE (5) is non-referential (Michaelis and Lambrecht 1996a). Finally, TE (6) contains a referential subject that is *not* co-indexed with the post-predicate NP. With respect to prosody, TE broadly patterns with NE as both are pronounced under a single intonation contour. In contrast, RD is characterized by a clear prosodic break between the matrix predicate and the following NP.

TE is also distinct from NE and RD with respect to the informational relations that it expresses. As I will argue in Section 4, TE has a topic-focus structure: the predication between the matrix predicate and the following NP is in focus, and the asserted information is construed as being about the matrix subject. This type of topic-focus structure – in which the topical referent is not an argument of the in-focus predication – is pervasive in "topic-prominent" languages but relatively rare in "subject-prominent" languages such as English (Li and Thompson 1976). Neither RD nor NE has a topic-focus articulation of this sort. RD expresses a topic-focus structure that is more typical of English information structure: the post-predicate NP is a topic whose referent is an argument in the focal predication. In contrast, NE is an all-focus construction. Its main predication is in focus, but there is no element of the construction that is conventionalized to express topicality (Michaelis and Lambrecht 1996a).

TE is a common construction in contemporary American English, but appears to be restricted to relatively informal registers. Nearly all of the naturally-occurring tokens that I have collected come from spontaneous speech and informal written genres such as blogs and message boards. Prescriptively, TE is dispreferred. Although all of the American English speakers that I surveyed rate TE as at least "somewhat natural" (in at least some contexts), many perceive it as lazy, sloppy, or casual. One possible source of this perception is that TE appears to be a "young" construction, a relatively recent innovation. As recently as 1991, the year in which the Switchboard corpus of spoken American English (Godfrey et al. 1992) was recorded, TE was rare.[2] However, a Google search performed in May 2006 revealed that 20% of the 45 sentences containing the phrase *annoying the way* are TE. The contrast between these results suggests that TE has become more common over the past 15 years. Of course, it is possible that sampling differences in dialect and register may have contributed to this effect.

2. Informational Constraints and Sentence Structure

Following Lambrecht (1994), I take "topic" and "focus" to express informational

---

[2] I found no instances of the construction in a large sample of environments in which the construction could potentially occur. No tokens of TE were present within a randomly sampled set of 588 of the 1296 instances of the phrase "the way" found in the Switchboard corpus. (The post-predicate NP in TE very frequently takes the form "the way CP".) I also found no instances of TE in 20 corpus searches of the form "ADJ the", where ADJ is an exclamative adjective known to be compatible with TE (e.g. *amazing, annoying, unbelievable*).

relations that hold between a proposition and the mental organization of a discourse. They determine what information should be entered into the representation of an unfolding discourse and where this information should be filed. Topic and focus are intended to be informational constructs. They are not defined formally, nor are they necessarily reducible to any aspect of sentence form at the morphosyntactic level, including sentence-initial or subject position (Reinhart 1981, Lambrecht 1994, contra Halliday 1967 and the Prague School literature on functional sentence perspective, e.g. Firbas 1964). Though topic and focus are signaled by prosodic structure – topics tend to be unaccented and occur at the edge of a prosodic contour, while focal information is prosodically prominent – the relations are not *defined* at this level; instead, they are defined by the roles that they play in the organization of a discourse (e.g. Reinhart 1981). However, topics are still elements of sentence grammar; topical referents must be realized as sentence constituents even though they are defined on the informational level. This notion of "topic" is distinct from the construct of "discourse topic", which is defined at the level of discourse coherence and may or may not be realized as a sentence-level constituent.

The relation of topic makes a pragmatic assertion of "aboutness": topicality requires the discourse representation to indicate that a proposition is about a given referent (e.g. Strawson 1964, Reinhart 1981, Lambrecht 1994). Reinhart (1981), following Strawson (1964), connects the intuitive notion of aboutness with the storage and evaluation of information in a developing discourse. When an informative proposition enters a discourse representation, it may be stored under the organizational heading provided by a topic. If the topic relation holds, the truth of the proposition will be evaluated in terms of the available information about the topic. The evaluative component of the aboutness relation restricts the way in which the truth of a proposition is computed, but does not change the resulting truth value.

Informally, focal information contributes substantially to the body of knowledge that is active in a discourse representation. Lambrecht (1994:213) defines focus as "the semantic component of a pragmatically structured proposition whereby the assertion differs from the proposition". Within a proposition, the focus relation may occur in isolation or embedded within the topic relation. Here I argue that the formal distinction between NE and TE encodes just this pragmatic distinction: an all-focus information structure in NE and a topic-focus articulation in TE. In other words, TE gives more specific directions about how the focal information should be represented. As parallel NE and TE sentences have identical truth conditions but differ with respect to information structure, they are "allosentences", defined as "available … grammatical alternatives for expressing a given proposition" (Lambrecht 1994:6).

3.   Argument Structure in TE
The primary goal of this section is to establish that the post-predicate NP in TE is an argument of the main predicate – and essentially, that the matrix subject is not.

Initially, this claim may seem far-fetched. For example, the most natural interpretation of (7) for some speakers is, informally, as follows: *Amelia is annoying* **with respect to** *the way she always cracks her knuckles.* In this interpretation, the matrix subject is apparently assigned a semantic role by the main predicate: the sentence seems to assert that Amelia is annoying.

(7)   Amelia is annoying the way she always cracks her knuckles.

However, if this were the true interpretation, it would be problematic for most theories of argument structure. In such an analysis, a single semantic role (that of "being annoying") would be assigned to two semantically and syntactically distinct constituents (the subject NP and the post-predicate NP) within a minimal domain of predication. On both empirical and theoretical grounds, projectionist theories of argument structure explicitly prohibit such an operation, e.g. through the θ-criterion (Chomsky 1981). Thus, there is pressure from the perspective of argument linking to devise an alternative account of the interpretation of TE. The rest of this section will demonstrate that distributional evidence also fails to support this analysis.

Main predicates in TE express judgment. They assert that a semantic constituent is subjectively assigned a value in a particular domain. As such, they select for an argument that undergoes evaluation, along with an evaluator. In TE, the "evaluator" role is typically unexpressed. As for the "evaluated" role, the rest of this section will demonstrate that it is linked to the post-predicate NP, and not to the subject NP. The truth conditions associated with TE provide support for this claim.

For a moment, let us return to the hypothesis that both the subject NP and the post-predicate NP in TE are assigned the "evaluated" role, in line with the apparently natural interpretation of the construction discussed at the beginning of this section. The predictions of this hypothesis are not borne out, as contradiction of the two hypothesized predications (between the predicate and each of the two NPs) results in very different truth conditions, as illustrated in (8)-(9).[3]

(8)   # She's annoying the way she cracks her knuckles, but THE WAY SHE CRACKS HER KNUCKLES isn't annoying.
(9)   She's annoying the way she cracks her knuckles, but SHE'S not annoying.

Example (8) is clearly contradictory, which is to be expected if the post-predicate NP is indeed assigned the "evaluated" role. All survey respondents indicated that (8) contains a "clear contradiction". However, (9) – which tests whether an

---

[3] I distributed a formal survey to six naïve native speakers of American English (age range: 20-54, diverse regional backgrounds); the judgments presented in Sections 3 and 4 are averaged from the responses to this survey.

argument-predicate relation holds with the subject NP – is entirely well-formed: five out of six respondents indicated that (9) contains "no contradiction", while one responded that it contains a "possible contradiction". These examples demonstrate that only the post-predicate NP is assigned the "evaluated" role in TE.

Examples (10)-(12) provide further evidence that the subject NP is not an argument in TE, as its presence does not contribute to the truth conditions of the sentence. Most speakers find (10) at least somewhat contradictory.[4] However, the TE construction in (11) is not contradictory, demonstrating again that the "evaluated" role is not assigned to the subject NP. The source of this contrast cannot be the potential lexical ambiguity of *funny* ("strange" or "humorous"). For the survey respondents, only the "humorous" sense is available, as demonstrated by the perceived contradiction in (10); if the "strange" sense were available to these comprehenders, then (10) should be felicitous. In other words, the interpretation of (10) illustrates that *funny* is **not** lexically ambiguous for the survey respondents. As such, the well-formedness of (11) indicates that the subject NP is not assigned a semantic role by *funny*.

(10)   ??She's funny, but she has no sense of humor.
(11)   She's funny the way she always drops things, but she has no sense of humor.
(12)   It's funny the way she always drops things, but she has no sense of humor.

The comparison between (11) and the NE construction in (12) is striking: they are equally well-formed, suggesting that the presence of a referential subject in TE does not affect the sentence's truth-conditions. (11) and (12) are thus allosentences. Section 4 will demonstrate that the differences in their distribution are motivated at the informational level.

These contrasts make it clear that the subject in TE is not assigned either of the semantic roles that are known to be lexically selected by the main predicate. However, there remains the possibility that the subject is assigned a *different* semantic role. As the claim that TE subjects are licensed by information structure is dependent on the subject not being a semantic argument, it is necessary to explore this possibility further.

Clearly, the hypothetical semantic role could not emerge from the predicate itself, as at least some TE predicates maximally select for "evaluator" and "evaluated" roles.[5] It is possible, though, that the additional semantic role could be

---

[4] Four out of six respondents rated (10) as "possibly contradictory"; one rated this example as "clearly contradictory," while the final respondent saw no contradiction in (10). In contrast, five out of six respondents saw no contradiction in either (11) or (12). For all respondents, (11) and (12) were judged to be less contradictory than (10).

[5] Pesetsky (1987) proposes a three-argument structure for experiencer verbs such as *frighten* and *amaze*: "experiencer", "cause of emotion", and "object of emotion". Though many experiencer predicates appear in TE, this three-argument articulation could not be extended to all TE predi-

projected from the top down, i.e. from a constructional event representation. The essential question is what this semantic role would be. Lambrecht (p.c.) suggests that this role is assigned to an individual who possesses the property that is evaluated in TE; the individual role is assigned to the subject NP, while the "evaluated" role is assigned to the post-predicate NP.

Indeed, this semantic relationship between the referents of the two NPs is typical of TE. The referents of most TE subjects do play a role within the eventuality expressed by the post-predicate NP. (13) is a typical example: the referent of the matrix subject is the agent of the event expressed by the post-predicate NP.

(13)   She's annoying the way she always cracks her knuckles.
(14)   Marilyn Monroe is amazing the way people still read books about her.

However, this semantic relationship is not required. Example (14) is a well-formed token of TE even though the referent of the matrix subject, *Marilyn Monroe*, does not participate in the embedded event (cf. Reinhart 1981). She is certainly *relevant* to the event, but this relation of relevance is not established through event participation. This suggests that the relationship between the subject and the post-predicate NP in TE is not defined at the semantic level. Section 4 will demonstrate that the relation is constrained at the informational level, specifically by the pragmatic requirements for topicality.

4.   Information Structure in TE

As the subject in TE is topical, its relationship with the extraposed NP is constrained by a requirement of relevance: "A statement about a topic can count as informative only if it conveys information which is relevant with respect to this topic" (Lambrecht 1994:191). In TE, the requirement of relevance is often satisfied through the assignment of an event role – the referent of the subject NP is frequently a participant in the event expressed by the post-predicate NP. While event participation appears to be a sufficient condition for relevance, it is not a necessary one, as illustrated by example (14). A further exploration of the conditions for relevance within the topic relation is outside the goals of this paper. However, the acceptability of (14) demonstrates that the referents of the two NPs in TE are obligatorily linked at the pragmatic level, though not necessarily linked in semantic event representations.

The rest of this section will provide further evidence that TE obligatorily expresses a topic-focus information structure. Here I will emphasize the empirical basis for the claim that TE subjects are topical; I refer the reader to Michaelis and Lambrecht's (1996a) account of NE – which as demonstrated above is the allosentence of TE – for arguments that the post-predicate NP is in focus. The

---

cates. For example, evaluative adjectives such as *great* and *weird* do not encode a "cause" vs. "object" distinction in any analysis known to me.

evidence for topicality in TE is drawn from diverse sources: topic-selecting constructions, the activation status of TE subjects, and the effect of ratified discourse topics on the acceptability of TE in context.

First, TE is compatible with topic-selecting constructions such as "As for X, Y", "Speaking of X, Y" and "What's up with X?", where X is required to be a topic (Reinhart 1981). When the topic-selecting construction subsumes TE within a discourse, the topical element X must co-refer with the TE subject, lending support to the claim that TE subjects are obligatorily topics. This is illustrated in (15)-(17).

(15)   As for Mary, she worries me the way Bill keeps beating her at Scrabble.
(16)   # As for Bill, Mary worries me the way he keeps beating her at Scrabble.
(17)   A: What's up with Mary?
        B1: Well, she worries me the way Bill keeps beating her at Scrabble.
        B2: # Well, Bill worries me the way he keeps beating her at Scrabble.

In (15), the topic *Mary* co-refers with the matrix subject of the TE construction, and the sentence is pragmatically well-formed. However, when the established topic and the TE subject do not co-refer, as in (16), the result is infelicitous. This is the case despite the fact that *Bill* is the agent of the embedded event in (16), and therefore is a *potential* topic by the criterion of relevance. In fact, in the absence of a discourse context *Bill* seems to be a better potential topic than *Mary,* as agentivity tends to correlate with topicality. The contrast between the B1 and B2 responses in (17) extends the same observation to a different topic-selecting construction. The infelicity of (16) and (17-B2) thus indicates that the subject position in TE conventionally expresses the topic relation.

Further evidence that subjects in TE are topical emerges from constraints imposed through the interaction of the topic relation with activation status, i.e. the extent to which a referent is "activated" in the mental representation of a discourse. Although information status and topicality are dissociable – inactive referents, often coded as indefinite NPs, may occasionally serve as topics – there is a positive correlation between topicality and activation or accessibility (Reinhart 1981, Lambrecht 1994). This correlation is a natural consequence of the informational role the topic relation plays. The referents of topical constituents tend to be active within a discourse because they specify the domains in which information is evaluated and stored. However, the correlation is necessarily imperfect; at some point, every potential topic must be introduced into the discourse and raised to active status.

The effects of this imperfect correlation are evident in TE. Subjects in TE are frequently unaccented pronouns, which in English is the preferred means of encoding highly active referents (Lambrecht 1994). In contrast, indefinite NPs – which tend to code inaccessible referents – are generally barred from the subject position in TE. This constraint is illustrated in (18), which is at least somewhat degraded for most speakers. However, there is not an absolute ban on inaccessible

subjects in TE, as shown by (19). In this sentence, the matrix subject is both indefinite and inaccessible. However, the sentence is rescued by the fact that the form *this (one) X* serves to introduce new topics into a discourse (e.g. Prince 1981c). To summarize, subjects in TE are constrained by the same accessibility requirements that generally apply to the topic relation: inaccessible referents make poor topics unless their form explicitly signals the introduction of a new topic.

(18) (#) At the conference last weekend, **a woman** was annoying the way she kept cracking her knuckles.

(19) At the conference last weekend, **this one woman** was annoying the way she kept cracking her knuckles.

Finally, the acceptability of TE sentences improves when the subject co-refers with a ratified (i.e. strongly established) discourse topic (Lambrecht and Michaelis 1998). Though the constructs of "sentence topic" and "discourse topic" are distinct, they are interrelated: the referents of sentence topics tend also to be topical on the discourse level. Thus, the presence of a ratified discourse topic tends to make topic-selecting sentences more natural. Example (20), which is adapted from a naturally occurring discourse, has a prominent discourse topic: *What I think of Bill* explicitly selects *Bill* as the topic of conversation. The TE construction in Continuation (1), which appeared in the actual discourse, is fully felicitous in this environment. In fact, English speakers consistently find Continuation (1) more natural in the context provided than in isolation. This effect cannot be attributed to the presence of just *any* context, as the given context does not improve the felicity of the NE sentence in Continuation (2). In addition, some speakers prefer the TE construction to its NE allosentence in this environment, even though the NE construction is generally judged to be more natural in isolation.

(20) **Context**: What I think of Bill: He's a cool guy. People go on about him not speaking English much, but he's so good at French!
Continuation (1): He's great the way he sort of corrects my French when we're talking without making a big deal of it.
Continuation (2): It's great the way he sort of corrects my French when we're talking without making a big deal of it.
(adapted from http://www.coastkid.org/hd4a.html)

This double dissociation supports the analysis of TE and NE as informationally distinct allosentences. NE signals an all-focus information structure, while TE additionally expresses the relation topic.

5.   Concluding Remarks

The analysis of the English TE construction presented here opens the door to a new exploration of the interaction between information structure, argument

structure, and morphosyntax – and in particular, between the relations of topic, argument, and subject. TE subjects, which are classified as such on morphosyntactic grounds, are licensed on the informational level but not on the semantic level. The fact that subjects are not arguments in TE goes against the generalization that a subject "always has a selectional relation with some predicate in the sentence" (Li & Thompson 1976:462). Even if this statement is amended to accommodate expletive subjects that are licensed at the syntactic level, the referential subjects of TE resist the generalization. They also point to broader implications: TE demonstrates that a purely projectionist model of argument structure – that is, a theory that requires that every referential expression within the clause be selected by some lexically represented predicate – cannot fully account for the distribution of referential NPs. Argument structure and information structure interact in the domain of licensing.

One important issue for future research is how general the phenomenon of licensing by information structure is: whether it is restricted to TE, or whether it is a productive operation at the information structure interface. Though to the best of my knowledge TE is the first attested case of licensing by information structure, the phenomenon is certainly consistent with the long tradition of research linking topicality to subject position (e.g., Firbas 1964, Halliday 1967, Reinhart 1981, Lambrecht 1994) as well as the "conspiracy of syntactic constructions" that front predictable or topical information (Prince 1981a:247, see also Horn 1986, Birner and Ward 1998). As such, the possibility that it is a productive process should be carefully investigated. One potential source of the apparent rarity of the phenomenon is that the "input conditions" for the licensing of a topical subject are rarely satisfied: an all-focus construction with an expletive subject that could potentially support the topic relation. Some initially attractive candidate constructions with expletive subjects are out on informational grounds: sentential extraposition constructions (21) are not necessarily all-focus and it is hard to imagine how so-called "thetic" constructions (22) could support a topic.

(21)   It's amazing that Bill left.
(22)   It's raining.

The typological status of licensing by information structure thus remains an open question. The existence of the phenomenon, though, calls for a re-examination of the scope of the information structure interface, as well as the mechanisms that underlie licensing.

References

Birner, Betty and Gregory Ward. 1998. *Information Status and Noncanonical Word Order in English.* Amsterdam: John Benjamins.
Chafe, Wallace. 1976. Givenness, Contrastiveness, Definiteness, Subjects,

Topics, and Point of View. In C. Li, ed., *Subject and Topic,* 25-55. New York: Academic Press.

Chomsky, Noam. 1981. *Lectures on Government and Binding.* Dordrecht: Foris.

Davison, Alice. 1984. Syntactic Markedness and the Definition of Sentence Topic. *Language* 60:797-846.

Firbas, Jan. 1964. On Defining the Theme in Functional Sentence Analysis. *Travaux Linguistiques de Prague* 1:267-280.

Godfrey, John, Edward Holliman, and Jane McDaniel. 1992. SWITCHBOARD: Telephone Speech Corpus for Research and Development. *International Conference on Acoustics, Speech, and Signal Processing* 92:517-520.

Goldberg, Adele. 1995. *Constructions: A Construction Grammar Approach to Argument Structure.* Chicago: University of Chicago Press.

Goldberg, Adele. 2001. Patient Arguments of Causative Verbs Can Be Omitted: The Role of Information Structure in Argument Distribution. *Language Sciences* 23:503-524.

Grosz, Barbara and Yael Ziv. 1998. Centering, Global Focus, and Right Dislocation. In M. Walker, A. Joshi, and E. Prince, eds., *Centering Theory in Discourse,* 293-307. Oxford: Clarendon Press.

Halliday, Michael. 1967. Notes on Transitivity and Theme in English, Part 2. *Journal of Linguistics* 3:199-244.

Horn, Laurence. 1986. Presupposition, Theme, and Variations. *Proceedings of the Chicago Linguistic Society* 22(2):168-192.

Keenan, Edward. 1976. Towards a Universal Definition of "Subject". In C. Li, ed., *Subject and Topic,* 303-334. New York: Academic Press.

Lambrecht, Knud. 1994. *Information Structure and Sentence Form.* Cambridge: Cambridge University Press.

Lambrecht, Knud and Laura Michaelis. 1998. Sentence Accent in Information Questions: Default and Projection. *Linguistics and Philosophy* 21:477-544.

Li, Charles and Sandra Thompson. 1976. Subject and Topic: A New Typology of Language. In C. Li, ed., *Subject and Topic,* 457-89. New York: Academic Press.

Michaelis, Laura and Knud Lambrecht. 1996a. Toward a Construction-Based Theory of Language Function: The Case of Nominal Extraposition. *Language* 72:215-247.

Michaelis, Laura and Knud Lambrecht. 1996b. The Exclamative Sentence Type in English. In A. Goldberg, ed., *Conceptual Structure, Discourse, and Language,* 375-389. Stanford, CA: CSLI.

Pesetsky, David. 1987. Binding Problems with Experiencer Verbs. *Linguistic Inquiry* 18:126-140.

Prince, Ellen. 1981a. Toward a Taxonomy of Given/New Information. In P. Cole, ed., *Radical Pragmatics,* 223-254. New York: Academic Press.

Prince, Ellen. 1981b. Topicalization, Focus-movement, and Yiddish-movement: A Pragmatic Differentiation. In *Proceedings of the Berkeley Linguistics Society* 7:249-265.

Prince, Ellen. 1981c. On the Inferencing of Indefinite *this* NPs. In A. Joshi, B. Webber and I. Sag, eds., *Elements of Discourse Understanding,* 231-50. Cambridge: Cambridge University Press.

Reinhart, Tanya. 1981. Pragmatics and Linguistics: An Analysis of Sentence Topics. *Philosophica* 27:53-94.

Ruppenhofer, Josef. 2004. *The Interaction of Valence and Information Structure.* Ph.D. diss., University of Colorado-Boulder.

Strawson, P.F. 1964. Identifying Reference and Truth Values. In D. Steinberg and L. Jakobovits, eds., *Semantics: An Interdisciplinary Reader in Philosophy, Linguistics, and Psychology*, 86-99. Cambridge: Cambridge University Press.

Jennifer Mack
Yale University
Department of Linguistics
370 Temple St.
New Haven, CT 06520

jennifer.mack@yale.edu

Laughing Our Heads Off: When Metaphor Constrains Aspect[∗]

JAUME MATEU and M. TERESA ESPINAL
Universitat Autònoma de Barcelona

1.   Aspect in Idiomatic Constructions

It has been claimed in the Distributed Morphology framework that aspectuality of verbal phrases cannot be altered in idiomatic contexts (Marantz 1997, McGinnis 2002, 2005). For example, McGinnis (2002:667) points out that it should not be surprising that the following idiomatic examples in (1), which are representative of the familiar Vendlerian classes turn out to preserve the aspectuality associated to their literal interpretations:

(1)   a. States (*have bigger fish to fry; take the cake*)
          b. Activities (*beat around the bush; push one's luck*)
          c. Accomplishments (*run X into the ground; climb the ladder of success*)
          d. Achievements (*drop the ball; kick the bucket*)

McGinnis (2005:9) goes further by claiming that "there is still no evidence that an idiomatic phrase can have an aspectual interpretation that is incompatible with its syntactic structure".

In this paper, we take issue with this radical position by showing how metaphor can change the aspectual interpretation "compatible with its syntactic structure". In order to show this, we will be using some interesting examples that fall into the class described as *fake resultatives* by Jackendoff (1997, 2002) and Glasbey (2003, 2005). Interestingly, these authors have pointed out that these constructions have an aspectual reading different from true resultatives: for example, compare the telic resultative constructions in (2), associated to literal eventualities, with the atelic ones in (3), associated to idiomatic ones.

(2)   a. The audience laughed the actor off the stage in/*for ten seconds.
        b. She worked the splinter out of her finger in/*for ten seconds.

(3)   a. John laughed his butt off all day long/*in ten minutes.
        b. John worked his guts out all day long/*in ten minutes.

The main goal of this paper is to show that fake resultatives can be conceptually associated with durative activities, not because of Jackendoff's (1997, 2002) or Glasbey's (2003, 2005) lexical stipulations (see section 2), but rather because of regular metaphorical modes of thought that are dynamically activated in the process of idiom comprehension (Gibbs 1994, 1995, Lakoff 1993, Lakoff and Johnson 1999). In particular, as shown in section 3, we claim that the atelic interpretation is driven by the activation of the complex metaphor AN INTENSE ACTIVITY IS AN EXCESSIVE DETACHMENT OF A BODY PART, which is a subcase of AN INTENSE ACTIVITY IS AN EXCESSIVE CAUSED CHANGE OF LOCATION/STATE.

2.   Two Accounts of *Fake Resultatives*
In this section, we review two previous accounts that assume that the aspectual meaning (in particular, the atelic or process interpretation) drawn from the semi-idiomatic constructions in (3) follows from or relates to some unmotivated lexical stipulations: see Jackendoff (1997, 2002) and Glasbey (2003), respectively. We hold that idioms cannot be simply taken as non-compositional, and idiosyncratic. Rather we assume that their linguistic interpretation is no different from that of non-idiomatic constructions, and – in order to account for the atelic interpretation involved in apparent resultative constructions like those in (3) – we put forward the hypothesis (cf. Mateu and Espinal 2007) that the interpretation 'to excess' is obtained at the output of various metaphorical and metonymic conceptual processes that apply non-systematically in idiom comprehension (Gibbs 1995). Accordingly, the relevant point is not whether the supposed stipulation (or convention, as we prefer to call it here) exists, but rather whether it can be motivated or not. In contrast to Jackendoff's and Glasbey's unmotivated analyses, we will show that the relevant motivation whereby an atelic interpretation is involved in (3) is to be related to Lakoff & Johnson's (1999) theory of conceptual metaphors (see section 3).
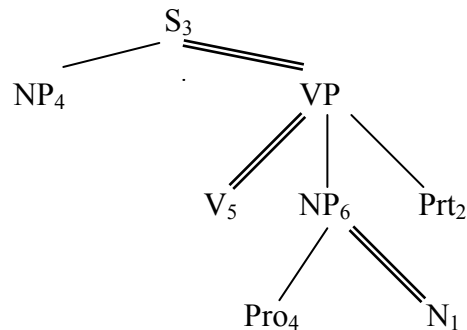
2.1.   Jackendoff (1997, 2002)
According to Jackendoff, the idioms in (3) form a class of constructional idioms (CI), in the sense that they show a syntactic configuration whose structure contributes semantic content above and beyond that contained in the constituent lexical items. More specifically, he claims that the data in (3) instantiates a family of idiomatic intensifiers that use the same syntax as the resultative. In other words, this class of CI corresponds to an idiomatic specialization of the resultative construction.

In particular, he claims that the constructions in (3) are listed in the lexicon as VP idioms: see (4) and (5) for his informal representations, drawn from Jackendoff (1997:554) and Jackendoff (2002:173), respectively. The construction itself has a VP syntactic structure in which the NP + PRT are lexically fixed, and the V is a free variable. At the level of conceptual structure the schemas in (4a) and (5a) are claimed to be interpreted with an intensive adverbial force (i.e., *intensely, excessively*), associated with the action denoted by the verb. The NP plus the particles *out/off* form a class of idiomatic intensifiers that, somewhat unexpectedly, do not carry typical resultative semantics. Crucially, notice that the association between the syntactic part in (4a)/(5a) and the interpretive one in (4b)/(5b) is merely stipulated, and no motivation is provided for such a stipulation.

(4)   a.   [$_{VP}$ V [bound pronoun]'s head off]
       b.   'V intensely'

(5)   a.   [$_{VP}$ V NP PRT]: V pro$_e$'s head / butt off, V pro$_e$'s heart out
       b.   'V excessively'

Adopting Jackendoff's (2002) Parallel Architecture framework, Cappelle (2005:48) provides a more formal representation in (6). In particular, notice that the Jackendovian semantic/conceptual representation in (6b) contains a Degree expression which is *directly* associated to the NP and Prt via two subindices: *6+2*, respectively. Indeed, we will argue that such a direct association prevents the relevant motivation from being properly captured.

(6)   a.   Syntactic structure

b. Semantic (conceptual) structure

$$\text{Event}_3$$

$$\text{Object}_4 \qquad Y_5 \qquad \text{Degree}_{6+2}$$

$$X \qquad\qquad\qquad \text{EXCESSIVELY}$$
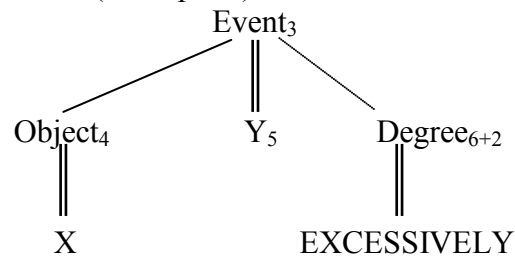
More interestingly, Jackendoff (1997:552) points out that a class of fake reflexive resultatives exists in English that show a similar intensive adverbial force, linguistically expressed by means of an AP or a PP that idiomatically mean *excessively*:

(7)   a. Dean laughed/danced himself *crazy/silly.*
        b. Dean laughed/danced himself *to death/to oblivion.*

Concerning the aspectual meaning involved in (7), Jackendoff (1997:552) makes the interesting observation that "the expressions with *crazy* and *silly* can be used telically or atelically; those with *to* prefer to be telic": cf. (8). In contrast, he points out (Jackendoff 1997:551) that the abovementioned expressions with *out/off*-particles (as well as the V *up a storm* construction) can only be interpreted with an atelic reading: cf. (9).

(8)   a. Dean laughed/danced himself *crazy/silly* for/in an hour.
        b. Dean laughed/danced himself *to death/to oblivion* in/??for an hour.

(9)   a. Sue worked *her butt off* for/*in an hour.
        b. Harry cooked *up a storm* for/*in an hour.
        c. The frog sang *his heart out* for the whole night/*in a night.

To sum up, it is important to notice that under Jackendoff's architecture a constructional idiom is a special kind of phrasal lexical item, whose meaning is learnable in the same way word meanings are learned; therefore, the fact that different phrases that idiomatically mean *intensely/excessively* have different aspectualities must be attributed to the fact that SS-CS correspondences have to stipulate when a given SS corresponds to a telic CS (e.g. time-*away* construction), an atelic one (e.g. V *up a storm*, V NP *out/off*), or to both (e.g. *laugh himself silly*). In section 3 we will show that the aspectual meaning of this construction is activated by salient conceptual metaphors.

2.2. Glasbey (2003, 2005)

Glasbey (2003, 2005) mainly focuses on the fact that fake resultatives like those in (3) and (9) show non-compositionality of aspect (*contra* McGinnis 2002, 2005), since the aspectual class conveyed by the idiomatic interpretation is an

activity, a kind of eventuality that should be contrasted with the literal interpretation, which gives rise to an accomplishment. According to her, whereas literal eventualities have a natural endpoint and a gradual patient, there is usually no gradual patient property in the idiomatic eventuality involved in (3) and (9), unless one can imagine such a natural end point and some homomorphism can be identified between the syntactic components and certain properties of the idioms's components. Thus, her example in (10a) is partially accepted and can be submitted to the accomplishment test in (10b), because a counterpart exists in the idiomatic domain (i.e. *pains, feelings, thoughts,* etc.) to the body part in the domain of literal interpration (i.e. *heart*).

(10) a. ?Patsy poured her heart out in two hours, on the phone to her sister.
      b. It took Patsy two hours to pour her heart out, on the phone to her sister.

According to Glasbey (2005:5), what is characteristic about the class of idioms under the present study is that it corresponds to "a construction which describes an accomplishment under a literal interpretation and an activity under an idiomatic interpretation". She claims that idioms which do not show compositionality of aspect, tentatively identified with Nunberg, Sag, and Wasow's (1994) so-called *idiomatic phrases*, should best be regarded as being listed as full phrases in the lexicon with their aspectual information attached. Glasbey concludes that it is possible to view aspect as being compositional in at least some idioms (e.g. Nunberg, Sag, and Wasow's *idiomatically combining expressions*), while at the same time allowing for the result of the aspectual composition to be different in the idiomatic and the literal cases. The problem still is that, under her approach, no motivation is given to the empirical fact that the idioms exemplified in (3) and (9) are aspectually interpreted as activities. This is merely stipulated.

In the next section, we show that (i) Jackendoff's (1997, 2002) observation that the set of idioms in (3) and (9) are interpreted as "V excessively" and (ii) Glasbey's (2003, 2005) claim that they are interpreted as activities (but not as accomplishments) both can be motivated, if one assumes that regular metaphorical modes of thought are dynamically activated in the process of idiom comprehension (cf. Gibbs 1994f, Lakoff and Johnson 1999, among others).

3.   An Alternative Account: When Metaphor Constrains Aspect

Before dealing with so-called *fake* resultatives and showing how the relevant metaphor involved can be argued to constrain their aspect, it will be useful to show how *true* resultatives have been analyzed within a particular cognitive framework that assumes Lakoff & Johnson's theory of conceptual metaphors: for our present purposes, here we will be using Goldberg's (1995) Construction Grammar-based informal analysis of the *resultative construction* (e.g., (11b)), which is regarded as a metaphorical extension of the so-called *caused-motion construction* (e.g., (11a)). She represents the relation between the two constructions as in (12). Basically, according to Goldberg (1995:84f), the resultative

construction is a metaphorical extension of the central sense of the caused-motion construction, which is associated with the semantics "X CAUSES Y to MOVE Z".

(11) a. Joe kicked the bottle into the yard.
b. Joe kicked Bob black and blue.

(12) Goldberg's (1995:88) Construction Grammar analysis
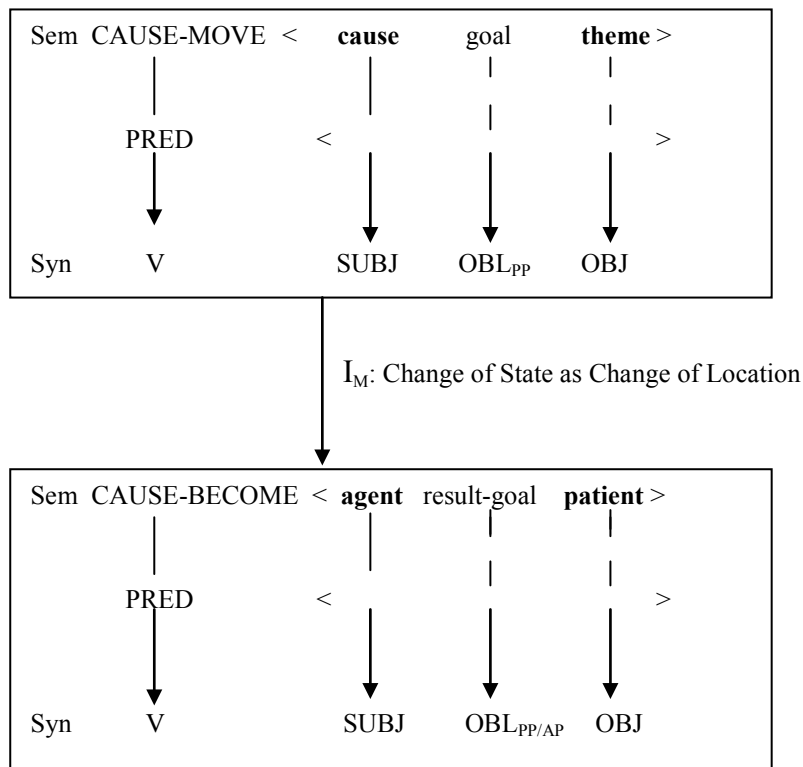
Notice that the intervention of the well-known metaphor *Changes of State are Changes of Location* is depicted in (12) via the metaphorical extension inheritance link I_M.

> The metaphor –in this case, Change of State as Change of Location- accounts for the relation between the semantics of the two constructions. The syntactic specifications of the metaphorical extension are inherited from the caused-motion construction.
> (Goldberg 1995:88-89)

To put it in Lakoff & Johnson's (1999:52-53) terms, there are three primary metaphors involved in the resultative construction, the ones in (13).

(13) a. *States are Locations*

Subjective Judgment: A subjective state
Sensoriomotor Experience: Being in a bounded region of space
Primary experience: Experiencing a certain state as correlated with a certain location (e.g., being cool under a tree, feeling secure in bed)

b. *Change is Motion*
Subjective Judgment: Experiencing a change of state
Sensoriomotor Experience: Moving
Primary experience: Experiencing the change of state that goes with the change of location as you move

c. *Causes are Physical Forces*
Subjective Judgment: Achieving results
Sensoriomotor Experience: Exertion of force
Primary experience: Achieving results by exerting forces on physical objects to move or change them

Given this*,* the metaphor posited by Goldberg (1995:88) in (12) is in fact a combination of the two primary metaphors in (13a) and (13b). Notice moreover that her analysis in (12) should also be modified by positing an additional inheritance link, the one having to do with the primary metaphor in (13c). In this sense, i.e., *stricto sensu*, Goldberg's (1995) use of the abstract CAUSE predicate in the basic or source domain structure in (12) is not quite appropriate: the replacement of the term "*Caused*-Motion Construction" by "*Forced*-Motion Construction" seems to be more justified.

Next consider the relevant minimal pair in (14), where the resultative construction in (14b) can be seen to preserve the telic aspect of the forced-motion construction in (14a):

(14)   a. Joe laughed the audience off the stage (in/*for ten seconds)
        b. Joe laughed himself to death/to oblivion (in/*for an hour)

Indeed, the fact that those resultatives exemplified in (11b) and (14b) preserve a telic aspectuality follows from the more general claim alluded to by Gibbs's (2003:7) that the "metaphorical mappings preserve the cognitive topology of the embodied, image-shematic source domain" (cf. Lakoff's (1990, 1993) so-called *Invariance Hypothesis*). In the present case, there is a *telos* (or 'final goal') involved in the source domain of the forced-motion construction (cf. (14a)) that is mapped onto the target domain of the resultative construction (cf. (14b)): as pointed out by Goldberg (1995:84), "the resultative is a metaphorically interpreted goal phrase". It is then not surprising that resultative constructions are usually found to be telic: i.e., since forced-motion constructions are usually telic,

resultative constructions are predicted to be telic as well, by virtue of Lakoff's (1990, 1993) Invariance Hypothesis.[2]

Up to now we have been dealing with the somewhat easier or more predictable cases: i.e., the *true* resultatives, which are those whose aspect is telic. Next consider again the more interesting cases in (3), repeated in (15).

(15) a. John laughed his butt off all day long/*in ten minutes
      b. John worked his guts out all day long/*in ten minutes.

It must be recalled from section 2 that two non-trivial facts must be explained concerning the examples in (15): not only must we account for their conceptual interpretation (i.e., 'to act excessively'), but also their atelic aspect (i.e., their at first sight unexpected process or activity reading). Indeed, as emphasized above, we do not want to simply assume Jackendoff's (1997, 2002) stipulation concerning the former nor Glasbey's (2003, 2005) one concerning the latter. Rather, we want to motivate both interpretations (the meaning of 'excessively' and the atelic reading), and in order to achieve this goal we will use Lakoff & Johnson's (1999) theory of conceptual metaphors.

On the other hand, although we do not provide experimental or psycholinguistic evidence for our present proposal,[3] here we want to claim that metaphor can be shown to constrain aspect. This can better be shown in a non trivial way when dealing with the "exceptional" cases (e.g., fake resultatives), rather than when dealing with the usual ones (i.e., true resultatives). In fact, it should not be surprising that Glasbey's (2003, 2005) criticism of McGinnis's (2002, 2005) syntactico-centric treatment of aspect is mostly based on the existence of examples like those in (15), since – given McGinnis' hypothesis on the systematicity of aspect – only the accomplishment reading would be expected to emerge in (15), contrary to fact. However, as noted above, it seems to us that Glasbey's (2005) alternative solution of attaching the relevant aspectual reading (an atelic one in (15)) to the entire idiomatic phrases in the lexicon is not explanatory enough. Rather it seems to us that appealing to conceptual metaphor becomes unavoidable if one wants to account for (and not just stipulate) their atelicity.

To put it in the present terms, metaphor can be shown to constrain aspect in a non-trivial way precisely in those cases where metaphorical mappings do not appear to preserve the cognitive topology of the embodied, image-shematic source domain, i.e., in those cases where the so-called Invariance Hypothesis (Lakoff 1990, 1993) appears to be violated. In contrast, when dealing with "true" resultatives, aspectuality can be said to follow from the topology of the source

---

[2] See Lakoff & Johnson (1999) for the claim that such a hypothesis does not have a primitive status in their recent theory of conceptual metaphor.

[3] See Gibbs (1994, 1995, i.a) for evidence showing how the meaning of idioms is metaphorically motivated.

domain: the *telos* (i.e., the endpoint/final goal) in the source domain is mapped onto another one in the target domain (cf. (14)).

Given the previous discussion, let us try to motivate both stipulations involved in (15): i.e., the conceptual interpretation 'to act excessively' and its related atelic interpretation. Far from accepting the traditional claim that idioms are bearers of interpretive anomalies, we want to support the idea that they are conceived of as triggers of conceptual metaphors. In particular, the examples in (15) seem to involve a complex metaphor based on the well-established primary metaphor that conceives the body as a container, for extracting a part from this container is cognitively conceived of as an excessive, impossible action. This complex metaphor, which could be formulated as in (16), allows an interpretation according to which the exaggeration (i.e., the meaning of '*ex*cessively') that emerges at the physical or source domain of the body is mapped as intensity onto the abstract or target domain of the relevant action: that is, acting excessively is conceptually motivated in terms of an excessive change undergone by the subject's body part.

(16)   AN INTENSE ACTIVITY IS AN EXCESSIVE DETACHMENT / EXHAUSTION OF A BODY PART

Given this, the fact that examples like (15a) and (15b) are conceptually interpreted as (roughly) 'John {laughed/worked} excessively' is assumed to be driven by the activation of the complex metaphor in (16). That is to say, the intensity meaning in (15a) is structured by an excessive (unreal) detachment undergone by the butt of the subject, while the intensity meaning in (15b) is understood by means of an excessive (also unreal) exhaustion of the guts of the subject (e.g., notice that the same holds for the typical idiom *to cry one's eyes out*).

More generally, we claim that the particular complex metaphor in (16) is not but a subcase of the more general one represented in (17):

(17)   AN INTENSE ACTIVITY IS AN EXCESSIVE CAUSED CHANGE OF LOCATION / STATE

Our claim is that it is precisely the activation of the complex metaphor in (17) that accounts for the durative (i.e., atelic) aspect of examples like those in (15): the excessive change of location structured by a bounded path (*out/off*) is mapped onto the target domain as a more abstract unbounded intensity component. In other words, the two activities involved in the examples in (15) are conceptualized as so intense that they appear to lack boundaries; as a result of the activation of the complex metaphor in (17), there turns out to be no real endpoint involved in the final conceptual interpretation of the idiom, hence the *non*-resultative aspect of the semi-idiomatic constructions in (15).

Furthermore, (17) can also be argued to be involved in the process of understanding "fake resultatives" like the one in (18a), which has a typical durative (i.e., atelic) interpretation and contains a subset of adjectives (i.e., *crazy* or *silly*)

initially conceptualized as final states of a caused change (cf. (12) above). We claim that the atelicity of (18a) follows from the fact that the excessive final endpoint/state associated to *crazy/silly* is conceptualized in such a way that the intense activity appears to lack boundaries. As above, as a result of the activation of the complex metaphor in (17), there turns out to be no final state involved in the final conceptual interpretation of the idiom, hence the typical *non*-resultative aspect of the semi-idiomatic construction in (18a).

(18)   a. John laughed himself *crazy/silly* for an hour.
        b. (?)John laughed himself *crazy/silly* in an hour.

On the other hand, concerning the telic interpretation in (18b), our claim is that the only complex metaphor involved is the typical one found in telic resultatives: i.e., *A caused change of state is a forced motion/'change' of location*, i.e., the very same one found in (11b) *Joe kicked Bob black and blue* or (14b) *Joe laughed himself to death/to oblivion*.

4.   Concluding Remarks

So-called "fake resultative constructions" like *We laughed our heads off* have been assigned both a somewhat unexpected atelic interpretation (Glasbey 2003, 2005) and a conceptual meaning expressing intensity (Jackendoff 1997, 2002). Here we have shown that both associations must not be regarded as mere stipulations, but can be accounted for by examining a metaphorical process which is not syntactically transparent nor compositional.

In our previous work (e.g., Mateu & Espinal 2007), we have claimed that a generative approach to the compositional meaning of idiomatic constructions must not be regarded as incompatible with the cognitive one presented here. We also leave it for further research to deal with Gibbs's (2003:14) concessive claim that "traditional propositional and high-dimensional approaches to semantics may not be entirely incompatible with an embodied meaning perspective". For the time being, we are persuaded that both perspectives (the generative one and the cognitive one) can provide interesting insights on the syntax and semantics of idioms.

References

Cappelle, Bert. 2005. Particles Patterns in English: A Comprehensive Coverage. Ph.D. diss., Katholieke Universiteit Leuven, Kortrijk.

Gibbs, Raymond W. 1994. *The Poetics of Mind: Figurative Thought, Language, and Understanding*. Cambridge: Cambridge University Press.

Gibbs, Raymond W. 1995. Idiomaticity and Human Cognition. In M. Everaert et al., eds., *Idioms: Structural and Psychological Perspectives*, 97-116. Hillsdale, NJ: Lawrence Erlbaum Associates.

Gibbs, Raymond W. 2003. Embodied Experience and Linguistic Meaning. *Brain and Language* 84:1-15.

Glasbey, Sheila R. 2003. *Let's Paint the Town Red For a Few Hours*: Composition of Aspect in Idioms. In A. M. Wellington, ed., *Proceedings of the ACL Workshop: The Lexicon and Figurative Language*. Sapporo.

Glasbey, Sheila R. 2005. Aspectual Composition in Idioms. Ms., University of Birmingham.

Goldberg, Adele. 1995. *Constructions. A Construction Grammar Approach to Argument Structure.* Chicago: The University of Chicago Press.

Jackendoff, Ray. 1997. Twisting the night away. *Language* 73:534-559.

Jackendoff, Ray. 2002. *Foundations of Language. Brain, Meaning, Grammar, Evolution*. Oxford and New York: Oxford University Press.

Lakoff, George. 1990. The Invariance Hypothesis: Is Abstract Reason Based on Image-Schemas? *Cognitive Linguistics* 1:39-74.

Lakoff, George. 1993. The Contemporary Theory of Metaphor. In A. Ortony, ed., *Metaphor and Thought*, 202-251. Cambridge: Cambridge University Press.

Lakoff, George and Mark Johnson. 1999. *Philosophy in the Flesh. The Embodied Mind and Its Challenge to Western Thought.* New York: Basic Books.

Marantz, Alec. 1997. No Escape from Syntax. Don't Try Morphological Analysis in the Privacy of Your Own Lexicon. *UPenn Working Papers in Linguistics* 4(2):201-225.

Mateu, Jaume and M. Teresa Espinal. 2007. Argument Structure and Compositionality in Idiomatic Constructions. *The Linguistic Review* 24(1):33-59.

McGinnis, Martha. 2002. On the Systematic Aspect of Idioms. *Linguistic Inquiry* 33(4):665-672.

McGinnis, Martha. 2005. Painting the Wall Red for a Few Hours: A Reply to Glasbey (2003). *Snippets* 10. http://www.ledonline/snippets/

Nunberg, Geoffrey, Ivan Sag, and Thomas Wasow. 1994. Idioms. *Language* 70(3):491-538.

Jaume Mateu and M. Teresa Espinal
Departament de Filologia Catalana
Facultat de Filosofia i Lletres
Universitat Autònoma de Barcelona
E-08193 Bellaterra (Barcelona)
Spain

jaume.mateu@uab.cat   teresa.espinal@uab.cat

Distributed Reduplication in Kankanaey

BRADLEY MCDONNELL
Arizona State University

Introduction

This paper investigates the prosodic and segmental properties of Kankanaey (Austronesian; Philippines) progressive and diminutive heavy syllable reduplication in the derivational framework Distributed Reduplication (henceforth, DR; Frampton 2004). Under the umbrella of Distributed Morphology (Halle and Marantz 1993), DR augments Raimy's (2000) formal reduplicative mechanisms with additional formal mechanisms to account for prosodic patterns of reduplication that go unexplained in Raimy (2000). DR employs the derivational notion of cyclicity to account for prosodic forms of reduplication that were said to be impossible in a derivational framework (cf. McCarthy and Prince 1995).

Kankanaey presents two such prosodic patterns in progressive and diminutive reduplication. Progressive reduplication exhibits a simplex pattern of heavy syllable reduplication, but yields unexpected surface forms when glides or glottal stops are present in the reduplicant; the analysis shows that certain of these surface through cyclic rule application. Diminutive reduplication evinces a more phonologically complex pattern whereby heavy syllable reduplication is accompanied by a glottal infix in some but not all lexical items, yielding a variety of surface forms. Allen (1980) analyzed this as a discontinuous morpheme; I argue that the glottal infix is a result of the prosodic requirements of diminutive reduplication. The analysis demonstrates how DR can account for prosodic forms of reduplication through prosodic adjustment and cyclicity.

1   Distributed Reduplication

DR claims that reduplication is accounted for by the interaction of several simple processes distributed throughout the morphology and the phonology. Frampton (2004) divides the duplicating processes into two main stages: 1) transcription junctures (henceforth, t-junctures) are inserted into the timing tier by the morphology via readjustment rules -- rules triggered by lexical insertion, see Halle and Marantz (1993); 2) transcription (autosegmental doubling) then

operates in the phonology. Following Frampton, the present paper formally represents t-junctures by [and]. The introduction of t-junctures in the morphological operation and their adjustment in the phonological component is further articulated in the three processes in (1).

(1)   a. **Domain Selection** - morphological operation to locate the initial t-juncture insertion location.
        b. **Juncture Insertion** - morphological operation that actually inserts the t-junctures into the timing tier.
        c. **Prosodic Adjustment** - morphologically conditioned phonological operation to adjust the t-juncture to a prosodic desideratum before transcription.   Frampton (2004:5)

Both *domain selection* and *juncture insertion* occur in all examples of reduplication and take place in the morphology. These are exemplified in this section with an Ilokano example from Frampton (2004:36-39), originally presented in Hayes and Abad (1989). *Prosodic adjustment*, on the other hand, occurs in only a subset of reduplicative forms and takes place in the phonology. Prosodic adjustment is discussed in §1.1 using examples from Mokilese progressive reduplication.

In Ilokano light syllable reduplication, the first CV segment of a root, such as /roʔot/ 'leaves, litter,' duplicates upon the affixation of *si-* 'covered with,' yielding the surface form /siroroʔot/ 'covered with litter.' The first step in the duplicating process is lexical insertion, by which morphosyntactic features are exchanged for phonological features at each terminal node. Lexical insertion begins with the root /roʔot/ and works its way out. Once the prefix *si-* is inserted, the readjustment rule in (2) is triggered, which carries out domain selection (1a) and juncture insertion (1b).

(2)   a. ø →] / V___ ; leftmost in stem
        b. ø → [/ ___ x; leftmost in stem   Frampton (2004:38)

Rule (2) consists of two parts: the *juncture insertion rule* (left of the semicolon) and the *rule domain* (right of the semicolon). The juncture insertion rule specifies the placement of the t-junctures in the root. (2a) specifies that a]-juncture is inserted after the leftmost vowel in the stem (as specified by the rule domain). Subsequently, (2b) specifies that the [-juncture is inserted before the leftmost timing slot in the stem. The readjustment rule is demonstrated in the first step in (3). Once the t-junctures are inserted into the timing tier via the readjustment rule in (2), phoneme association lines are autosegmentally transcribed to the left, producing a crossed structure, erasing t-junctures in the representation, as is shown in the second step in (3). In order to satisfy the No Crossing Constraint (NCC; Goldsmith 1976), the crossed structure is repaired via *fission* at the phonology-phonetics interface shown in the final step in (3). For the sake of

simplicity, the examples hereafter are represented in the format of (4). The readjustment rules that insert t-junctures in (2) are conflated and represented as C*V following Frampton (2004).

(3)   **Autosegmental Representation of Reduplication**
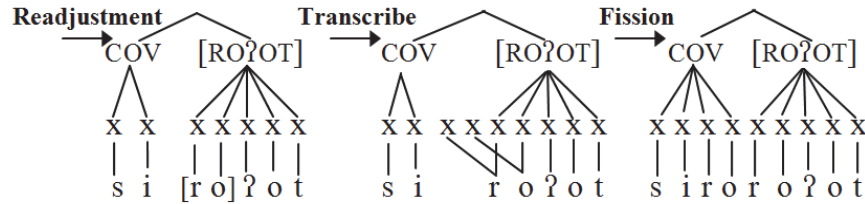
(4)   Lexical Insertion   C*V   Transcribe

     roʔot   →   siroʔot   →   si[ro]ʔot   →   si**ro**roʔot

1.1   Prosodic Adjustment

The basic tenets of prosodic adjustment are the notions *prosodic desideratum* and *defect driven rule* (DDR) that repair prosodic defects to meet the desideratum (Frampton 2001). The basic mechanisms are introduced in (5) with Frampton's (2004:93-97) description of heavy syllable reduplication in Mokilese. In (5a), the initial heavy syllable in the root is copied into the reduplicant. In (5b), the contiguous vowels trigger initial vowel lengthening in the reduplicant.

(5)   **Progressive Reduplication in Mokilese**
     a. kasɔ   →   **kas**kasɔ   'is throwing'
     b. wia   →   **wiː**wia   'is doing'

To account for these patterns, Frampton proposes the DDR in (6) that applies iteratively to repair a prosodic defect. The DDR consists of the *derivational constraint*, *adjustment rule list*, and *desideratum*. The desideratum, in turn, is expressed in a bipartite structure: the *substructure* and *condition*. The desideratum is defined as a governing prosodic target that is roughly the equivalent to the prosodic template in Prosodic Morphology (McCarthy and Prince 1986). In effect, the DDR is the driving force behind heavy syllable reduplication in DR.

(6)   **Annotated Defect Driven Rule for Mokilese Progressive Reduplication**

desideratum

reduplicant; bimoraic syllable ::]-Right, *otherwise* FCVL;   *Diphthong

substructure   condition   adjustment rule list   derivational constraint
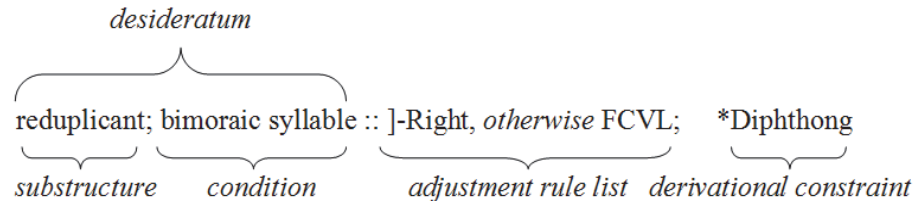
The substructure defines the domain of the desideratum, which, in (6), is the reduplicant, while the condition defines the prosodic requirement of the desideratum in the substructure domain. In (6), this is a bimoraic syllable. To the right of the double colon, the adjustment rule list provides an ordered list of possible repair rules, by which a rule will apply if it can. There are two rules in the adjustment rule list in (6) that account for Mokilese reduplication. The first rule,]-Right, is defined as an adjustment mechanism that shifts the t-juncture one segment to the right in the environment of _C (Frampton 2004: 93). The second rule, First Conjunct Vowel Lengthening (FCVL) only applies if]-Right is barred by the derivational constraint. FCVL meets the desideratum by exploiting truncated timing slot epenthesis. That is, a timing slot with truncation junctures (i.e., < and >) is epenthesized to spread a singly linked vowel in the root to two timing slots in the reduplicant, creating a long vowel in the reduplicant, but not in the root (Frampton 2004: 65). The application of the adjustment rules is constrained by the derivational constraint. In (6), this is *Diphthong, which prohibits a diphthong in the reduplicant. In (7), I apply the DDR in (6) to the example in (5a). First, C*V inserts t-junctures around the first CV segment by the readjustment rule in the morphology. To satisfy the desideratum,]-Right applies, as it is the first rule in the adjustment rule list. Then, the t-junctures undergo transcription and fission. Essentially, this process alters the reduplicant from a light to heavy syllable to meet the prosodic desideratum.

(7)   C*V   ]-Right   Transcribe
        kasɔ   →   [ka]sɔ   →   [kas]ɔ   →   **kas**kasɔ

FCVL, however, requires truncation junctures, which are defined as "bookkeeping symbols" that are "inserted by the transcription rules and are used for keeping track of the progress of the computation (Frampton 2004: 54)." That is, truncation junctures track segments (or the timing slots linked to segments) within the t-junctures that have already been copied, until all segments enclosed therein have been copied. Truncation junctures are a part of every computation and thus are present in all examples of reduplication (see Frampton 2004: ch.4; Halle 2005 for discussion). In FCVL, a segment linked to a timing slot is inserted already enclosed within t-junctures, which then copies to the reduplicant, but does

not remain in the root. The Mokilese example in (5b) is articulated in (8), by which a timing slot enclosed in truncation junctures is inserted by FCVL and then transcribed into the reduplicant. Henceforth, FCVL is represented as it is in (9).

(8)   **Application of FCVL in Mokilese Progressive Reduplication**

(9)   C*V   FCVL   Transcribe

        wia   →   [wi]a   →   [wi<i>]a   →   **wiꞏwia**
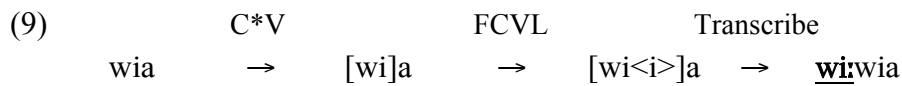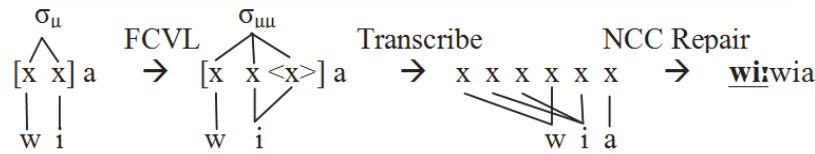
This concludes the overview of the mechanisms of DR; the following sections apply the principles outlined above in a study of Kankanaey reduplication.

3   Kankanaey

Kankanaey, a Western Malayo-Polynesian language, is spoken in the northern Philippines. The data in this paper is primarily taken from Allen (1980).[1]

3.1   Phonotactics, Glides, and the Glottal Stop

The syllable in Kankaney is minimally CV and maximally CVC with no complex onsets and no onsetless syllables; codas are restricted to underlying segments. Reduplicative forms display two unexpected patterns: 1) long vowels occur in the reduplicant in progressive reduplication, and 2) glottal stops occur in a coda position in diminutive reduplication. Glides /w/ and /y/ are predictable onsets following the vowels /o/ and /i/, respectively. This is shown in (10).

(10)   a. /ʔowas/   'wash'   (owa)   b. /kiyap/   'chicks'   (iya)
            /mantowili/   'look back'   (owi)   /nabiyogan/   'dirty'   (iyo)
                                                                /masiyek/   'laugh'   (iye)

Allen (1980) maintains that /w/ is melodically identical to /o/ and /y/ is melodically identical to /i/ and that there are no homorganic vowel-glide adjacencies. That is, there are no examples of *iyi or *owo. The examples in (11) exhibit unpredictable glides in non-nuclear positions.

---

[1] Some data come from Larry and Jan Allen who have extensive knowledge of Kankanaey.

(11) a. /yamoyam/   'smooth over'   (word-initial onset)
          /mankedyat/   'to raise eyebrows' (word-medial onset)
          /layʔos/   'folk song'   (word-medial coda)
          /kompay/   'tooth'   (word-final coda)
      b. /wanes/   'g-string'   (word-initial onset)
          /tigwi/   'species of bird'   (word-medial onset)
          /saliwʔa/   'divert'   (word-medial coda)
          /ʔagew/   'sun'   (word-final coda)

Like glides, glottal stops surface to repair instances of vowel hiatus or to act as an onset for a word-initial vowel and are generally predictable in intervocalic positions between /a/ and high vowels or between two homorganic vowels as in (12).

(12) a. /saʔon/   'canine tooth' (aʔo)   b. /palsiʔit/ 'shoot'   (iʔi)
          /laʔem/   'inside'   (aʔe)   /seʔed/   'wait for' (eʔe)
          /taʔi/   'feces'   (aʔi)   /boʔok/   'hair'   (oʔo)
                                                 /kaʔag/   'monkey'   (aʔa)

There are other instances where a glottal stop emerges in an unpredictable environment, such as CʔV, which form minimal (or near minimal) pairs with CV segments as in (13).

(13) **CV**   **CʔV**
      /baba/   'below'   /babʔa/   'tooth'
      /bosoŋ/   'protuberant navel'   /bosʔoŋ/   'live by oneself'
      /taked/   'rope'   /takʔep/   'outer clothing'

In §3.1.1, I outline an explanation of the syllabification in Kankanaey that explains predictable and unpredictable glides, but I leave discussion of unpredictable glottal stops aside and only treat predictable glottal stops here.

3.1.1 Syllabification, Glides and the Glottal Stop

The analysis in §3.1 shows that glides forming between contiguous vowels to resolve vowel hiatus (as in (10)) are not linked to a timing slot. Conversely, glides that are not formed predictably are underlying vowels and therefore linked to a timing slot. This is exemplified in the root /bowaya/ 'crocodile' in (14).

(14) ***UR***   *syllabification*   ***SR***
      /b o a i a/   →   →   [bo.wa.ya]

In (14), the /w/ is not linked to a timing slot, while the /y/ is underlying /i/ and linked to a timing slot. Further motivation for this comes from reduplication in §4.

3.2   Glottal Stops, Glides, and Cyclicity

The proposed analysis closely follows that of Hayes and Abad (1989) for Ilokano. Two operations, *glide formation* and *glottal epenthesis*, crucially apply in a cyclic rule block, glide formation>glottal epenthesis, ordered according to the Elsewhere Condition. Evidence favoring a cyclic rule analysis comes from the affixation of *-an* and *-en.* Upon suffixation, a glottal stop is epenthesized in vowel-final roots, even if a glide is expected to arise between a contiguous vowel pair. Roots that end in a consonant, however, do not epenthesize a glottal stop. This is exemplified in (15) with both expected and actual surface forms.

(15)

	Root	**Actual (Suffixed)**	**Expected (Suffixed)**	**Gloss**
a.	dan	danen	danen	'walk'
b.	kalopti	kaloptiʔan	*kaloptiyan	'roll up'
c.	lako	lakoʔan	*lakowan	'buy'

The examples in (15) demonstrate that glide formation does not occur across a morpheme boundary. This, in turn, supports the notion of cyclicity adopted here from Frampton (2004), by which a cyclic rule block applies at lexical insertion at each terminal node. This means that when /dan/ is inserted, the cyclic rule block applies once. When it is affixed, the cyclic rule block applies once again as demonstrated in (16).

(16)

Cycle	**Rule**	***UR:***	/dan/	/lako/	/kalopti/
1	syllabification		dan	la.ko	ka.lop.ti
	glide formation		-----	-------	-----------
	glottal epenthesis		-----	-------	-----------
	AFFIXATION		dan-en	la.ko-an	ka.lop.ti-an
2	syllabfication		da.nen	la.ko.an	ka.lop.ti.an
	glide formation		---------	-----------	----------------
	glottal epenthesis		---------	la.ko.ʔan	ka.lop.ti.ʔan
		SR:	[danen]	[lakoʔan]	[kaloptiʔan]

4   Reduplication

This section details progressive and diminutive reduplication.

4.1   Progressive Reduplication

Progressive reduplication is heavy syllable reduplication that indicates either "a progressive action or an action in progress (Allen 1980:34)." The examples in (17) represent three phonological shapes of progressive reduplication.

(17)   **Kankanaey Progressive Reduplication**
      a. kapi   →   man-**kap**kapi   'drinking coffee'
      b. ʔayam   →   man-**ʔay**ʔayam   'playing'
      c. taʔoli   →   man-**tat**taʔoli   'returning'
      d. baʔon   →   ʔi-**bab**baʔon   'taking a lunch'
      e. ʔiyan   →   man-**ʔiː**ʔiyan   'staying overnight'
      f. towili   →   man-**toː**towili   'turning head'
      g. ʔowas   →   man-**ʔoː**ʔowas   'washing'

The first shape is the canonical form, by which the first three segments of the root (henceforth, the *remnant*) are simply copied and remain unaltered in the reduplicant in (17a-b). In (17c-d), the second reduplicant shape includes a glottal stop in the third segment of the root, which then surfaces as a geminate across the reduplicant-remnant boundary. The third reduplicant shape, in (17e-g), contains a predictable glide segment as the third segment in the root, which, in the end, surfaces as a long vowel in the reduplicant.

4.1.1. An Analysis of Progressive Reduplication

Since heavy syllable reduplication is dependant on prosodic adjustment, I use the DDR in (18). The only difference between this DDR and the Mokilese DDR in (6) is the *VV$_{\text{NUCLEI}}$ as the derivational constraint, which prohibits two contiguous vowel nuclei, a basic prohibition in Kankanaey.
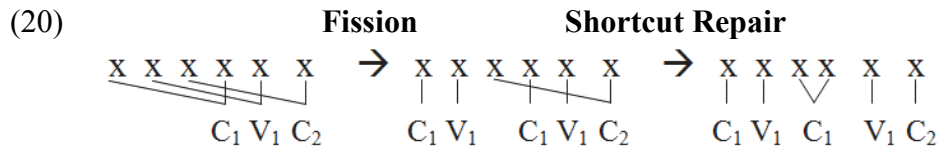
(18)   reduplicant; bimoraic syllable ::]-Right, *otherwise* FCVL; ***VV$_{\text{NUCLEI}}$**

In the canonical shape, the first three segments of the root are simply copied by the operation C*V and further repaired by]-Right. This is exemplified in (19).

(19)   C*V   ]-Right   Transcribe   affixation
      kapi → [ka]pi → [kap]i   →   **kap**kapi   →   man-**kap**kapi

This canonical shape is as expected. However, due to the restricted distribution of the glottal stop as discussed in §§3.1-3.2, the second pattern does not follow the canonical form by copying the glottal stop into the reduplicant. Rather, the second shape occurs as follows: if a glottal stop is to be the coda of a heavy syllable reduplicant, the reduplicant will form a geminate consonant (instead of a glottal stop) with the following onset of the remnant. Since glottal stops are disallowed in a coda, there needs to be an additional mechanism for repair. Frampton (2004)

offers such a repair mechanism called *Shortcut Repair* (SR) in his analyses of Hausa and Korean reduplication. SR operates at the phonology-phonetics interface upon NCC Repair. When NCC repair reaches the final segment during the fission process, the final segment is repaired as a geminate. That is, the glottal is indeed copied but altered during NCC repair. This is demonstrated in (20).

(20)   **Fission**   **Shortcut Repair**

X X X X X X → X X X X X X → X X XX X X

C₁ V₁ C₂   C₁ V₁   C₁ V₁ C₂   C₁ V₁ C₁ V₁ C₂

Evidence for a SR analysis is quite clear considering the root /ʔiyan/ 'stay overnight' from (17e), in which the glottal stop in a word-initial position canonically copies into the reduplicant. This shows 1) glottal stops arise cyclically at lexical insertion, and 2) there is no restriction on copying glottal stops in onsets. Thus, this supports that, in the second reduplicative form, the glottal stop is indeed epenthesized and copied, but repairs upon NCC repair. This is illustrated with the root /taʔoli/ 'return' in (21).

(21)   C*V   ]-Right   Transcribe   SR
       taʔoli   → [ta]ʔoli   → [taʔ]oli   → **taʔ**taʔoli   → **tat**taʔoli
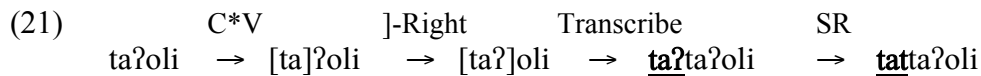
The restriction on homorganic vowel-glide adjacencies prevents the expected output of the third pattern in (17d-f). Hence, the third (glide) form is summarized as follows: if a glide is to be the coda of a heavy syllable reduplicant, the reduplicant will form a long vowel (instead of a glide). In the third reduplicative shape, the predicable glide is not associated to a timing slot as argued in §3.1. Since t-junctures are inserted into the timing tier, it is impossible to copy predictable glide segments or contiguous vowel nuclei. Consequently, FCVL applies as a repair rule, exemplified with the root /ʔiyan/ 'stay overnight' in (22).

(22)   C*V   FCVL   Transcribe
       ʔiyan   → [ʔi]yan   → [ʔi<i>]yan   → **ʔiː**ʔiyan
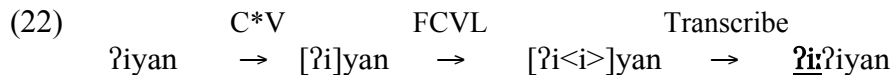
In the doubling of unpredictable glides, such as /ʔayam/ 'play' in (17b), the glide is copied because each segment is attached to a timing slot. This contrasts with (22) to yield the most plausible explanation for the disparity between predictable and unpredictable glides. In §4.2, I build on the analysis thus far to explain the complex forms of diminutive reduplication.

4.2   Diminutive Reduplication

Diminutive reduplication construes an interpretation of "pretend" or "make-believe" in verbs and nouns, and "only" when used with numerals (Allen

1980:34). The examples in (23) exhibit three phonological shapes, which I claim are based on the weight of the initial syllable of the root.

(23)   **Kankanaey Diminutive Reduplication**
    a. ʔaklat   →   <u>ʔak</u>ʔaklat   'tattered old jacket'
    b. kantina   →   man<u>**kan**</u>kantina   'to play at keeping store'
    c. kabayo   →   man<u>**kab**</u>kabʔayo   'pretend to ride horseback'
    d. kapi   →   <u>**kap**</u>kapʔi   'few old coffee beans'
    e. waʔo   →   <u>**waw**</u>waʔʔo   'only eight'
    f. kiyap   →   <u>**kik**</u>kiʔʔap   'toy chicks'
    g. bowaya   →   <u>**bob**</u>baʔʔaya   'toy crocodile'

The first shape in (23a-b) exhibits forms where the initial syllable of the root is heavy. Upon doubling, the first three segments are canonically copied. In the second shape in (23c-d), the initial syllable is light, and the copying of the first three segments is accompanied by an epenthetic glottal stop immediately following the remnant. The third form in (23e-g) exhibits the most complex of all reduplicative shapes. In these forms, the initial syllable of the root is light and is followed by an epenthetic onset in the second syllable (i.e., a glottal stop or a glide). Upon reduplication, the reduplicant forms a geminate consonant across the reduplicant-remnant boundary and the epenthetic glottal stop forms a geminate across the remnant-root boundary.

4.2.1   An Analysis for Diminutive Reduplication

Allen (1980) described diminutive reduplication as a type of discontinuous morpheme triggering CVC reduplication and a glottal infix. However, there is clear motivation from the distribution of the glottal stop in (23) and glottal epenthesis in §3.1 to claim that this pattern is, in fact, prosodic. That is, diminutive reduplication demonstrates moraic weight restrictions that hold that the reduplicant and remnant must be bimoraic syllables, as in the schema in (24).

(24)   **Moriac Weight Requirements for Diminutive Reduplication**
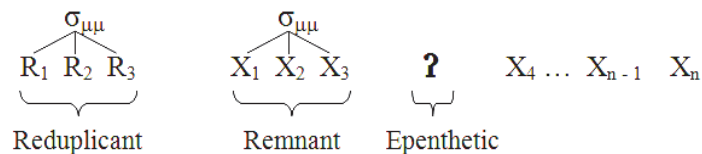
The diminutive shape results from prosodic adjustment, made explicit by the DDR in (25).

(25)   reduplicant, **remnant**; bimoraic syllable ::]-Right; *VV$_{\text{NUCLEI}}$

The DDR in (25) provides an additional domain to the substructure in the desideratum. This means that when]-Right applies, it shifts the syllable weight for both the reduplicant and the remnant. I call this operation]-Right(DIM). Once]-Right(DIM) adjusts a light syllable in the substructure domain to a heavy syllable, the cyclic rule ʔ-epenthesis applies to onsetless syllables. Essentially,]-Right(DIM) applies to make light syllables in the reduplicant and remannt heavy, as shown in the root /kapi/ 'coffee' in (26), where ʔ-epenthesis applies as a cyclic phonological rule. If the first syllable of the root is heavy, as in (23a-b),]-Right(DIM) is not activated in the remnant because it already meets the desideratum. Further, ʔ-epenthesis need not apply because there are no onsetless syllables, as the prosodic structure of the root remains intact.

(26)   C*V   ]-Right(DIM)   ʔ-Epenthesis   Transcribe
     kapi → [ka]pi   → [kap]i   →   [kap]ʔi   → **kap**kapʔi

In the third form, epenthetic segments are root internal, which affect the doubling as shown in §4.1 for progressive reduplication. When an epenthetic glottal stop occurs within the root, the same analysis for (26) falls out quite naturally. The only difference is that the additional operation SR from §4.1.1 occurs at transcription. In these cases, ʔ-epenthesis applies twice; first it applies inside the root in the first cycle and then again after]-Right(DIM). Upon transcription, the glottal stop repairs via SR at the phonology-phonetics interface. However, if there is a root internal epenthetic glide, an additional prosodic adjustment rule is required. Since epenthetic glides are not linked to timing slots, the DDR specified in (25) does not provide any adjustment rules that are able to apply to these roots. FCVL cannot apply because it does not meet domains of the substructure in the desideratum, as it is not possible to have a long vowel in the remnant.]-Right(DIM) cannot apply because of the derivational constraint that prohibits $*VV_{NUCLEI}$. Because of this, I introduce *x*-epenthesis, which specifies that the DDR inserts a bare (unassociated) timing slot in the timing tier as an intermediary step that allows]-Right(DIM) to apply on a second pass through the DDR, so that the desideratum is met. This means that *x*-epenthesis applies first as]-Right cannot. The revised DDR is in (27).

(27)   reduplicant, remnant; bimoraic syllable ::]-Right, ***x*-epenthesis**; $*VV_{NUCLEI}$

Upon *x*-epenthesis, the epenthetic glide loses its status in the phonological representation. That is, when the intervening timing slot is epenthesized, the glide no longer acts as an onset and is either delinked from the timing tier or conflated with the preceding vowel. Once the additional timing slot is available in the timing tier,]-Right is able to apply. I collectively call these two adjustment rules *x*]-Right(DIM) for simplicity. Subsequently, ʔ-epenthesis applies. The

unassociated timing slot is then associated to the glottal stop, creating a geminate glottal stop as in the derivation of the root /kiyap/ 'chicks' in (28).

(28)　　　　C*V　　　*x*]-Right(DIM)　ʔ-Epenthesis/Association　Transcribe/SR
　　　　kiyap　→　[ki]yap　→　　[ki*x*]ap　　　→　　[kiʔ]ʔap　→　**kik**kiʔʔap

The processes of glottal epenthesis and association appear to be two processes and distinct from the reduplicative processes. Due to the geminate across the reduplicant-remnant boundary, I conclude that ʔ-epenthesis and association apply before transcription, as this is the pattern in progressive reduplication. All reduplicative and cyclic operations are summarized in the derivation in (29).

(29) **Derivation of Diminutive and Progressive Reduplication**

Cycle	Rule	Diminutive			Progressive
1	*UR*	/kapi/	/ kiap /	/oao/	/ian/
	syllabification	ka.pi	ki.ap	oa.o	i.an
	glide formation	---------	ki.yap	wa.o	i.yan
	glottal epenthesis	-----------	--------	wa.ʔo	ʔi.yan
2			/ki.yap/	/wa.ʔo/	/ʔiyan/
	C*V	[ka]pi	[ki]yap	[wa]ʔo	[ʔi]yan
	]-Right(DIM)	[kap]i	-----------	[wa]ʔo	----------
	FCVL	----------	-----------	-----------	[ʔiː]yan
	x]-Right(DIM)	-----------	[ki*x*]ap	-----------	----------
	glide formation	-----------	--------	----------	----------
	ʔ-epenthesis	[kap]ʔi	[ki*x*]ʔap	[wa]ʔo	----------
	x-association	-----------	[kiʔ]ʔap	----------	----------
	transcribe	kapkapʔi	kiʔkiʔʔap	waʔwaʔʔo	ʔiːʔiyan
	short-cut repair	-----------	kikkiʔʔap	wawwaʔʔo	----------
	SR	kapkapʔi	kikkiʔʔap	wawwaʔʔo	ʔiːʔiyan

5.　　Conclusion

In this study of Kankanaey reduplication, I presented a novel account of the complex patterns of heavy syllable reduplication utilizing a derivational framework. In doing so, I provided further empirical support for current derivational theories such as DR (Frampton 2004). I also showed how cyclicity and prosodic adjustment are crucial for this analysis of reduplication.

References

Allen, Lawrence. 1980. The Interaction of Reduplication and Phonology in Kankanaey. *Philippine Journal of Linguistics* 11: 27-43.

Frampton, John. 2008. SPE Extensions: Conditions on Representations and Defect Driven Rules. In Bert Vaux and Andrew Nevins, eds., *Phonological Perspectives: Rules and Constraints in Contemporary Phonological Theory*, 220-251. Oxford: Oxford University Press.

Frampton, John. 2004. *Distributed Reduplication.* Cambridge, Mass.: MIT Press.

Goldsmith, John. 1976. An Overview of Autosegmental Phonology. *Linguistic Analysis* 2: 23-68.

Halle, Morris. 2005. Reduplication, Ms. MIT.

Halle, Morris and Alec Marantz. 1993. Distributed Morphology and the Pieces of Inflection. In Kenneth Hale and Samuel Jay Keyser, eds., *A View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, 111-176. Cambridge, MA: MIT Press.

Hayes, Bruce and May Abad. 1989. Reduplication and Syllabification in Ilokano. *Lingua* 77: 331-374.

McCarthy, John and Alan Prince. 1986. *Prosodic Morphology*. Technical Report 32, Rutgers University Center for Cognitive Science.

McCarthy, John and Alan Prince. 1995. Faithfulness and Reduplicative Identity. In Jill Beckman, Laura Walsh Dickey & Suzanne Urbanczyk, eds., *Papers in Optimality Theory. University of Massachusetts Occasional Papers* 18, 249-384. Amherst, Mass.: Graduate Linguistic Student Association.

Raimy, Eric. 2000. *The Morphology and Morphophonology of Reduplication.* Berlin: Mouton de Gruyter.

Bradley McDonnell
Arizona State University
Department of English,
Language and Literature Building 350
Tempe, AZ 85287

bradley.mcdonnell@gmail.com

Phrasal Tone Domains in San Mateo Huave[1]

MARJORIE PAK
University of Pennsylvania

0.   Introduction

The dialect of Huave (isolate) spoken in San Mateo del Mar, Mexico, has a rule of H Tone Spread (HTS) that applies across words in certain syntactic contexts. HTS is demonstrated in (1)-(2), with phonological domains marked by parentheses.[2]

(1)   **H** L   L   L **H** ——————————————>
         (xíkè) (tà-n-àxóm tí ɨl tíí ɨd nóp kóchíl)
          1s.pro   pst-sub-find   in street one knife
          'I found a knife in the street.'

(2)   L **H**L   L   **H** ————————————————————————>
         (òxêp) (àp-m-ɨ́ɨ́ch ákókiáw   chípín   áágá náxéy kiáh mí-kwál xé-kómbɨ́l)
         tomorrow fut-sub-give five   tomato the   man   that poss-son 1poss-friend
         'Tomorrow my friend's son will give five tomatoes to that man.'

The first word in both of these utterances – a subject in (1) and an adverb in (2) – forms a phonological domain of its own, with a (L)HL melody and no rightward spreading of H. The remaining words in each utterance – including the postverbal locative PP in (1) and the postverbal subject in (2) – are all grouped together into a *single tone domain*, with H docking on the heavy final syllable of the verb and spreading rightward to the end of the sentence.

    Taken together with other data reported here (§2), these examples show that: (i) Huave tone domains are potentially quite large, in terms of both phonological weight and syntactic complexity; but (ii) HTS does not apply 'across the board,' since preverbal subjects and time/place adverbs consistently phrase separately.

---

[2] The following Huave orthographic conventions are adopted here: x = /###/, ch = /t###/, ng = /ŋg/, y = /j/. In syllables containing palatal glides (usually transcribed with e or i), tone is marked only on the nuclear vowel.

The goal of this paper is to provide a fuller description and formal analysis of this pattern. An important question addressed here is why the phonology should treat *preverbal* subjects and adverbs as special, without also distinguishing their postverbal counterparts. I propose that preverbal subjects and adverbs are in fact *structurally higher* than postverbal subjects and adverbs – in a clause-peripheral 'topic' or 'edge' position – and therefore are spelled out separately from the rest of the clause (§3). In the *cyclic-spellout* or *phase-based* architecture underlying this proposal, the phonology deals directly with individual substructures (or phases) as they are spelled out, and is thus predicted to 'respect' the underlying syntactic constituent structure in a way that is transparent and regular in the default case. This type of model places tight restrictions on the possible range of syntax-phonology interactions, the implication being that the phonology *can* provide a reliable source of information about the syntax once we understand how to interpret it. I will contrast this approach with one that allows the phonology to access an arbitrary range of information about linear order, category labels, etc. in addition to constituent structure, and will show that this latter approach makes incorrect predictions both cross-linguistically and in the case at hand. In particular, we will see that the notions of clause and clause edge play a predictable role in Huave phonology across a range of structures, and that the full- vs. reduced-clause distinction plays a corresponding role in the syntax (§4).

1.   Background on Huave Morphosyntax and Tone

Huave is a pro-drop language. Verbs are inflected for person number subject agreement, tense, and what can roughly be called 'subordination' (labeled 'sub' in glosses here). Inflection on nouns is minimal – case, for example, is not distinguished except by possessive affixes and an optional final vowel on subject pronouns (Stairs and Hollenbach 1981).

While some aspects of word order are fixed – e.g. possessees always precede possessors – the position of other elements in the sentence appears to vary depending on argument structure, discourse status, and other factors. The 'default' position of the subject (when overt) is particularly unclear: Huave has been variously described as SVO (Campbell et al. 1986:547; SIL Ethnologue), VOS (Fromkin and Rodman 1998:470), and VS/SVO (with the position of the subject influenced by the transitivity of the verb (Stairs and Hollenbach 1981:335)).

In our elicitations speakers generally accepted SV, VS, SVO and VOS sentences as grammatical in out-of-the-blue contexts. VSO order, on the other hand, does not seem to occur unless (a) the object is a clause (O_{CL}), and (b) the subject is postverbal – in which case VSO_{CL} order appears to be obligatory:

(3)   a.   ngom m-ahaw [naxey kam]$_{SBJ}$ [tiɨl mi-ntah   akiiɨb]$_{O_{CL}}$
                not   sub-see   man   this   if   poss-wife accompany
                'This man didn't know if his wife was with him.' (Radin 1929:4)
        b.   * ngom mahaw tiɨl mintah akiiɨb [naxey kam]$_{SBJ}$

I assume that VSO$_{CL}$ order is derived by obligatory extraposition of complement clauses to a position past the postverbal subject. Whether clausal extraposition is general or restricted to sentences with postverbal subjects is not yet clear.

With respect to tone, the basic generalization for San Mateo Huave is that there is *exactly one pitch peak per tone domain*, so any time we see a fall from H to L (e.g. at the end of the subject *xike* in (1)) we know that a domain boundary has been reached. However, the exact shape of the basic phrasal $(L_n)H_n(L)$ melody varies considerably from phrase to phrase: the H pitch peak may be realized on a single syllable, as part of a HL contour tone, or spread over several syllables, and may or may not be preceded by a series of L tones. Furthermore, tonal contrast on words in isolation are often neutralized in phrasal contexts:

(4)   Tonal contrast between final H and final HL on words in isolation:
    a. Final H: **kàwák** 'fruit tree', **chíl** 'fish', **nàdám** 'big', **sàmpíy** 'coyote'
    b. Final HL: **kàwâk** 'south', **chîl** 'needle', **nàngân** 'sweet', **kôy** 'rabbit'

(5)   Neutralization of word-level tone contrasts in phrasal contexts:
    a. (t-àhàw-ás   nádám **sámpíy** tí-lám)   (< sàmpíy)
        pst-see-1/pst big   coyote in-river
        'I saw a big coyote in the river.'
    b. (t-àhàw-ás   nádám **kóy**   tí-lám)   (< kôy)
        pst-see-1/pst big   rabbit in-river
        'I saw a big rabbit in the river.'

To explain these facts, Noyer (1991) argues that tones are assigned at the level of the *phrase* in San Mateo Huave. More specifically, words are grouped into phrases (or tone domains) in a way that will be discussed in detail in §§2-3, and tones are assigned to each phrase by the following algorithm:

1. Some words (e.g. (4)b) have a floating *Lexical L*, which is licensed (linked) only at the right edge of a phrase ((6)a).

2. A *Phrasal H* tone docks on the primary-stressed (final if heavy, else penultimate) syllable of the 'head' of the phrase. If this syllable already has Lexical L, then a HL contour tone is produced ((6)b).

3. *H Tone Spread (HTS):* Phrasal H spreads rightward to the end of the phrase, stopping at the penult iff the final syllable already has Lexical L ((6)c).

4. Remaining syllables receive *Default L* ((6)d).

(6)

		'rabbit'	'saw a rabbit'	'saw a rabbit in the river'
a.	Lexical L:	kòy	tahawas kòy	-- (no Lexical L on *lam*)
b.	Phrasal H:	kôy	tahawás kòy	tahawás koy tilam
c.	HTS:	--	--	tahawás kóy tílám
d.	Default L:	--	tàhàwás kòy	tàhàwás kóy tílám

Noyer's analysis successfully accounts for the distribution of tones within phrases and will be adopted here without modification (see Evanini, this volume, for discussion of how these rules relate to surface pitch and duration). The remainder of this paper focuses on how phrasal tone domains are derived in the first place.

2. The Current Study: Tone and Syntax in San Mateo Huave

Noyer's primary data source, Pike and Warkentin 1961, provides a number of descriptive generalizations leading to the claim that 'tone is used extensively for syntactic purposes' in San Mateo Huave (627). The basic pattern reported there is:

(7)   A verb is grouped together with a following object and/or adverb into a single tone domain, while preverbal subjects form their own tone domains.

This pattern is confirmed by the current study, which draws on a new corpus of 334 recorded phrases elicited from five native speakers (4F, 1M, ages 14-45) during on-site linguistic interviews in 2004 and 2006.[3] This pattern was also found to extend to ditransitive verbs, which are not addressed in Pike and Warkentin 1961 – i.e., the verb groups together with *all* following arguments and modifiers, resulting in a sustained H plateau of apparently indefinite length, while the subject remains separate regardless of its semantic or prosodic weight:

(8)   (nèhîw) (t-àhch-ɨw   nérráár yów   námbeór íchweàik)
        3p.pro   pst-give-3p hot   water black   monkey
        'They give hot water to the black monkey.'

    Based on the observations in (7) alone, Huave syntax-phonology interactions appear to be fairly straightforward: subjects are usually assumed to be structurally more distant from the verb than objects and it is therefore unsurprising that the phonology should treat them as such. The intuition behind this type of reasoning is that *syntactic closeness corresponds to phonological closeness* in a very general sense; i.e., there is something about the nature of the syntax-phonology interface that makes phonological rules more likely to apply across weak syntactic junctures than across strong syntactic junctures.
    As noted in the introduction, however, things become more complicated when we consider sentences with postverbal subjects – another case that Pike and Warkentin do not address. We found that postverbal subjects consistently group *together* with the verb, unlike their preverbal counterparts.

---

[3] All five speakers are native to San Mateo and bilingual in Spanish and Huave. Most material was elicited by presenting a phrase in Spanish and asking for the Huave equivalent. In some cases, some or all of the expected Huave words were provided with an English-style 'questioned-list' intonation and the informant was asked to (a) judge whether the resulting sentence was well-formed and (b) say it out loud if it was. Speakers were usually asked to repeat each phrase once. In the handful of cases where the tone phrasing changed from one rendition to another, the two tokens were counted separately; otherwise, each phrase in the corpus is a distinct type.

(9) a. (**nèhîw**) (t-àhàw-ɨw nákánts ólám)
         they   pst-see.3p red   cane   'They saw red sugarcane.'
     b. (tàhàwɨw nákánts ólám **néhìw**)   'They saw red sugarcane.'

(10) a. (**pét**) (àntsôr)
         dog bark   'The dog is barking.'
     b. (àntsòr-ɨw á **pèt**)
         bark-3p the dog   'The dogs are barking.'

(11) a. (nìngɨy) (**òlám**) (ngò m-àtâng)
         here   cane not sub-grow   'Sugarcane doesn't grow here.'
     b. (nìngɨy) (ngò màtáng **ólám**)   'Sugarcane doesn't grow here.'

This same asymmetry is seen with adverbs of time and place: when such adverbs precede the verb they form their own tone domains; otherwise they group together with the verb and other postverbal arguments and modifiers:

(12) a. (mí-kwál xé-kómbɨl) (àp-m-ɨ́ch **óxép** ákókiáw chípín áágá náxéy kiáh)
          poss-son 1poss-friend fut-sub-give tomorrow five tomato the   man   that
         'My friend's son will give five tomatoes to that man tomorrow.'
     b. (**òxêp**) (àp-m-ɨ́ch ákókiáw chípín áágá náxéy kiáh mí-kwál xé-kómbɨl)
         tomorrow fut-sub-give five   tomato the man   that poss-son 1poss-friend
         'Tomorrow my friend's son will give five tomatoes to that man.'

Our task, then, is to explain the following asymmetry:

(13) Preverbal subjects and time/place adverbs form their own tone domains, while postverbal subjects and adverbs phrase together with the verb.[4]

3.   Analysis
The current study has shown that the syntax-phonology relations in Huave are not as straightforward as they may have appeared in earlier work (Pike and Warkentin 1961, Noyer 1991). While preverbal subjects are indeed set apart phonologically from the predicate, a fact that is unsurprising in itself, it is now apparent that *postverbal* subjects are *not* set apart but instead group together with the verb.

There are at least two approaches we can pursue at this point: we can abandon the idea that the phonology is constrained primarily by constituent structure and concede that the grammar allows other factors (e.g. linear order, node labels) to take precedence on a case-by-case basis; or we can maintain the idea that phonological closeness corresponds to syntactic closeness and try to find a

---

[4] Preverbal subjects and adverbs phrased separately from the verb in 213 out of 215 relevant unambiguous examples from our elicitation corpus; postverbal subjects and adverbs grouped together with the verb in 54 out of 59 cases. See §3 for comments on possible domain variability.

syntactic explanation for the asymmetry seen here. An example of how the first type of approach might be formalized is given in (14):

(14) Huave syntax-phonology mapping algorithm (to be rejected):
 a. The fully linearized syntactic structure is scanned from left to right. Each XP preceding the main verb forms its own tone domain.
 b. Once the main verb is reached, scanning ends. A final tone domain begins with the main verb and extends blindly to the end of the utterance, regardless of its internal structure.

Under (14), what matters is the linear order of each XP constituent with respect to the main verb; the prediction is that syntactic structure is irrelevant once the main verb has been reached. In §§4-5 we will see that this prediction – in addition to presenting serious complications for any theory of the syntax-phonology interface – is simply incorrect for the case at hand. Huave tone domains do in fact continue to 'see' structure past the first verb; in particular, in sentences containing multiple clauses, each clause forms a separate tone domain. This effect is accounted for automatically in the current model, which I present now.

As mentioned above, I assume a *cyclic spellout* or *phase-based* architecture of the grammar, in which syntactic structures are built up and spelled out in stages (or phases). Within this model, spellout occurs at predetermined points (e.g. CP and vP in Chomsky 1999 et seq.). Material within this cut-off point is spelled out together, and material external to it is spelled out on the next cycle. In addition, I assume that *phonological rules apply as and/or after each phase is spelled out* – i.e., spelled-out phases are the basic objects that the phonology deals with.

The question that arises now is how the phase is defined in Huave – and why postverbal subjects are spelled out together with the verb while preverbal subjects are spelled out separately. The hypothesis I pursue here is that postverbal subjects (and adverbs) are *structurally closer* to the verb than their preverbal counterparts, which occupy a clause-peripheral 'edge' position. More specifically:

(15) Proposal
 a. Preverbal subjects and time/place adverbs in Huave obligatorily occupy Spec,CP (a 'topic' position).[5]
 b. Postverbal subjects are in a lower position, e.g. Spec,TP or Spec,vP.[6]
 c. Spellout is triggered at each CP. Everything within the CP is spelled out together except the material in its 'edge' (i.e. C and Spec,CP), which is spelled out in a separate cycle.
 d. Tones are assigned to the spelled-out, linearized output of each phase.

---

[5] Sentences with multiple preverbal topics (e.g. (11)a) are assumed to have recursive CPs.

[6] There are a number of ways to derive VOS order, including: (i) right-adjunction or right-linearization of Spec,TP (cf. Aissen 1992, Rizzi 1982); (ii) fronting of the predicate to a position above the subject (cf. Massam 2005), or (iii) serial movement of verb and arguments out of vP (cf. Ordóñez 1998). The question of which analysis is most suitable for Huave is left for future work.

To illustrate: in the SVO sentence in (16)a, repeated from (9)a, the preverbal subject *nehiw* is in Spec,CP[7] – i.e. at the phase edge – and is therefore excluded from the (boldfaced) CP spellout domain. In the VOS sentence in (16)b, the subject is lower than Spec,CP, e.g. in Spec,vP or Spec,TP. The CP phase edge is empty, and all of the boldfaced material below C is spelled out together.

(16)   a.   SVO: $_{CP}$[nèhîw $_{TP}$[**tàhàwíw nákánts ólám**]]
                        3p.pro   see.pst.3p red   cane
                        'They saw red sugarcane.'
         b.   VOS: $_{CP}$[$_{TP}$[**tàhàwíw nákánts ólám néhìw**]]
                        'They saw red sugarcane.'

While this analysis is intended to derive the syntax-phonology mappings we find in the default case, the model assumed here is also able to accommodate a certain amount of performance-related variability. In Pak (2006) I argue that rules like Huave HTS – which apply to fully linearized, potentially *n*-ary chains of words – apply relatively late in the derivation, when information about speech rate has become available. Such rules are predicted to be variable in a specific way: phases can be broken apart in slow speech or merged in fast speech.

Influence from rate, rhythm, carefulness, and other nonsyntactic factors could very well account for some of the exceptional cases seen in our corpus, although experimental studies and corpus studies of spontaneous speech are needed in order to determine the exact factors involved in Huave tone-domain variability. In the meantime it is worth noting that while our corpus contains several pairs like (17)a-(17)b, where a verb phrase is realized as either one or two tone domains, parses like (17)c are so far unattested.

(17)   a.   (xíkè) (s-àngàneów cháw pópóx xówɨy lángàn)   (S) (VOAdj)
                     1s.pro 1-drink   atole foam   very   sweet
                     'I drink very sweet foam *atole* (a warm drink).'
         b.   (xíkè) (sàngàneów cháw pópóx) (xòwɨy làngân)   (S) (VO) (Adj)
         c.   * (xíké sángáneôw) (chàw pòpóx xówɨy lángàn)   * (SV) (OAdj)

In other words, it does not appear to be possible for *only a subpart* of one phase (the verb (17)c) to 'escape' its tone domain and join another. Accordingly, the analysis I have laid out accommodates cases like (17)b but not cases like (17)c.

4.   Further Support: Reduced and Full Clauses, Extraposition, and Tone

Within the current proposal, the Huave tone domain is basically a clause minus its edge. Presumably, this treatment could be extended to other languages that have been shown to set apart preverbal subjects phonologically, e.g. tone-association

---

[7] I assume that this subject has either moved from a lower vP-internal position or is coindexed with a pro subject in vP; at this point nothing hinges on the choice between these two options.

rules in Slave (Rice 1987), Kinande (Hyman 1990), and Luganda (Hyman 1982 et seq., Pak 2007). While the status of preverbal subjects as high, phase-edge elements remains to be established across these languages,[8] there is independent evidence that the proposal in (15) is on the right track for Huave. I present this evidence next.

So far, all the examples we have seen have been single clauses containing a single verb. According to the proposal in (15), however, spellout is assumed to occur at *every* CP node. The proposal therefore makes a clear prediction:

(18)   Prediction: In utterances containing more than one clause, each clause
        should form a separate tone domain.

Based on the data available so far,[9] this prediction is borne out: finite complement clauses (19), finite adjuncts (20)-(21), relative clauses (21), nonfinite purpose clauses (22), and nonfinite 'want' complements (23) form their own tone domains, separate from the matrix verb:

(19)   (nìpìlán) (àpiɨng-îw) (àp-m-àndeòw-áàts)
         people   say-3p   fut-sub-die-1p/inc
         'People say we will die.' (Pike and Warkentin 1961:639)

(20)   (sà-n-àyàk-án   ndòk) (kós) (lè-m-àsáh   xík)
         1fut-1sub-put-1p/ex net   because 2rec.pst-sub-say 1s.pro
         'We'll cast our nets because you told me (to).'

(21)   (wɨx teàt Sìmòn Pédrò) (t-àháw) (leàw t-àráng teát Jésús) (t-àsâh)
         when lord Simon Peter pst-see rel pst-do lord Jesus   pst-say
         'When Simon Peter saw what Jesus had done, he said…'

(22)   (s-àhàl-án teát bìɨmb)(pàrà n-àtsánts   á   yòw)
         1-light-1p sir fire   for 1sub-reheat det water
         'We make a fire to reheat the water.'

(23)   (s-àndíɨm)(n-àndeák   ómbeáy-ìɨts)   (pòrkè m-àhneâh)
         1-want   1sub-speak language-1p/inc   because sub-beautiful
         'I want to speak Huave because it's beautiful.'

---

[8] For example, we might expect to find 'scope freezing' effects – obligatory wide quantifier scope on preverbal subjects – the idea being that the preverbal position is too high to be included in the domain for reconstruction (cf. Alexiadou and Anagnostopoulou 1998 on Greek and Romance).

[9] Viz. our elicitation corpus, Pike and Warkentin 1961, a recording of John 1:1-18 (Liga Bíblica México) and selections from a movie version of St. Luke's gospel (www.jesusfilm.org). Written sources considered in §4 include example sentences in Stairs and Stairs 1981 and Stairs and Hollenbach 1981; the first ten texts in Radin 1929 (oral narratives in San Dionisio Huave); and a Huave translation of St. John's gospel (Liga Bíblica México 2005).

As predicted by (18), each clause forms its own tone domain in Huave. In (20) the subordinate clause is in turn broken up into separate tone domains; I assume that this is because *kos* 'because' is in a high edge position while the other connectors seen here (e.g. *leaw* 'that which,' *porke* 'because') are located lower in the clause.

A handful of apparent exceptions to this clause-to-domain correspondence have been found, all involving causative constructions with the light verb *ɨɨch* 'give.' In (24) and (25), *ɨɨch* groups together with the following subordinate-prefixed verb into a single tonal domain, instead of forming its own tone domain like the matrix verbs in (19)-(23). Example (26), from our elicitation corpus, shows intraspeaker variation: *ɨɨch* grouped together with the following verb on one rendition and phrased separately on another. Notice that all three of these examples are semantically ambiguous as well:

(24)   (íké) (**ììch**   m-ámb tíɨl éskwél mí-kwál)
       2s.pro 2.give sub-go to   school poss-son
       'You make your son go to school / send your son to school.'

(25)   (nêh) (t-íɨn)   (**ììch** nèh   m-ìɨn   teàt diôs)
       3s.pro pst-come give 3s.pro sub-come lord god
       'He came; God sends him / makes him come.' (Sp: *enviado por Dios*)

(26)   a.   (íkè)   (teà-m-**áàch**) (m-àngàneów nángán yów   xé-kwál)
            2s.pro prog-sub-give sub-drink   sweet water 1poss-son
            'You're making my son drink soda / giving my son soda to drink /
               feeding my son soda.'
       b.   (íkè) (teàm**ààch** màngàneów nángán yów xékwál)

A likely reason for the apparent 'domain fusion' seen in (24)-(25) and (26)b is that the verbal complement in these sentences is *not a full CP* but rather a reduced structure, which does not 'count' as a phase and therefore gets spelled out together with the matrix verb *ɨɨch*. The idea is that *ɨɨch* is involved in a number of different constructions, appearing with different-sized complements that are likely associated with different interpretations.

If this idea is on the right track, we might expect the full vs. reduced clause distinction to play a role in other, nonphonological phenomena as well. This expectation is also borne out. Recall that clausal complements are obligatorily extraposed in sentences with postverbal subjects, resulting in VSO_CL order:

(27)   a.   ngom m-ahaw [naxey kam]_SBJ [tiɨl mi-ntah   akiɨɨb]_OCL
            not   sub-see man this   if poss-wife accompany
            'This man didn't know if his wife was with him.'
       b.   * ngom mahaw tiɨl mintah akiɨɨb [naxey kam]_SBJ

VO~CL~S sentences like (27)b, which appear to be ruled out in general, do occur when the matrix verb is *ɨɨch*. In other words, verbal *ɨɨch* complements can fail to extrapose, just as they can fail to form separate phonological domains.

(28)   a. t-ɨɨch   xik   n-iɨn   [xe-teat   dios]~SBJ~
            pst-give 1s.pro 1sub-come 1poss-lord god
            'My lord God sent me / made me come.'
        b. t-ɨɨch   m-ahneah   omeaats mi-chiig   neh   [a Juan]~SBJ~
            pst-give sub-beautiful heart   poss-brother 3s.pro   Juan
            'Juan calmed his brother down.' (lit. made his brother's heart good)

In sum, the phonological variability seen with *ɨɨch* constructions in (24)-(26) has a structural source: the syntax itself is variable, allowing *ɨɨch* to occur with either a full CP or a reduced non-CP complement. As we might expect, restructuring plays a role elsewhere in the grammar as well: *ɨɨch* complements can fail to extrapose.

5.   Concluding Remarks

This paper presented results from a new study of phrasal tone domains in San Mateo Huave. The principal finding was that *preverbal* subjects and adverbs consistently form their own tone domains, separate from the predicate, while *postverbal* subjects and adverbs phrase together with the preceding verb. The question addressed here was what the source of this pattern is.

The range of possible answers to such questions is of course circumscribed by the model of the syntax-phonology interface assumed. I have adopted a model in which phonological rules apply directly to the syntactic objects that are spelled out at designated stages in the derivation – i.e. a model that predicts a *transparent* correspondence between the syntax and the phonology in the default case – and consequently I pursued the idea that the phonological asymmetry reported here is the result of an underlying syntactic asymmetry. Specifically, I argued that preverbal subjects and adverbs are structurally higher than their postverbal counterparts, in a clause-peripheral position at the 'edge' of the CP phase, and thus undergo spellout separately from the verb.

At the beginning of §3 (see (14)) I briefly considered an alternative account, one that made use of a hybrid mix of linear relations, node labels and constituency relations in order to derive the preverbal/postverbal asymmetry reported here. According to this algorithm the first verb in the string is predicted to group together with everything that follows, regardless of the internal syntactic structure of the resulting domain. This type of treatment is unformulable in the phase-based grammar assumed here, since it simultaneously requires that the entire linearized string be taken into account *and* requires reference to aspects of the constituent structure (XP status of preverbal constituents, category of the verb). Furthermore, as shown in §4, this algorithm makes the wrong prediction: the leftmost verb does not blindly group together with everything that follows; instead, clausal complements and adjuncts consistently form their own domains.

Of course we could alter (14) to derive the clause-sensitivity effect seen in (19)-(23) – e.g. by restricting the tone domain to 'the next clause boundary' – but such a modification would be basically arbitrary. If we admit such statements we might as well also admit statements limiting tone domains to 'the next noun phrase' or 'the next quantifier' – thus ruling in all kinds of category-sensitivity effects that play no role in attested syntax-phonology mappings. We could, for example, generate an algorithm like (29) as a logical possibility:

(29)   a. A phonological break occurs (only) after every adjective in the string.
        b. My best / friend drank a small / black / coffee while I read a new / book.

Mappings like (29) are unattested, and as such have been systematically ruled out by models of the syntax-phonology interface going back to word-boundary theory (Chomsky and Halle 1968) and including most versions of XP-edge alignment (Chen 1987, Selkirk 1986). Accordingly, phonological rules that appear at first sight to require reference to an hybrid assortment of arbitrary information, as in (14), require careful examination. In the case of Huave, we found that tone domains are in fact consistently clause-bounded – an automatic result in the architecture assumed here, where clauses are phases – and that variation in this clause-to-domain correspondence is attributable to variation in clause size with certain (restructuring) predicates. In the course of this case study, what started as a phonological observation led to a new insight about the syntax – another consequence of adopting a model in which syntax-phonology interactions are predicted to be transparent and regular in the default case.

References

Aissen, Judith L. 1992. Topic and Focus in Mayan. *Language* 68:43-80.

Alexiadou, Artemis and Elena Anagnostopoulou. 1998. Parametrizing Agr: Word Order, Verb-Movement and EPP-Checking. *Natural Language and Linguistic Theory* 16:491-539.

Campbell, Lyle, Terrence Kaufman, and Thomas C. Smith-Stark. 1986. Meso-America as a Linguistic Area. *Language* 62:530-570.

Chen, Matthew. 1987. The Syntax of Xiamen Tone Sandhi. *Phonology Yearbook* 4:109-149.

Chomsky, Noam. 1999. Derivation by Phase. *MIT Occasional Papers in Linguistics, Vol. 18*. Cambridge, MA: MIT.

Chomsky, Noam and Morris Halle. 1968. *The Sound Pattern of English*. New York: Harper and Row.

Evanini, Keelan. 2007. The Phonetic Realization of Pitch Accent in Huave. *Proceedings of BLS 33*.

Fromkin, Victoria and Robert Rodman. 1998. *An Introduction to Language*. New York: Harcourt Brace.

Hyman, Larry M. 1982. Globality and the Accentual Analysis of Luganda Tone. *Journal of Linguistic Research* 2/3:1-40.

Hyman, Larry M. 1990. Boundary Tonology and the Prosodic Hierarchy. In S. Inkelas and D. Zec, eds., *The Phonology-Syntax Connection*, 109-125. Chicago: University of Chicago Press.

La Liga Bíblica México. 2005. *Najneaj nanderac leaw tapiüng San Juan wüx Teat Cristo.* Electronic Version.

Massam, Diane. 2005. Lexical Categories, Lack of Inflection, and Predicate-Fronting in Niuean. In A. Carnie, H. Harley, and S. Dooley, eds., *Verb First: On the Syntax of Verb-Initial Languages*, 227-242. Amsterdam: Benjamins.

Noyer, Rolf. 1991. Tone and Stress in the San Mateo Dialect of Huave. *Proceedings of ESCOL '91,* 277-288.

Ordóñez, Francisco. 1998. Postverbal asymmetries in Spanish. *Natural Language and Linguistic Theory* 16(2):313-346.

Pak, Marjorie. 2006. The Postsyntactic Derivation and Its Phonological Reflexes. Ms., University of Pennsylvania.

Pak, Marjorie. 2007. Clause Size and Tone Domains in Huave and Luganda. Paper presented at SPINE-3, Cornell University.

Pike, Kenneth L. and Milton Warkentin. 1961. Huave: A Study in Syntactic Tone with Low Lexical Functional Load. In B. F. Elson and J. Comas, eds., *A William Cameron Townsend en el vigésimoquinto aniversario del Instituto Lingüístico de Verano*, 627-42. SIL, Mexico.

Radin, Paul. 1929. Huave Texts. *International Journal of American Linguistics* 5:1-56.

Rice, Keren. 1987. On Defining the Intonational Phrase: Evidence from Slave. *Phonology Yearbook* 4:37-59.

Rizzi, Luigi. 1982. *Issues in Italian Syntax*. Dordrecht: Foris.

Selkirk, Elisabeth. 1986. On Derived Domains in Sentence Phonology. *Phonology Yearbook 3*:371-405.

Stairs, Emily F. and Elena E. de Hollenbach. 1981. *Gramática huave*. In Kreger and Stairs 1981.

Stairs Kreger, Glenn Albert and Emily Florence Scharfe de Stairs. 1981. *Diccionario huave de San Mateo del Mar.* SIL, Mexico.

Marjorie Pak
Department of Linguistics
University of Pennsylvania
619 Williams Hall
Philadelphia, PA 19104-6305

mpak@ling.upenn.edu

Debunking the Trochaic Bias Myth: Evidence from Phonological Development

YVAN ROSE & CHRISTINE CHAMPDOIZEAU
Memorial University of Newfoundland

## 0.	Introduction

Since the advent of the theory of Generative Grammar (e.g. Chomsky 1957), a large number of researchers have been on a quest to uncover language universals, which are believed by many to be psychologically real, either because they represent basic language storage or processing mechanisms, or because they emerge as artifacts of our perception or production systems. In many different ways, this quest has offered positive, useful results. Typological studies have yielded generalizations that suggest the presence of basic structures or mechanisms underlying the functioning of human languages. Similar generalizations were obtained from studies of language acquisition.

However, an undesirable effect of this quest has been, at times, somewhat hasty speculations that purported language universals should manifest themselves in language acquisition. Indeed, it is often the case that claimed universals end up representing cross-linguistic tendencies which themselves do not make any useful predictions in language acquisition. For example, while coronal consonants enjoy a special status in the phonological systems of a large number of the world's languages (e.g. Paradis & Prunet 1991; Hall 1997), they display various behaviors in first language acquisition data that contradict the view that they should be universally unmarked or special in any way (e.g. Rose 2000).

In this paper, we argue that one such purported universal, often referred to as the trochaic bias, should be abandoned from the theory on a number of grounds. First, the cross-linguistic facts supporting this construct are far from conclusive. Second, babbling and early acquisition data do not provide any independent evidence for such a bias in phonological development. Finally, even in contexts where everything is in place to favor the manifestation of a bias towards trochaic footing, no convincing evidence can be found.

The paper is organized as follows. In section 1, we provide an overview of the predictions entailed by the trochaic bias as well as a brief survey of the literature on the topic in the context of child language phonology. As we will see, an overwhelming majority of the empirical evidence available fails to independently

support the trochaic bias as a valid construct. In Section 2, we discuss an apparent counter-example to this general observation. We however discredit this counter-example based on methodological considerations. We introduce the current study in section 3. As we will see, the data from this study also fail to provide support for the trochaic bias. We offer a brief summary and discussion in section 4.

1.   The Trochaic Bias Hypothesis

The trochaic bias hypothesis, as its name indicates, implies that trochaic, i.e. strong-weak (SW), foot form should be favored over other types of feet by Universal Grammar. To our knowledge, this hypothesis has been first proposed by Allen & Hawkins (1978, 1980). As observed by these scholars, English-learning children tend to first preserve stressed and final syllables in the truncated forms they produce. For example, when producing WSW words such as *banána* or *tomáto*, these children showed a strong tendency to delete the first syllable altogether thereby producing a SW, trochaic word form. These results were later supported in works such as Demuth (1995), who provides a bottom-up account of the development of prosodic words based on data from English-learning children. However, Demuth does not claim that at the stage when feet are developing in children's prosodic representations, there is a bias for trochaic footing, despite the general trends uncovered by Allen and Hawkins' work.

Other scholars, however, have provided direct or indirect support to the trochaic bias hypothesis. For example, Fikkert (1994), in her study of the development of prosodic structure in first language Dutch learners, adopts a principle-and-parameter approach according to which the learner's task is to set parameter values based on the evidence available from the input. Fikkert makes two key observations. First, similar to the English patterns described above, Dutch children tend to reduce long word forms to SW forms during early stages of phonological development. Second, these learners also show a tendency to pronounce target WS forms such as *ballón* 'balloon' as SW (Fikkert 1994: 203). Fikkert suggests that these observations can be related to a trochaic bias effect. (See also Kehoe 1997, 1998 for additional discussions of Fikkert's proposal based on acquisition data from English learners.)

1.1   The Circularity Problem

While the research reported above appears to lend support to the trochaic bias hypothesis, we argue here that none of the evidence put forth should be considered conclusive. Indeed, all of the supporting evidence comes from the acquisition of Dutch and English, two target languages that are uncontroversially analyzed as trochaic (e.g. Booij 1995, Hammond 1999). The patterns observed in the acquisition of these languages may in fact be triggered by the rhythmic properties of these languages, that is, the positive evidence that the learners of these languages are exposed to on a daily basis. The exposure to trochaic input is indeed likely to yield trochaic patterns without the need of any built-in bias towards a trochaic analysis of the language.

1.2 Contradictory Evidence

A further look at the literature on phonological development reveals a series of observations that contradict the existence of a trochaic bias even at the earliest stages of development, irrespective of the metrical properties of the target language.

1.2.1 Evidence from Trochaic Languages

Focusing first on English, Pollock, Brammer & Hageman (1993) investigate the acoustic properties of stressed syllables produced by young learners of this language. Their study yields two important conclusions. First, they demonstrate that these learners have no generalized preference for trochaic stress patterns. Second, they show that at the production level, learners master the three acoustic parameters of stress (fundamental frequency, intensity and duration) independently. This second finding is important given that stress is realized through a combination of these parameters, whose realization is itself dependent on the system of segmental contrasts that exists in the language. For example, the relative duration of a stressed vowel is itself contingent on whether this vowel is phonologically tense (long) or lax (short). In addition, contextual effects must be considered, for example, the seemingly universal property of utterance-final syllables to display longer duration (e.g. Hayes 1995). The importance of considering all acoustic parameters of stress will be discussed further below.

Keeping with the trochaic bias hypothesis, one could hypothesize that trochaic bias effects are rather subtle and short-lived, and are rapidly hindered through language acquisition. In this context, it is necessary to look at the earliest linguistic productions, those found during the babbling stage. However, the evidence from such studies also generally contradicts the trochaic bias hypothesis. For example, Klein (1984) shows that both trochaic and iambic patterns are attested in babbles produced by an English-learning child. She concludes that stress is acquired lexically by children, at least during the initial stages of phonological development. Furthermore, Vihman, DePaolis & Davis (1998) demonstrate from perceptual and acoustic evidence that children in fact appear to have their own rhythmic preferences in babbling, thereby contradicting predictions made by the trochaic bias hypothesis. The evidence they discuss from English-learning toddlers shows a nearly bipolar distribution between trochaic and iambic patterns in disyllabic babbles (only 56% of the disyllabic babbles displayed a trochaic pattern), even though both a purported trochaic bias and the general rhythmic properties of English should in theory conspire to yield trochaic patterns in babbling. As Vihman et al. argue, the emergence of iambic patterns in their data may originate from words or phrases that constitute evidence for iambic footing, for example determiner + monosyllabic noun combinations, disyllabic phrases with final stress (e.g. *a báll*). From an analysis of the rhythmic properties of child-directed speech from two caregivers in the same corpus, Vihman et al. show that children learning English are indeed exposed to a significant portion of iambic stress patterns (in approximately half of the child-directed utterances).

The authors conclude that children's patterns are not influenced by any built-in metrical bias. Rather, babblers appear to have their own analysis of the ambient evidence. Given that any analysis of English foot form as trochaic must be based on lexical stress patterns incorporating complicated evidence such as syllable weight and extrametricality, it is likely that babblers do not yet attend to all of this evidence. In addition, they have in their lexicon phrases such as *a ball* that are not yet segmented into two words and, as such, are suggestive of iambic footing.

This possibility is in fact compatible with the evidence found in early word productions previously discussed for Dutch and English. Older children are likely to attend to the more complete set of evidence required to analyze the metrical properties of the target language. Once they arrive at this analysis, they will tend to generalize it over all forms, including those that do not show strong-weak patterns such as *giraffe*. These words may undergo stress shift or other modifications yielding the more general, trochaic pattern expected.

Similar findings are documented for the acquisition of other trochaic languages. For example, Hochberg (1988), who focuses on the acquisition of Spanish, finds no preference for trochaic or iambic footing in either non-word imitation tasks or real-word spontaneous production tasks. Similarly, Tzakosta (2004) recently demonstrated that learners of Greek may truncate WSW forms to either WS (iambic) or SW (trochaic) forms in early word productions. In line with the conclusions reached above for English, it is possible that the superficial properties of these target languages have an influence on the child's analysis. For example, in both Spanish and Greek, stress may fall on the final, penultimate or antepenultimate syllables, depending on a series of factors such as extrametricality, morphological structure and lexical idiosyncrasies. Such factors are likely to influence the acquisition of the metrical properties of the adult language.

While the complications noted above could be considered to hinder the effects of a potential bias, the existence of such a bias should however yield some preference for trochaic footing, which is evidently not the case. The only safe conclusion one can reach from these observations is that there is simply no such bias influencing children's early phonologies.

1.2.2 Evidence from Iambic Languages

Given that no evidence for the trochaic bias can be found in acquisition data from trochaic languages, which should in principle conspire with the trochaic bias to yield trochaic patterns, it is reasonable to expect that no such influence will be found in non-trochaic languages, mainly because of the absence of such a possible conspiracy between a hypothetical built-in bias and the evidence coming from the ambient language that the learner is exposed to. A survey of the literature on the acquisition of iambic languages fully supports this expectation. No trochaic bias appears to be found in the stress patterns, syllable truncation patterns or the development of complex word forms in iambic languages. These observations hold in languages such as Turkish (e.g. Aksu-Koç & Slobin 1985), Yucatec Mayan (e.g. Archibald 1996) and French (e.g. Paradis, Petitclerc & Genesee

1997, Vihman et al. 1998, Archibald & Carson 2000, Rose 2000), whether the evidence comes from naturalistic, spontaneous productions or from more experimental approaches. For example, coming back to the Vihman et al. (1998) study discussed above in the context of English, these scholars also found that French learners' productions were overwhelmingly iambic, as opposed to the bipolar results found in the English data. The authors attribute this difference to the fact that stress patterns in French are extremely regular: only phrase-final syllables are stressed in this language.[1]

First language acquisition data thus fail to provide evidence for any kind of bias in the early production of stress by first language learners. We discuss an apparent counter-example to this generalization in the next section.

2.   Contradictory Results

One apparent counter-example to the conclusions reached above for both trochaic and iambic languages comes from LaBelle's (2000) study of a bilingual, English-French first language learner. LaBelle argues from acoustic and perceptual-impressionistic assessments that this learner is in fact influenced by the trochaic bias, as she displays predominant trochaic patterns in both her English and French productions. In the lines that follow, we argue that LaBelle's conclusions are by and large unsupported, mostly due to methodological issues that prevent a clear assessment of this child's production patterns.

2.1   LaBelle's (2000) study

To determine which stress pattern was characterizing this bilingual child's speech, LaBelle primarily analyzed FØ contours in one-word disyllabic utterances. He considered rising FØ contours to be indicative of iambic stress and, conversely, associated falling FØ contours to trochaic stress. LaBelle included only declarative utterances in the analysis, since interrogative and imperative utterances typically have a rising intonational contours which could be suggestive of iambic stress.

Using the measurements obtained from the declarative utterances, an "impressionistic judgment was made regarding each token's stress pattern" (LaBelle, 2000: 476). The stress pattern was classified as having either iambic stress, trochaic stress or level stress, if the child equally stressed both syllables (not showing evidence of either stress pattern). The results from LaBelle's study indicate that the participant used mostly trochaic stress patterns (in 57% of 33 French productions and 71% of 58 English productions). The tendencies observed in the data are suggestive of a predominantly trochaic influence, even in French utterances. LaBelle interprets this evidence as a manifestation of the trochaic bias.

---

[1] We come back to the properties of stress in French below in section 3.1.

2.2 Criticism

While LaBelle's (2000) conclusions seemingly support the trochaic bias hypothesis, we argue that these conclusions may in fact be an artifact of the method he used to analyze the child's productions. As mentioned above, the evidence that LaBelle uses comes primarily from an analysis of FØ curves. However, we argue that such an approach is flawed, because it makes it impossible to determine with certainly what syllable was in fact stressed by the child. Indeed, as noted previously, stress can be realized across languages through the enhancing of one of three acoustic parameters (FØ, intensity and duration) or of any combination of these parameters. Although LaBelle mentions measurements of all three parameters, he did not incorporate intensity and duration in his assessment of the child's productions. This approach is especially problematic since English and French utilize very different cue combinations to realize stress. As we will see below, while FØ is important to English stress, it is virtually irrelevant to French stress. In this context, it appears that LaBelle was not considering all of the required evidence to test his hypothesis.

An additional argument arises from this criticism. Given that utterance-final intonation is typically falling in both English and French declarative sentences, and that a falling FØ curve on the final syllable is interpreted by LaBelle as evidence for trochaic footing, it is no surprise that the evidence he found based on FØ measurements was supportive of the trochaic bias.

Building on this discussion, we introduce our current study in the next section.

3. Current study

Our study is based on one learner, code-named Anne, who was raised in a bilingual, English-French household in St. John's, Canada. St. John's is the capital city of the province of Newfoundland and Labrador where English is clearly the predominant language. The French-speaking population of St. John's is indeed restricted to a few hundred individuals, virtually all of whom also speak English as a second language. We recorded Anne's linguistic development for a period of approximately two years (from 2;00.04 to 4;02.25). Our study focuses more specifically on the first year of recordings. At the time of the study, Anne could understand virtually everything that was spoken to her in French. However, she was overwhelmingly English-dominant. We believe that this dominance arose from her then recent entry into a monolingual English daycare center, where she was in regular contact with a monolingual community of English-speaking peers. Consistent with her preference for English, Anne avoided French as much as possible, even with French interlocutors. As a result, most of her French productions arose from code-switches. We recorded Anne on a fortnightly basis following a one-speaker, one-language protocol, i.e. alternating English and French interlocutors across recording sessions.

3.1 Method

In line with LaBelle, we analyzed declarative utterances only. We performed acoustic analyses of Anne's stress patterns in both French ($n = 36$) and English ($n = 38$) disyllabic words. However, we excluded from our analysis English words with final stress such as *ballóón*, since comparisons between penultimate and final syllables in such words would wrongly suggest iambic patterning. In addition, we measured and considered all three cues that are potentially relevant for stress assignment: FØ and intensity peaks as well as vowel duration. We measured both the final and the penultimate vowels of each utterance-final word and then compared the measurements obtained across syllable positions. For each parameter, larger values on the penultimate syllable indicated trochaic stress while larger values on the final syllable were interpreted as evidence for iambic stress.

As alluded to above, a consideration of all three acoustic cues is paramount in such a study, since the acoustic manifestations of stress in English and French involve significantly different cue combinations. In English, stressed syllables involve higher FØ and intensity values (Fry 1955, Lieberman 1960, Beckman 1986), in addition to increased duration, modulo the tense/lax contrast between vowels, which is in part manifested through vowel length. As opposed to English, stressed syllables in French are primarily characterized by increased vowel duration (Delattre 1966, Léon 1996, Vaissière 1997). Intensity and FØ in French are mostly related to intonation and sentential focus.

3.2 The Relevance of this Study

As can be inferred from our methodology, virtually everything needed to encourage the emergence of trochaic bias effects was in place. First, our participant, despite living in a bilingual household, was raised in the overwhelmingly English-speaking environment of St. John's. Moreover, at the time of the study, she was attending a monolingual, English-speaking daycare center, to which we attribute her generalized preference for English and obvious avoidance of French productions. In this context, while the emergence of a trochaic bias in her productions could be attributed to her linguistic environment, the absence of such an emergent property in her speech should provide significant empirical evidence against the existence of a trochaic bias.

3.3 Results

We analyzed the results from two different perspectives. First, we analyzed the overall differences observed by the penultimate and final syllables for each acoustic parameter. As can be seen in (1), a falling curve between the penultimate and final syllables is found for each acoustic parameter in English productions. These results generally correspond to what should be expected in this language. As opposed to this, we find mixed and relatively flat results for FØ (slightly falling) and intensity (slightly rising) in French, with a clearly rising curve for duration. Again here, the results closely match the parameters of the target

language, in which, as already mentioned, stress is mainly realized through increased vowel duration.

(1)   Overall results for each acoustic parameter
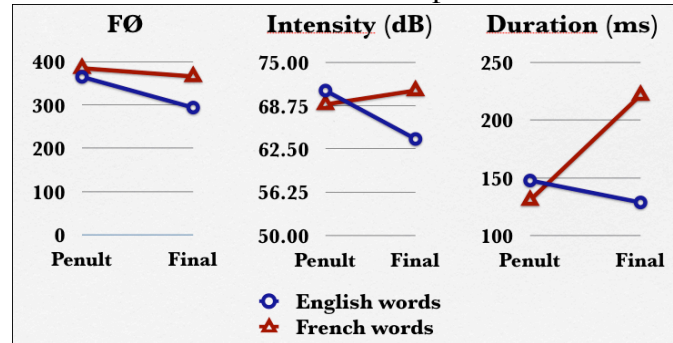
The general tendencies depicted in (1), which are already suggestive of a separation between the two languages in the child's productions, and of a relatively native-like behavior in each language, do not however provide indication on stress patterns produced in individual words. The next two figures provide an analysis of trochaic versus iambic patterns for both English and French. As can be seen in (2), the child's English productions generally followed a trochaic pattern if one considers FØ and intensity, the two clearest acoustic parameters of stress in this language.

(2)   Stress patterns in English productions
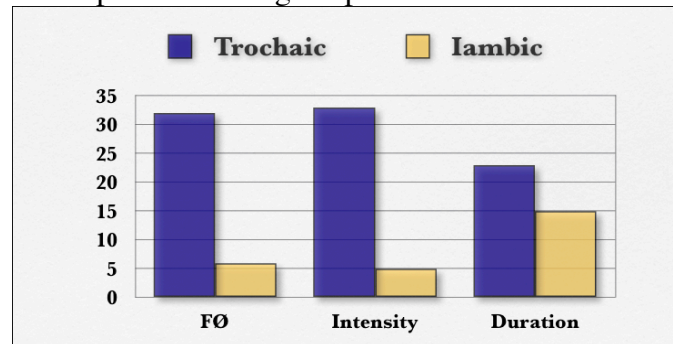
However, the results from duration are more mixed. We attribute these results to a combination of potential factors. As already mentioned, vowel duration in English is relevant not only to stress but also to the phonological contrast that exists between tense and lax vowels. In addition, vowel duration in English is also influenced by factors such as the voicing of post-vocalic consonants (e.g. Borden et al. 2003). Finally, other general influences such as the lengthening of utterance-

final vowels may further influence these results.[2] Despite all of these complications, we do observe a majority of trochaic patterns based on duration.

A comparison of the stress patterns in English words in (2) with those in French words in (3) reveals clear qualitative and quantitative differences. First, we see the overall stress pattern shifting to an iambic one. In addition, instead of displaying clear patterns for FØ and intensity as we saw in (2), the only dominant stress pattern found in French words relates to duration. These data clearly demonstrate that when uttering French words, the child correctly produced an iambic stress pattern, using the only acoustic correlate relevant to French stress, that is, increased duration of the final syllable.

(3)   Stress patterns in French productions
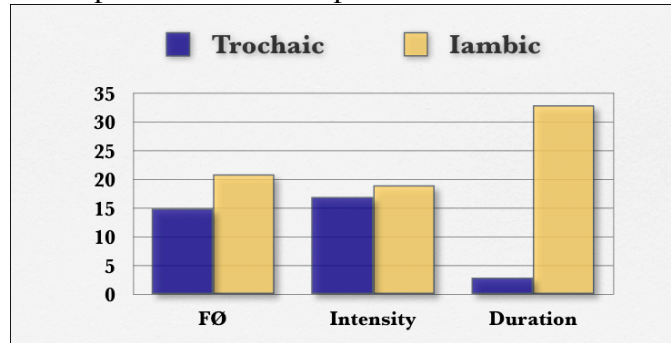
As noted above, there appears to be a universal tendency for vowel lengthening in utterance-final syllables across languages (Hayes 1995). It is possible that this tendency for final lengthening, which presumably has articulatory or aerodynamic sources, conspires with the acoustic properties of French to yield such a clear result. However, this possibility should not detract us from the observation that the child's productions are nonetheless largely compatible with the metrical and acoustic properties of French stress. In this context, it is important to note the marginal patterns found with the other two acoustic parameters, especially in light of the fact that these two parameters are the ones that are mostly exploited to phonetically realize stress in the English data.

3.4   Interpretation
The results emerging from the measurements of the English and French productions provide us with compelling indications about both the child's metrical analysis and overall mastery of the acoustic correlates of stress that are relevant to each language. These two observations are evident from the schema in (4), which combines the results from both languages. As we can see in this comparative summary, the child not only generally displayed the correct stress patterns in each

---

[2] Full testing of such influences would require analysis of variance based on a larger number of examples for each relevant context. This issue, which extends beyond the scope of this case study, is left for future investigation.

language, she also demonstrated great control of the acoustic correlates of stress in each of the two languages.

(4)   Summary of results
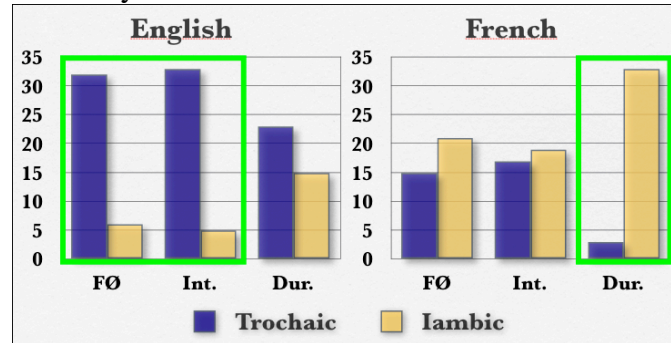
Indeed, English productions are mostly realized through an increase of FØ and intensity on the penultimate syllable, with a more marginal role left to increased duration, while the only clear pattern that arises from the French productions relates to an increased duration of the final syllable. In sum, the child's productions are generally native-like in both of her languages.

The results from our study contradict the trochaic bias hypothesis. Indeed, while the child displayed trochaic stress patterns in her English production, no such patterns were found in the French data. These results are particularly significant in light of the general context of the study, which is based on a clearly English-dominant learner who was raised in an English-dominant environment. These results also contradict those of LaBelle's (2000) study. Even though we are not in a position to verify the source of the differences between the two studies, we attribute it to the different methods used in each. Furthermore, based on our criticism of LaBelle's study, we speculate that a detailed investigation of the acoustic parameters relevant to each of the languages may have yielded different conclusions.

4.   Discussion

In this paper, we discussed the controversial status of the trochaic bias, a theoretical construct suggesting an inborn bias towards trochaic footing in child language. We first provided a survey of the background literature on the topic. Based on this survey we concluded that there is currently no independent evidence supporting the presence of this bias in child language. While all of the evidence available in support of such a bias is confined to the acquisition of trochaic languages, thereby posing a circularity problem, a significant body of evidence, coming from the acquisition of both trochaic and iambic languages, contradicts the trochaic bias hypothesis. We then discussed findings by LaBelle (2000) that apparently contradict this conclusion. We rejected these results as inconclusive on methodological grounds. We then introduced our study, which consists of a metrical and acoustic

analysis of words produced by a bilingual learner. This learner provides a good test case for our hypothesis against a trochaic bias in child language because of her language dominance and her general linguistic environment, both of which would likely favor the manifestation of such a bias in her word productions. Based on acoustic measurements of the fundamental frequency, intensity and duration of the penultimate and final vowels produced by this child in both English and French words, we demonstrated that the child had mastered both the basic metrical properties and the most central acoustic correlates of stress of each of the target languages.

The results of our investigation clearly contradict the presence of a trochaic bias in the child's phonology. Similar to the findings from the literature on babbling and first word productions reported above, the current results fail to provide empirical support for the trochaic bias. In fact, these results overwhelmingly suggest that the only biases that the learners are subject to come from the phonological and acoustic properties of the target languages. Based on the absence of any clear, independent empirical support for the trochaic bias, we thus propose that this construct is nothing more than a myth and, as such, should be eliminated from any theoretical claims about the cognitive foundations of stress systems in human languages.

References

Aksu-Koç, Ayhan and Dan Slobin. 1985. The Acquisition of Turkish. In *The Cross-linguistic Study of Language Acquisition, Volume 1: The Data*, edited by Dan Slobin. Hillsdale, NJ: Lawrence Erlbaum Associates.

Allen, George and Sarah Hawkins. 1978. The Development of Phonological Rhythm. In *Syllables and Segments*, edited by Alan Bell and Joan Bybee Hooper. Amsterdam: North Holland.

___. 1980. Phonological Rhythm: Definition and Development. *Child Phonology* 1:227-256.

Archibald, John. 1996. The Acquisition of Yucatecan Maya Prosody. In *Proceedings of the UBC International Conference on Phonological Acquisition*, edited by Barbara Bernhardt, John Gilbert and David Ingram. Somerville, MA: Cascadilla Press.

Archibald, John and Jana Carson. 2000. Acquisition of Quebec French Stress. In *Proceedings of the 2000 Annual Meeting of the Canadian Linguistics Association*, edited by John Jensen and Gerard van Herk. Ottawa: University of Ottawa.

Beckman, Mary. 1986. *Stress and Non-Stress Accent*. Dordrecht: Foris.

Booij, Geert. 1995. *The Phonology of Dutch*. Oxford: Oxford Clarendon Press.

Borden, Gloria, Katherine Harris and Lawrence Raphael. 2003. *Speech Science Primer, 4th Edition*. Philadelphia: Lippincott Williams & Wilkins.

Chomsky, Noam. 1957. *Syntactic Structures*. The Hague: Mouton.

Delattre, Pierre. 1966. A Comparison of Syllable Length Conditioning Among Languages. *International Journal of Applied Linguistics* 4:182-198.

Demuth, Katherine. 1995. Markedness and the Development of Prosodic Structure. In *Proceedings of the North East Linguistic Society (NELS)*, edited by Jill Beckman. Amherst: Graduate Linguistic Student Association.

Fikkert, Paula. 1994. *On the Acquisition of Prosodic Structure*. Dordrecht: ICG Printing.

Fry, Dennis. 1955. Duration and Intensity as Physical Correlates of Linguistic Stress. *Journal of the Acoustical Society of America* 27:765-768.

Hall, Tracy Alan. 1997. *The Phonology of Coronals*. Philadelphia: John Benjamins.

Hammond, Michael. 1999. The Phonology of English. Oxford: Oxford University Press.

Hayes, Bruce. 1995. *Metrical Stress Theory: Principles and Case Studies*. Chicago: The University of Chicago Press.

Hochberg, Judith. 1988. Learning Spanish Stress: Developmental and Theoretical Perspectives. *Language* 64:683-706.

Kehoe, Margaret. 1997. Stress Error Patterns in English-speaking Children's Word Productions. *Clinical Linguistics and Phonetics* 11:389-409.

___. 1998. Support for Metrical Stress Theory in Stress Acquisition. *Clinical Linguistics and Phonetics* 12:1-23.

Klein, Harriet. 1984. Learning to Stress: A Case Study. *Journal of Child Language* 11:375-390.

LaBelle, Christopher. 2000. A Longitudinal Study of Lexical and Prosodic Differentiation by a Simultaneous French/English Bilingual Child. In *Proceedings of the 24th Annual Boston University Conference on Language Development*, edited by Catherine Howell, Sarah Fish and Thea Keith-Lucas. Somerville, MA: Cascadilla Press.

Léon, Pierre. 1996. Phonetic Changes and Variations in Contemporary French: Linguistic and Semiotic Factors. *Revue de Phonétique Appliquée* 120:201-219.

Lieberman, Philip. 1960. Some Acoustic Correlates of Word Stress in American English. *Journal of the Acoustical Society of America* 32:451-454.

Paradis, Carole and Jean-François Prunet, eds. 1991. *The Special Status of Coronals: Internal and External Evidence*. Vol. 2, *Phonetics and Phonology Series*. San Diego: Academic Press.

Paradis, Johanne, Sophie Petitclerc and Fred Genesee. 1997. Word Truncation in French-speaking Two-year-olds. In *Proceedings of the 21st Annual Boston University Conference on Language Development*, edited by Elizabeth Hughes, Mary Hughes and Annabel Greenhill. Somerville, MA: Cascadilla Press.

Pollock, Karen, Dianne Brammer and Carlin Hageman. 1993. An Acoustic Analysis of Young Children's Productions of Word Stress. *Journal of Phonetics* 21:183-203.

Rose, Yvan. 2000. Headedness and Prosodic Licensing in the L1 Acquisition of Phonology. Ph.D. Dissertation, McGill University.

Tzakosta, Marina. 2004. *Multiple Parallel Grammars in the Acquisition of Stress in Greek L1*. Utrecht: LOT.

Vaissière, Jacqueline. 1997. Langues, prosodie et syntaxe. *Revue Traitement Automatique des Langues* 38:53-82.

Vihman, Marilyn, Rory DePaolis and Barbara Davis. 1998. Is there a "Trochaic Bias" in Early Word Learning? Evidence from Infant Production in English and French. *Child Development* 69:935-949.

Double-subject Sentences, Double-dimension Semantics

WILLIAM SALMON
Yale University

0.   Introduction

This paper looks at one topic-comment construction in spoken Brazilian Portuguese (BP). The construction is similar to what Li and Thompson (1976, 1981) have called *double-subject sentences* (DSS) for Mandarin and other topic-prominent languages. (1a) is a prototypical example of the BP construction in question, and a Mandarin example follows in (1b).

(1)   a. Peixe, sardinhas são deliciosas.
             'Fish, sardines are delicious.'

         b. Zhèi ge nǔhái yǎnjing hěn dà. [Li and Thompson 1981:4.19]
             'That girl, eyes are very big.'

The BP double-subject sentence is syntactically composed of an initial NP followed by an NP and a VP. The initial NP (NP1) contains topic information, and the rest of the construction bears a comment related to that topic information.

  The DSS have received very little attention in traditional Brazilian Portuguese grammars or in linguistic literature, so part of this paper must be descriptive. The greater part of the paper, however, explores how the topic NPs might be accounted for within the multidimensional semantics of Potts (2005).

1. Background and Description of Brazilian Double-subject Sentences

The DSS occur normally in informal, spoken Brazilian Portuguese. The construction seems to have been first mentioned in Pontes (1987), and Perini dedicates a brief section to it in his 2002 reference grammar of BP.

  We can get a basic idea of the DSS grammar through a comparison to Li and Thompson's (1976) rendering of its Mandarin counterpart. The essential features discussed below are: the requirement of a part-whole relationship with NP1 and the comment sentence; NP1 must be definite or generic; NP1 lacks selectional relations with the main verb; there must be an intonational break between NP1 and the comment sentence. For the most part, the BP sentences pattern here exactly as with the Mandarin.

As do the Mandarin topics, the BP topics must bear a part-whole or a hyponymy relationship, which is seen in the subcategory *sardinhas* of the more general *peixe*. The definiteness/generic requirement can be seen in NP1 of (2) and (3) respectively.

(2)   Peixe, sardinhas são deliciosas.
        'Fish, sardines are delicious.'

(3)   Esse presidente, o imposto está cada vez mais alto.   [Perini §39.4][1]
        'This president, taxes are getting higher and higher.'

(4)   Flores,   a Maria   gosta de tulipas.   [Flannery and Kuong (2)]
        flowers, the Maria like.3.sg.   tulips
        'Flowers, Maria likes tulips.'

In (4) we can see the lack of selectional relations with the verb. The topic *Flores* 'flowers' is plural, while the verb *gosta* 'likes' agrees with a singular subject *Maria*.

Finally, the intonational break between NP1 and the following sentence is an important feature to consider, as it will play an important role below in the discussion of the DSS and Potts's multidimensional semantics. This break is *obligatory* in all of the BP sentences. This contrasts with the Mandarin sentences, in which an intonational break need not be present in fast speech.

We can now turn to the semantics of Potts (2005) and what it can tell us about the DSS.

2.   Multidimensional Semantics

Potts (2005) develops a two-dimensional semantics with an eye toward Grice's (1989) conventional implicature (CI). However, he makes very clear that he intends his semantics to account for many kinds of multidimensional data that have not previously been discussed as CIs, such as non-restrictive relatives, sentence adverbs, honorifics, epithets, in addition to other kinds of expressive

---

[1] Flannery and Kuong (2004) claim that the DSS can be indefinite in BP. However, the examples they cite in support of this seem to actually be generics, as in (i) and so are not counterexamples. [Flannery and Kuong's (1)]

(i)   *Animais de estimação, eu falei com aquele menino sobre cachorros ontem.*
        'Pets, I talked about dogs with that kid yesterday.'

 It should be mentioned, however, that indefinite NPs do seem possible in the NP1 position as long as they receive a specific reading. So, it appears that definiteness alone is not a sufficient description.

content.[2] In fact, he purposefully bypasses the traditional CI data such as *but*, *therefore*, and *even*[3] in favor of the supplements and expressives.

The claim is that various grammatical elements contribute multidimensional information, but that this multidimensional information must stand in a certain relation to a primary assertion: viz., it is a comment upon a primary assertion, or it helps the hearer to better understand a primary assertion. This seems exactly relevant to the DSS, and so the final part of this paper attempts to show that despite some initial hesitation, Potts's semantics suggests a stimulating place to locate these traditionally illusive data.

Potts (2005:2.10) distills various passages from Grice (1989), arriving at what he terms the "abstract properties" of CIs given below in (5), and a large portion of his work is spent defining his various CI data against this definition.

(5) a. CIs are part of the conventional meaning of words
     b. CIs are commitments and thus give rise to entailments
     c. These commitments are made by the speaker of the utterance 'by virtue of the meaning of the words' he chooses
     d. CIs are logically and compositionally independent of what is said (in the favored sense)' i.e., independent of the at-issue entailments

Potts assumes, following Bach (1999) and others, that a single sentence can express multiple propositions, and he suggests that a sentence containing a CI actually expresses two propositions: the first a primary one, which contains the important or "at issue" information, and then a secondary one, which contains information that has been backgrounded but that helps the hearer to understand the first. So, according to Potts, (6a) expresses the primary assertion in (6b) as well as the secondary (and false) assertion in (6c) [Potts's (2.38)]:

(6) a. Lance Armstrong, an Arkansan, has won the 2003 Tour de France!
     b. Lance Armstrong has won the 2003 Tour de France.
     c. Lance Armstrong is an Arkansan.

My primary interest for this paper is in Potts's formulation of the two-tiered semantics. On the *lower* level Potts places primary assertions, represented in (6b). The *upper* level contains secondary assertions like (6c), and it is concerned with directing the discourse, or allowing the speaker to comment upon her assertion. It is this upper level that is relevant to discussion of the DSS.

Crucial to Potts's analysis of primary and secondary assertions is what he refers to as *comma intonation*. Potts depends heavily on this intonational break to distinguish CI content from primary asserted content. The comma intonation

---

[2] Whether or not Grice would have considered the non-restrictive relatives, sentence adverbs, etc., to be conventional implicatures, I will leave aside for the time being.

[3] Potts does not consider these traditional data to be CIs. This is based on his claim that they do not satisfy his requirement that CIs be speaker-oriented. For Potts, then, Grice's definition of CIs is a valid concept, but it just picks out different data from those Grice originally discussed.

marks a shift from at-issue content to CI content, or from the lower to the upper level of Potts's two-tiered semantics. As I have discussed above, the Brazilian DSS must *always* be set off by such an intonational break. This suggests that they are not semantically coordinate with the primary assertion, and it provides an immediate parallel to Potts's data. What remains then is the question whether Potts's definition in (5) above can pick out the DSS in addition to the supplements that are the focus of his work. I suggest that it does so easily. First, however, there is a potential point of contention looming that needs to be dealt with.

2.1.   Discourse-newness and Potts CIs

Potts requires his CIs to contribute *discourse-new* information. This he does in order to set CIs apart from presupposition, which has long had a confusing relationship with conventional implicature in the semantics and pragmatics literature.[4]

Now, *topic-hood* has traditionally been discussed in terms of shared information, givenness, old information, and so forth, and this seems immediately counter to Potts's requirement that CIs be discourse-new. However, notions like *familiarity* and *shared knowledge* are notoriously slippery. For example, some object or event could be familiar or shared knowledge to discourse participants yet not be the immediate topic of conversation. This shared information could then be brought to the forefront of the conversation, and even though the information was previously known, it would then be considered *discourse*-new. I think this is at least part of the potential problem that I discuss in the next few paragraphs. Essentially, Potts seems to use "not part of the common ground" and "discourse-new" interchangeably.[5] But as I suggest for the DSS, such usage is a bit coarse, as DSS generally do contribute information that is somehow part of a prior common ground. At the same time, though, DSS need to be used such that they are contributing a kind of discourse-new information, or else they are redundant.

There are a couple of things we can do here to show that the DSS are not in conflict with this part of Potts's proposal. First, we can illustrate that while the DSS do contain previously known information, they are generally used in situations where this information will not be redundant. Second, we can easily show that the information in Potts's examples can be characterized the same way: that is, the supplements can be both previously known and discourse-new. Let's look first at some of Potts's examples, in which he suggests supplements are required to contribute discourse-new content.

Here is Potts's (2.13a), reproduced here as (7a), as well as an indefinite version of the same nominal appositive [Potts's (4.2a)] reproduced here as (7b). Both of these he considers to be good CIs by his definition.

(7)   a.   Ames, the former spy, is behind bars.

---

[4] See Karttunen and Peters (1979), and Chierchia and McConnell-Ginet (2000), on CIs as presuppositions.
[5] "CI expressions usually offer information that is not part of the common ground when they are uttered" (33). And, "the constructions are united in contributing discourse-new, speaker-oriented entailments: CIs" (13).

b. Ames, a successful spy, is now behind bars.

According to Potts, "former spy" should be discourse-new, deemphasized information. But what if we tinker with Potts's example a little bit, as in (8), below?

(8) a. Ames, you know, the former spy, is behind bars.
     b. Ames, the guy I was just telling you about, is a former spy.

In (8a), the speaker must assume the hearer is already familiar with the fact that Ames is a former spy. This is suggested by the consensual marker *you know* as well as by the use of the definite article. In these examples the speaker seems to be reactivating "former spy" rather than introducing novel information.

   In a BP double-subject sentence, NP1 must be something the hearer has some familiarity with, and the familiarity must be relatively proximal. However, the restrictions run the other way too. If it is obvious what the discourse topic is, it can be redundant and awkward to use the DSS.

   Consider the following scenario. Two people are talking about Mr. Jones's biology class and the fact that the students had just taken an exam. As a result, the class and the exam are completely activated in the discourse. In this case, it is not necessary to use the DSS in (9a) and to do so would seem repetitive. The speaker could instead just assert the non-DSS (9b).

(9) a. Classe da sra. Jones, todo mundo repetiu de ano.
        'Mr Jones's class, every boy failed the exam.'

     b. Todo mundo repetiu de ano.
        'Every boy failed the exam.'

We can see an English correlate to this kind of redundancy in the *as for* constructions in (10):

(10) John: I'm going to The Salt Lick for some ribs. I love that place.
      Ted: #Yeah. As for The Salt Lick, I think it's pretty good too.

      Grady: Yeah. I think it's pretty good too.

   Ultimately then, the DSS do not seem in conflict with Potts's discourse-new requirement, and we can return to his definition of CIs to see that it does seem to pick out the DSS as a kind of CI meaning.

2.2. CIs are Part of the Conventional Meaning of Words
It is clear that what the DSS assert depends directly on the semantics of the words that compose them. There is no mystery with this requirement, no inference or implicature necessary. It is by virtue of the semantic reference of NP1, along with the syntactic position and comma intonation, that the DSS establishes or (re)activates a relation with a context.

In addition, the fact that there needs to be a part-whole relation between the topic and grammatical subject, no matter how dependent on context, further suggests that there are restrictions which depend on the semantic content of NP1.

2.3. CIs are Commitments and thus Give Rise to Entailments

This part of the definition is also straightforward in that it is not possible to deny what is contributed by NP1. Again, there is no sense in which "fish" is used to implicate something other than fish or where anything is used non-literally in either of the examples below. If by the use of the DSS one is meaning to reintroduce or reactivate a topic, it follows that the reactivated topic cannot then be denied.

(11)   Peixe, sardinhas são deliciosas. Mas, eu não estou falando sobre peixe.
        'Fish, sardines are delicious. #But, I am not talking about fish.'

Further, if we take a standard DSS like (12a) and insert a relative clause containing information similar to the topic, the resulting redundancy is extremely awkward, as in (12b).

(12)   a. Peixes, sardinhas são deliciosas.
            'Fish, sardines are delicious.'

        b. #Peixes, sardinhas, que são um tipo de peixe, são deliciosas.
            'Fish, sardines, which are a kind of fish, are delicious.'

2.4. CIs are Commitments Made by the *Speaker of the Utterance*

This part of Potts's definition is a little harder to illustrate with the DSS. The primary means of testing for speaker orientation is through indirect speech reports, embedding under verbs like *say*. However, for the DSS, embedding of any kind does not work, as the topics have a strict requirement to be sentence-initial.

Potts demonstrates that under embedding, the content of supplements and epithets becomes relativized to the speaker of the new construction and so these forms seem to follow the current utterance rather than the one being reported. That is, those constructions are syntactically embeddable, while semantically *un*embeddable. However, with the DSS, it is just not possible to embed them at all. They are syntactically unembeddable.

For example, if we embed the topic construction in (13a), as in (13b), it is necessary to insert an additional pause after *dourado* 'dolphin', the grammatical subject of (13a). This changes the meaning and the syntax dramatically. In the embedded (13b), *Peixe* 'fish', which was formerly the topic, now has become the grammatical subject, while *dourado* has become a nominal appositive.

(13)   a. Peixe, dourado é o melhor.
            'Fish, dolphin is the best.'

  b. Gustavo disse que o peixe, dourado, é o melho.
      'Gus said that fish, dolphin, is the best.'

Without the additional pause, in (13b), the sentence would just be ungrammatical. As it stands though, it is no longer the kind of construction we have been interested in in this paper.

  Thus, we cannot embed the DSS directly. But this is not too surprising, as NP1 is essentially a kind of shorthand that requires contextual information and specific syntactic marking to be fully saturated. Thus, evidence for this part of Potts's requirement is a bit more difficult to find.

  We can find indirect evidence for speaker-orientedness, though, in the embedding behavior of the *as for* construction. Here, the topic marker is shifted to a parenthetical position within the sentence.

(14)   Mary: I love all kinds of meat. My favorite is beef flank-steak. Also I like
               pork butt roast. And sardines, as for fish, are delicious.

The parenthetical *as for fish* has the effect of changing the topic in (14) just as it does in initial position in (15).

(15)   Mary: I love all kinds of meat. My favorite is beef flank-steak. Also I like
               pork butt roast. As for fish, sardines are delicious.

And, *as for* is easily embedded in English and BP with the desired speaker-oriented interpretation.

(16)   a. John said that sardines, as for fish, are delicious.
       b. João disse que sardinhas, quanto ao peixe, são deliciosas.

Thus, we can see that in the *as*-parenthetical constructions it does seem possible to retrieve speaker-oriented meaning.[6]

  This is not conclusive evidence, as the relevant constituent in the DSS is sentence-initial, but it is at least encouraging evidence. Interestingly, Potts faces a similar difficulty with some of his data, which we will turn to next.

  For Potts, some of the more problematic data are his supplementary adverbs, which are a special class of supplements. These face similar difficulty in embedding, and we can draw support from a comparison of the behavior of the DSS and the supplementary adverbs.

  Utterance modifiers[7] such as *confidentially*, *frankly*, *between you and me*, etc., pattern just like the DSS, as they do not embed and they "are restricted to matrix occurrences because they require arguments that have main clause force" (Potts 147). This can be seen in (17a-b) [Potts's (4.140a-b)].

(17)   a. Confidentially, Al's wife is having an affair.

---

[6] C.f. Lambrecht (1990) on reversibility of topic constituents in Mad Magazine sentences.
[7] See Bach (1999) for a lengthy discussion of this kind of utterance modifier.

b. #Bill said that, confidentially, Al's wife is having an affair.

In (17a), Potts suggests the adverb bears a relation between the speaker and the utterance: namely, that the utterance is being made confidentially. This is clearly not the case in (17b), which if anything, means Al's wife is having an affair confidentially. But even this reading is not forthcoming. So we can find a sort of parallel between the utterance modifiers in (17a-b) and the attempt at embedding DSS in (13a-b): both in their syntactic behavior under embedding and in the way their semantic contributions change in the embedded sentences.

It is difficult to make claims about the DSS data and Potts's speaker-oriented requirement. But, there is more to say about this aspect of Potts's proposal generally. Bach (2006:493) correctly observes that the nature of speaker-orientedness varies widely between the expressives and the supplements of Potts's data, with expressives being "speaker-oriented in a more radical way" than supplements. As Bach suggests, expressive content is a relation that is *strictly* between the speaker and the utterance, while the content of supplements can be believed by anyone. This is a difference that Potts does not address.[8]

Thus, while the DSS do not meet this part of Potts's definition as well as they might, they seem to be at least marginally speaker-oriented, and their behavior is comparable to that of Potts's utterance modifiers.

2.5. CIs are Logically and Compositionally Independent of What is Said

According to Potts, CI content should not affect the basic truth of the primary assertion.[9] Thus consider (18) [Potts's (2.38)], which contains a supplement that contributes false information.

(18) Lance Armstrong, an Arkansan, has won the 2003 Tour de France!

Armstrong is, of course, from Texas, not Arkansas, but this does not prevent us from recovering from the utterance that Lance Armstrong did in fact win the 2003 Tour de France.

As was demonstrated above, the BP DSS have no selectional relations with the verb of the primary assertion. There need only be a very loose semantic relation with the grammatical subject, which is consistent with Potts's supplements. Crucially though, this relation doesn't seem to have an effect on the

---

[8] See also Karttunen and Zaenen (2005) for other potentially problematic issues arising for speaker-oriented claims.

[9] This claim is less obvious if the appositive is a full clause such as in (i).

(i) Lance Armstrong, who is an Arkansan, has won the 2003 Tour de France.

Similarly, if the appositive is a little more outrageous, judgments will differ on the truth of the primary assertion, such as in (ii).

(ii) Steve Anderson, the defensive tackle for the Dallas Cowboys, is chair of the linguistics department at Yale.

semantics of the primary assertion. It instead is relevant to felicity conditions for NP1 itself. We can remove the topic, and the semantics of the primary assertion do not change: sardines are still delicious whether they're linked to the rest of the discourse via the topic or not. While removing the topic might result in an utterance that is infelicitous or misplaced in context, it does not result in one that is semantically ill-formed.

We can take a quick example from Potts to further illustrate the independence of the content of NP1 from the at-issue meaning. Potts demonstrates that if assertions containing speaker adverbs are denied, it is the content of the primary assertion that is denied, not that of the speaker-oriented adverb. Consider (19) [Potts's (3.17)].

(19)   Unfortunately, I was home when my parole officer called.

According to Potts, if the hearer responded *No* to (19) she would be denying only that the speaker was home when the parole officer called, not the unfortunateness of the situation.

The BP examples we have seen thus far pattern the same way.

(20)   Churasco, carne de vaca é delicioso.
        'Barbecue, beef is delicious.'

If the hearer were to respond *Não* to (20), she would not be denying the relation between beef and barbecue. Rather, she would be denying that beef is delicious. Similarly, if the hearer queried *Por que?* she would be asking why beef was delicious, not why a relation holds between beef and barbecue. So it seems quite clear that the content of NP1 and its relation to the comment is not a part of the primary assertion that *beef is delicious*.

Thus it seems the BP double-subject sentences pattern in accordance with the criteria Potts sets up to define his CI data. Of the four parts of the definition given in (5), only the speaker-oriented requirement gives us any pause. However, as I show in §2.4, there is indirect evidence that suggests the BP data can be considered speaker-oriented in the way Potts requires.

3.   Conclusion

The BP double-subject sentences are quite similar to those in Mandarin, but there are key differences: most notably, the stricter requirement of an intonational break for the BP. Thus, the BP double-subject sentences seem a better candidate for exploring Potts's multidimensional semantics.

In the past this kind of construction has been considered a discourse-level or information structure phenomenon, to the extent that it has been considered at all. This paper attempts to place a topic-comment type construction next to other kinds of multidimensional meaning—supplements and expressives, perhaps the lexical CI triggers. If successful, we can begin to ask a whole new range of questions of their semantic and pragmatic relations to the larger structure of a discourse and efficient, felicitous communication.

References

Bach, Kent. 1999. The Myth of Conventional Implicature. *Linguistics and Philosophy* 22(4):367-421.

Bach, Kent. 2006. Review of *The Logic of Conventional Implicatures*. *Journal of Linguistics* 42(2):490-495.

Chierchia, Gennaro and Sally McConnell-Ginet. 2000. *Meaning and Grammar*: *An Introduction to Semantics*. 2nd ed. Cambridge, MA: MIT Press.

Grice, Paul. 1989. *Studies in the Way of Words*. Cambridge, MA: Harvard University Press.

Karttunen, Lauri and Annie Zaenen. 2005. Veridicity. Ms. Palo Alto Research Center.

Kuong, Io-Kei Joaquim and Mércia Flannery. 2004. Frame-Setting Topic and the Left Periphery in Syntax. Poster presented at GURT 2004, Georgetown University. <http://complingtwo.georgetown.edu/~gurt/abstracts/01.htm>.

Lambrecht, Knud. 1990. "What, me worry?"—Mad Magazine Sentences Revisited. *Proceedings of Berkeley Linguistics Society*, Vol. 16.

Lambrecht, Knud. 1994. *Information Structure and Sentence Form*: *Topic, Focus and the Mental Representations of Discourse Referents*. Cambridge: Cambridge University Press.

Li, Charles and Sandra Thompson (eds.). 1976. *Subject and Topic*. New York: Academic Press.

Li, Charles and Sandra Thompson. 1976. Subject and Topic: A New Typology of Language. In C.N. Li and S.A. Thompson (eds.).

Li, Charles and Sandra Thompson. 1981. *Mandarin Chinese*: *A Functional Reference Grammar*. Berkeley: University of California Press.

Perini, Mário A. 2002. *Modern Portuguese: A Reference Grammar*. New Haven: Yale University Press.

Pontes, Eunice. 1987. *O Tópico no Português do Brasil*. Campinas, SP: Pontes.

Potts, Christopher. 2005. *The Logic of Conventional Implicature*. Oxford: Oxford University Press.

William Salmon
Yale University
Linguistics Department
370 Temple, Rm 201
New Haven, CT 06511

william.salmon@yale.edu

The metaphoric grounding of grammar: the modal construction with *give* in Brazilian Portuguese

MARIA MARGARIDA M. SALOMAO
UFJF/CAPES

1   The theoretical issue

The hypothesis that grammar is metaphorically grounded is quite a new idea in the relatively short history of linguistics as a disciplinary field (or as an *ordre du discours*, in the terms of Foucault 1970). The largely prevailing view in the field has grammar either as the Saussurean "system" or as the Chomskyan "competence." In any case, it is seen as a set of formal regularities to be found across (more or less) spontaneous speech, in distinctive opposition to the more anomalous figurative uses, characteristic of special communicative practices, like poetry, politics or philosophy.

In the late nineties, the idea comes to be forcefully stated within the Neural Theory of Language framework (Lakoff to appear, Lakoff 2006, Feldman2006, Gallese and Lakoff 2005, Feldman and Narayanan 2004, Lakoff and Johnson 1999), which purports that the meaning of all abstract concepts, including grammatical meaning, is metaphorically mapped from the meaning of concrete concepts. The concrete source domain meaning contributes its frame and image-schema structure to the target domain in point. The theory strongest claim is that concrete concepts are directly embodied in the brain in such a way that the same neural circuitries activated to carry out an action are also activated when that specific action-type is watched or imagined or remembered. As a consequence, the same neural substrate actually used for acting and imagining is also hypothesized to be used for understanding; therefore, understanding would be a form of neural simulation.

In the case of grammatical meaning, the theory takes a strong push from Narayanan's finding that pre-motor "executing-schemas," independently required to model motor actions in neural computation, have the exact structure to characterize aspectual meaning in grammar (Narayanan 1997). Lakoff has proposed to generalize that rationale in such a way that grammatical meanings would be characterized by "cogs," that is, secondary neural structures (in the pre-motor cortex),

with no-active connection to a primary area, corresponding to all the primitive image-schemas (Containment, Path, Force-Dynamics, Orientation). Such a hypothesis would account for the general and abstract character of grammatical meanings and for their quasi-universality in the languages of the world.

Much before those bold propositions, the thesis about the metaphorical motivation of grammar had found voice in cognitive linguistics through the pioneering work of Sweetser (1990) on synchronic polysemy and historical change, especially with respect to the modals of English. Adopting Talmy's analysis of root modality in terms of force-dynamic schematization (Talmy 1988; 2000), Sweetser shows that it is possible to unify metaphorically the treatment of all modals in terms of the basic notions of directed forces and barriers, applied not only to the to the sociophysical domain but also to its epistemic and communicative metaphorical extensions.

The process of metaphorization as a major factor in grammaticalization and semantic change (exemplified by the development of grammatical markers for time from constructions with spatial meaning) is largely acknowledged in the literature (Sweetser 1988; Heine, Claudi, and Hunnemeyer 1991; Hopper and Traugott 1993; Bybee, Perkins and Pagliuca 1994).

The thesis, however, has deserved contradiction from two interrelated directions:

(i)   There are scholars who contend that what has been treated as metaphorical change would be better described as a metonymical development, or, at least, as a   metonymically-based metaphorical development: that is the position taken in Barcelona (2000), Radden (2000), Goossens (2000), among others.

(ii)   There are other scholars who assert that, given textual evidence, the supposedly metaphorical shift should be analyzed as the conventionalization of pragmatic inferences: that is the position taken in Traugott and Dasher (2005) and Traugott (2006).

Both allegations do not discard the metaphorical analysis, treated as a kind of "side-effect": in fact, specific metaphorical relationships would be the purported endpoint of either the discussed metonymical extensions or the described historical changes. The main argument, however, is that there would be scarce empirical support in favor of the "metaphorical jump."

In this paper, I want to show that there are sufficient analytical reasons to claim metaphorical explanation for the rising of a specific modal construction in Brazilian Portuguese (BP). I will argue further from a usage-based perspective in favor of the critical role of metaphorization in the process of "grammar-constructing (Tomasello 2003; Goldberg 2006)."

2   The modal construction with *dar* in BP
2.1   Brief presentation

Through the last century, in their conversational usages, Brazilian Portuguese speakers developed a modal periphrasis, modeled on canonical uses of the verb *dar* "give". The novelty of this employment explains its relative rarity in written discourse. Traditional lexicography, usually resistant to the record of new expressions, has not yet included this modal construction in the entries for *dar:* the three leading dictionaries for Brazilian Portuguese are all incomplete regarding this issue. The construction is, however, productive: a study of frequency over uses in the Internet MSN Messenger system shows that the Modal *dar-* constructions correspond to one-tenth of all modals employed. It is also highly frequent in the lyrics of popular songs, a point that illustrates how natural and vernacular the construction sounds. Attested examples are presented below:

(1)

(a)   *A gente fica na janela que dá pra ver o refeitório.*
we stay at window that gives for see-inf the diner
"If we get to the window, we can see the dining-hall."
(PEUL-58m10a2efcurs)

(b)   *Deu pra copiar o arquivo.*
gave for copy-inf the file
"It was possible to copy the file."
(MSN-m26s/m26s)

(c)   *Não dá pra ser feliz.*
not gives for be-inf happy
"It is impossible to be happy."
(GONZAGUINHA:1983)

(d)   *Dá pra mim mandar o texto mais tarde?*
gives for me-dat send-inf the text more late
"May I send you the text later?"
(MSN-m32s/m26s)

The examples in (1) illustrate the semantic range of the construction: abilitative in (1a; b), root possibility in (1c) and permission in (1d). One rough syntactic representation of the construction would be (2):

(2)   *dá/deu para/pra* NP$_{dat}$ [$_{VP}$ V (inf)]
GIVE/GAVE FOR

As it may have been noticed, the *dar* clause presents the following formal features:

    (i)   it appears as a subjectless intransitive clausal pattern;

    (ii)   it governs an infinitive clause introduced by the preposition para, frequently in its reduced version *pra,* that may combine with pronominal nominative forms, like in *preu* (1st sg), or *proce* (2nd sg) or *prele* (3rd sg) or just precede the dative form *mim*.

2.2   The lexical network with *dar*

As in so many other languages (Newman 1996), the Portuguese verb for "give" is hugely polysemous. The most commonly used lexicographical registers for BP (www.aurelioonline.com.br, www.michaelis.com.br, or www.houaiss.com.br) report more than one hundred different meanings for constructions with *dar*.

I have claimed elsewhere (Salomao 1990), on the grounds of standard linguistic argumentation that those interrelated uses constitute a radial category (in the sense of Lakoff 1987), since they may be described as a cluster of constructions that partly inherit their syntax and their semantics from a central construction, namely the transfer of ownership construction, exemplified below:

(3)   *O Antonio deu o livro dele pra mim.*
       the Antonio gave the book his for me
       "Antonio gave me his book."

It is not surprising that the transfer of ownership construction be the central member of this polysemy network: after all, the socio-cognitive saliency of the related scenario accounts for its being the most frequently meaning connected to the GIVING verbs in the world's languages (Newman 1996). It also figures among the earliest uses in child language (Tomasello 2003 and Goldberg 2006). Therefore, it could be expected, from its cognitive relevance, that this construction would be extended in multiple ways.

More recently, additional arguments have been introduced: first, that language acquisition is strongly item-based (Tomasello 2003, Goldberg 2006), and, second, that the psychologically-relevant linguistic units of storage and access are the units of usage (Bybee and Hopper 2001). It amounts to say, in the case under examination, that the transfer of ownership *dar* construction, for its high frequency, due to its high relevance in the socio-cognitive world, comes to model other more abstract situations and thus motivates the respective idiomatic extensions, as, for example:

(4)

    (a)   *O Antonio deu um chute na porta.*
                the gave a kick in the door
                "Antonio kicked the door."

    (b)   *Ela me deu uma força quando eu adoeci.*
                she me gave a force when I got sick
                "She helped me a lot when I got sick"

    (c)   *Aula me dá sono.*
                lecture me gives sleep
                "Lectures leave me sleepy."

All those expressions that, in different ways, describe actions or experiences are linked to the central construction by the general metaphor ATTRIBUTES ARE POSSESSIONS (Lakoff and Johnson 1999). Other constructions in the network suppose much more intricate inheritance relationships and I will not pursue this point here.

Assuming the cognitive construction grammar framework (Goldberg 1995; 2006), I will represent below the transfer of ownership construction:

CAUSE-RECEIVE	AGT	PAT	DESTINATION
V	POSSESSOR	RESOURCE	RECIPIENT
dar	SUBJ	OBJ	OBL$_{/pra}$

About this representation, I want to point out that:

    (i)   the transfer of ownership construction is an instantiation of the caused motion construction;

    (ii)   it is lexically represented here filled by the Verb *dar*; and

    (iii)   it may also be instantiated with other lexical fillings (as, for example, *doar, ceder, conceder, outorgar, presentear, entregar, oferecer, passar, transmitir*, and many others).

From a usage based theoretical viewpoint this is not a problem: there is no contradiction in posing as units of the grammar abstract argument structure patterns *and* the lexical filling of those patterns that, in the actual language usage, constitute their most frequent and most natural instantiation (Langacker 1987; 2000; Kemmer and Barlow 2000).

The conceptual frame evoked by the transfer of ownership *dar*-construction is inherently complex in that:

(i)   it conflates the causing event and its result in a causative pattern; and

(ii)   it binds three conceptual schemas with each other:

FIRST POSSESSOR	=	AGENT	=	SOURCE
RESOURCE RECIPIENT	=	PATIENT	=	THEME DESTINATION
POSSESSION SCHEMA	=	ACTION SCHEMA	=	PATH SCHEMA

It is this rich conceptual structure, paired to an elegantly simple syntactic framework that, in alliance to its strong pragmatic relevance, makes the transfer of ownership *dar* construction such a powerful resource as a source domain.

We should not be surprised by the internal complexity of the GIVING scenario: as complex physical actions have been shown to arise from the elaborate choreography of basic primitive actions (Gallese and Lakoff 2005), it may be expected that social patterns of interaction arise as conventionalized blends (Fauconnier and Turner 2002) of independent conceptual structures. As a fact, the description above proposed is possibly a quite bare version of the actual linguistic instantiations, which may require, as demonstrated for Japanese (Newman 1996), the further recruitment of other sociocultural schemas (e.g. politeness conventions).

2.3   The metaphorical motivation of the modal *dar* construction

In this section I will describe the metaphorically motivated enablement *dar* construction and its further generalization as a modal construction.

2.3.1   The conceptual metaphors
2.3.1.1 The ENABLEMENTS ARE POSSESSIONS metaphor

The metaphor ENABLEMENTS ARE POSSESIONS is a case of the more general metaphor ATTRIBUTES ARE POSSESSIONS, described in Lakoff and Johnson (1999), and exemplified by the expressions in (4):

(4)
    (a)   *I have a headache.* (The headache is a possession.)
    (b)   *I got a headache.*   (Change is acquisition.)
    (c)   *The noise gave me a headache.* (Causation is giving.)

Not all ATTRIBUTES, however, are enabling: *my headache* may work as a Barrier (in the sense of Talmy 1988; 2000) and prevent me from going to a con-

cert, for example. That is why it is necessary to pose the specific metaphor ENABLEMENTS ARE POSSESSIONS to deal with cases like (5):

(5)

    (a)   *I have enough money for the trip.*
    (b)   *He managed some time to read my paper.*
    (c)   *God give me patience so that I can bear him for one more hour.*

        In all the examples in (5), the POSSESSION is a positive resource that empowers the POSSESSOR in such a way that one previous existing difficulty (lack of *money*, or of *time*, or of *patience*) is removed in the pursuit of a GOAL.

        It is worthy noting that ENABLEMENTS, conceived metaphorically as POSSESSIONS, are critically distinct from CAUSES: the fact that *I have money* is not a sufficient (although it may be a necessary) condition for *me to travel*. This distinction is accounted for in Talmy's treatment of causation in terms of force-dynamics (Talmy 1988; 2000): within this framework, CAUSES are conceived as DIRECTED FORCES but ENABLEMENTS will be SUPRESSED BARRIERS.

        POSSESSIONS ARE ENABLEMENTS motivates in BP an enablement *dar* construction, distinguished from the modal expression, although closely connected to it, exemplified in (6):

(6)

    (a)   *A CAPES me deu uma bolsa <u>pro Doutorado</u>*
             the CAPES me gave a scholarship for the doctorate
             "CAPES gave me a scholarship for my doctoral studies."

    (b)   *Eu dei uma chance pro Ze <u>prele apresentar sua proposta</u>*
             I gave a chance for Ze for him to present his bid
             "I gave Ze a chance to present his bid."

    (c)   *Ele me deu mais tempo <u>preu acabar de escrever</u>.*
             he me gave more time for I finish-inf of write
             "He gave me more time to finish my writing."

        Notice that this construction includes in its syntactic expression both the enabled actor (in Talmy's terms, the agonist) and the situation to which the newly-acquired enablement may apply. Notice, also, that the enabling property is construed as a contingent ability, one that is externally transferred to the agonist and so may not be considered as one of his/her inherent capacities.

2.3.1.2 The PURPOSES ARE DESTINATIONS metaphor

This well-studied metaphor integrates one of the two major metaphorical conceptions of event-structure (Lakoff and Johnson 1999) and accounts for cases like (7):

(7)

    (a)   *We are seeing the light at the end of the tunnel.*
                    (Achieving a purpose is reaching a destination.)
    (b)   *We've come a long way.*
                    (Amount of progress is distance moved)
    (c)   *We are going nowhere with this.*
                    (Lack of progress is lack of movement)

The Brazilian Portuguese enablement construction expresses the metaphorically motivated purpose, underlined in the examples in (6). As it may be noticed, the intended situation, when represented as a clause, appears to be an infinitive clause, introduced by the preposition *para/pra*.

In BP, destinations and purposes, being metaphorically related, are marked by the preposition *para/pra.* Consider the following examples (8):

(8)

    (a)   *Ele mudou <u>pra</u> Sao Paulo.*
             he moved for Sao Paulo
             "He moved to Sao Paulo." (Sao Paulo is his final destination)

    (b)   *Faz este favor <u>pra</u> mim*
             do this favor for me-dat
             "Do me a favor" (*pra mim* indicates the beneficiary)

    (c)   *Ele saiu do emprego <u>pra</u> ganhar dinheiro.*
             he left from the job for earn-inf money
             "He left his job to make money" (purpose clause)

2.3.2   The enablement *dar* construction

The enablement construction inherits structure from the transfer of ownership construction via a metaphorical link (Goldberg 1995). It also combines with the purpose construction to motivate its whole frame.

The enablement *dar* construction is represented as below:

CAUSE-RECEIVE	AGENT	ENABLEMENT	RECIPIENT/$_{BEN}$	PURPOSE
V				
dar	SUBJ	OBJ	OBL/$_{pra}$	INF CL/$_{pra}$

Through the metaphorical link, the following mappings result:

POSSESSOR / AGENT ⟶ AGENT
POSSESSION ⟶ ENABLEMENT
RECIPIENT ⟶ BENEFICIARY / AGONIST

As it has been pointed out before (Goldberg 2006), Constructions are motivated via inheritance and/or by syntagmatic combination. The enablement *dar* construction inherits frame-structure from transfer of possession and combines with the purpose construction to constitute its own complex syntactic/semantic pairing.

Combined with purpose, the construction allows the following inferences:

(i)   the transferred resource enables the recipient to move to the intended destination;
(ii)   the enabled recipient is an empowered agonist;
(iii)   the shift in the force-dynamics pattern unblocks the path of the agonist.

In its instantiations, it is possible to articulate the sentences in (9), sentence (9b) being the most frequent version of the pair:

(9)

(a)   *Ele deu força <u>pra mim</u> preu viajar*
         he gave force for me-dat for I travel-inf
         "He helped me that I could travel."

(b)   *Ele deu força preu viajar*
         he gave force for I travel
         "He helped me that I could travel."

The difference between the two sentences is that (9a) expresses both the recipient and the subject of the infinitive whereas (9b) only expresses the latter. As indicated by the English translations, the two uses are semantically equivalent, although (9a) might be characterized as the emphatic version. The interesting point worthy mentioning is that, in (9b), we find a kind of syntactic blend predicted in Barlow (2000): the recipient of the *dar* clause and the agonist/subject of the infinitive clause are fused into the same syntactic expression. We could say that what we face here is an iconic reduction: it involves the merger of two distinct syntactic places filled by entities referentially identical and conceptually related.

2.3.3   The generalization to the modal construction

The enablement *dar* construction already conveys a modal meaning: it clearly expresses an abilitative sense that, in the terms of the relevant literature, should be categorized as a kind of root or dynamic modal meaning (Palmer 1986; Nuyts 2006; de Haan 2006). In order to adapt Bybee, Perkins and Pagliuca (1994)'s terminology to Talmy's framework, here assumed, we should say that we are dealing with a case of agonist-oriented modality (instead of their agent-oriented modality). As said before, the abilitative property is acquired by the recipient/agonist and cannot be counted as a case of participant-internal possibility, a category proposed in the semantic map of modality by van der Auwera and Plungian (1998).

It should be mentioned that Bybee, Perkins and Pagliucca (1994) had already reported, on the description of languages like Baluchi, Lahu, Cantonese and Uigur, the development of modal abilitative meanings from lexical expressions of possession.

The abilitative meaning of the enablement construction is expressed in quite precise ways: the construction will not take a subject that could not be understood as an admissible agent/causer or an object that could not be construed as a proper enablement. See the examples in (10) which illustrate those impossibilities:

(10)

    (a)   *A bagagem deu uma forca pra mim viajar.*
              the lugagge gave a force for me-dat travel
              ? "The luggage helped me so that I could travel."

    (b)   *O barulho me deu dor de cabeca pra mim viajar.*
              the noise me gave headache for me-dat travel
              ? "The noise gave me a headache so that I could travel."

The modal construction is a generalization over the enablement construction, from which it partly inherits its syntax and its semantics. In this construction, not only the causer goes unnamed, treated as generic or indeterminate, but also the enablement appears as a null object (generic/indeterminate or retrievable from the immediate context). The semantic range of the agonist role is also dramatically increased. The examples in (11) illustrate those characteristics:

(11)

    (a)   *Dá pra ele chegar a tempo.*
              gives for he arrive-inf to time
              "He can arrive in time."
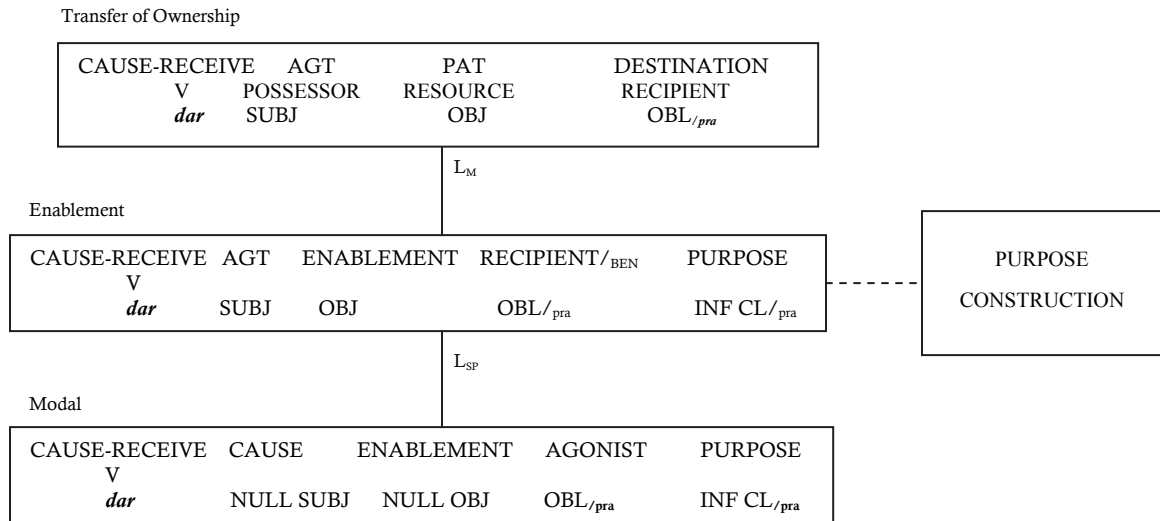
    (b)   *Dá pra mim receber os convidados.*

gives for I-dat receive-inf the guests
"I can play host to the guests."

(c)   *Dá prele ta mais calmo agora.*
        gives for he be-inf more calm now
        "He can be more relaxed now."

(d)   *Dá prele ser derrotado na eleição.*
        gives for he beinf defeated in the election
        "He can be defeated in the next elections."

(e)   *Dá pra cerveja tá gelada antes do churrasco.*
        gives for beer be-inf cold before of the barbecue
        "The beer can be cold before the barbecue."

In the examples (11), sentences (a) and (b), with an agent agonist, may be understood as conveying an abilitative sense. However, sentence (c), with an experiencer as agonist, and sentences (d) and (e), with a patient in the agonist slot, are better interpreted as expressing a root possibility meaning.

The representation of the modal *dar* construction, connected to the enablement *dar* construction through a subpart link (Goldberg 1995; 2006), is the following:

Transfer of Ownership

CAUSE-RECEIVE	AGT	PAT	DESTINATION
V	POSSESSOR	RESOURCE	RECIPIENT
dar	SUBJ	OBJ	OBL$_{/pra}$

L_M

Enablement

CAUSE-RECEIVE	AGT	ENABLEMENT	RECIPIENT/$_{BEN}$	PURPOSE
V				
dar	SUBJ	OBJ	OBL/$_{pra}$	INF CL/$_{pra}$

PURPOSE CONSTRUCTION

L_{SP}

Modal

CAUSE-RECEIVE	CAUSE	ENABLEMENT	AGONIST	PURPOSE
V				
dar	NULL SUBJ	NULL OBJ	OBL$_{/pra}$	INF CL$_{/pra}$

As we see, the modal construction is motivated from the transfer of ownership construction through multiple inheritance (Goldberg 1995; 2006).

It is a defining characteristic of modal constructions to display greater semantic generality. Dascher and Traugott (2005:109) point out that English modal

verbs, unlike main verbs, impose no selectional restrictions on their subjects or the verbs that follow them. As the BP modal construction is a much younger development than the English modal verbs, the perusal of frequency data reveals a more restrained development. Actually, the original abilitative meaning with agentive agonists is still largely the most common usage of the modal *dar* construction: a frequency study over spoken discourse and Internet *MSN Messenger* usage shows that the abilitative meaning occurred 63% of the time, the root possibility meaning appeared 27%, and the permission sense happened 10% of all times that the modal *dar* construction was employed (Velloso 2007).

The above mentioned frequency pattern suggests a gradual spreading of the semantic range of the construction, which follows the predictions about the process of grammaticalization of modality markers (Bybee, Perkins and Pagliucca 1994; van der Auwera and Plungian 1998; Traugott 2006):

ABILITY > ROOT POSSIBILITY > PERMISSION

Besides the illustrated convergence with other grammaticalization patterns, the modal *dar* construction also exhibits the characteristic higher degree of abstraction that identifies grammatical meaning: the cause and the enablement arguments in its conceptual frame are understood to be generic causes and enablements that need not to be specified. Even the agonist may be left without mention when it is the case that it is universally quantified, as in (12):

(12)   *Da pra pegar uma praia mais logo.*
        gives for pick up a beach more soon
        "It is possible for everyone to go to the beach in a while."

The increased generalization also correlates with increased *subjectification*, as predicted by Traugott (1982; 1985; Langacker 1990; Traugott and Dasher 2005): several of the examined uses have an unequivocal evaluative flavor, as in (13):

(13)
        (a)   *Dá pra ele ser médico.*
               gives for he be-inf doctor
               "It may be that he becomes a doctor."

        (b)   *Ainda dá pra chover mais logo.*
               still gives for rain-inf more soon
               "It is quite possible that it will rain soon."

Sentences (13) sound like predictions, conveying a future meaning, also characteristic of modal expressions.

Furthermore, we should mention the severe syntactic pruning of the modal construction: its syntactic framework omits systematically subject and object and, eventually, also the agonist. The strong reduction imposed on the enablement construction syntax is another feature of the ongoing grammaticalization process.

Finally, we may say that the impersonal *dar* clause works as a mental space builder, introducing the modal space specified by the infinitive purpose clause.

3. Conclusions

In this paper, I have illustrated the development of a young modal construction in Brazilian Portuguese and described its immediate connections to the constructional network in that language: the modal construction arises as a generalization of the enablement *dar* construction through syntactical reduction and loss of semantic restrictions.

I have specifically shown that the enablement construction is metaphorically linked to the central (transfer of ownership) construction via the conceptual metaphor POSSESSIONS ARE ENABLEMENTS, a case of the general metaphor for event-structure that ATTRIBUTES ARE POSSESSIONS.

I have also shown that the enablement construction is syntagmatically motivated via a combination with the purpose construction. The whole frame of the enablement construction blends the ENABLEMENT AS TRANSFER OF OWNERSHIP metaphor and the PURPOSE AS DESTINATION metaphor. All the inferences that follow from the construction are mapped from this composite source domain. We may then assert that, in the case under examination, the metaphorical relationship is established at the beginning of the process of grammaticalization, not at its endpoint. There is no doubt that the abilitative modal meaning (the first modal sense to appear in this situation) develops from a metaphorical mapping.

It may be claimed that the process of generalization from the enablement construction to the modal construction involves the conventionalization of pragmatic inferences in the spreading of its use and consequent entrenchment. It should be argued, however, that such inferences are made possible precisely by the "metaphorical jump."

Usage-based approaches to language acquisition and to grammatical explanation have demonstrated that grammatical abstract patterns arise, through analogy, from the frequent use of lexically-specified constructions: those linguistic units contribute their lexical and syntactical expression and their corresponding generic conceptual schemas to the grammar. In the case of the modal construction, the enablement construction contributes its syntactic frame and the metaphorical inferences drawn from its source-domain.

The above mentioned conclusion is also compatible with the hypothesis about cogs, developed within the Neural Theory of Language framework: the ab-

stract grammatical meaning corresponds to the most schematic core of the basic human experiences; in our specific case, the central social experience of disposing of goods for free.

References

Barcelona, Antonio. 2000. On the plausibility of claiming a metonymic motivation for conceptual metaphor. In A. Barcelona, ed., *Metaphor and metonymy at the crossroads*, Berlin/New York: Mouton de Gruyter.

Barlow, Michael. 2000. Usages, blends and grammar. In Michael Barlow and Suzanne Kemmer, eds. *Usage based models of language*. Stanford: CSLI.

Bybee, Joan and Paul Hopper. 2001. Introduction to frequency and the emergence of linguistic structure. In J. Bybee and P. Hopper, eds., *Frequency and emergence of linguistic structure*. Amsterdam/Philadelphia: John Benjamins.

Bybee, J., R. Perkins and W. Paglucca. 1994. *The evolution of Grammar: Tense, Aspect and Modality in the Languages of the World*. Chicago: Chicago University Press.

de Haan, Ferdinand. 2006. Typological approaches to modality. In W. Frawley, ed., *The expression of Modality*. New York/Amsterdam: Mouton de Gruyter.

Fauconnier, Gilles and Mark Turner. 2000. *The Way We Think*. New York: Basic Books.

Feldman, Jerome. 2006. *From Molecule to Metaphor: A Neural Theory of Language.* Cambridge, Mass.: The MIT Press.

Feldman, Jerome and Srini Narayanan. 2004. Embodied meaning in a neural theory of language. *Brain and Language* (89):385-392.

Foucault, Michel. 1970. *L'ordre du discours.* Paris: Gallimard.

Gallese, Vittorio and George Lakoff. 2005. The brain's concepts: the role of the sensory motor systems in conceptual knowledge. *Cognitive Neuropsychology* 22(3-4):455-479.

Goldberg, Adele. 2006. *Constructions at work*. Oxford/New York: Oxford University Press.

Goldberg, Adele. 1995. *Constructions: a Construction Grammar Approach to Argument Structure*. Chicago: Chicago University Press.

Goossens, Louis. 2000. Patterns of meaning, "parallel chaining" subjectification and modal shifts. In A. Barcelona, ed., *Metaphor and Metonymy at the Crossroads*. Berlin/New York: Mouton de Gruyter.

Heine, B., U. Claudi and F. Hunnemeyer. 1991. *Grammaticalization: A Conceptual Framework*. Chicago: University of Chicago Press.

Hopper, Paul and Elizabeth Traugott. 2003. *Grammaticalization*. Cambridge: Cambridge University Press.

Kemmer, Suzanne and Michael Barlow. 2000. Introduction: a usage-based conception of language. In M. Barlow and S. Kemmer, eds., *Usage-based Models of Language*. Stanford: CLSI.

Lakoff, George. 2008. The neural theory of metaphor. In R. Gibbs, ed., *The Metaphor Handbook*, 17-38, Oxford: Oxford University Press.

Lakoff, George. 2006. The neuroscience of form in art. In M. Turner, ed., *The Artful Mind*. Oxford/New York: Oxford University Press.

Lakoff, George. 1987. *Women, Fire and Dangerous Things: What Categories Reveal About the Mind.* Chicago: University of Chicago Press.

Lakoff, George and Mark Johnson. 1999. *Philosophy in the Flesh*. New York: Basic Books.

Langacker, Ronald. 1987. *Foundations of Cognitive Grammar, Vol. I.* Stanford: Stanford University Press.

Langacker, Ronald. 2000. A dynamic usage-based model. In Michael B. and S. Kemmer, eds., *Usage Based Models of Language*. Stanford: CLSI.

Narayanan, Srini. 1997. *KARMA: Knowledge based active representation for metaphor and aspect*. PhD Dissertation. Computer Science Division. University of California, Berkeley.

Newman, John. 1996. *Give: A Cognitive Study*. Berlin/New York: Mouton de Gruyter.

Nuyts, Jan. 2000. Modality: overview and linguistic issues. In William Frawley, ed., *The Expression of Modality*. Berlin/New York: Mouton de Gruyter.

Palmer, Frank. 2001. *Mood and Modality*. Cambridge: Cambridge University Press.

Radden, Gunther. 2000. How metonymic are metaphors? In Antonio Barcelona, ed., *Metaphor and Metonymy at the Crossroads*. Berlin/New York: Mouton de Gruyter.

Salomao, Maria-Margarida. 1990. *Polysemy, Aspect and Modality: The Case for a Cognitive Explanation of Grammar*. PhD Dissertation. Department of Linguistics. University of California , Berkeley.

Sweetser, Eve. 1988. Grammaticalization and semantic bleaching. In S. Axmaker et al., eds., *BLS-14*. Berkeley:University of California, Berkeley.

Sweetser, Eve. 1990. *From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structure*. Cambridge: Cambridge University Press.

Talmy, Leonard. 1988. Force dynamics in language and cognition. *Cognitive Sciences* 12:49-100.

Talmy, Leonard. 2000. *Toward a Cognitive Semantics. Vol I.* Cambridge, Mass: The MIT Press.

Tomasello, Michael. 2003. *Constructing a Language: A Usage Based Theory of Language Acquisition.* Cambridge, Mass. and London: Harvard University Press.

Traugott, Elizabeth. 2006. Historical aspects of modality. In William Frawley, ed., *The Expression of Modality*. Berlin/New York: Mouton de Gruyter.

Traugott, Elizabeth. 1995. Subjectification in grammaticalization. In Dieter Stein and Susan Wright, eds., *Subjectivity and Subjectification*. Cambridge:Cambridge University Press.

Traugott, Elizabeth. 1982. From propositional to textual and expressive meaning: some semantic-pragmatic aspects of grammaticalization. In Winfred Lehmann and Yakov Malkiel, eds., *Perspectives in Historical linguistics.* Amsterdam:Benjamins.

Traugott, Elizabeth and Richard Dasher. 2005. *Regularity in Semantic Change*. Cambridge: Cambridge University Press.

van der Auwera, Johan and Vladimir Plungian. 1998. Modality's semantic map. *Linguistic Typology*, 2(1):79-124.

Velloso, Monica. 2007. *A emergencia da gramatica: estudo da idiomatizacao da Construcao Modal com* dar *no Portugues do Brasil*. M.A.Thesis in progress. Juiz de Fora, Brasil:UFJF.

Maria Margarida Martins Salomão
Universidade Federal de Juiz de Fora, Brasil

mm.salomao@uol.com.br

Reduplication in Indonesian and the Lexicalist Hypothesis

YOSUKE SATO
University of Arizona

BRADLEY MCDONNELL
Arizona State University

1.   Introduction

In this paper, we discuss reduplication in Indonesian. We show that the corpus survey of four popular newspapers in Indonesia reveals that nominal reduplication allows both stem and stem-affix reduplication while verbal reduplication allows only stem affixation. This asymmetry in reduplication between nouns and verbs, as well as a word-internal reduplication pattern, poses a non-trivial architectural paradox for several versions of the so-called Lexicalist Hypothesis as in Chomsky 1970 and Kiparsky 1982a, b, and Mohanan 1986. We claim that this asymmetry crucially depends on morphosyntactic structures that underlie nominal and verbal reduplication within the recent non-lexicalist framework of Distributed Morphology (Halle and Marantz 1993, 1994, Harley and Noyer 1999, Embick and Noyer 2005).

2.   Reduplication in Indonesia and the Lexicalist Hypothesis

To determine recurrent patterns in nominal and verbal reduplication in Indonesian, we have conducted a corpus survey of four popular newspapers in Indonesia. The result is shown in (1) below.

(1)   The corpus survey of four popular newspapers in Indonesia

			Stem-Reduplication		Stem-Affix Reduplication	
			Total Tokens	Unique Forms	Total Tokens	Unique Forms
No affix			1014	312	N/A	N/A
Derivational	Verbal Affixes	ber-	89	37	0	0
		meN-	30	23	0	0
		di-	23	20	0	0
		ter-	13	9	0	0
		-an-	32	22	19	15
	Nominal Affixes	peN-	0	0	8	5
		peN-an	0	0	2	2
		per-an	6	2	9	6
		ke-an	1	1	10	8
Inflectional		se-	22	6	2	2
		-nya	29	27	0	0
		se-nya	13	9	0	0

This survey reveals a curious asymmetry that has never been reported in the literature. Whereas nominal reduplication allows both stem and stem-affix reduplication, verbal reduplication allows only stem reduplication. Given below are some examples that illustrate this asymmetry in reduplication.

(2)   Stem reduplication (verbs)
        a. belit 'twist' → [ber [belit-belit]]   'meander'
                                 *[[ber-belit]-[ber-belit]]
        b. cakap 'talk'   → [ber [cakap-cakap]]   'chat'
                                 *[[ber-cakap]-[ber-cakap]]
        c. jalan 'walk' →   [ber [jalan-jalan]]   'stroll'
                                 *[[ber-jalan]-[ber-jalan]]

(3)   Stem reduplication (nouns)
        a. sayur-sayuran   *sayuran-sayuran   'many types of vegetables'
           [[sayur-sayur]-an]]   [[sayur-an]-[sayur-an]]
        b. buah-buahan   *buahan-buahan   'many types of fruits'
           [[buah-buah]-an]]   [[buah-an]-[buah-an]]
        c. biji-bijian   *bijian-bijian   'many types of seeds'
           [[biji-biji]-an]]   [[biji-an]-[biji-an]]

(4)   Stem-affix reduplication (nouns)
        a. pikiran-pikiran   *pikir-pikiran   'thoughts'
           [[pikir-an]-[pikir-an]]   [[pikir]-[pikir]-an]]
        b. tulisan-tulisan   * tulis-tulisan   'writings'
           [[tulis-an]-[tulis-an]]   [[tulis]-[tulis]-an]]
        c. masukan-masukan   *masuk-masukan   'inputs'
           [[masuk-an]-[masuk-an]]   [[masuk]-[masuk]-an]]

Verbs allow only stem reduplication as shown in (2a-c). There are no instances that reduplicate a verb stem together with an affix. By contrast, the examples in (3a-c) and (4a-c) show that nouns allow both stem and stem-affix reduplication, depending on the nature of stems.

    The existence of reduplication internal to words derived by affixation of *ber-* and *-an* in the data in (2-4) poses non-trivial difficulties for several versions of the so-called Lexicalist Hypothesis in the literature as in Chomsky 1970 and Kiparsky 1982a, b, 1985, and Mohanan 1986. Chomsky 1970 (see also Aronoff 1976) proposes that nonproductive, irregular processes such as derived nominals should be in the lexical component while productive, regular processes such as gerunds in the syntactic component. In this sense, *ber-/-an* affixation is certainly a lexical process. The prefix *ber-* may attach to nominal, numeral and verbal bases that yield unpredictable semantic meanings such as possession, characterization, and way of living/profession and it occasionally works as a verbalizer of verb stems that usually do not occur alone or add the

additional sense of repetition and randomness, depending on what stem it identifies with. The function of suffix *-an* also varies; when it attaches to verbal bases, it serves as nominalizer; when it attaches to nominal bases, it works as kind of classifier, meaning 'many types of'. On the other hand, reduplication in Indonesian is a fully productive process. Reduplication of any countable noun produces a grammatical form that is specifically plural. Reduplication of a verb adds a connotation of variety or multiplicity. This is in tandem with the general notion of plurality/emphasized quantity, a crosslinguistically attested effect of reduplication (Moravcsik 1978, Travis 1999). If this is correct, examples of stem reduplication in verbs and nouns as in (2a-c) and (3a-c) are problematic for Chomsky's 1970 weak lexicalist theory because their formation requires reduplication as syntactic process followed by affixation as a lexical process, and this ordering is impermissible under this theory that posits the lexicon as a pre-syntactic component. In fact, the stem-affix reduplication that his theory would predict to be the only grammatical form is ungrammatical, as shown in (2a-c) and (3a-c). Furthermore, his weak lexicalist theory does not seem to have much to say about why there is an asymmetry as revealed in (1) where nominal reduplication allows both stem and stem-affix reduplication but verbal reduplication only allows stem reduplication.

The word-internal reduplication pattern also refutes one well-known version of the strong lexicalist theory called Lexical Phonology (Kiparsky 1982a, b, 1985, Mohanan 1986). This theory maintains that morphology and phonology interact in tandem with each stratum governing operations with certain properties. Specifically, affixation and irregular inflection with irregular phonological and morphological consequences in Stratum 1 while regular inflection with transparent and productive consequences occurs in a later Stratum (3 in Kiparsky and 4 in Mohanan). According to this criterion, *ber*-prefixation and *an*-suffixation occur at Stratum 1 due to their unpredictable behaviors as we have confirmed earlier. Reduplication occurs at Stratum 3/4 because of its fully productive nature. One important theoretical assumption of Lexical Phonology is the use of the Bracketing Erasure Convention. This convention deletes all brackets at the end of each stratum of word formation and thus has the effect of rendering access to the previously available internal structure of words opaque for operations in later cycles. This convention, thus, derives part of the Lexical Integrity Principle that syntactic processes cannot look into the morphological make up of the complex morphological words. Lexical Phonology, therefore, predicts that no productive inflectional processes should be found within a (complex) word that is derived by affixation in earlier strata. This prediction is clearly incorrect in Indonesian because the inflectional process of reduplication targets part of the word derived by affixes (stem reduplication), not the right or left edge of the whole complex morphological object (stem-affix reduplication), in examples like (2a-c) and (3a-c). As in Chomsky's 1970 weak lexicalist theory, Lexical Phonology also does

not seem to provide us with any way to derive the asymmetry between nominal and verbal reduplication in a principled way.

In this section, we have discovered that the reduplication pattern systematically differs between nominal and verbal stems: the former allows both stem-affix and stem reduplication while the latter only allows stem reduplication. We have shown that this asymmetry, as well as reduplication with morphologically derived stems, poses difficulties for versions of the weak and strong lexicalist hypothesis as proposed in Chomsky 1970 and Lexical Phonology in Kiparsky 1982a, b, 1985, and Mohanan 1986. For this reason, we pursue a non-lexicalist analysis of these facts in the next section.

## 3.	A Non-Lexicalist Account of the Reduplication Asymmetry in Indonesian

We claim that the noted asymmetry between nominal and verbal reduplication, as well as the word-internal reduplication pattern, receives a straightforward account within the recent morphosyntactic framework of Distributed Morphology (Halle and Marantz 1993, Harley and Noyer 1999, Embick and Noyer 2005). In what follows, we assume, in line with much recent work on reduplication, that reduplication consists in affixation of the reduplicative morpheme RED that triggers copying on a stem in its neighborhood (Marantz 1982, McCarthy and Prince 1986, 1993, 1995, Travis 1999).

Consider first verbal reduplication. As we have seen in section 2, verb stems allow stem-reduplication but never allow stem-affix reduplication. This pattern receives a straightforward account if verbal reduplication is some sort of inner aspect (Travis 1999) as in the morphosyntactic derivation shown in (5) for the example in (2a).

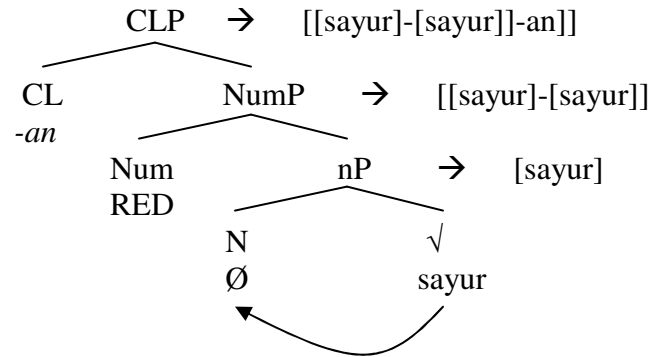(5)	Morphosyntactic derivation of the stem-reduplication in (2a)
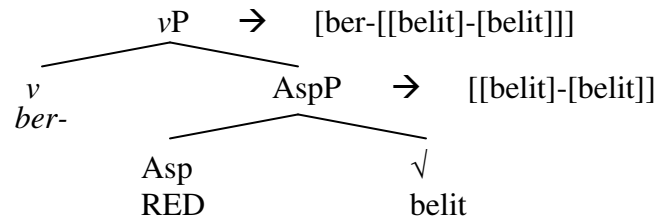
In this derivation, the Asp head merges with the root *belit* 'twist' as its complement. This object is spelled-out as the reduplicated form *belit-belit*. The AspP undergoes further merger with the verbalizing prefix *ber-* to derive the correct stem reduplication form *ber-belit-belit* 'meander'. The RED morpheme intervenes between the *v* head and the root. Thus, the RED cannot reach up to the position of the *v* to include the verbalizer *ber-* in its domain for reduplication. This accounts for the unavailability of stem-affix verbal reduplication. In this way, the fact that verb stems never reduplicate affixes naturally falls into place by assuming a particular hierarchical arrangement of certain morphosyntactic heads.

Let us now consider nominal reduplication. As we have seen in section 2, nominal stems both allow stem and stem-affix reduplication. But this choice is not free but instead governed by the underlying syntactic category of a stem. Consider examples in (3a-c) and (4a-c), repeated here as (6a-c) and (7a-c), respectively.
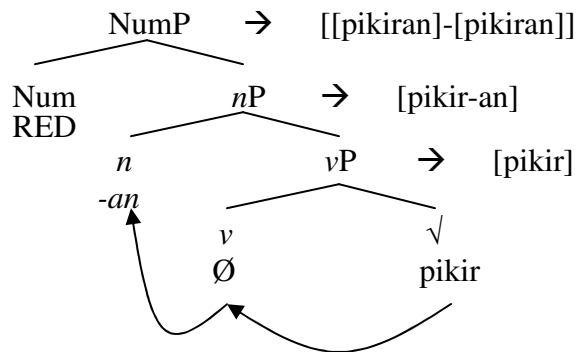
(6)   Stem reduplication (nouns)
        a. sayur-sayuran   *sayuran-sayuran   'many types of vegetables'
            [[sayur-sayur]-an]]   [[sayur-an]-[sayur-an]]
        b. buah-buahan   *buahan-buahan   'many types of fruits'
            [[buah-buah]-an]]   [[buah-an]-[buah-an]]
        c. biji-bijian   *bijian-bijian   'many types of seeds'
            [[biji-biji]-an]]   [[biji-an]-[biji-an]]

(7)   Stem-affix reduplication (nouns)
        a. pikiran-pikiran   *pikir-pikiran   'thoughts'
            [[pikir-an]-[pikir-an]]   [[pikir]-[pikir]-an]]
        b. tulisan-tulisan   *tulis-tulisan   'writings'
            [[tulis-an]-[tulis-an]]   [[tulis]-[tulis]-an]]
        c. masukan-masukan   *masuk-masukan   'inputs'
            [[masuk-an]-[masuk-an]]   [[masuk]-[masuk]-an]]

Specifically, input nominals in (6a-c) that allow only stem reduplication are all underived simplex nominals (*sayur* 'vegetable', *buah* 'fruit', and *biji* 'seed') whereas input nominals in (7a-c) that allow only stem-affix reduplication are all deverbal nominals (*pikir* 'think' → *pikiran* 'thought', *tulis* 'write' → *tulisan* 'writing', *masuk* → *masukan* 'input'). This difference, we claim, holds a key to a full understanding of why nominals allow two types of reduplication unlike verbs. Let us assume that nominal reduplication consists in the copying of a nominal stem by the RED in the Num head. The Num head selects a nominal stem as its complement, a reasonable assumption given that the reduplication of a noun yields an emphasized quantity of the referent of the noun (such as plural). Then, simplex underived nominal stems as in the examples in (6a-c) can undergo direct merge with the Num head. Verbal stems as in the examples in (7a-c), on the other hand, cannot merge with the Num head, which only takes a nominal stem as its complement. Thus, they are nominalized by the suffix -*an* in order to merge with the Num head. The derivations for the examples in (6a) and (7a), for example, are given in (8) and (9), respectively.

(8)   Morphosyntactic derivation of the stem-reduplication in (6a)

```
                    CLP      →     [[sayur]-[sayur]]-an]]

            CL              NumP       →     [[sayur]-[sayur]]
            -an
                        Num           nP      →     [sayur]
                        RED
                              N               √
                              Ø               sayur
```

(9)   Morphosyntactic derivation of the stem-affix reduplication in (7a)

```
                      NumP       →     [[pikiran]-[pikiran]]

              Num               nP      →     [pikir-an]
              RED
                        n               vP      →     [pikir]
                        -an
                              v               √
                              Ø               pikir
```

In the derivation in (8), the root *sayur* 'vegetable' is instantiated as a noun by movement into the *n* head. This stem, being a nominal, can directly merge with the Num head as input for nominal reduplication. This derivation derives the stem-affix reduplication for simplex underived nominals as in (6a-c). The derivation in (9) is crucially different from that in (8), in that the base stems are all verbal. Accordingly, they are converted into nominal elements by the suffixation of *-an* to serve as correct complement to merge with the Num head. Since this head includes the nominalizing suffix *-an* in its structural domain, the RED is interpreted as reduplicating the verbal stem together with the suffix (*pikir-an*). This derivation correctly yields the stem-affix reduplication for complex deverbal nominals as in (7a-c).[1]

---

[1] The function of the suffix *-an* is certainly not a verbalizer as in the case of deverbal noun stem-affix reduplication. In the case of stem-noun reduplication, this suffix works as a kind of classifier in Bahasa Indonesia. Thus, *buah-buahan*, derived from *buah* 'fruit', means 'many types of fruits' but this suffix cannot be attached to stems like *jeruk* 'lemon' to derive *jeruk-jerukan* because the lemon is a specific instance of the fruit kind. The form *jeruk-jerukan* is not ungrammatical but means something different ('toy orange'). Thanks to Heidi Harley, Dwi Hesti Yuliani-Sato, and an audience at BLS 33 for raising this question and important discussion.

4.   Conclusions

The corpus study of four popular newspapers published in Indonesia shows that nominal stems allow both stem and stem-affix reduplication while verbal stems allow only stem reduplication and that both nominal and verbal stems may allow reduplication to target part of the morphologically derived word rather than the left/right edge of the word. These two facts pose non-trivial empirical difficulties for a few well-known versions of the so-called Lexicalist Hypothesis as in Chomsky 1970 and Kiparsky 1982a, b, 1985, and Mohanan 1986. This problem arises only when we adopt a theory that posits the generative lexicon as the pre-syntactic component. The inverse paradox required by word-reduplication in Indonesian ceases to be a problem under non-lexicalist theories because we do not have the lexicon in the first place. We have argued that the two facts above receive a straightforward account within the recent non-lexicalist, morphosyntactic framework of Distributed Morphology if we take into account a hierarchical arrangement of morphosyntactic heads such as Asp and Num as well as the underlying syntactic category of input stems for reduplication. The overall result, therefore, provides a strong piece of evidence against the general lexicalist theory, and, at the same time, argues in favor of non-lexicalist theories of the syntax-morphology interface as in Distributed Morphology.

References

Aronoff, Mark. 1976. *Word Formation in Generative Grammar*. Cambridge, MA: MIT Press.

Chomsky, Noam. 1970. Remarks on Nominalizations. In Roderic Jacobs and Peter Rosenbaum, eds., *Readings in English Transformational Grammar*, 184-221. Waltham, MA: Ginn.

Embick, David, and Rolf Noyer. 2005. Distributed Morphology and the Syntax/Morphology Interface. Ms., University of Pennsylvania. To appear in Gillian Ramchand and Charles Reiss, eds., *The Oxford Handbook of Linguistic Interfaces*. New York: Oxford University Press.

Halle, Morris, and Alec Marantz. 1993. Distributed Morphology and the Pieces of Inflection. In Kenneth Hale and Samuel Jay Keyser, eds., *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, 111-176. Cambridge, MA: MIT Press.

Halle, Morris, and Alec Marantz. 1994. Some Key Features of Distributed Morphology. *Papers on Phonology and Morphology*, *MIT Working Papers in Linguistics* 21:275-288.

Harley, Heidi, and Rolf Noyer. 1999. Distributed Morphology. *Glot International* 4:3-9.

Kiparsky, Paul. 1982a. Lexical Morphology and Phonology. In The Linguistic Society of Korea, ed., *Linguistics in the Morning Calm*, 3-91. Seoul: Hanshin.

Kiparsky, Paul. 1982b. From Cyclic Phonology to Lexical Phonology. In Hulst, H. van der and Norval Smith, eds., *The Structure of Phonological Representations*, 131-175. Dordrecht: Foris.

Kiparsky, Paul. 1985. Some Consequences of Lexical Phonology. In Kaisse, Ellen M. and Patricia A. Shaw, eds., *Phonology Yearbook* 2:83-138.

Marantz, Alec. 1982. Re reduplication. *Linguistic Inquiry* 13:435-482.

McCarthy, John, and Alan Prince. 1986. Prosodic Morphology. Ms., University of Massachusetts, Amherst, and Brandeis University, Waltham, Mass.

McCarthy, John, and Alan Prince. 1993. Prosodic Morphology I: Constraint Interaction and Satisfaction. Ms., University of Massachusetts, Amherst, MA; Rutgers University, New Brunswick, NJ.

McCarthy, John, and Alan Prince. 1995. Faithfulness and Reduplicative Identity. *Papers in Optimality Theory, University of Massachusetts Occasional Papers in Linguistics* 18:249-384. Amherst, MA: GLSA.

Mohanan, Karuvannur Puthanveettil. 1986. *The Theory of Lexical Phonology*. Dordrecht: Kluwer.

Moravcsik, Edith. 1978. Reduplicative Constructions. In Joseph H. Greenberg, ed., *Universals of Human Languages*. Vol. 3:297-334. Stanford, CA: Stanford University Press.

Sato, Yosuke. 2007. Derivational Morphology in Non-Lexicalist Theories: Cross-Linguistic Evidence of Complex Phrase Structures within Morphological Words. Ms., University of Arizona, Tucson.

Travis, Lisa. 1999. A Syntactician's View of Reduplication. *Proceedings of the Sixth Meeting of the Austronesian, Formal Linguistics Association Toronto Working Papers in Linguistics*, 312-331.

Yosuke Sato
University of Arizona
Department of Linguistics
Douglass 200E
Tucson, AZ 85721-0028

yosukes@email.arizona.edu

Bradley McDonnell
Arizona State University
Department of English,
Language and Literature 350,
Tempe, AZ 85287

bradley.mcdonnell@asu.edu

The Japanese Contrastive *Wa*: A Mirror Image of EVEN[*]

OSAMU SAWADA
University of Chicago

0.   Introduction

Many studies have been made of the Japanese contrastive *wa* (Kuno 1973a, b, Teramura 1991, Noda 1996, Nakanishi 2001, Hara 2006, Oshima to appear, among others). However, they have analyzed the semantics/pragmatics of contrastive *wa* without considering (ⅰ) the scalar value and (ⅱ) the possibility that contrastive *wa* has **multiple** meanings (conventional implicatures).

The purpose of this paper is to argue that there are two types of contrastive *wa*— scalar contrastive *wa* and polarity contrastive *wa*— and that the scalar type has conventional implicatures that are a 'mirror image' of those of *sae/mo* 'even'. (1) is an example of the scalar type and (2) is an example of the polarity type:

(1.)   (Do you have a vehicle?)
Jitensya ***wa***   mot-tei-masu.
Bicycle Cont   have-State-polite
'I have [a bicycle]Cont.'
→I don't have more expensive vehicles than a bicycle (e.g. a motor cycle)

(2.)   (Have all of the members (e.g. Taro, Hanako, Ziro) arrived at Chicago?)
Taro ***wa***   tuki   masi-ta.
Taro Cont   arrive polite-perfect
'[Taro] Cont has arrived.'
→There is someone other than Taro who has not arrived at Chicago.

This paper proposes the following points: (a) The conventional implictures/presuppositions (Karttunen and Peters 1979) of contrastive *wa* can be a '**mirror image**' of those of *sae/mo*. This fact naturally explains why contrastive

wa, but not *sae/mo*, can induce a conventional quantity (scalar) implicature. (b) There is, however, a case in which contrastive *wa* seems not to induce a conventional Q implicature. In contrast to the case of *sae*, the scalar presupposition is 'optional' for contrastive *wa*, and this optionality induces a different type of implicature, a 'polarity reversed conventional implicature/ presupposition' (Lee 2006, Oshima to appear). The quantificational force of the implicature in polarity contrastive *wa* can be pragmatically **strengthened** to become universal ($\forall$) in some contexts, while in other cases it can be epistemically **weakened** to become existential ($\exists$) with a possibility operator $\Diamond$. (c) The precise mirror image of contrastive *wa* is expressed by *mo*, which is semantically ambiguous between 'even' and 'also.' (d) If we posit the existence of two types of contrastive *wa*, we can unify two seemingly incompatible approaches to this particle: the 'reversed polarity approach' (Kuno 1973a, b, Teramura 1991, Noda 1996, Oshima to appear) and the 'scalar alternative approach' (Hara 2006, to appear).

1. Background: Thematic *Wa* vs. Contrastive *Wa*

It is well known that the particle *wa* in Japanese has two kinds of uses, **thematic** and **contrastive** (Kuno 1973a, b, Teramura 1991, Noda 1996, Nakanishi 2001, Oshima to appear, among many others).

(3.)   Taro   ***wa***   hasi-ttei-ru.
      Taro   run -Prog-pres
      a. Thematic wa: 'Speaking of Taro, he is running.'
      b. Contrastive wa: 'Taro is running (but Hanako is not running.)'

<div align="right">(Kuno 1973a: 207)</div>

In (3a), *wa* marks a constituent that stands for a theme, as opposed to a comment. According to Kuno (1973a, b), such themes must be either **generic or anaphoric** (i.e. previously mentioned). By contrast, in (3b), *wa* marks the contrasted element of the sentence, and conventionally implies that there is an element that is alternative to it. Notice that the element marked by contrastive *wa* can be **generic, anaphoric or neither** (Kuno 1973a, b). That is, the element does not always have to be topical.[1] We should also notice that thematic *wa* is phonologically different from contrastive *wa* (Nakanishi 2001, Oshima to appear). If we put a stress on *wa*, it is interpreted as contrastive. This paper focuses solely on contrastive *wa*.

2. Previous Analyses of Contrastive *Wa*

---

[1] Since contrastive *wa* always posits an alternative element or elements other than the one it marks and induces an 'anti-additive' implicature, it is safe to consider it a kind of focus-sensitive operator (Oshima to appear). Notice, however, that the element marked by contrastive *wa* can be either given or new information. This suggests that the concept of contrastiveness is independent from the distinction between given and new information.

In languages like Japanese and Korean, contrast is marked **morphologically**, while in a language like English it is marked **phonologically**. Two theories have been proposed to explain the **implicature** of contrastive *wa*; these may be termed the *reversed polarity* approach and the *scalar alternative* approach. The reversed polarity approach says that the implicature induced by contrastive *wa* has an meaning opposite to the stated one: 'X *wa…*' implies 'but it **not** the case that y *wa…*)' (Kuno 1973a, b, Teramura 1991, Noda 1996, Oshima to appear, among others). Some researchers call this the 'polarity reversed conventional implicture/ presupposition' (Lee 2006, Oshima to appear).

The *scalar alternative approach*, on the other hand, says that contrastive *wa* **always** induces a conventional scalar implicature (Hara 2006, to appear). Hara (2006, to appear) claims that "a contrastive topic presupposes a particular set of scalar alternatives, namely stronger propositions than the asserted one and the implicature induced by the contrastive *wa* is a conventional Q implicature." Notice that Hara (2006, to appear) does not say that the contrastive *wa* has a **scalar value**. I will argue that the 'scalar type' of contrastive *wa* has a scalar value that is a mirror image of *sae/mo* 'even'.

Both approaches consider an implicature induced by contrastive *wa* **conventional,** but not conversational. Applying the detachability test, we find that the implicature in (4a) is detachable because (4b), which has the same semantic content as (4a), does not normally induce the implicature:

(4.)   [Detachability test: detachable]
        a. Hanako wa   jitensya   **wa**   mot-tei-ru.
          Hanako Top   bicycle   Cont have-state-pres
          'Hanako has [a bicycle] $_{cont}$.'
          →Hanako doesn't have more expensive vehicles than a bicycle.
        b. Hanako wa   jitensya o   mot-tei-ru.
          Hanako Top   bicycle   ACC   have-state-pres
          'Hanako has a bicycle.'   (The implicature is not obligatory)

According the cancellability test, the implicature is not cancelable:

(5.)   [Cancelability test: non-cancelable]
        #Hanako wa jitensya **wa** mo-ttei-ru-si,   ootobai   mo
          Hanako Top bicycle   Cont have-state-pres-and motor cycle also/even
          mot- tei-ru.
          Have-state-pres
          'Hanako has [a bicycle] $_{cont}$ and she {also/even} has a motor cycle.'

Both the reversed polarity approach and the scalar alternative approach consider the implicature induced by contrastive *wa* **conventional, but not conversational**. However, their explanations of this fact are different. The reversed polarity

approach does not posit a scale, while the scalar alternative approach does. Can we unify these accounts?

I will argue that there are two kinds of contrastive *wa*, scalar contrastive *wa* and polarity contrastive *wa*. This theory makes it possible to unify the two seemingly different approaches.

3. Scalar Contrastive *Wa*: A Mirror Image of EVEN
3.1. Positive Case

Let us observe the following examples: (Context: Amateurs, semi-professionals, and professionals are participating in a tennis tournament.)

(6.)   Taro wa   sirooto   ni   {**wa**   / ??**sae**}   ka- tta.
         Taro Top   amateur   Dat   cont   / even   win-past
         '(lit.) Taro beat an [amateur]$_{cont}$. /??Taro even beat an amateur.'

(7.)   Taro wa   puro   ni   {??**wa**   / **sae**}   ka -tta.
         Taro Top   professional Dat   cont   / even   win-past
         '(lit.) ??Taro beat a [professional]$_{cont}$ / Taro beat even a professional.'

There is a clear difference in acceptability between contrastive *wa* and *sae* in each of above sentences. The conventional implicatures of (6) with contrastive *wa* are as follows:

(8.)   Scalar contrastive *wa* (positive):
         a. $\exists x\, [C(x) \wedge x \neq \text{amateur} \wedge \neg\, \text{beat (Taro, x)}]$
         b. $\forall x[C(x) \wedge x \neq \text{amateur} \rightarrow \text{unlikelihood (Taro beat x)} > \text{unlikelihood (Taro beat an amateur)}]$

The combination of (8a) and (8b) produces the **conventional** quantity implicature that 'Taro could not beat a tennis player who is stronger than an amateur.'[2] On the other hand, in (7) *sae* has a positive existential presupposition and forces us to construe the proposition as **high** on this scale, as shown in (9b):

(9.)   *Sae 'even'* (positive):
         a. $\exists x\, [C(x) \wedge x \neq \text{professional} \wedge \text{beat (Taro, x)}]$
         b. $\forall x\, [C(x) \wedge x \neq \text{professional} \rightarrow \text{unlikelihood (Taro beat a professional)} > \text{unlikelihood (Taro beat x)}]$

Note that (7) with *sae* does not induce a conventional quantity implicature.

---

[2] If 'semi-professional' is substituted here, the sentences with contrastive *wa* and *sae* both become acceptable. This is because the element can be construed as 'low' relative to a professional but 'high' relative to an amateur (cf. Kay 1990).

3.2. Negative Case

Contrastive *wa* and *sae* can also appear in a negative environment, where the scalar values are reversed:

(Context: Amateurs, semi-professionals and professionals are participating in a tennis tournament.)

(10.) Taro wa sirooto ni {??***wa*** / *sae*} kata-na-katta. (cf. (6))
       Taro Top amateur Dat cont / even win-not past
       '(lit.) Taro didn't beat an [amateur]$_{cont.}$ /Taro didn't even beat an amateur.'

(11.) Taro wa puro ni {*wa* / ??*sae*} kata-na-katta. (cf. (7))
       Taro Top professional Dat cont / even win-not-past
       'Taro didn't beat a [professional]$_{cont.}$/ ??Taro didn't even beat a professional.'

When contrastive *wa* is used in a negative context, the proposition **without a negative operator** is construed as **high** on the scale of 'unlikelihood', whereas with *sae*, the proposition without a negative operator is construed as **low** on this scale. The conventional implicatures of (10) with *sae* and (11) with contrastive *wa* can be represented as (12) and (13), respectively:[3]

(12.) Scalar contrastive *wa* (neg):
    a. $\exists x [C(x) \wedge x \neq \text{professional} \wedge \text{beat (Taro, x)}]$
    b. $\forall x [C(x) \wedge x \neq \text{professional} \rightarrow \text{unlikelihood (Taro beat professional)} >$
       $\text{unlikelihood (Taro beat x)}]$

(13.) *Sae* (neg):
    a. $\exists x [C(x) \wedge x \neq \text{amateur} \wedge \neg \text{beat (Taro, x)}]$
    b. $\forall x [C(x) \wedge x \neq \text{amateur} \rightarrow \text{unlikelihood (Taro beat x)} > \text{unlikelihood (Taro beat an amateur)}]$

3.3. Scope Inversion

In Japanese, there is a phenomenon of scope inversion using contrastive marking (Hara to appear, Oshima to appear, Lee 2000).

(14.) a. John wa zen-in o tasuke-nakat-ta.
       John top everyone Acc help Neg Past
       'John didn't help anyone.' ($\forall > \neg$)
       '?? It is not the case that John helped everyone.' ($\neg > \forall$)

---

[3] The conventional implicatures of the negative sentences with contrastive *wa* and *sae* are represented based on the framework of polarity theory (Rooth 1985, Rullmann 1997, Giannakidou 2007, Yoshimura (to appear)). There is also a framework of scope theory (Karttunen and Peters 1979).

b. John wa zen-nin   ***wa***   tasuke-nakat-ta.
John top everyone Cont   help Neg Past
'*John didn't help anyone.'   ($\forall > \neg$)
'It is not the case that John helped everyone.' ($\neg > \forall$)

The reading of ($\forall > \neg$) in (14b) is not acceptable because it does not satisfy the existential presupposition of contrastive *wa*. In the negative context, contrastive *wa* has to have a **positive existential** conventional implicature, as in (15):

(15.)   Scalar contrastive *wa* (neg): (QP=quantifier phrase)
a. $\exists$ QP [C(QP)$\wedge$QP$\neq$ everyone $\wedge$ helped (John, QP)]
b. $\forall$ QP [C(QP)$\wedge$QP$\neq$ everyone$\rightarrow$ unlikelihood (John helped everyone)>
unlikelihood (John helped QP)]

The reading of ($\neg > \forall$) in (14b) is acceptable because the sentence has a positive existential presupposition.

4.   Additional Empirical Evidence for the Existence of Scalar Type

Teramura (1991: 40) and Noda (1996: 224) point out that contrastive *wa* is interpreted as *sukunaku-tomo* 'at least', if combined with numerals. Does this use of contrastive *wa* only occur with numerals? The answer is no. I argue that scalar contrastive *wa* is not an ad hoc usage. It 'inherently' has a scalar value that **forces** the addressee to interpret the proposition as **low** on the scale of unlikelihood in the positive case and **high** on this scale in the negative case.

4.1.   Comparative *Yori* plus Contrastive *Wa*

If contrastive *wa* is attached to *yori*, the standard of comparison is construed as low on a given scale, as shown in (16b):

(16.)   a. Taro wa   Ziro yori se   ga   takai.
Taro Top   Ziro than   height   Nom tall
'Taro is taller than Ziro.'
b. Taro wa   Ziro *yori-**wa***   se   ga   takai.
Taro Top Ziro than-cont   height Nom   tall
'Compared to Ziro, Taro is tall.'
$\rightarrow$Ziro is short.   (Implicature from the standard of comparison)
$\rightarrow$Taro is not definitely tall.   (Implicature from the main clause)

Notice that there is another implication as well: that 'Taro is not definitely tall' (Sawada 2007).

4.2.   Predicate with Contrastive *Wa*

A scalar value also arises when contrastive *wa* is attached to the predicate of a sentence (i.e. adjective, verb):

(17.)   Ame   wa   furi ***wa***   si-ta.
        Rain   Top   fall Cont   do-past
        'It [rained]$_{cont.}$'
        → (Implicature): It didn't rain a lot. (low amount)

4.3.   Polar Question (Negative Bias)

Positive questions with minimizers can express a negative bias (Borkin 1971, Ladusaw 1979, Giannakidou 2007, among others):

(18.)   Did Tom *lift a finger* to help?
        (Bias: No, he didn't.)

Contrastive *wa* can also be used in a positive question with a negative bias.

(19.)   X   daigaku   ni   *wa*   ukari-masi-ta-ka. (X university is easy to enter.)
        X   university   Dat   Cont   pass- polite-past-Q
        'Were   you   accepted by [X university]$_{cont}$?
        (Bias: No you weren't.)

This fact supports the idea that scalar contrastive *wa* has a low scalar value.

5.   The Mirror Image in Rullmann's Typology of *Even*-Items

Rullmann (2006) proposes a four-way typology of *even*-items, which is analogous to Israel's (1996) typology of polarity items. Israel (1996) proposes two kinds of parameters for the typology of polarity items:

(20.)   Quantitative Value (Q): **high** or **low** relative to norm
        Informative Value (I): **understating** or **emphatic** relative to norm

Based on these parameters, Rullmann (2006) proposes the following typology of *even*-items:

(21.)   Rullmann's four-way typology of *even*

		Emphatic	**Understating**
	Positive P: **high**	*1 even* (PPI)	*3 ? ? (NPI)*
Unlikelihood	Positive P: **low**	*2 even* (NPI)	*4 at least* (PPI)

Rullmann (2006) assumes that there may be no items that would fit into the 'top, understating' zone in his four-way typology of *even*-items. This study, however, shows that the Japanese contrastive *wa* does fit into that zone:

(22.)   Mirror image of *sae* and scalar contrastive *wa*

		Emphatic	**Understating**
	Positive P: **high**	*sae* (PPI)	scalar contrastive *wa* (NPI)
Unlikelihood	Positive P: **low**	*sae* (NPI)	scalar contrastive *wa* (PPI)

The Japanese scalar contrastive *wa* supports Rullmann's (2006) typology of *even* items. Giannakidou (2007) proposes a different typology of *even* items, which is compatible with Rullmann's typology. Her typology has two parameters: scalar value (high/low) on the likelihood scale and the presence or absence of the negative operator in the existential presupposition/conventional implicature. One of the advantages of this typology is that it can capture the fact that *sae* (NPI) and contrastive *wa* (PPI) have the same kind of existential conventional implicature.

6.   Polarity Contrastive *Wa*
Let us now turn our attention to the polarity type of contrastive *wa*:

(23.)   Taro-**wa**   ki-ta.
         Taro-cont   come-past
         '[Taro] $_{cont}$ came.'
         $\rightarrow$ There is someone other than Taro who didn't come.
(24.)   Watasi *wa*   moku-yoobi **wa**   ai-teiru.
         I   Top   Thursday   cont   free-TEIRU (stative)
         'I am free on [Thursday] $_{cont}$.'
         $\rightarrow$ There are some days other than Thursday that I am not free.

The implicatures in (23) and (24) do not posit a scale. Contrary to Hara's (2006, to appear) claim, it seems that contrastive *wa* does not **always** induce a Q implicature. If contrastive *wa* is attached to non-scalar nouns or predicates, it is **difficult**, though not impossible, to posit an (un)likelihood scale. Oshima (to appear) argues that the semantic contribution of a contrastive morpheme is antonymous to that of the additive particle 'also.'
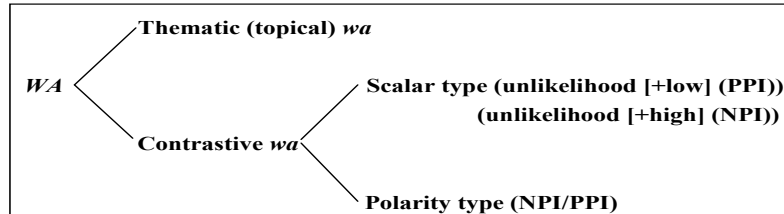
7.   The Difference between the Polarity Type and the Scalar Type
Given the above analysis, how can we account for the difference between the polarity and scalar types of contrastive *wa*? I argue that the difference can be explained by the **optionality** of the scalar presupposition. The conventional implicature of polarity contrastive *wa* in (23) is shown in (25a):

(25.)   a. $\exists x [C(x) \wedge x \neq Taro \wedge \neg came (x)]$
         b. $\forall x [C(x) \wedge x \neq Taro \rightarrow$ unlikelihood (x came)>unlikelihood (Taro came)] (optional)

If there is not enough information to posit a scale, one can ignore the scalar presupposition and construe contrastive *wa* as polarity contrastive *wa*.[4] The following figure shows the landscape of *wa*:

(26.)   **The landscape of *WA***

```
┌──────────────────────────────────────────────────────────────────┐
│              ╱ Thematic (topical) wa                                │
│             ╱                                                        │
│   WA ──────                    ╱ Scalar type (unlikelihood [+low] (PPI))  │
│             ╲                 ╱          (unlikelihood [+high] (NPI))      │
│              ╲ Contrastive wa ─                                      │
│                               ╲                                      │
│                                ╲ Polarity type (NPI/PPI)             │
└──────────────────────────────────────────────────────────────────┘
```

8.   Ambiguity Between the Scalar and the Polarity Types

The instance of contrastive *wa* in the following sentence is ambiguous; it could be read as either scalar contrastive *wa* or polarity contrastive *wa*:

(27.)   Watasi wa   ju-kiro no   hako   ***wa***   mot-eru.
        I   Top   10-kilo Gen   box   cont   lift-can
        'I can lift the [10 kilo box]$_{cont.}$'
(28.)   → (scalar): I cannot lift boxes that are heavier than 10 kilos.
           → (polar): There are some boxes other than the 10 kilo box that I cannot
                    lift (e.g., there are dangerous chemicals inside the boxes).

9.   *Mo* **as the Precise Mirror Image of Contrastive *Wa***

The particle *mo* is semantically ambiguous between a scalar additive meaning 'even' and a simple inclusive meaning 'also', as in (29). This ambiguity can also be accounted for in a unified way, based on the concept of the **optionality** of the scalar presupposition, as in (30b).

(29.)   Ziro   ***mo***   siken ni   uka-ta.
        Ziro   also/even exam to   pass-past
        'Even Ziro passed the exam. /Ziro also passed the exam.'
(30.)   Conventional implicature of *mo*
        a.∃x [C(x) ∧ x≠Ziro ^ passed (x, the exam)]
        b.∀x[C(x) ∧ x≠Ziro→unlikelihood (Ziro passed the exam)>unlikelihood
           (x passed the exam)]   ←optional

This suggests that the semantics of *mo* and contrastive *wa* are **precise** mirror opposites.

---

[4] Another approach is to consider that contrastive *wa* is lexically ambiguous between scalar contrastive *wa* and polarity contrastive *wa*. Notice, however, that this ambiguity is not like the ambiguity between *bank* meaning 'a financial institute' and *bank* meaning 'the side of a river.'

10. The Quantificational Variability of Contrastive *Wa*

In some contexts, the quantificational force of the existential presupposition in contrastive *wa* can be (pragmatically) **strengthened** to become universal ($\forall$), but in other contexts, it can be epistemically **weakened** to become an existential ($\exists$) force with a possibility operator ($\Diamond$). Let us consider an example of polarity contrastive *wa*:

(31.)   A: Did Taro, Hanako and Ziro come to the party?
        B: Taro   wa   ki-ta.
          Taro   Cont   come-past
          '[Taro]$_{cont}$ came.'

There are at least three possible implicatures here, according to the context:

(32.)   **Context A**: Speaker B <u>knows</u> that Taro came to the party and Hanako
        didn't come, but does not know whether or not Ziro came.

In this context (31B) implies that 'there is someone other than Taro who didn't come.' This implicature has existential force.

(33.)   **Context B**: Speaker B knows that Taro came to the party, and that Hanako
        and Ziro didn't.

In this context, (31B) implies that 'no one other than Taro came to the party.' This implicature has universal force. That is to say, the existential presupposition of contrastive *wa* is pragmatically strengthened. Context B is a situation in which *only* is used.[5]

(34.)   **Context C**: Speaker B <u>knows</u> that Taro came to the party but <u>is not sure</u>
        whether Hanako or Ziro came.

---

[5] There is still a semantic difference between *dake* 'only' and contrastive *wa* in context B, as regards contrastiveness:

(ⅰ)   Taro wa   ki-ta.   Sikasi   Hanako to   Ziro wa   ko-naka-ta.
         Taro Cont come-past   but   Hanako and Ziro Cont come-not-past
         '[Taro]$_{Cont}$ came but [Hanako and Ziro]$_{Cont}$ didn't.'
(ⅱ)   #Taro dake ki-ta.   Sikasi   Hanako   to   Ziro   wa   ko-naka-ta.
          Taro only come-past   but   Hanao   and Ziro   Cont come-not-past
          '#Only Taro came but   [Hanako and Ziro]$_{cont}$ didn't.'
Sentence (ⅰ) with contrastive *wa* can explicitly contrast Taro with partygoers Hanako and Ziro, but sentence (ⅱ) cannot make this contrast explicitly.

In this context, (31B) implies that '<u>it is possible</u> that there is someone other than Taro who didn't come.' The possibility operator is attached to the existential presupposition in this case.

The implicature generated by scalar contrastive *wa* also has quantificational variability. Thus, the conventional scalar implicature that 'a stronger proposition is not true' may become the weaker implicature that 'a stronger proposition may not be true.'

11.   Conclusion

This paper has argued that there are two types of contrastive *wa*, a scalar type and a polarity type. The conventional implicatures of scalar contrastive *wa* are a mirror image of those generated by *sae* 'even', whereas the conventional implicature of polarity contrastive *wa* appears because of the optionality of the scalar presupposition in scalar contrastive *wa*. Positing the existence of two types of contrastive *wa* reconciles seemingly incompatible approaches, the reversed polarity approach and the scalar alternative approach. I hope this paper sheds new light on the study of contrastiveness. It may be possible to consider that the same analyses can apply to the Korean contrastive marker *-nun*.

In a future study, I would like to consider the semantic/pragmatic difference between scalar contrastive *wa* and adverbs such as *sukunaku-tomo* '(lit) little-even if' and *saitei-demo* '(lit) the least-even if':

(35.)   {*Sukunaku-tomo/ saitei*-(*demo*)}   juu-nin   ki-   ta.
          Little   CONC/ lowest CONC   ten-CL (person) come-past
          'At least ten people came.'   (No negative implicature.)
(36.)   Juu-nin   *wa*   ki-ta.
          Three-CL (person) cont   come-past
          '[Ten people]$_{Cont}$ came.'
          (Implicature: I am not sure whether more than ten people came.)

It seems that *sukunaku-tomo* and *saitei(-demo)*, block a Q implicature but scalar contrastive *wa* does not.

References

Borkin, Ann. 1971. Polarity Items in Questions. *Papers from the Seventh Regional Meeting of the Chicago Linguistic Society* 7, 53-62.

Giannakidou, Anastasia. 2007. The Landscape of EVEN. *Natural Language and Linguistic Theory* 25:39-81.

Hara, Yurie. 2006. Implicature Unsuspendable: Japanese Contrastive *wa*. *Proceedings of the 2004 Texas Linguistic Society Conference: Issues at the Semantics-Pragmatics Interface*, 35-45.

Hara, Yurie. To appear. Scope Inversion in Japanese: Contrastive Topic Requires Scalar Implicatures. *Japanese/Korean Linguistics* 13. Stanford, CA: CSLI.

Israel, Michael. 1996. Polarity Sensitivity as Lexical Semantics. *Linguistics and Philosophy* 19:619-666.

Karttunen, Lauri, and Stanley Peters. 1979. Conventional Implicature. In C. K. Oh and D. A. Dinneen, eds., *Syntax and Semantics*. *Vol. 11. Presupposition*, 1-56. New York: Academic Press.

Kay, Paul. 1990. Even. *Linguistics and Philosophy* 13:59-111.

Kuno, Susumu. 1973a. Nihon Bunpoo Kenkyuu (The study of Japanese Grammar). Toyko: Taisyuukan.

Kuno, Susumu. 1973b. *The Structure of Japanese Language*. Cambridge, MA: MIT Press.

Ladusaw, William. A. 1980. *Polarity Sensitivity as Inherent Scope Relations*. New York & London: Garland Publishing.

Lee, Chungmin. 2000. Contrastive Predicates and Conventional Scales. In A. Okrent and J. Boyle, eds., *Papers from the 36th Annual Meeting of the Chicago Linguistic Society*, 243-257.

Lee, Chungmin. 2006. Contrastive Topic/Focus and Polarity in Discourse. In K. von Heusinger and K. Turner, eds., *Where Semantics Meets Pragmatics*, 381-420. New York: Elsevier.

Nakanishi, Kimiko. 2001. Prosody and Information Structure in Japanese: A Case Study of Topic Marker *wa*. In N. Akatsuka and S. Strauss, eds., *Japanese/Korean linguistics* 10, 434-447. Stanford, CA: CSLI.

Noda, Hisashi. 1996. *Wa to Ga* (Wa and ga). Tokyo: Kuroshio.

Oshima, David. To appear. Morphological vs. Phonological Contrastive Topic Marking. *Papers from the 41st Meeting of the Chicago Linguistic Society.*

Rooth, Mats. 1985. Association with Focus. Ph.D. diss., University of Massachusetts at Amherst.

Rullmann, Hotze. 1997. *Even*, Polarity, and Scope. In M. Gibson, G. Wiebe, and G. Libben, eds., *Papers in Experimental and Theoretical Linguistics* Vol.4, 40-64. Edmonton: University of Alberta.

Rullmann, Hotze. 2006. Does *Even* Even Have Scope? Handout of Linguistics Colloquium at University of Chicago.

Sawada, Osamu. 2007. Pragmatic Aspects of Implicit Comparison. Paper Presented at the 81st Annual Meeting of the Linguistic Society of America. Anaheim, CA. January 6.

Teramura, Hideo. 1991. Nihongo no Sintakusu to Imi Ⅲ (Syntax and Semantics of Japanese Ⅲ). Tokyo: Kuroshio.

Yoshimura, Keiko. To appear. Scope Theory vs. Polarity Theory: Analysis of Japanese Focus Particle –Sae. *Papers from the 40th Annual Meeting of the Chicago Linguistic Society*.

Osamu Sawada
University of Chicago
Department of Linguistics
1010 East 59th street
Chicago IL 60637, USA

sawadao@uchicago.edu

Phonological Structure in Syllabification: Evidence from Dyslexia

PATRICIA SCHNEIDER-ZIOGA   FUSA KATADA
California State University, Fullerton   *Waseda University*

0.   Introduction

Developmental dyslexia is believed to involve deficits in phonological awareness (Goswami 2003). Researchers have argued this inability leads to weak phonological representations of words in the mental lexicon. This suggests the main problem for dyslexic people lies in their inability to remain faithful to adult forms. Contra the mainstream view, we argue that the core problem does not lie in phonemic awareness. Instead we argue the core problem lies in a disturbance of temporal-spatial ordering abilities evinced in lexical semantic and atypical prosodic development. In particular we suggest the atypical prosodic development leads the person with dyslexia not to exploit the unit *rime* in reading. The absence of the construct *rime* is highly problematic because accurate and efficient acquisition of reading in English requires reference to rime: the pronunciation of vowel graphemes in this orthographically opaque language is most predictable in the context of the coda grapheme(s) (Treiman et al 1995). We propose that the metrical construct FOOT has not emerged and therefore a constraint such as FOOT-BINARY does not drive syllabification of post vocalic consonants as codas. Instead, the person with dyslexia is free to syllabify post vocalic consonants as onsets. Our analysis implies the notion *rime* is not available in the initial state of language. We locate the underlying disturbance in dyslexia in the domain of temporal-spatial organization and observe that this affects the construction of the rime and, thus, the hierarchical structure of the syllable.

1.   Background
1.1.   Developmental Dyslexia: Its Characteristics and Its Indicators

Developmental dyslexia (henceforth simply dyslexia), as opposed to acquired dyslexia, is characterized by a failure to reach age appropriate reading abilities despite adequate intelligence, educational opportunities, and socioeconomic possibilities, and in the absence of any cognitive problems such as poor vision or obvious brain damage (Vellutino 1979).

      Some of the commonly found indicators of the phonological deficit associated with dyslexia are: (a) rapid naming problems as established by

behavior in RAN (Rapid Automatic Naming) tasks; (b) verbal short term memory difficulties; (c) difficulties in spoonerism tasks.

In a RAN task, a subject is presented with a list of digits, letters of the alphabet, or pictures of common objects and is required to name them as rapidly as possible. Problems with this task indicate difficulties in lexical access or lexical retrieval. The clearest cases of purely phonological problems in verbal short term memory tasks are ones where the subject is auditorily presented with, for example, three phonologically plausible but semantically empty nonwords (such as: *tegdep*, *retway*, and *mollup*) and asked to recall them. In a spoonerism task, a subject is presented with two words, for instance, the words *bat* and *pin,* and asked to exchange the initial sounds of both words. In the example, the target spoonerism would be *pat bin*. Often the presentation is accompanied by matching pictures so as not to also test the subject's memory of the presented words. Problems with spoonerism tasks are interpreted as difficulties segmenting a word into smaller phonological units.

1.2.   Phonemic Awareness and Orthographic Opacity versus Transparency

The potential relevance of *phonemic awareness* to reading was first pointed out by the research group at Haskins in the late 1970's. They noted that there is a particular segmental level, the phonemic one, which seems critical to reading an alphabetic language. This is because an alphabetic language is based on the alphabetic principle, which is the important insight that a grapheme, a meaningless graphic symbol, can be used as a symbol for another meaningless abstract unit, a phoneme. The Haskins group suggested that the phoneme is particularly difficult for conscious access because it is obscured by coarticulation. Their slogan was "reading is difficult because listening is easy." That is, phonemes are not perceptually real, but they must be hypothesized for successful reading.

Many studies have been able to duplicate the findings that phonemic awareness is impaired in dyslexic readers. However, the subjects of these studies are limited to disabled readers of English only. As research has begun to include work on alphabetic languages other than English, it has become clear that impairments in phonemic awareness are most apparent in alphabetic languages that also have the property of being orthographically opaque. To be orthographically opaque means that there is not a consistent mapping between grapheme and phoneme. The opacity might express itself in an inconsistency such that a particular grapheme is pronounced one way in some words, but a different way in other words. Representative of such a language is English, as opposed to orthographically transparent languages such as Spanish, Italian, German, and Dutch. As table (1) shows, especially vowel graphemes are unpredictable in their pronunciation in English (Treiman et al 1995; Kessler and Treiman 1997), whereas in German there is approximately a one to one mapping between grapheme and phoneme, as table (2) shows.

(1)   Opacity of English orthography: graphemes vs. phonemes

graphemes	in words spelled	phonemes (in IPA)
a	father, fat, staple	/faðɹ/, /fæt/, /stepl̩/
e	bet, be, Bert	/bɛt/, /bi/, /bɻt/
i	bird, pint, hint	/bəɹd/, /pajnt/, /hɪnt/
ou	should, shoulder, foul	/ʃʊd/, /ʃoldɹ/, /fawl/

(2)   Transparency of German orthography: graphemes to phonemes

graphemes	in words spelled	phonemes (in IPA)
a	Vater, an, nah	/fatɛr/, /an/, /naː/
e	ersten, Ecke, Knecht	/ɛrstɛn/, /ɛkɛ /, /knɛçt/
i	Ich, finden Birgit	/ɪç/, /fɪndɛn/, /bɪrgɪt/
au	Glauben, August, Traum	/glawben/, /awgust/, /trawm/

Disabled readers of orthographically transparent languages do not exhibit long lasting problems with phonemic awareness, though they share with dyslexic readers of orthographically opaque languages other problems such as slow reading speed and difficulties with RAN tasks.

1.3.   Orthographic Opacity and the Unit Rime

Turning to English, the most opaque orthographic system of all alphabetic languages, the statistical analyses carried out by Kessler and Treiman (1997) reveal a strong tendency of English orthography to be rime-based: the coda provides more useful information about the possible pronunciation of the vowel grapheme than the onset. Treiman et al (1995) documents VC as a more predictable environment for orthographic pronunciation than CV. For example, the digraph *ea* is almost always pronounced [ɛ] before *d* (the orthographic rime *ead* as in *bread*, *tread*, *head*, and *dead*), and as [i] before *p* (the orthographic rime *eap* as in *heap*, *leap*, and *cheap*). On the other hand, onset graphemes do not offer a clue as we can see by the varying CV graphemes of these examples.

This means that in order to successfully read English, not only must one know the various possible mappings of the vowel grapheme to its appropriate phoneme, but, more importantly, the reader must exploit the unit *rime* in the process in order to be able to take into account the maximally informative context for accurate pronunciation of the vowel grapheme. In orthographically transparent languages such as German, it is not necessary to exploit the unit *rime* in reading that language since the mapping between grapheme and phoneme is consistent.

An important finding in this respect is that of Goswami (1999, 2001), who in her study of English speaking/reading children presents experimental evidence that rimes are important for reading (see also Wise, Olson, and Treiman 1990). She argues that beginning readers strongly benefit from exploiting the unit *rime* to read analogically. Other studies confirm this position. For example, in

experiments conducted by Wise, Olson, and Treiman (1990), onset-rime segmentation of written words proved more helpful than postvowel segmentation in short-term learning of the words for beginning readers, as in (3).

(3)   Types of segmentation

words	onset-rime segmentation	postvowel segmentation
ship	sh.ip	shi.p
big	b.ig	bi.g

Moreover, Duncan et al. (1997) finds that poor rhymers were poor readers and good rhymers were good readers. These facts not only indicate that efficient readers, at least in some point early in their reading development, make use of the construct *rime*, they also suggest that a disturbance in the ability to construct *rime* would severely impact the reading of English, at least during early development.

2.   Our Case Study: CV as Fundamental Unit
2.1.   Brief Profile of Our Case

We undertook a case study of an English-speaking girl with dyslexia, born in 1988, henceforth called Tara, a pseudonym. Tara's language development seemed completely normal. However, Tara's mother was concerned about Tara's slow acquisition of reading and spelling and had her tested on a number of psychometric tests at relevant stages in her development. She demonstrated well above average language abilities in various tests including forward digit repetition, the Peabody Picture Vocabulary test, Boston Diagnostic Aphasic Examination; Tara's IQ score was 131. Nonetheless, Tara had great difficulties in learning to read, spell, and write. Tara looked predictably atypical in one language measure: rapid naming, a problem with which consistently correlates with dyslexia.

The next two subsections show a striking contrast in Tara's reading: the presence of onsets versus lack of codas. Her reading can be characterized as involving an *overproduction of CV units* and a decided *lack of VC units*, leading to highly inefficient decoding. Our observations are concerned with words that Tara does not already know how to read. The words she reads for these observations are nonsense words, Latin, or vocabulary items that are at a very advanced reading level. Since these words are not already in Tara's reading vocabulary, she must use a phonological route to arrive at the correct pronunciation. All words were presented to her as individual words on a reading list, and therefore she could not use contextual clues to arrive at a plausible pronunciation.

2.2.   Observation 1: The Avoidance of Coda except Word-Finally

Our first observation is that Tara avoids pronouncing codas in all positions except word finally, an exception to which we return in section 3.4. In all of the examples in (4), Tara pronounces the codas as onsets. She achieves this either by epenthesizing a vowel immediately after the word internal coda (4a, b, c, and d), or by metathesizing a vowel from a nearby vowel digraph so that a vowel follows the coda (4e, f, g), or by simply deleting a word-internal coda (4h).

(4)   Avoidance of Coda via Epenthesis, Metathesis, or Deletion

	presented word	Tara's pronunciation	process
(a)	regatleb	[ri.ˈgɑ.ti.lɛb]	epenthesis
(b)	bailesbud	[be.ˈli.sɪ.bəd]	epenthesis
(c)	besaubgant	[bi.ˈsɑ.bɪ.gænt	epenthesis
(d)	aipcid	[ˈe.pɪ.sɪd]	epenthesis
(e)	maudlin	[ˈmɑ.du.lɪn]	metathesis
(f)	leegtab	[le.ˈgɑ.tə.bə]	metathesis
(g)	weipgan	[ˈwi.pɪ.gæn]	metathesis
(h)	wepgad	[ˈwe.gæd]	deletion

2.3.   Observation 2: The Presence of Complex Onsets
By contrast, onsets, including word-internal complex onsets, are intact for Tara.

(5) The presence of complex onsets

	presented word	Tara's pronunciation	complex onsets:
(a)	feestary	[ˈfi.stə.nɑ.ri]	sC
(b)	reastal	[ˈri.stəl]	sC
(c)	toispar	[ˈtoɪ.spɑr]	sC
(d)	roipsar	[ˈroɪ. spɑr]	(*ps* → *sp*)
(e)	degatrab	[di.ˈgæ.træb]	Cr
(f)	tobrawnest	[to.brɑ.wə.nɛst],	Cr
(g)	pelaustible	[plɑ.sɪ.tə.bl̩]	sC→ səCə

In the above examples, we see that if the orthographic sequence CC occurs word-internally, several things can happen. Most commonly, if the sequence is a possible onset according to the phonotactics of English, it was able to be pronounced as an onset. In these cases the word internal sequences: *st*, *sp*, and *tr* are mapped as complex onsets and the words are read accurately.

    The example in (d) is noteworthy. The word internal sequence is *ps*. The only way to interpret this is as a coda followed by an onset. The observed prohibition on codas word internally would seem to require an epenthesis of a vowel; that is, a …C_1C_2 … sequence would be pronounced as …$C_1V.C_2$….

392

However, there is another possibility that Tara exploited for this example: the sequence *ps* can be metathesized to *sp* and form a licit complex onset: $C_1C_2 \rightarrow C_2C_1$.

The example in (f) has two word internal sequences in the orthographic input: *br* and *wn*. Tara pronounced the first sequence *br* as a complex onset in accordance with the phonotactics of English. The second sequence: *wn*, which could not be interpreted as a complex onset, was pronounced with an epenthetic vowel: *wən* in order to avoid pronouncing a coda. The final example (g), where *pelau<u>st</u>ible* maps to [p<u>l</u>a.sɪ.tə.b<u>l</u>], illustrates that a licit complex onset, the sequence *st*, can also map as CV.CV. In sum, we see that Tara can have syllables that are more complex than the unmarked CV syllable; however, only complex onsets are possible. Codas appear only in word final position.

3.   Phonology of Dyslexia: The Temporal-Spatial Disordering Hypothesis

The above discussion introduced and underscored the fact that Tara's reading errors reveal her reliance on CV as a unit of sequential organization of the melody of the words she reads. Now we consider the source of her reliance on this unit. The leading hypothesis in dyslexia research is that there is a problem with phonological awareness and this problem leads to essentially an incomplete or weak representation of the melody of a word (see Goswami 2003 for interesting discussion). We advance the hypothesis that a higher level problem is responsible for Tara's reliance on CV. We suggest that Tara has general temporal-spatial ordering problems and this has repercussions at several levels of the grammar: lexical semantics and metrical phonology.

3.1.   Temporal-Spatial Semantic Difficulties

First, we note Tara's temporal-spatial difficulties as reflected in her lexical semantics. Tara reports confusion in understanding the meaning of *before* and *after*, *above* and *below*, and *right* and *left*. The following example illustrates a typical error. Here she is using *above* in a purely relational sense to mean *on the other side*.

(6)   "Mommy, sit above the blanket." (17 years 2 months)
          (Meaning: "Mommy sit oriented to the other side of the blanket." i.e.,
          under the blanket)

Tara also reports confusion in understanding the meaning of instructions that state "before X, Y," or "after X, Y." Specifically, she is unsure of which temporal sequence is intended.

3.2.   Auditory and Motor Rhythm Awareness

There is literature that suggests people with dyslexia have problems with rhythmic awareness. We interpret this problem with rhythmic awareness as a reflex of temporal-spatial ordering problems. Thomson et al (2006) and Goswami

et al (2002) report that children and adults with developmental dyslexia have difficulties with auditory cues to speech rhythm and stress. Both expressive and receptive abilities seem affected. Also non-linguistic areas are affected such as manual tapping to a metronome, and perception of amplitude modulating tones as having a beat or not. It is known that rhythmic periodicity in speech is related to the onset of vowels in stressed syllables (P-center cue). Researchers suggest that this affects the ability to gain access to segmental organization within syllables.

3.3.   The Temporal-Spatial Ordering Problem and its Metrical Correlate
We hypothesize that the temporal-spatial ordering problem that is suggested by the difficulties with rhythmic awareness has a metrical correlate. This is because the task of the metrical component of the grammar is to grammatically organize units both temporally and spatially. We propose that Tara's overproduction of CV units is the reflex of a problem with the temporal-spatial ordering of salient items (vowels) versus non-salient items (consonants).

From this perspective, consider the view of articulatory phonology that the onset of a syllable is a co-articulation on the vowel (Goldstein et al, as developed in Vergnaud 2007). Also relevant is the observation that the onset consonant forms a tight unit with a following vowel in the Japanese mora-based system (cf. Katada 1990, Kubozono 1989). Given these views, we can think of the onset then as an autosegment of the vowel:

(7)   C
        |
        V

As an autosegment, there is essentially no ordering decision to make for CV, the C is part of the salient unit. Therefore, the ordering of CV is for free. The representation of CVC under this view must then require a temporal-spatial ordering decision about the order of CV and C, where the following representation is required for a CVC syllable:

(8)   C
        |
        V—C
        $\rightarrow$ time

The coda, a nonsalient item which is not a co-articulation of the vowel, cannot as easily be integrated into the syllable and requires a temporal-spatial ordering decision. The ordering must be as in (9) or as in (10):

(9)   C   C

```
       |      |
       V←C   V
       →time
```

(10)   C   C
```
       |      |
       V   C→V
       →time
```
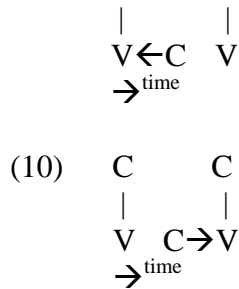
The above scenarios illustrate the problematic aspects of temporal spatial ordering decisions for the ordering of non-salient and salient items. An obvious solution where Tara can avoid any temporal-spatial ordering decision is to interpret a potential coda as the coarticulation of a different syllable, or to delete it altogether. This produces a parse of a multisyllabic word CVC.CV as CV.CV.CV.

3.4.   The Presence of Word-Final Codas
There is an exception, however, at word margins. As Table (4) shows, Tara appears to have word-final codas, such as (4a) rega<u>tl</u>eb [re.gɑ.ti.lɛb]. The presence of her word-final codas do not necessarily argue for her knowledge of coda. The coda at a right word margin can only be associated with the preceding V, and hence Tara is not faced with a temporal-spatial ordering decision about how to integrate the consonant into the word. Alternatively, we interpret the fact as support for Goad and Brannen (2003), who present phonetic evidence that in English, word final consonants in early stages of child language acquisition are actually syllabified as onsets.

### 3.5.   The Avoidance of VV Sequences
Sequences of vowels are also not allowed in Tara's reading; sequences are broken up by intervening C's (11a-f). CV is exceptionally not required at left word margins (11f).

(11)   The absence of VV sequences

	presented words	Tara's pronunciation
(a)	pat<u>io</u>r	[pa.ti.tor]
(b)	d<u>iu</u>rnal	[du.ri.nal]
(c)	dev<u>ia</u>te	[dɛ.lʏ.vet]
(d)	sc<u>io</u>	[si.ko]
(e)	celo	[kle.do] (*[kl<u>eo</u>])
(f)	aipcid	[e.pi.sɪd]

Here, a temporal-spatial ordering decision has to be made about the two vowels—are they part of a heavy syllable as in (12) or two distinct syllables as in (13)?
(12)   C

```
      |
    V ← V
      →time


(13)  C
      |
    V.  V
      →time
```
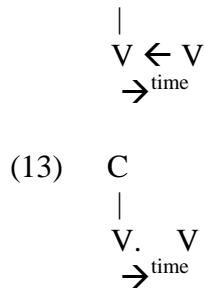
Tara seems to avoid the ordering decision and inserts C between the two vowels. At the left word margin, there is no ambiguity involving a temporal spatial ordering decision, so V can occur without an onset as in (11f).

3.6.   Proposal

To account for Tara's overproduction of CV (moraic) units, we propose that she has a less developed syllable structure than a typical reader and we suggest this is because her acquisition is delayed or incomplete. Specifically, we assume that CV is a basic organizing unit of phonological melody. This view is consonant with the fundamental idea of Lowenstamm's (1996) CV only phonology. Because of the absence of the construct *rime* in Tara's data and its importance in the reading literature, we believe that in typical phonologies the CV units are organized into a larger unit *syllable* from which the construct *rime* can be derived. Furthermore, the development of the unit *syllable* is the important step that drives efficient reading acquisition.

Specifically, we propose that metrical construct FOOT (at least moraic trochee) is absent for Tara and that this could explain why she has difficulties making the temporal-spatial ordering decision that syllabifies post vocalic C's as codas. Tara has reading difficulty in the orthographically opaque language English which requires a reliance on *rime* to decode because she lacks the metrical structure required for decoding.

3.7.   Implications to Language Acquisitions

Parallels with early child language (lack of foot) suggest immature readers and readers with dyslexia will have similar behavior: specifically, also an over-reliance on CV. This prediction has been borne out in a study of blending skills in beginning readers (Cassady and Smith 2004) where nascent readers blend CVC words more efficiently as CV+C than C+VC: eg.: *ca+t* is preferred to *c+at*.

Our proposal can also shed light on the findings of Geuden and Sandra (2003), discussed in Yip (in press). In their study of phonemic awareness in Dutch children, they found that young readers were reluctant to split apart a single syllable word at the so-called onset-rime division; instead, they preferred to split apart a word after the vowel and before the final consonant: eg. …..*c/at* (dispreferred) vs.…..*ca/t* (preferred). This fact can be accounted for if we assume a lack of FOOT in early readers.

3.8.   Suggestive Evidence from Japanese

It has been claimed that in the English speaking world, ten to twelve percent (10-12%) of the population is found to be dyslexic, whereas a much lower four percent (4%) of the Japanese population is found dyslexic (cf. Sakai 2002). An accurate description of this tendency is that in the Japanese population the problem of phonemic awareness does not surface as much as in the English population. This contrast is often talked about in the Japanese dyslexic literature as being attributable to the contrast between the Japanese transparent orthography, *Kana*, and the English opaque alphabet. Given that Japanese reading includes *Kanji* ideographic characters more than the *Kana* syllabary characters and that *Kanji* is even more phonologically opaque than the English alphabet (a direct phonological route to reading *Kanji* is impossible), we suspect that orthographic transparency is not the issue here. Rather we argue that this contrast adds to our proposal in 3.6. Since Japanese is a CV-based language, the Japanese-speaking population does not require a temporal-spatial ordering decision to read materials that are fundamentally CV-based. Therefore, any deficit in this area will remain largely undetected.

4.   Functional Structure

It is possible to make a different interpretation of Tara's knowledge. Suppose Tara does not completely lack feet. Instead, she attempts to implement a more manageable (least marked) metrical structure, that is, quantity insensitive syllabic feet, by allowing only light syllables, since this allows her to avoid facing temporal spatial ordering decisions.

Alternatively, we might interpret what we are calling a moraic trochee as a functional structure. Suppose that syllabification is driven by functional structure as follows: (i) every mora is CV (in a sense, all languages potentially have quantity insensitive feet), (ii) two moras make up a quantity sensitive unit: [CVCV], (iii) this unit is headed by a functional category f: $_f$[CVCV], (iv) the final V can be silent according to the context (here right edge of the functional structure) along the lines of van der Hulst's radical CV phonology. A learner who lacks functional categories in this domain cannot construct quantity sensitive units. We note that the role of functional categories in language acquisition is well established. Relevant also is Vergnaud's (2007) claim that the prosodic structure (stress) of words can be interpreted as functional structure. Our findings supports his claim, given he includes footlike structures among the relevant prosodic structures.

5.   Conclusion

Developmental dyslexia as a phonologically-based disorder has been primarily explored in the literature as a deficit in phonological awareness. Here we have attempted to establish that the core problem does not lie in phonemic awareness. Instead, we argue that it lies in prosodic development, which leads the person

with dyslexia to not exploit the unit *rime* in reading. Since reading English requires the construct rime for accurate decoding, the person with dyslexia will read English slowly and inaccurately.

References

Cassady, Jerrell C. and Lawrence L. Smith. 2004. Acquisition Of Blending Skills: Comparisons Among Body-Coda, Onset-Rime, And Phoneme Blending Tasks. *Reading Psychology* 25(4): 261 – 272.

Duncan, Lynne G., Phillip H.K. Seymour, and Shirley Hill. 1997. How Important Are Rhyme and Analogy in Beginning Reading? *Cognition* 63:171-208.

Geudens, Astrid and Dominiek Sandra. 2003. Beyond Implicit Phonological Knowledge: No Support for an Onset-Rime Structure in Children's Explicit Phonological Awareness. *Journal of Memory and Language* 49:157-182.

Goad, Heather and Kathleen Brannen. 2003. Phonetic Evidence for Phonological Structure in Syllabification. In Jeroen van de Weider, Vincent J. van Heuven and Harry van der Hulst, eds., *The Phonological Spectrum*, 3-30. Amsterdam: John Benjamins.

Goswami, Usha. 1999. Causal Connections in Beginning Reading: the Importance of Rhyme. *Journal of Research in Reading* 22 (3):217–240.

Goswami, Usha. 2001. Rhymes Are Important: A Comment on Savage. *Journal of Research in Reading* 24(1):19-29.

Goswami, Usha, Jennifer Thomson, Ulla Richardson, Rhona Stainthorp, Diana Hughes, Stuart Rosen and Sophie K. Scott. 2002. Amplitude Envelop Onsets and Developmental Dyslexia: A New Hypothesis. *Proceedings of the National Academy of Sciences* 99(16):10911-10916.

Goswami, Usha. 2003. Why Theories of Dyslexia Require Developmental Designs. *Trend in Cognitive Sciences* 7:534-554.

Goswami, Usha. 2003. How to Beat Dyslexia: The Broadbent Lecture 2003. *The Psychologist* 16(9):462-465.

Katada, Fusa. 1990. On the Representation of Moras: Evidence from a Language Game. *Linguistic Inquiry* 21:641-646.

Kessler, Brett and Rebecca Treiman. 1997. Syllable Structure and the Distribution of Phonemes in English Syllables. *The Journal of Memory and Language* 37, 295-311.

Kubozono, Haruo. 1989. The Mora and Syllable Structure in Japanese: Evidence from Speech Errors. *Language and Speech* 32:249-278.

Lowenstamm, Jean. 1996. CV as the Only Syllable Type. In Jacques Durand and Bernard Laks, eds., *Current Trends in Phonology: Models and Methods,* 419-442. European Studies Research Institute, University of Salford Publications.

Sakai, Kuniyoshi. 2002. *Gengo-no noukagaku* (Brain science of language). Tokyo: ChuouKouronsha.

Thomson, Jennifer, Ben Fryer, James Maltby, and Usha Goswami. 2006. Auditory and motor rhythm awareness in adults with dyslexia. *Journal of Research in Reading* 29(3):334-348.

Treiman, Rebecca, John Mullennix, Ranka Bijeljac-Babic, and E. Daylene Richmond-Welty. 1995. The Special Role of Rimes in the Description, Use, and Acquisition of English Orthography. *Journal of Experimental Psychology: General* 124 (2): 107-136.

Vellutino, Frank R. 1979. *Dyslexia: Theory and Research*. Cambridge, MA: MIT Press.

Wise, Barbara, Richard Olson, and Rebecca Treiman. 1990. Sub-Syllabic Units as Aids in Beginning Readers Word Learning Onset-Rime versus Post-Vowel Segmentation. *Journal of Experimental Child Psychology* 49:1-19.

Vergnaud, Jean-Roger. 2007. Some Preliminary Remarks on the Syntactic Organization of Phonology. Paper presented at CUNY Phonology Forum 2007.

Yip, Moira. In press. The Non-Existence of the Onset-Rime Boundary. *Lingua.*

Patricia Schneider-Zioga
CSU Fullerton
Department of English, Comparative Literature, and Linguistics
800 N. State College Blvd.
Fullerton, CA 92834-9480

pzioga@fullerton.edu

Fusa Katada
Waseda University
Faculty of Science and Engineering
Center for English Language Education in Science and Engineering
3-4-1 Okubo, Shinjuku-ku
Tokyo, Japan 169-8555

katada@waseda.jp

The Eastern Tukanoan Languages and the Typology of Classifiers[1]

WILSON SILVA and JOSHUA BOWLES
Center for American Indian Languages, *University of Utah*

0.   Introduction

The Tukanoan[2] languages have a complex system of noun classifiers. There have been several studies in individual Tukanoan languages (which include descriptions of their noun classifiers), such as Barnes (1990) for Tuyuca, Gomez-Imbert (2006) for Tatuyo, Ramirez (1997) for Tukano and Stenzel (2004) for Wanano. Other works[3] also have mentioned the complexity of classifiers in Tukanoan languages, and they were also used as resources for this investigation. Due to the limitation of space, we give examples only in the languages which better illustrates the phenomena we discuss.

In this paper, we highlight some typological anomalies in the noun classifier (NCL hereafter)[4] systems of Eastern Tukanoan (ET) languages, taking into account the typology of NCL generally. The NCLs of ET exhibit behavior that challenges some current claims concerning the typology of classifiers. In section 1 we provide an overview of the properties of NCL; in 2 we test typological claims about classifiers; finally, in 3 we conclude by discussing the contributions that ET languages make to the general study of the typology of classifiers systems.

---

[2] According to Stenzel (2004:20), the Tukanoan family consists of 20 languages divided in two branches: Western (WT) and Eastern (ET). The WT languages are: Korenguaje, Secoya, Siona, and Orejón; and the ET languages are: Bará, Barasano, Desano, Karapanã, Kubeo, Makuna, Piratapuyo, Pisamira, Siriano, Retuarã, Taiwano, Tatuyo, Tuyuca, Tucano, Wanano and Yurití. The total number of speakers: 28,000 for all the languages together. These languages are spoken in areas of Brazil, Colombia, Ecuador, and Peru; known as Northwest Amazonia.

[3] Barasano (Jones and Jones, 1991), Cubeo (Fergunson et al., 2000; Morse and Maxwell, 1999), Siriano (Criswell and Brandrup, 2000), Tucano (Welch and West, 2000) Yurití (Kinch and Kinch, 2000), Desano (Miller, 1999), Retuarã (Strom, 1992), Karapanã (Metzger, 1981; Silva 2006),

[4] Abbreviations: CL = classifier; ET = Eastern Tukanoan; GEN = genitive; GENCL = genitive classifier; LCL = locative classifier; MASC = masculine; NCL = noun classifier; NUM = number; NUMCL = numeral classifier; POSS = possessive; VCL = verb classifier; WT = Western Tukanoan

1.   Overview of Classifiers
1.1.   Historical Background
The description and study of nominal classification got its serious start in the mid 1960's with Burling (1965) and Berlin (1968). Both works were about numeral classifiers, the former in Burmese and the latter in Tzeltal. These were followed by later studies in Mayan (Tzeltal, Jakaltec, Akatek) and Austronesian languages, as well as in Thai, Vietnamese, Chinese, and Japanese. Allan (1975) is foundational for classifier studies, and Denny (1976) is one of the first to mention explicitly NCL as opposed to 'concordial' classifiers. The well-studied noun-class systems of Bantu languages were compared to the less grammaticalized forms of numeral or noun classifiers. Dixon (1982, 1986) compared noun-class systems with classifier systems in Yidiny and Dyribal, both Australian languages, and this work remains influential for NCLs. Craig (1986a, 1992) and Grinevald (2000) showed that a grammaticalization "continuum" from lexical (nouns and measure terms) to grammatical (gender or noun-class morphemes) is the best approach for observing noun classifiers in typological perspective. Finally, Aikhnevald (2000) attempted to formulate a large-scale typology of nominal classification systems, including verb, deictic, possessive, and noun classifiers, as well as 'multiple classifier' and various noun-class systems in the world's languages. The determining characteristic of NCLs is the fundamental distinction between them and a noun-class or gender markers. That is, NCL is not part of the agreement system. In more recent work on Tukanoan languages (Gomez-Imbert 2006) this distinction is being questioned.

In the following section we present the current typological model for noun classifiers based on Craig (1992) and Grinevald (2000) (see also Aikhenvald 2000) and discuss how ET classifiers fit into this typological model.

1.2.   Current Typological Properties[5]
The function of NCL, according to Craig (1992) and Grinevald (2002), can be analyzed by three criteria: the operator context, the morphosyntactic environment, and the semantic domain. In her typology, different kinds of classifiers will exhibit unique behaviors according to the three criteria, as illustrated in Table 1, which presents the prototypical characteristics of classifiers according to Craig (1992) and Grinevald (2002).

---

[5] We have not yet looked in-depth at the classifier systems of other well-known languages such as Chinese, Japanese, Vietnamese, etc. Therefore, the above statements may not be representative of *all* the world's languages.

TABLE 1 - Prototypical Characteristics of Classifiers[6] (Grinevald)

TYPES OF CL	NUMCL	GENCL	NCL
Operator context	[quantity]	[locality]	[quality]
Morphosyntax	NUM + CL	POSS + CL	CL + NOUN
Semantic domain	type/shap	function	material/essence
Example:	*tuhke rioapwoat* tree 2+CL:long *'two trees'* (Ponapean)	*kene-i mwenge* CL:edible-GEN/1food *'my food'* (Ponapean)	*naj xuwan* CL:man John *'John'* (Jakalteko)

In Table 1, the NCL functions to individuate the noun by selecting salient features of the noun or some quality of the material/essence of that noun and preceding it within the noun phrase. For example, in Jakalateko *naj xuwan* 'man John' the NCL *naj* selects the quality and essence "animate human" in the noun *xuwan* 'John' while occupying the morphosyntactic position in front of the noun (Craig 1992:284). This is what gives the NCL its "individuating" function (Grinevald 2002:290). The use of NCL and classifiers in general is not an absolute requirement and many cases of data show that the NCL is not obligatorily required to occur compared to the obligatoriness of noun-classes (Aikhenvald 2000:81). However, in ET some nouns obligatorily need a NCL.[8] The decision to use NCL with a noun is pragmatically decided based on the discourse context (Craig 1986a).

The unique function of individuating the noun by NCL, along with the reduced semantic content of the NCL (i.e. the general semantic domain of "material/essence") *naj* 'man,' places the NCL, according to Craig, closer to a grammatical category than a typical lexical noun. However, compared to noun-classes or gender markers, whose semantic content is almost entirely bleached and whose presence on the noun is absolutely required, NCL cannot be a fully grammatical item. Therefore, the NCL, and classifiers in general, fall somewhere between lexical items and grammatical items. This analysis is consistent with Dixon (1982) and Aikhenvald (2000). This continuum between lexical and grammatical items is shown in Grinveald (2002) and reproduced here in (1) with Wanano examples from Stenzel (2004:128,145).

(1)   Grammaticalization Continuum (Grinevald 2002:260)
   <**lexical**………..……………………………………..…**grammatical**>
   measure/class terms   *"CLASSIFIERS"*   *noun class/gender*
                                              -ku

      -ku

                          NCL$_{tree}$ MASC

---

[6] Ponapean and Jakalteko data from Craig (1992:283-85).
[8] From an anonymous reviewer of grant proposal related to this topic (April 2007).

1.3. Noun Classifiers in ET Languages

ET languages have classifiers of various types (VCL, LCL, GENCL, NUMCL and NCL) in various combinations. They also have a noun-class system. In this study we focus on NCL. There have been several studies to establish a distinction between a classifier and a noun-class in ET languages (Derbyshire and Payne 1990, Barnes 1990, Gomez-Imbert 1996, 2006). We believe that a distinction between NCL and noun-class does exist and the following data are a first approximation to our efforts to illustrate this distinction. Typologically, the NCL is non-obligatory and not an essential part of the gender or other agreement markers (case, tense, person, aspect, mood).

In ET languages NCLs are suffixed to the noun and their semantic domain includes "type/shape" as well as "material/essence." In the prototype typology for classifiers, also presented in Table1, based on Graig (1992) and Grinevald (2002), it was established that the semantic domain of NCLs is 'material/essence'. The examples (2)-(4) from selected ET languages show that NCLs also covers the semantic domain of 'type/shape.' Examples (a) reflect the domain of 'material/essence' and (b) show 'shape/type.'

Kubeo[9]
(2) a. hoki-**ki**   b. xia-jo-~ku
         wood-**NCL_{tree}**   river-**NCL_{slender.pointed}NCL_{hump.shaped}**
         'tree'   *'canoe'*

Wanano[10]
(3) a. pari-**taro-re**   b. tua-**dʉ**
         lake-**NCL_{lake}NCL_{generic}**   stick-**NCL_{cylindrical/straight}**
         'lake'   *'a branch'*
Desano[11]
(4) a. oho-**y~u**   b. b~ata-**soro**
         banana-**NCL_{palm}**   clay-**NCL_{concave bowl}**
         'banana plant'   *'clay bowl'*

The data presented do not fit in the prototypical typology presented in Table 1. Thus, we propose a revision of the prototypical typology, as shown in Table 2, which accounts for NCL in ET languages. The changes are in boldface under NCL.

---

[9] Data from Morse and Maxwell (1999:75).
[10] Data from Stenzel (2004:144, 411).
[11] Data from Miller (1999:37, 41).

TABLE 2 – Prototypical Typology of ncl in ET.

TYPES OF CL	NUMCL	GENCL	NCL
Operator context	[quantity]	[locality]	[quality]
Morphosyntax	NUM + CL	POSS + CL	NOUN + **CL**
Semantic domain	type/shape	function	material/essence **type/shape**

In the following section, we discuss some of the general claims that have been made about classifiers and in particular about NCL; and we will show how data from ET languages fit into these claims.

2. Some General Claims of NCL Systems

In this section we present four general claims about classifiers that have been made in previous attempts to establish a typology of classifiers. For each claim (i)-(iii) we present data from selected ET languages. For the claims (i) and (iii) we present data that we believe are counter-examples. For claim (ii) we present data that pose possible problems, which we discuss.

(i) 'Noun classifiers are always free forms' (Dixon 1986:106). We find that in the agglutinating languages of ET ncl occurs as a suffix to the noun.

(ii) 'All occurrences of two generic nouns [NCL] in a noun phrase must involve one inherent nature term and one function/use classifier' (Dixon 1982:192). We find data that warrant doubt concerning this claim.

(iii) 'Noun classifier systems... have a large preference for one semantic cluster, that of material' (Grinevald 2000:73). Our data show that in ET this may not be the case.

In section 2.1 we deal with each claim separately.

2.1. ET Languages and the Typology of Classifiers

Claim (i) - *'Noun classifiers are always free forms'* (Dixon, 1986:106). According to Dixon 'a classifier will occur in the same noun phrase as the noun it qualifies but it is always a separate constituent, never forming a morphological unit with the noun' (1986:106). The data in (5)-(8) illustrates a well-known general Tukanoan property of NCL: classifiers are generally suffixed to the nouns they classify.[12]

---

[12] See examples (15) and (16) for a case in Piratapuya where the NCL does not suffix the noun.

Wanano[13]
(5)   pari-**taro**
      lake-**NCL_lake**
      'lake'

Desano[15]
(6)   papera-**turi**
      paper-**NCL_stack**
      'paper'

Karapanã[16]
(7)   yo-**ki**
      wood-**NCL_tree**
      'tree'

Barasano[18]
(8)   sudi-**hãi**
      clothing-**NCL_flat,thin**
      'cloth'

Claim (ii) - *'all occurrences of two generic nouns* [NCL] *in a noun phrase must involve one* inherent nature *term and one* function/use *classifier'* (Dixon 1982:192). In ET languages some examples of the co-occurrence of NCL bring into question the intuitive classification of them as inherent or functional. The semantics are not clear and we are cautious in claiming that classifier languages restrict the co-occurrence of two noun-classifiers to inherent and functional.[19] The data we present in (9)-(11) show that defining co-occurring NCLs as functional or inherent is problematic. It is not clear whether physical (shape/type) is a function or the inherent nature of the noun being classified, though shape/type would seem to involve inherent nature.

---

[13] Data from Stenzel (2004:147).
[15] Data from Miller (1999:40).
[16] Data from Silva (2006, fieldwork notes).
[18] Data from Jones and Jones (1992:57).
[19] The notion of "inherent" classifier compared to "function/use" classifier (Dixon 1982:192-205) seems to be a matter of interpretation of the linguist's classification of the use of native speaker lexical terms. The actual classification of objects in the world as either functional or inherent is determined by the world-view of the speakers themselves. For example, Dixon lists the Yidiny terms *buri* 'fire' and *walba* 'stone' as inherent classifiers without any argument for why exactly fire and stone are not functional in Ydiny. One must assume, then, that the classification of 'fire' and 'stone' is determined by the culture and world-view of the speakers. Thus, what is inherent in one culture may be functional in another. No standard for the linguistic determination of "inherent" can be possible in the absence of a coherent and applicable semantic theory.

Kubeo[20]

(9)   hia-**jo-ku**
        river-NCL~slender.pointed.cylindrical~-NCL~hump.shaped~
        'canoe'

(10)   hia-**jo-we**
        river-NCL~slender.pointed.cylindrical~-NCL~flat.thin~
        '(canoe) paddle'

Wanano[21]

(11)   yɨkɨ-**kɨ-phi**
        tree-NCL~tree~-NCL~long,flat-blade.like~
        'woden knife'

Claim (iii*)- 'Noun classifier systems have a… large preference for one semantic cluster, that of material'* (Grinevald 2000:73). In her study of the morphosyntactic typology of classifiers, Grinevald suggests that there is 'a semantic-morphosyntactic correlation, with a preference in numeral classifiers for the physical semantic cluster, in noun classifier, for the material semantic cluster…' (Grinevald 2000:72; c.f. Table 1 in this paper). However, in ET languages the NCL also shows preference for encoding the physical semantic cluster (type/shape) as well to the material semantic cluster (material/essence). Examples (12) – (14) illustrate the use of physical semantic cluster (type/shape) with NCL.

Piratapuya[22]

(12)   a.   ~bisí **doto**   b.   ohó ~**too**
              vine NCL~bundle~   banana NCL~bunch~
              'a bundle of vine'   'a bunch of bananas'

Barasano[23]

(13)   a.   sudi-**hãi**   b.   b~eka-**bo**
              clothing-NCL~flat/thin~   ant-NCL~dome~
              'cloth'   'ant hill'

---

[20] Data from Morse and Maxwell (1999:75).
[21] Data from Stenzel (2004:145).
[22] Data from Ball (2004:1).
[23] Data from Jones and Jones (1991:57-58).

Tukano[24]

(14) a. nuri-**gɨ**[25]   b. ~uyu-**gɨ**
          penis-**NCL_{straight/wood}**   avacado-**NCL_{stright/wood}**
          'penis'   'avacado tree'

3.   Conclusions and General Implications

In conclusion we restate our findings. Besides being a separate word (as in some Austronesian, Australian and Mayan languages), NCLs in ET languages can also be bound morphemes. ET languages show evidence that two inherent NCLs may co-occur with a noun, dependent on whether one considers shape as an inherent feature and how exactly one assigns the distribution of 'function' to co-occurring NCLs. Regarding the prototypical typology of NCL proposed in Craig (1992) and Grinevald (2000, 2002) we have suggested an alternative (Table 2). Extending the semantic domain of NCL to include shape and type as well as allowing the NCL to be suffixed to the noun accounts for the examples in ET languages.

Questions remain about the role that NCL play in the agreement systems of ET languages. The view that NCLs should be placed somewhere in between lexical items and gender agreement items on a grammaticalization continuum implies that NCL could potentially play a role in the gender agreement (c.f. Barnes 1990; Gomez-Imbert 1996, 2006). Questions also remain about whether or not shape can be considered 'inherent,' and if so, in what way. It will be important to analyze data from discourse narratives and dialogues so we are able to account for the semantic and grammatical function of NCLs in a discourse context.

References

Aikhenvald, Alexandra. 2000. *Classifiers: A Typology of Noun Categorization Devices*. Oxford Studies in Typology and Linguistic Theory. Oxford: Oxford University.
Press.
Allan, K. 1977. Classifiers. *Language* 53: 284-310.
Ball, Christopher. 2004. An Automodular Approach to Noun Classifiers in Piratapuya (E. Tukanoan). *Proceedings of the 30th Annual Meeting of the Berkeley Linguistics Society,* 1-10. Berkeley, CA: Berkeley Linguistics Society.
Barnes, Janet. 1990. Classifiers in Tuyuca. In Doris L. Payne, ed., *Amazonian Linguistics: Studies in Lowland South American Languages,* 273-92. Austin: University of Texas Press.

---

[24] Data from Ramirez (1997:213).
[25] The NCL suffix –gɨ "rectilinear/straight" refers to all type of trees or bushes except the palm and banana trees and also to all objects that are generally long and straight (Ramirez 1997:213).

Berlin, B. 1968. *Tzeltal Numeral Classifiers: A Study in Ethnographic Semantics*. The Hauge: Mouton.

Burling, R. 1965. How to Choose a Burnese Numeral Classifier. In M.E. Spiro, ed., *Context and Meaning in Cultural Anthropology, in Honor of A. Irving Hallowell,* 243-64. New York: Free Press.

Craig, C.G. 1986a. Jacaltec noun classifiers: a study in language and culture. In C.G. Craig ed., *Noun Classes and Categorization: Proceedings of a Symposium on Categorization and Noun Classification, Eugene, Oregon, October 1983,* 295-363. Amsterdam: John Benjamins.

Craig, C.G., ed. 1986b. *Noun Classes and Categorization: Proceedings of a Symposium on Categorization and Noun Classification, Eugene, Oregon, October 1983*. Amsterdam: John Benjamins.

Craig, C.G. 1992. Classifiers in a functional perspective. In M. Fortescue, P. Harder and L. Kristoffersen, eds., *Layered Structure and Reference in Functional Perspective,* 277-301. Amsterdam: John Benjamins.

Criswell, Linda and B. Brandrup. 2000. Un Bosquijo Fonológico y Gramatical del Siriano. In Maria Stella G. de Pérez and Maria Luiza R. de Montes, eds., *Lenguas Indígenas de Colombia: Una Visión Descriptiva*, 395-415. Santafé de Bogotá: Instituto Caro y Cuervo.

Denny, J.P. 1976. What are Noun Classifiers Good For? *Papers from the Annual Regional Meeting of the Chicago Linguistic Society* 12: 122-32.

Derbyshire, D.C. and D.L. Payne. 1990. Noun Classification Systems of Amazonian Languages. In Doris L. Payne, ed., *Amazonian Linguistics: Studies in Lowland South American Indian Languages,* 243-71. Austin: University of Texas Press.

Dixon, R.M.W. 1982. *Where Have all the Adjectives Gone? And Other Essays in Semantics and Syntax*. Berlin: Mouton.

Dixon, R.M.W. 1986. Noun Classes and Noun Classification in Typological Perspective. In Colette Craig, ed., *Noun Classes and Categorization: Proceedings of a Symposium on Categorization and Noun Classification, Eugene, Oregon, October 1983,* 105-112. Amsterdam: John Benjamins.

Fergunson, Judith, C. Hollinger, L. Criswell and N. Morse. 2000. El Cubeo. In Maria Stella G. de Pérez and Maria Luiza R. de Montes, eds., *Lenguas Indígenas de Colombia: Una Visión Descriptiva,* 357-70. Santafé de Bogotá: Instituto Caro y Cuervo.

Gomez-Imbert, Elza. 2007. Tucanoan Nominal Classification: The Tatuyo System. In W. Leo Wetzels ed., *Language Endangerment and Endangered Languages: Linguistic and Anthropological Studies with Special Emphasis on the Languages and Cultures of the Andean-Amazonian Border Area.* Indigenous Languages of Latin America Series (ILLA). Publications of the Research School of Asian, African and Amerindian Studies (CNWS). Leiden University, the Netherlands.

Wilson Silva & Joshua Bowles

Grinevald, Colette. 2000. A Morphosyntactic Typology of Classifiers. In Gunter Senft, ed., *Systems of Nominal Classification,* 50-92. Language Culture and Cognition 4. Cambridge University Press.

Grinevald, Colette. 2002. Making Sense of Nominal Classification Systems: Noun Classifiers and the Grammaticalization Variable. In Ilse Wischer an G. Diewald, eds., *New Reflections on Grammaticalization,* 259-75. Amsterdam/Philadelphia: John Benjamins.

Jones, Wendell, and Paula Jones. 1991. *Barasano Syntax.* Dallas: Summer Institute of Linguistics and the University of Texas at Arlington.

Kinch, Pamela G. and R. A. Kinch. 2000. El Yurutí. In Maria Stella G. de Pérez and Maria Luiza R. de Montes, eds., *Lenguas Indígenas de Colombia: Una Visión Descriptiva,* 469-87. Santafé de Bogotá: Instituto Caro y Cuervo.

Metzger, Ronald G. 1981. *Gramatica Popular del Carapana.* Bogotá, Colombia: Instituto Lingüístico de Verano.

Miller, Marion. 1999. *Desano Grammar.* Dallas: Summer Institute of Linguistics and the University of Texas at Arlington.

Morse, Nancy, and Michael Maxwell. 1999. *Cubeo Grammar.* Dallas: Summer Institute of Linguistics and the University of Texas at Arlington.

Ramirez, Henri. 1997. *A Fala Tukano dos Ye'pâ-Masa, Tomo I: Gramática.* Manaus: Inspetoria Salesiana Missionária da Amazônia.

Silva, Wilson. [manuscript]. *Fieldwork notes on Karapanã* (Summer 2006).

Sorensen, A. P. Jr. 1969. *Morphology of Tucano.* Ph.D. diss, Columbia University.

Stenzel, Kristine (2004). *A Reference Grammar of Wanano.* Ph.D. diss, University of Colorado.

Strom, Clay. 1992. *Retuarã Grammar.* Dallas: Summer Institute of Linguistics and the University of Texas at Arlington.

Welch, Beth and B. West. 2000. El Tucano. In Maria Stella G. de Pérez and Maria Luiza R. de Montes, eds., *Lenguas Indígenas de Colombia: Una Visión Descriptiva,* 419-36. Santafé de Bogotá: Instituto Caro y Cuervo.

Wilson Silva and Joshua Bowles
Department of Linguistics
University of Utah
255 S. Central Campus Dr. Rm 2300
Salt Lake City, UT 84112

wilson.silva@utah.edu
bowles.j.ling@utah.edu

Language and Gesture on Ishigaki Island[1]

MAKIKO TAKEKURO
Waseda University

0.   Introduction

Based on the results of many years of cross-linguistic research in a number of field sites where non-Indo-European languages are spoken, a functional typology of linguistic encoding of space was presented and three spatial frames of reference were identified: Relative (ego-centric), Absolute (environmental), and Intrinsic (Pederson et al. 1998; Levinson 2003). In the relative system, referents are referred to by the spatial configurations vis-a-vis the speaker (e.g. 'right' and 'left'), as in "The man stands on my <u>right</u>." The spatial relation changes as the speaker's location changes. In the absolute system, the frame of reference requires fixed bearings such as 'north', 'south', 'east', and 'west,' as in "Okinawa is on the <u>south</u> of Tokyo." The spatial relation is stable as the orientations are based on fixed environmental features. In the intrinsic system, the frame of reference is identified in terms of the referent's own characteristics –i.e., 'front,' 'back,' 'mouth,' and 'foot,' as in "Flowers touch the <u>mouth</u> of the vase."[2]

While contemporary Japanese possesses the three types of frame of reference (hereafter, FoR), it is believed to rely overwhelmingly on the relative system, at least in the Metropolitan Tokyo area (Pederson et al. 1998). The terms *migi* ('right') and *hidari* ('left') are considered the dominant linguistic encodings of space in Japanese. However, the literature on language and space in Japan is so scarce that we can hardly validate the claim of the dominance of the relative FoR in Japanese spatial cognition. The aim of this paper is to exhibit a communicative practice based on the absolute FoR in a rural community outside the Japanese mainland. By presenting linguistic and gesture data collected on Ishigaki Island in Okinawa, this paper also argues that the choice of the FoR is not predetermined but changes according to interactional contexts.

---

[2] Other researchers have defined these notions using different terms (See Kataoka 2002). In this paper, I will use Levinson's notions and terminology as a point of departure.

1.   Space and communicative practice in communities outside Tokyo

Recently, studies investigating the use of the spatial frame of reference in communities outside the Metropolitan Tokyo show that the absolute FoR is more frequently used in Japanese than has been considered.

Inoue (2002) reveals that the city of Kouchi in the Shikoku region of Japan is a community where the absolute FoR is ordinarily used. Based on interviews and questionnaires among 43 elementary school students, Inoue (2005) found several aspects of spatial cognition and language use in Kouchi. First, 8.5% of her subjects claim that they apply cardinal direction terms to body parts, as in "My north-east cavity aches." Second, the frequency of using cardinal direction terms increases as the size of space referred to becomes larger. For example, in describing "indoor space" and "outdoor with boundaries" (e.g. gates, school buildings, and outdoor stairs), 35% and 60% of her subjects claim to use cardinal direction terms, respectively. On the contrary, in describing "big outdoors," 70% of her subjects claim that they would use cardinal direction terms. Thus, subjects switch the FoR from relative to absolute, as the referred space becomes larger. Third, in the downtown, the common FoR has shifted from absolute to relative over time. In mountainous areas, there is an ongoing shift in the use of FoR from absolute to relative. Inoue's studies report the changes in the use of the FoR, however, they demonstrate that the absolute FoR is still used in the community.

Hosoma (2003) examines interactions with a master of the local traditional festival, Nishiure Dengaku, in Shizuoka, Japan. As the master's gestural description of the arrangement of items that are indispensable to the festival is always accurate to the compass, Hosoma claims that the master's gestures are based on the absolute FoR.

Kataoka (2005) investigates the use of FoR in street signboards in outskirts of the city of Nagoya. Contrary to the claim that the relative FoR is common in Japanese spatial cognition, the absolute FoR is most frequently used in street signboards. For example, while the relative FoR is used to describe location in proximity, the absolute FoR is used to describe destination in distance. He concludes that the absolute FoR plays an equally important role as the relative FoR in Japanese wayfinding.

These studies altogether suggest that the absolute FoR is indeed observable in some geographical and interactional contexts. A careful examination of spatial cognition in various Japanese communities is necessary before we can conclude that the relative FoR is dominant in Japan. This paper thus investigates the spatial FoR in a rural community outside the Japanese mainland, Ishigaki Island.

2.   Ishigaki Island

Ishigaki Island is one of the Yaeyama Islands, the southernmost island group in Japan, lying 420 kilometers southwest of Naha on the Main Okinawa Island.[3] It

---

[3] Ishigaki Island is located 2,200 kilometers south of Tokyo and 250 kilometers west of Taiwan.

belongs to the subtropical climate zone. The island is about 120km in circumference and surrounded by coral reeves and beaches. Every year more than seventy thousand tourists visit the island, which has a significant impact on the island's economy. Among the island's estimated population of 47,000, ninety percent lives in Ishigaki *shigaichi* (downtown), which is marked by parallel roads leading a few blocks north from the port and by crossroads running west-east along the coast (See Maps 2 & 3).

On Ishigaki Island, speakers, especially of the older generation, speak the Yaeyama dialect or varieties of the Ryuukyuu Dialect in addition to Standard Japanese.[4] Today, many young speakers claim that they cannot speak or understand the Yaeyama dialect. But their speech contains accentual patterns and lexicons that are characteristics of the Yaeyama or the Ryuukyuu dialect.

3. Data analysis

This section presents data collected in several field trips to Ishigaki Island since September 2006. The analysis reveals that (1) the absolute FoR is ordinarily observed in Ishigaki speakers' speech and gesture; and (2) speakers choose the FoR according to the interlocutors' background.[5]

3.1. Cardinal direction terms in the Yaeyama (Ishigaki) dialect

Cardinal direction terms used on Ishigaki Island are different from those in Standard Japanese. Table 1 shows a list of cardinal direction terms relevant to this study in the Naha and the Yaeyama dialects, Standard Japanese, and English.[6]

Table 1: Cardinal direction terms in the Yaeyama and Naha dialects

English	Standard Japanese	Naha Dialect	Yaeyama Dialect
'east'	*higashi*	*Agari*	*aaru*
'west'	*nishi*	*Iri*	*iiru*
'south'	*minami*	*hai/pai*	*hai/pai*
'north'	*kita*	*nishi/nisu*	*nishi/nisu*

The Yaeyama dialect has its own cardinal direction terms that are slightly different from those in the Naha dialect, but no instance of the terms spoken in the Yaeyama dialect was found during my data collection. Ishigaki speakers that I

---

[4] Varieties spoken on the Yaeyama, Miyako, Okinawa, and Amami Islands are known as Ryuukyuu Dialect as a whole. Since Ishigaki Island's population includes groups of settlers whose ancestors came from these and other islands, speakers of the older generation speak dialect varieties that their ancestors spoke on their home islands. However, those islands are so far apart in the Pacific Ocean that dialect varieties are often mutually unintelligible.

[5] Here, Ishigaki speakers refer to natives of Ishigaki Island.

[6] Here, the Naha dialect refers to a variety of the Ryuukyuu Dialect.

encountered used cardinal direction terms not in the Yaeyama dialect but either in the Naha dialect or in Standard Japanese, as shown in the following analysis.

3.2. The absolute frame of reference in speech

This section examines how Ishigaki speakers describe space in their everyday speech. In naturally-occurring interaction I recorded, no speaker used cardinal direction terms in reference to body parts, unlike speakers in Kouchi in Inoue's studies. However, in reference to objects inside or near the house, Ishigaki speakers sometimes use cardinal direction terms, as in (1) and (2).

(1) The speaker (age 80) talks to his grandson who is looking for scissors:
jibun   *no*   ***kita***   *ni*   *aru*   *sa*
self   GEN   north   LOC   exist   SFP
'(The scissors) are on your <u>north</u>.'

(2) Standing at the entrance space, the speaker talks to her neighbor and the cat:
iri   *ni*   *mawatte*   *haitte*   *yo*
west   LOC   go around   enter   SFP
'Go around (the house) to the <u>west</u> and come in.'

When speakers talk about local geography, they often use cardinal direction terms, as in (3) and (4). Example 3 shows a common way of conveying the locative information in downtown Ishigaki.

(3) The speaker informs her friend about the place to meet:
yuubinkyoku   *no*   ***agari***   *gawa*   *da*   *yo*
post office   GEN   east   side   COP   SFP
'(We'll) meet on the <u>east</u> side of the post office.'

(4) The speaker describes a route to a stranger:
soko   *itte*   *niken*   *sanken*   *yonkenme*   *desu*   *yo*
there   go   second   third   fourth house   COP   SFP
konkuri   *arimasuyo*   *sono*   ***nishi***   *desu*   *yo*
concrete   exist.COP.SFP   the   west   COP   SFP
'(When you) go there and on the second, third, and fourth house, there is a concrete building. (It's) on the <u>west</u> side of the building.'

Just like Inoue (2005) finds in the city of Kouchi, on Ishigaki Island, too, the larger the size of the referred space becomes, the more likely Ishigaki speakers would use cardinal direction terms. In such situations, the use of cardinal direction terms often occurs with gesture which accurately points the actual direction of the space mentioned. This point will be analyzed in 4.4. Overall, the use of cardinal direction terms is common in everyday speech among Ishigaki speakers. This,

however, does not automatically mean the dominance of the absolute FoR in Ishigaki speakers' speech. In fact, speakers on Ishigaki Island choose other spatial frames of reference depending on context, as illustrated in the next section.

### 3.3. The different frames of reference for different interlocutors
As a popular holiday resort and place for retired life, many people visit or move to the island throughout the year. To most islanders living and working in downtown Ishigaki, interaction with tourists or new settlers from other prefectures is an everyday matter. Then, what happens when local islanders and tourists from other prefectures meet and talk about space? Which FoR is chosen? This section analyzes how Ishigaki speakers in downtown Ishigaki describe a direction to non-Ishigaki speakers and examines whether or not the FoR used in Ishigaki speakers' directional descriptions remains constant across different interlocutors.

Before analyzing the data, I should introduce the local practice of describing a direction. In downtown Ishigaki, people use *agaru* ('to go up/climb') to go towards the direction of Mt. Omoto from the ocean and *sagaru/oriru* ('to go down/descend') to go towards the ocean from the direction of Mt. Omoto (Map 2). The terms are said to reflect the gentle slope leading to Mt. Omoto from the ocean. The same expressions are used in the town of Shiraho to the northwest of downtown Ishigaki, though compass directions of what *agaru* and *sagaru/oriru* point to in Shiraho and downtown Ishigaki are different (Map 1).

Map 1: Ishigaki Island[7]   Map 2: Downtown Ishigaki[8]
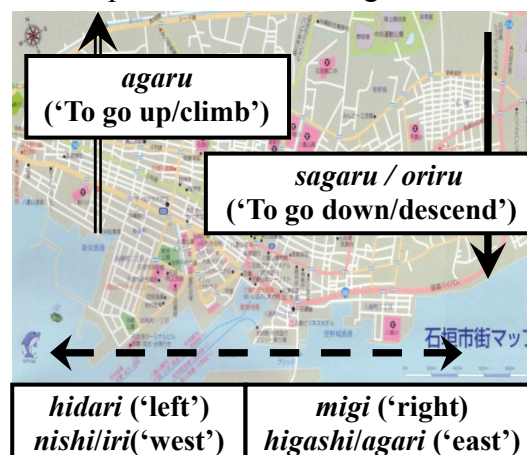
In downtown Ishigaki, spatial description is based on two coordinates: the south-north and east-west. To describe the south-north coordinate, as mentioned earlier, the terms *agaru* and *sagaru/oriru* are used. I heuristically consider that

---

[7] I used the map taken from http://wikitravel.org/en/Image:Map-ishigaki.png and modified.
[8] This map is taken from http://www.yaeyama.or.jp. The arrows and the explanations in the boxes were added by the researcher.

these terms are based on the intrinsic FoR.[9] To describe the west-east coordinate along which several long roads run parallel, the terms *hidari*/*migi* ('left/right'), *nishi*/*higashi* ('west/east') of Standard Japanese, or *iri*/*agari* ('east/west') of the Naha dialect are used.[10] In downtown Ishigaki, I consider the terms left/right as using the relative FoR and the terms west/east as using the absolute FoR.

Using these frames of reference as a point of departure, I investigated which spatial FoR would be used to a pair of non-Ishigaki speakers and to a pair of native Ishigaki speakers when the two pairs separately asked for directions (to locations A and B on Map 3) from randomly-chosen subjects who are natives of Ishigaki.[11] Data-collecting interviews were conducted on the flat part of downtown Ishigaki, in order to avoid the geographic bias and not to influence speakers to use the terms *agaru*, *oriru*, and *sagaru* that inherently include upward and downward movements.

Map 3: Two directions interviewed in downtown Ishigaki[12]
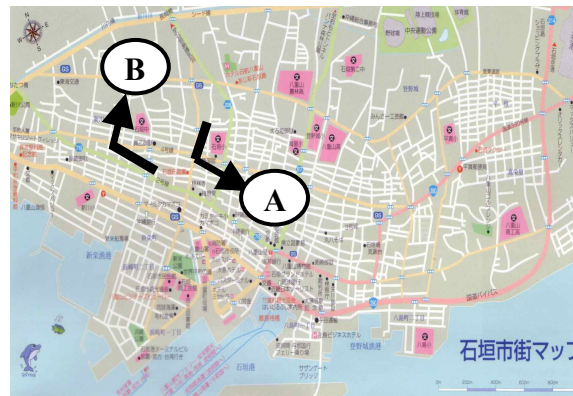
Tables 2 and 3 below show the results of the interviews and suggest that Ishigaki speakers tend to discern the use of FoR according to interlocutors.

---

[9] This categorization is different from Levinson's (2003). Levinson would consider that these expressions show the absolute FoR that is based on the fixed geographic features such as mountains and the sea. In the case of Ishigaki Island, the same expressions *agaru*, *oriru*/*sagaru* are used in Shiraho to describe not the south-north but west-east coordinate, as indicated on Map 1. So the use of the terms is based on the local intrinsic characteristics rather than the absolute compass .

[10] Precisely speaking, the west/east distinction is not accurate to compass. It has to be north-west/south-east, but people conventionally use the terms 'west' and 'east' to describe the direction indicated in the dotted line on Map 2.

[11] Here, locations A and B are heuristic. The directions and routes that people described were not limited to the ones that appear on the map.

[12] This map again taken from http://www.yaeyama.or.jp includes additional information.

Table 2: The FoR to describe location A[13]   **Table 3: The FoR to describe location B**

FoR	To non-Ishigaki Speakers	To Ishigaki Speakers	To non-Ishigaki Speakers	To Ishigaki Speakers
Relative	72% (13/18)	13% (2/15)	85% (11/13)	20% (2/10)
Absolute	17% (3/18)	47% (7/15)	15% (2/13)	20% (2/10)
Intrinsic	33% (6/18)	53% (8/15)	46% (6/13)	90% (9/10)

First, let me explain the results in Table 2. The two pairs of non-Ishigaki and native-Ishigaki speakers collected descriptions of the route to location A. As shown in the left column of Table 2, most subjects used the term *hidari* ('left') when they explained the route to non-Ishigaki speakers.

(5) *kono michi   o itte X   ni   tsuitara   shingou o* **_hidari_** *ni   magatte...*
    this   road   O go X   LOC arrive.then signal   O left   LOC turn
    'Go on this street and (when you) arrive at X, turn <u>left</u> at the signal…'

Some used the intrinsic expression *oriru* or *sagaru* combined with *hidari* as in (6).

(6) *sugu   soko   o   **_orite_**...   **_hidari_** ni   itte*
    immediately there   O   go down   left   LOC   go
    '<u>Go down</u> immediately there and …. go to the <u>left</u>.'

Then, the pair of native Ishigaki speakers asked the same question. As appears in the right column of Table 2, subjects did not use the term *hidari* ('left') when they talked to natives. Rather, they used cardinal direction terms such as *higashi* and *agari* or/and the intrinsic expression *oriru*, as in (7) and (8).

(7) *Zya   no   kado   o   **_orite_**   **_agari_** sa*
    Zstore   NOM   corner   O   descend   east   SFP
    '<u>Go down</u> at the corner of Store Z and it's on the <u>east</u>.'

(8) *asuko   o   **_orite_** Zya   de   **_higashi_** ni   iku   to*
    there   O   descend Zstore LOC   east   LOC   go   and
    '<u>Go down</u> there and go to the east at the Z store.'

Among native Ishigaki speakers, subjects prefer to use the intrinsic and absolute frames of reference rather than the relative FoR. Thus, whether or not interlocutors are native Ishigaki speakers seems to make a difference in subjects'

---

[13] The total percentage in the columns is over 100%, because some speakers use more than one FoR in one turn.

choice of the FoR in spatial descriptions of downtown Ishigaki.

Next, the same pairs of speakers asked a totally different set of subjects to describe the route to location B as appeared on Map 3. The majority of the new subjects used the relative FoR to the pair of non-Ishigaki speakers, as in (9).

(9) *gasorinsutando*   *o*   ***migi***   *ni*   *magatte*
    gas station   O   right   LOC   turn
    'Turn <u>right</u> at the gas station.'

Half of the subjects combined the relative FoR with the intrinsic expression such as *agaru*, as in (10).

(10) *gasorinsutando*   *o*   ***migi***   *ni*   ***agatte***
     gas station   O   right   LOC   go up
    '<u>Go up</u> to the <u>right</u> at the gas station.'

On the other hand, when native Ishigaki speakers talked to each other, the majority of the subjects only used the intrinsic expression, *agaru*, as in (11).

(11) *gasorinsutando*   *no*   *kado*   *o*   ***agatte***
     gas station   NOM   corner   O   go up
     '<u>Go up</u> at the corner of the gas station.'

Without using expressions based on the relative FoR, native Ishigaki speakers can understand which way to turn by the expression *agaru*. Furthermore, only 20% of the subjects used the term *kita* ('north') to indicate the direction of the turn, although their descriptions also included the intrinsic expression *agaru*. Thus, unlike the east-west grid, the north-south grid was not described by cardinal direction terms in downtown Ishigaki. Having the intrinsic expressions such as *agaru* and *sagaru/oriru* seems to suffice, which results in no need to use the cardinal direction terms for the north-south grid.

The results show that speakers in downtown Ishigaki commonly use the three types of FoR in their spatial description but discern the use of FoR depending on interlocutors. In talking to non-Ishigaki speakers, they tend to use the relative FoR, while preferring the intrinsic or/and absolute FoR among the locals. I also found that those who used the absolute FoR to non-Ishigaki speakers had limited contact with non-Ishigaki speakers, such as dry cleaning company's workers, fish-market wholesalers, shoppers of the older generations, compared to those in service industries who routinely interact with tourists in their everyday lives. Those with frequent contact with tourists and outsiders tend to switch their FoR depending on interlocutors, whereas those with limited contact with tourists and outsiders tend to maintain their routine practice of using the intrinsic FoR among locals, which was also observed in interaction with non-Ishigaki speakers. This is, however, my

informal observation and requires more careful examination.

3.4.   The use of gesture

This section analyzes the use of gesture in Ishigaki speakers' speech. The description of cardinal directions in Ishigaki speakers' speech is often matched by a parallel directional precision in their gesture.[14]

When the names of cities, islands, and countries are mentioned, co-occurring gesture tends to point to the cardinal direction of the locations mentioned. In (12), the speaker (S), who is a taxi driver, was aware of cardinal direction when he mentioned cities and islands outside Ishigaki Island, even in a house that he visited for the first time. The pictures below show that his hands moved to and accurately pointed to the geographic location of Okinawa (Naha) and Yonaguni Island with respect to his location.

(12) The speaker talks about how people on different islands in Okinawa Prefecture refer to the islands differently.

S: *boku   nanka   wa   ne   okinawahontou   naha   ni   iku*
  I   sort   SUB   SFP   Okinawa Island Naha   LOC   go

  tokini   wa   ne   Okinawa   ni   iku   tte   iu
  when   SUB   SFP   Okinawa   LOC   go   Q   say
  'When I visit Main Okinawa Island or Naha, I'd say "(I) go to Okinawa,"'

Pictures 1 & 2: His right hand points to Okinawa

Okinawa

(…)

  de   ano   yonaguni   nanka   wa   ne
  then   well   Yonaguni   sort   SUB   SFP

  kocchi ni   kuru   tte   iu   no   o   shika   ni   iku
  here LOC   come   Q   say   NOM   o   Shika   LOC   go
  'On Yonaguni Island, when they come to Ishigaki, they'd say "(I) go to Shika."'

---

[14] I must add, though, that compared to Guugu Yimithirr's use of gesture as illustrated in Haviland's studies (1993, 1998, 2000), Ishigaki speakers' gesture is much less salient and accurate to the compass.

Pictures 3-5: His left hand shows the trip from Yonaguni to Ishigaki


Yonaguni

As he mentions locative nouns such as the Main Okinawa Island, the city of Naha, and Yonaguni Island, his co-occurring gestures almost accurately point to the directions of the locations. But when the same speaker drives his taxi and talks to passengers who are both islanders and outsiders, he almost only uses the terms 'right' and 'left' to explain the local geography. In other words, the relative FoR is preferred when things are visible and passing by quickly through car windows, while the absolute FoR is used when things are not visible and unmovable. For example, when he communicates with the taxi company's staff through radio contact so that he could pick up passengers waiting at some specific place, both he and the staff use the cardinal direction terms and describe the meeting place. Visibility seems to be one of the factors that can help speakers to decide which FoR to use.

The next example shows that gesture was accurate to cardinal direction more than speech. In (13), the fisherman (T) talked to his friend (M) about the typhoon that hit Ishigaki in September 2006. T was sitting facing north. When M asked T from which direction the typhoon wind blew in Ibaruma where the fisherman's family lives (see Map 1), T's right hand pointed to the 'east' and made a gesture indicating the wind from the east as in Picture 6, even though he said that the wind blew from the 'south.' Then he corrected his speech immediately and said 'east,' and made a gesture indicating the wind from the east as in Pictures 7 and 8.

(13) M: *are*   *wa*   *umi*   *kara*   *no*   *kaze*   *ka?*
        that   TOP   ocean   from   GEN   wind   Q
        'Was the wind coming from the ocean?'

  T: *sou*   ***minami*** *kara*   *no*   *kaze*
        yes   south   from   GEN   wind
        'Yes, it was the wind from the <u>south</u>.'

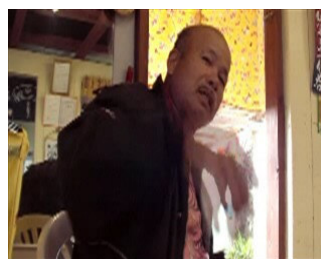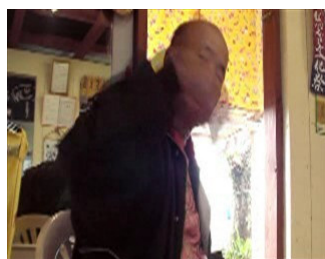**Picture 6: *Minami kara no kaze* ('Wind from the <u>south</u>')**

North
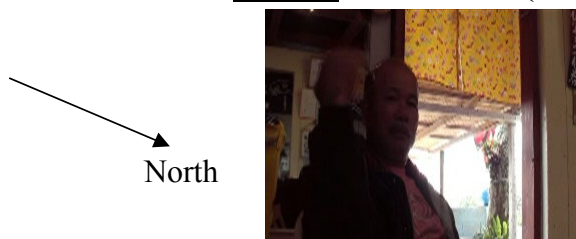
M: *minami   kara   no   kaze   ka*
    south   from   GEN   wind   SFP
    'Oh, it was the wind from the south.'

T : *iya   **minami** janai   **higashi***
    no   south   NEG   east
    'No, not from the <u>south</u>, (it was from) the <u>east</u>.'

Pictures 7 & 8: _Minami janai higashi_ ('Not from the <u>south</u>, but from the <u>east</u>.')

    These examples demonstrate a high level of compass-based use of directional expressions in speech and gesture among Ishigaki speakers. The gestural practices of Ishigaki speakers are reinforced by the frequent use of cardinal directional terms in speech. Furthermore, living environments on Ishigaki Island seem to be related to directional accuracy in Ishigaki speakers' speech and gesture. For instance, on this small island surrounded by the sea, the direction of the sea and the south towards which the entrance of residences face serve as crucial reference points for people's lives. Ishigaki speakers' perceiving and expressing direction in terms of the compass will need further investigation.

6.   Conclusions

This paper has demonstrated that the absolute FoR is commonly used in Ishigaki speakers' interaction together with the relative and intrinsic frames of reference. Unlike some studies that tend to argue for a one-to-one correspondence between a variety of language and the use of a certain FoR, the results obtained in this research thus far suggest that Ishigaki speakers discern the use of the special FoR according to interactional contexts. However, this study is just a beginning. More detailed studies on Ishigaki Island or in other island communities are necessary for an understanding of space in speech and gesture.

References

Haviland, John. 1993. Anchoring, iconicity, and orientation in Guugu Yimithirr pointing gestures. *Journal of Linguistic Anthropology* 3(1): 3-45.
Haviland, John. 1998. Guugu Yimithirr cardinal directions. *Ethos* 26(1): 7-24.

Haviland, John. 2000. Pointing, gesture spaces, and mental maps. In D. McNeill, ed., *Language and gesture*, 13-46. Cambridge: Cambridge University Press.

Inoue, Kyoko. 2002. *Soutai to fuhen no hazama de: kuukan shijiwaku ni yoru komyunikeeshon* [Between relative and universal: communication by spatial reference frame]. In T. Ohori, *Ninchi gengogaku II: Kategoriika* [Conigitive linguistics 2: Categorization], 11-35. Tokyo: University of Tokyo Press.

Inoue, Kyoko. 2005. *Kuukan ninchi to komyunikeeshon* [Spatial cognition and communication]. In S. Ide and M. Hiraga, eds., *Kouza shakaigengokagaku 1: ibunka to komyunikeeshon* [Sociolinguistic sciences 1: Different cultures and communication], 118-128. Tokyo: Hitsuji Publishers.

Kataoka, Kuniyoshi. 2002. Linguistic anthropological research on spatial cognition in European and non-European settings. *Language and Culture* 6: 121-150. Aichi University's Language Education Institute.

Kataoka, Kuniyoshi. 2005. Variability of spatial frames of reference in the wayfinding discourse on commercial signboards. *Language in Society* 34: 593-632.

Levinson, Stephen C. 2003. *Space in language and cognition*. Cambridge: Cambridge University Press.

Levinson, Stephen C. & Wilkins, David. P. 2006. *Grammars of space: Explorations in cognitive diversity*. Cambridge: Cambridge University Press.

Pederson, Eric, Danziger, Eve, Wilkins, David, Levinson, Stephen C., Kita, Sotaro, & Senft, Gunter. 1998. Semantic typology and spatial conceptualization. *Language* 74, 557-589.

Hosoma, Hiromichi. 2003. *Saireikuukan wo kataru kotoba to jesuchaa –misakubochou nishiuredengaku bettou no katari* [Language and gesture describing festival space: Narratives by a master of the Nishiure Dengaku in Misakubo town]. Proceedings of the Meeting of the Japanese Society for Artificial Intelligence, 47-51.

Makiko Takekuro
Waseda University
Faculty of Law
1-6-1 Nishiwaseda, Shinjuku-ku,
Tokyo, 169-8050, Japan

mtakekuro@waseda.jp

Political Ideology and Language Policy in North Korea

JACOB A. TERRELL
University of Hawai'i

1   Introduction

This paper describes the origins and development of language planning and policy (LPLP) in North Korea. North Korea's idiosyncratic language policies seem to many observers arcane and approaching the fanatical. The country, officially known as the Democratic People's Republic of Korea, is like no other and there are factors unique in the North which must be taken into consideration when attempting or interpret any policy. This is equally true for policies centered on language and its use. In order to truly understand LPLP in North Korea one must keep in mind the distinct social and political situations surrounding LPLP—primarily ideology and propaganda.

Previous studies on language in North Korea have provided some insight on this issue. For example, Kutani (1990) provides an excellent outline for the history of LPLP in the North. Song (1994, 2001) addresses the differences in LPLP between the North and the South; pointing out that the North's policies are strictly controlled while the South takes a laissez faire approach. Finally, Lee (1990) offers a good description of dialectal differences between the two states. However, most works either neglect to account for the socio-political setting in the North or do not place enough emphasis on political ideology when interpreting language policies, their uses and results. Therefore, the purpose of this paper is to address this disparity by highlighting the interrelation between political ideology and language policy in North Korea.

For example, in the North, every decision or policy that affects the masses is guided by the theory of *Juche*, which I will explain in detail in the following section. The policies themselves, whether successful or not, are then reinforced through excessive propaganda and information control. LPLP has an interesting relationship here in that it is directly influenced by *Juche*, and at the same time plays a role in the reinforcement of the ideology through propaganda.

In order to illustrate this relationship between political ideology and LPLP, section 2 begins by defining *Juche*. Section 3 is an account of the origins of LPLP in North Korea, with a focus on corpus planning. Finally, section 4 highlights the interrelationship between the two, as they are both guided by and used to reinforce one another.

2   Defining *Juche*

When interpreting any policy from the North, whether it is related to economics, politics or laws dictating one's hairstyle, it is first necessary to address the concept of *Juche*. The ideology's origins begin with Kim Il-sung, who ruled the country as a stern dictator from 1948 until his death in 1994. It is difficult to provide a concise definition for a notion as far-reaching as *Juche*. The direct Korean-English translation for *Juche* is 'self-reliance.' In a simple sense, it is the idea a nation can only become successful if it relies solely on internal resources for all needs of society. In doing so, a nation rids itself of external influences, allowing it to dictate its own path. This is the most basic component of the ideology.

However, there are disturbing underlying themes that accompany this line of thought. The first is that all things foreign in a society are inherently flawed because they originate from a different culture and people, and the mixing of two or more cultures or peoples creates impurity. Additionally, the mere presence of foreign influence or commodities in a society suggests that the nation is inferior due to its need to rely on outsiders. It should be noted that I use the term "foreign influence" loosely. It does not refer to only economic or political influence, but also to the presence of anything foreign: products, culture, religion, vocabulary and so on.

According to *Juche*, allowing signs of foreign influence to arise suggests that the nation is not self-reliant, while the absence of foreign presence indicates that a nation is strong. These assumptions create a psychological conditioning where there is a need for North Korea to keep all things foreign at bay in order protect the purity of its culture. This also feeds the notion that a true nation is one that is homogeneous, and homogeneity is equivalent to superiority. To illustrate just how serious this idea is taken, below is an abbreviation of a article from the the North's Korean Central News Agency (KNCA), which is North Korea's official English newspaper aimed at an international audience. The quote below from an article titled "Theory of Multiracial Society" is quite lengthy, but it provides a good depiction of North Korea's stance on the importance of a homogeneous society.

> A strange farce to hamstring the essential characters of the Korean nation and seek for 'multiracial society' is now being held in South Korea. In this regard Rodong Sinmun

today runs a signed commentary, which censures the farce as an unpardonable bid to ne-
gate the homogeneity of the nation, make South Korea multiracial and Americanize it. …
The South Korean pro-American traitorous forces advocating the theory of 'multiracial
society' are riffraffs who have not an iota of national soul, to say nothing of the elemen-
tary understanding of the view on the nation and social and historic development.

If the homogeneity of the nation is not kept, the nation and the destiny of individuals
cannot be defended. … The theory of 'multiracial society' is a poison and anti-
reunification logic aimed to emasculate the basic idea in the era of independent reunifica-
tion. … This is ascribable to the criminal attempt to make the north and the south differ-
ent in lineages, block the June 15 era of reunification and seek the permanent division of
the nation. (KCNA April 27, 2006)

The passage above includes the three main concepts of *Juche*—the expulsion
of foreign influence, homogeneity, and independence through self-reliance. *Juche*
is not only applied to reunification politics. Common themes in North Korean
literature include *Juche* and art, *Juche* and filmmaking, *Juche* and the military, the
revolution of *Juche*, agriculture through *Juche*, *Juche* as a basis for industry, and
so on. It should be no surprise that tenants of *Juche* can also be found in LPLP.

3   LPLP and Linguistic Prescriptions in North Korea

The principles for language planning and policy in North Korea were provided by
Kim Il-sung in the form of two dialogues. The first dialogue reportedly took place
on January 3, 1964. In the talk "Some Problems Related to the Development of
the Korean Language," Kim poses questions to a group of unnamed 'linguists'
concerning issues facing the Korean language, focusing mainly on vocabulary
maintenance. These topics were then revisited in a second dialogue on May 16,
1966 titled: "On Correctly Preserving the National Characteristics of the Korean
Language." Each dialogue was later published as "A Talk with the Linguists" in
an annual volume of all of Kim's speeches and talks for the respective year,
which are interpreted as guidelines and prescriptions for a wide array of issues.
Like many of Kim's other publications, there is no evidence that he is the author,
or that discussions with linguists concerning language actually took place. Even
the date of publication for these talks is under scrutiny (Kutani 1990). Still,
whether or not these two particular dialogues took place is beside the point. It is
obvious that language and language use was on Kim's agenda. The following
sections describe his mandates for status, corpus and acquisition planning, respec-
tively.

3.1   Status Planning

Status Planning is concerned with increasing the number of domains or functions in which a language is (officially) used. This in turn increases the language's prestige; the more domains a language occupies, the more attractive it is to potential users. Status planning is often an authoritative, top-down affair (though it can also be bottom-up), and in many cases it is used to promote a language in a domain in which elites are able to maintain or expand their power as native speakers (Cooper 1989).

In the North, Korean was already used in all domains of society at the time of these prescriptions. However, the political climate created a need for a new standard dialect to replace the notion that the Seoul dialect was still the standard, as it was before the Korean War and up to these prescriptions (Kumatani 1990). But choosing a Northern dialect as the new standard was not the only problem; in Korean the single term *pyojuno* means 'standard language.' Thus, the word 'standard language' alone carried indirect reference to the Seoul dialect. Kim was concerned that the ambiguity of using the same term for 'standard language' for two different dialects may cause confusion and mislead people to believe the Seoul dialect is still standard (Kim 1966). In order to avoid this problem Kim coined the term *munhwao*, or 'cultured language' to be used it in place of *pyojuno* 'standard language.' Kim declared the Pyongyang dialect the best representation of *munhwao* 'cultured language' since Pyongyang is the center of the revolution as the nation's capital, and thus *munhwao* 'cultured language' will be the language of the revolution. This was a very significant move, for it was this decision to differentiate Northern speech from that of the South that began an overhaul of language in North Korea. This initiated a policy of prescription centered on Pyongyang and the revolution of *Juche*. As the following section shows, this policy marked the beginning of establishing linguistic self-reliance and self-determination.

3.2   Corpus planning

Once the domains of a language have been increased, there is often a need to expand the lexicon to fulfill the demands of the new domains. Though corpus planning also involves other activities, such as orthography design or revision, corpus planning in Kim's prescriptions focused on coining new terms. Like the case of status planning above, rather than creating new terms to fill any void in the lexicon, Kim stressed the need to create terms to replace those which were already in use. In a rather bold attempt, Kim sought to erase historical traces of foreign influence from the language; in other words, Sino-Korean terms and loanwords were to be eliminated. The following is a list of criteria for replacing foreign and Sino-Korean words with pure Korean counterparts:[1]

---

[1] Adapted from Kim (1966).

1)   If a pure Korean term is synonymous with one of Sino origin, use the Korean term and "cross [the latter] off from the dictionary",

2)   use purely Korean names for places (towns, landmarks, etc.) and discontinue the use of their Sino-Korean names,

3)   domestic products must be renamed using only pure Korean words,

4)   coining of new words will be done strictly in pure Korean,

5)   only legitimate words (i.e. pure Korean) can be used to name children,

6)   new and existing words for foreign scientific concepts will be translated into pure Korean,

7)   military command words should be converted to pure Korean, with stress placed on the final syllable,

8)   Chinese characters should not be allowed to appear in school textbooks in any form,

9)   a National Language Standardization Commission will be established to oversee this transition.

At the time of these prescriptions, the only dictionary in print in North Korea was the 1962 *Choseonmal Sachen* 'The Korean Dictionary.' This of course was published before the LPLP prescriptions and it did not conform to the new mandates of *munhwao*. It was during the first talk with the linguists when Kim, referring to the 1962 dictionary, proclaimed: "this Korean dictionary looks like a Chinese-Korean dictionary (Kim 1964)." Thus, the new policies gave rise to the need for an ideologically fit dictionary. Kim then ordered the compilation of a 10,000 word dictionary free of foreign terms. Amazingly, the first edition of *Hyontae Choseonmal Sachen,* The Modern Korean Dictionary, was published in 1968. A second edition was released in 1973 titled *Choseon Munhwao Sachen,* Cultured Korean Dictionary, and a third edition appeared in 1981.

These guidelines for corpus planning represent a drastic attempt to purify the language. Yet, to rid an entire language of loanwords is a quixotic goal at best. As expected, even the most current version of the North's Korean – English dictionary contains loanwords from Russian and English, as well as Sino-Korean terms (Unknown 2002). Still, when compared to a South Korean dictionary the difference in the amount of loanwords and pure Korean words is noticeable (Lee 1990). This in part was accomplished through Acquisition planning and North Korea's peculiar publishing system.

3.3   Acquisition Planning

Furthermore, everyone should acquire the spirit of using our language correctly through ideological mobilization and a mass campaign. (Kim Il-sung 1966)

The goal of acquisition planning is a simple one: increase the number of users of a language. In order to do so, users must be provided with an opportunity to learn the language, for example through lessons and materials. At the same time, they must be provided with an incentive to learn, be it self-motivation or compulsory.

As for materials, the mandates above required that all literary work, including textbooks, be rewritten. Future authors too would have to abide by the prescriptions above. This sounds like quite an undertaking, but there is an important concept pertaining to publication in North Korea worth mentioning here. All authors, publishers, and publishing houses are held accountable to the Korean Workers' Party (KWP), which is the organization in charge of propaganda. The main publisher in North Korea, Pyongyang Publishing House answers directly to the KWP; in fact, the Pyongyang Publish House is housed within a smaller branch of the KWP. Should the KWP decide which words are acceptable for print, the publishers have no choice but to agree. It may seem that texts published before these prescriptions would be problematic, but this was not an issue. In order to promote the legitimacy of the new regime, the KWP found it advantageous to destroy or at least rework all literature and publications written before Kim Il-sung's rise to power. Kim himself mentions the need to revise previous literary works in order to make them more compatible with modern times (Kim 1966). That said, the ability of the party to require authors to follow Kim's prescriptions undoubtedly expedited the transition of acquiring the new *munhwao* 'cultured language' standard.

The motivation to acquire the new *munhwao* 'cultured language' standard was compulsory, and like most other social campaigns, the one for acquisition planning began with the children. Kim estimated some 5,000 to 6,000 words are necessary for daily use and are common in primary education. He placed an emphasis on training teachers and revising elementary materials first in hopes that children would learn to correct their parents' speech. He also suggests sending copies of the revised elementary textbooks to universities for their use as a standard. Finally, if these prescriptions were not enough to convince the population to switch to the ideologically fit *munhwao*, Kim recommends "If in the future the people should continue to use any of the words eliminated from the dictionary, we could then rehabilitate them (Kim 1966)."

4   Success of Language Policies in DPRK

It is an enormous task to convince an entire nation to stop using or replace everyday speech and vocabulary with the new ideologically correct *munhwao* standard. Yet Kim estimated it could be completed in a few years. Although the politically sensitive *munhwao* standard requires constant revision, Kim's prescriptions for easing the transition from one dialect to another were quite effective.

Although the North has a tendency to boast achieving a one hundred percent rate for anything positive (voter turnout, production rates, etc.), there is reason to believe that the alleged one hundred percent rate for literacy rate holds some truth. Regardless of the quality, education is mandatory in North Korea and all citizens must read and learn to recite literary works of the Kims. Even after education is completed, further study and recitation of Kim Il-sung's work is required in the military, factories, and elsewhere. This is responsible for the high literacy rate in the North. Even the CIA World Factbook (2005) goes as far as to list the literacy rate at ninety-nine percent. Kim's works are all edited to conform to the prescriptions described in the previous sections, and most example sentences in learners' books and dictionaries are quotes from his works. This constant exposure to the new *munhwao* 'cultured language' likely expedited its dissemination.

In fact, the most striking evidence for the success of these policies is the dialectal differences between North and South Koreans. There was no communication between the two nations from the end of the Korean War until the first ever Pan-Korea summit held in 1972, nearly two decades after the war. During these talks, South Koreans were not shocked by what their Northern brethren had to say, but how they said it (Lee 1990). The language in the North evolved to the extent that there were intelligibility problems. This is the type of evolution that would normally take generations, yet in happened in the North in as little as six years after Kim's prescriptions. The divergence in language continues today. Defectors from North Korea have repeatedly stated in interviews that one of the most difficult things to adjust to in life in the South is the difference in language. They mainly have problems with loanwords, not just those from English or German, but also those from Japanese as well as Sino-Korean words and their usage (Martin 2004).

5   LPLP and Social Control

Unlike other LPLP case studies, the practice in North Korea has a unique role in society in that the policies are guided by ideology, and then in turn used to reinforce said ideology. This bilateral relationship makes it difficult to determine the boundaries between the ideology, the policies, and propaganda. For example, the establishment of *munhwao* 'cultured language' based on the Pyongyang dialect and encouraging the population to adapt the new code are typical of how the North Korean government approaches any social issue—they are Pyongyang-centric and implemented through mass campaigns. Moreover, the emphasis on corpus planning is interesting in how it blurs the boundary between language policies and social control; here *Juche* calls for an ideologically fit language, *munhwao*, but the language is also used in tandem to support the concept of *Juche*.

For example, one of Kim's guidelines for vocabulary maintenance is that all North Korean products be renamed in pure Korean. His reasoning for this particu-

lar prescription is interesting. He justifies this decision with the following quote: "[I]f we should leave even these Japanese names as they are how could we explain our prosperity (Kim 1966)." The opposite is just as true. By renaming all foreign products in pure Korean, there is no need to explain the prosperity of other nations, or the regime can attempt to ignore the presentence of foreign goods under the guise of using pure Korean terms for them. (Take, for instance, the terms for 'ice cream' *oreum bo sugi* and 'computer' *cheoncha gesangi* in the North, while in the South English-based loanwords are used.)

Some of the best examples of propaganda come from the dictionaries. For example Kumatani (1990) notes a usage tag for entries that refer to notions which conflict with *Juche* and self-reliance. He states that words for concepts such as *kanggan* 'rape', *appak* 'oppression', *kangto* 'burglar', *pinyak* 'poverty' and, even *chongshinpyong* 'incurable disease' are tagged with a usage marker *narkun sahoi eso*, meaning 'in the old society… .' Most dictionaries contain example sentence illustrating a word's use and context. Unsurprisingly, the example sentences found in The Standard Korean Dictionary are all quotes from Kim Il-sung's speeches (Sae 1994). Finally, the term *oangjo* 'dynasty' had to be discarded after the son of Kim Il-sung, Kim Jong-il, replaced his father as the leader of the country (Harrold 2004).

The content of the dictionary exemplifies the role of language planning in propaganda and social control. The idea to create a pure Korean dictionary falls under corpus planning. This decision was influenced by *Juche*, and like the ideology states, the dictionary should not contain foreign words. However deliberately skewing definitions and excluding ideologically unfit terms is using corpus as a tool for social control. This demonstrates how LPLP has an interesting role in North Korea in that its policies are guided by *Juche*, yet the policies are also then used to reinforce the ideology.

6 Conclusion

> In linguistics too, Juche should be established so that our language develops systematically and that our people feel national pride and self-respect in speaking and writing it. (Kim 1966)

This is not intended to be an exhaustive list or time line of LPLP in North Korea. However, I hope it is enough to illustrate how the notion of *Juche* has shaped language planning and policies in the North. The three components to establishing linguistic *Juche* involve the creation of *munhwao* 'cultured language' (status planning), overhaul of the lexicon to eliminate foreign influence (corpus planning), and lastly dictating people follow the new policy (acquisition planning). These actions mirror the ideology of *Juche* in that they seek to promote superiority through homogeneity and self-reliance. This case study is significant in that

language policy in North Korea is possibly the best example of a rigorous, top-down policy widely adopted by the speech community. By focusing on an extreme example of how political agenda shapes language policy, it is my hope that this paper will contribute to the growing body of literature of language ideology.

References

Cooper, Robert L. 1989. *Language planning and social change*. Cambridge: Cambridge University Press.

CIA. 2005. *The world factbook*. Washington, DC: CIA. Available online: www.cia.gov/cia/publications/factbook

Harrold, Michael. 2004. *Comrades and Strangers*. West Sussex, UK. Wiley & Sons Ltd.

Kumatani, Akiyasu. 1990. Language Policies in North Korea. *International Journal of the Sociology of Language* 82. 87-108.

Kim Il-sung. 1964. Some problems related to the development of the Korean language. ed. unknown, in *On juche in our revolution*. 384-397. Pyongyang, N. Korea: Foreign Languages Publishing House.

Kim Il-sung. 1966. On correctly preserving the national characteristics of the Korean language. ed. unknown, in *On juche in our revolution*. 511-528. Pyongyang, N. Korea: Foreign Languages Publishing House.

Korean Central News Agency. 2006. *Rodong sinmun* censures theory of multiracial society, April 27, 2006. Available online: www.kcna.co.jp/

Lee, Hyun-Bok. 1990. Differences in language use between North and South Korea. *International Journal of the Sociology of Language* 82: 71-85.

Martin, Bradley K. 2004. *Under the Loving Care of the Fatherly Leader*. New York: St. Martin's Press.

Song, Jae Jung. 1994. Language Policies in North and South Korea. *Language Quarterly* 32: 205-212.

Song, Jae Jung. 2001. North and South Korea: language policies of divergence and convergence. *Language and language policy: East Asian Perspectives*, ed. by Nanette Gottlieb and Ping Chen, 129-157. Richmond, UK: Curzon Press.

Author Unknown. 2002. *Big Korean – English Dictionary*. Pyongyang, North Korea: Pyongyang Publishing House.

Department of Linguistics
College of Languages, Linguistics, and Literature
University of Hawaiʻi at Mānoa
1890 East-West Road
Moore Hall 569
Honolulu, HI 96822

jterrell@hawaii.edu

Language Change in Progress: Evidence from Computer-Mediated Communication[*]

NATSUKO TSUJIMURA
Indiana University

0. Introduction

Computer-Mediated Communication (CMC) has become an increasingly well investigated research area (cf. Herring 2001), and has led to the uncovering of interesting sociolinguistic findings involving variation (e.g., Herring 2003, 2004). For example, in their investigation of the relationship among language, gender, and genre in weblogs, Herring and Paolillo (2006) observe that the style difference of female vs. male features varies depending on the sub-genre of diary and filter (cf. Herring et al. 2004), regardless of the gender of the author. They find that the diary entries exhibit more female features while the filter entries more male features. The results shown in their study cast a fresh look at a gender-indexing distinct from the one that is generally characterized in spoken and written language. Research in CMC is not limited to English-based on-line communication. Nishimura (2003a, b) examines the nature of Japanese websites. She reports that an unconventional way of written scripts gives rise to, for example, puns based on Kanji (=Chinese) characters and playful coinage of new words resulting from replacement of two similar-looking characters. These phenomena together create a unique communication environment that is characteristic of the CMC mode.

In this paper I will present a preliminary observation from CMC in Japanese that offers an intriguing data source that can be interpreted to suggest a possible language change in progress. The type of data to be discussed below is not conventional by nature in that they have traditionally been considered "ungrammatical" or speakers' "errors" in more conventional modes of communication (Miyaji 1956). However, such ungrammatical or erroneous patterns regarding certain constructions that I shall discuss have turned out to be amply instantiated on the Japanese Internet. The large number of such patterns

available in CMC leads us to a possible interpretation that they are not simply individual speakers' errors but may reflect a currently on-going linguistic change in the language. In what will follow below I will describe the range of the CMC data of two morpho-syntactic constructions in Japanese, and will discuss their possible interpretations under the premise of the apparent-time construct, as advanced by Labov (1972).

2.   Two Intransitive Constructions

The case that I would like to focus on involves the two intransitive constructions consisting of the gerundive form of a verb immediately followed by either the verb *iru* or *aru*, as is exemplified by (1-2).

(1)   Doa-ga   ai-te **iru**. (*aite* < *aku*: intransitive)   <resultative reading>
         door-Nom   open
         'The door is open.'

(1')   Taroo-ga   arui-te **iru**.   <progressive reading>
         Taro-Nom   walk
         'Taro is walking.'

(2)   Doa-ga   ake-te **aru**. (*akete*<*akeru*: transitive)   <resultative reading>
         door-Nom   open
         'The door has been opened.'

The verb in (1), *aite*, is the gerundive form of the intransitive verb *aku* "open", and the subject corresponds to the theme/patient of the event of opening, i.e., an entity that is acted upon or undergoes change of state or position. The verb in this example is intransitive, of the unaccusative type. The sentence describes the state of the door being open, following the inchoative event of its opening. This interpretation has been termed the resultative reading. When the verb is unergative, such as *aruku* "walk" and *warau* "laugh", the subject of the intransitive construction corresponds to the agent, and the sentence describes the action in progress. The sentence in (1'), for example, has the progressive reading. The verb in (2), *akete*, is the gerundive form of the transitive verb *akeru* "open", which forms a morphologically related transitive-intransitive verb pair with the verb in (1), *aku*: these two verbs share the verbal root of *ak-*. The subject in (2) also corresponds to the theme/patient of the event, as is the case in (1). The object of the transitive verb *akeru* in this sentence is suppressed, and hence the structure is generally considered an intransitivizing construction. The meaning of (2) is also similar to (1) in that it describes the state of the subject resulting from the event denoted by the transitive verb: the door is in the state of open as a result of having been opened. The intransitive verb with *iru* in (1) and the transitive verb with *aru* in (2) are similar in three respects: (i) the structure is intransitive, (ii) the subject, which is marked with the Nominative Case, corresponds to the

theme/patient, and (iii) the meaning is the resultative state. The subtle semantic difference between (1) and (2) has been characterized such that the construction in (2) implies the existence of an individual who has undertaken the event denoted by the verb while such an implication is not associated with the construction in (1). The focus of the paper will be on the minimal pair of (1) and (2), and hence I will not consider the pattern in (1') throughout the paper except a brief reference to it toward the end.

The two constructions exemplified by (1-2) may appear with verbs that do not employ morphologically related transitive-intransitive pairs, as is illustrated in (3-4).

(3)   Tori-ga   shin-de iru.
        bird-Nom   die
        'A bird is dead.'

(4)   Shatsu-ga   arat-te aru.
        shirt-Nom   wash
        'The shirt has been washed.'

In (3), the verb *sinu* "die" is an intransitive verb and does not have its transitive counterpart that shares a verbal root. Similarly, the verb in (4), *arau* "wash", is independently transitive, without having a morphologically related intransitive counterpart. In both sentences, the subject is the theme/patient of the verbs and the meaning is resultative. The crucial pairing between the transitivity of verbs and the *iru/aru* distinction is schematized in (5).

(5)   a. [theme/patient]-ga … intransitive verb (gerund) + *iru* <resultative>
        b. [theme/patient]-ga … transitive verb (gerund) + *aru* <resultative>

3.   The CMC Data
The pairing of an intransitive verb with *iru* in (5a) and that of a transitive verb with *aru* in (5b) seem to leave no room for variation since their absolute and unique grammatical status has never been questioned. (cf. Miyaji 1956)   For instance, the mismatch between the transitivity of verbs and the *iru/aru* distinction has traditionally been considered ungrammatical, as violations of the patterns in (5). Thus, none of the sentences in (6-9) normally receives the acceptable status.

(6) (cf.(1))   * Doa-ga ake-te iru.   [transitive + *iru*]
(7) (cf.(2))   * Doa-ga ai-te aru.   [intransitive + *aru*]
(8) (cf.(3))   * Tori-ga shin-de aru.   [intransitive + *aru*]
(9) (cf.(4))   * Shatsu-ga arat-te iru.   [transitive + *iru*]

This situation, however, is challenged by a Japanese Internet search I conducted. It is revealed that the two sets of pairings in (5) are not as solid as they have

previously been understood, and deviations from (5), as in the examples of the patterns identical with those in (6-9), frequently appear in our CMC data. The sentences in (10-13) represent some of the attested samples that illustrate such mismatch patterns.

(10) a. Hai-ga shizun-de aru.   [intransitive + *aru*]
    ashes-Nom sink
    'Ashes are sunk.'
   a'. *shizume-te aru* (=5b) or *shizun-de iru* (=5a)

   b. Takezutsu-ga shizume-te iru (basho) [transitive + *iru*]
    bamboo tube-Nom sink   (place)
    '(the place where) a bamboo tube has been sunk'
   b.' *shizun-de iru* (=5a) or *shizume-te aru* (=5b)

(11) a. Kireini kutsu-ga sorot-te aru… [intransitive + *aru*]
    neatly shoes-Nom put together
    'The shoes have been put together neatly…'
   a'. *soroe-te aru* (=5b) or *sorot-te iru* (=5a)

   b. Yottu-no aji-ga   soroe-te iru. [transitive + *iru*]
    four-Gen flavor-Nom put together
    'Four flavors are put together'
   b'. *sorot-te iru* (=5a) or *soroe-te aru* (=5b)

(12) a. Kami-ga burasagat-te aru   [intransitive + *aru*]
    paper-Nom hang
    'Paper has been hung'
   a'. *burasage-te aru* (=5b) or *burasagat-te iru* (=5a)

   b. Siruku sukaahu-ga burasage-te iru (tenpo) [transitive + *iru*]
    silk scarf-Nom hang   (store)
    '(the store in which) silk scarves are hung'
   b'. *burasagat-te iru* (=5a) or *burasage-te aru* (=5b)

(13) a. Tosoo-ga hagare-te aru (bubun)   [intransitive + *aru*]
    paint-Nom come off (part)
    '(the part where) the paint has come off'
   a'. *hagashi-te aru* (=5b) or *hagare-te iru* (=5a)

   b. Oyayubi-no tsume-ga hagashi-te iru-kara [transitive + *iru*]
    big toe-Gen nail-Nom peel   -because
    '(because) the nail of the big toe is peeled'
   b'. *hagare-te iru* (=5a) or *hagashi-te aru* (=5b)

In each of (10-13) the verb of the (a) sentence and that of the (b) sentence form a morphologically related transitive-intransitive pair. Both examples in (a) and (b) represent the patterns that are inconsistent with the conventional patterns of (5). Their conventional counterparts that are straightforwardly accepted in spoken and written Japanese are given in (a') and (b'), which are naturally consistent with the patterns in (5). It should be pointed out that the sentences in (a) and (b) are intended to be interpreted on a par with their conventional counterparts in (a') and (b') respectively: that is, although the forms in (a) and (b) sentences are deviations from the forms in (5), they maintain the resultative interpretation. The innovative pairings between the transitivity of verbs and the *iru/aru* dichotomy that are repeatedly attested in CMC are schematized in (14), and should be contrasted with (5).

(14)   Innovative intransitive patterns in CMC
      a. [theme/patient]-ga … intransitive verb (gerund) + *aru*
      b. [theme/patient]-ga … transitive verb (gerund) + *iru*

(5)   Conventional intransitive patterns
      a. [theme/patient]-ga … intransitive verb (gerund) + *iru*
      b. [theme/patient]-ga … transitive verb (gerund) + *aru*

The degree to which the innovative patterns of intransitive constructions are attested is better understood when we examine the number of existing morphologically related transitive-intransitive verb pairs which participate in the new patterns in (14). In Japanese, morphological transitivity opposition in verbs is not formed either by causativization, where the intransitive verb is the base, or by anticausativization, where the transitive verb is the input. Instead, the language primarily adopts what Haspelmath (1993) calls the equipollent alternation, where a different set of suffixes is added to a shared root. This is schematized in (15).

(15) $[[verb]_{root} + M1]_{transitive}$, $[[verb]_{root} + M2]_{intransitive}$

The suffixes that are added to the verbal root, M1 and M2 in (15), are not restricted to a unique set, but extend to over a dozen pairs. Furthermore, there are no generalizations as to which root takes which transitivity-forming suffix pairs. Jacobsen (1992: 258-268) lists all transitive-intransitive verb pairs according to the suffix pair that is added to the verb root. The range of the transitive- and intransitive-forming suffix pairs is illustrated in (16) along with selected examples. (The final *ru/u* in these forms is the marker of non-past.)

(16)

suffix pair	intransitive		transitive	
-e-/-Ø-	oreru	'break'	oru	'break'
	yakeru	'burn'	yaku	'burn'
-Ø-/-e-	aku	'open'	akeru	'open'
	itamu	'hurt'	itameru	'injure'
-ar-/-e-	agaru	'rise'	ageru	'raise'
	hazimaru	'begin'	hazimeru	'begin'
-ar-/-Ø-	togaru	'become sharp'	togu	'sharpen'
	tunagaru	'become connected'	tuagu	'connect'
-r-/-s-	kaeru	'return'	kaesu	'return'
	kieru	'go out'	kesu	'extinguish'
-re-/-s-	koboreru	'spill'	kobosu	'spill'
	kowareru	'break'	kowasu	'break'
-ri-/-s-	kariru	'borrow'	kasu	'lend'
	tariru	'suffice'	tasu	'add, supplement'
-Ø-/-as-	heru	'decrease'	herasu	'decrease'
	naru	'ring'	narasu	'ring'
-e-/-as-	deru	'come out'	dasu	'take out'
	tokeru	'melt'	tokasu	'melt'
-i-/-as-	mitiru	'become full'	mitasu	'fill'
	nobiru	'become extended'	nobasu	'extend'
-i-/-os-	okiru	'get up'	okosu	'get up'
	otiru	'fall'	otosu	'drop'
-Ø-/-se-	niru	'resemble'	niseru	'model after'
	noru	'get on'	noseru	'put on'
-e-/-akas-	amaeru	'act dependent on'	amayakasu	'spoil'
	obieru	'become frightened at'	obiyakasu	'frighten'
-or-/-e-	komoru	'be fully present'	komeru	'fill with'
	nukumoru	'become warm'	nukumeru	'warm up'
-are-/-e-	sutareru	'fall into disuse'	suteru	'throw away'
	wakareru	'become divided'	wakeru	'divide'

Jacobsen's list contains 339 morphologically related transitive-intransitive verb pairs available in the language. What is striking is that of these 339 pairs, 52% of them (177 verb pairs) appear at least in one of the innovative patterns, i.e., (14a) or (14b) in our CMC data. Moreover, 17% of the 339 pairs (60 verb pairs) appear in both innovative patterns of (14a) and (14b). The emergence of the two innovative patterns of the intransitive constructions and their frequent occurrence in CMC may find its explanation in morphological confusion between a set of the two similar-looking verbal forms. As I mentioned earlier, there is very little regularity between verbal roots and transitivity-forming suffix pairs. To make the matters more complicated, an intransitive-forming suffix in one pair can have an identical morphological shape as a transitive-forming suffix in another pair, as (16) shows. So, the morphological confusion in transitivity of these verb pairs is perhaps a logical reason for the emergence of the innovative patterns of (14).

On the other hand, we also find similar examples with verbs that are morphologically independent regardless of the nature of transitivity. Our attested data in CMC include those in (17-24).

With transitive verbs
(17)   Juuyoo-na koto-ga   kai-te iru-koto-ga   ooi-desu. [transitive + *iru*]
       important   thing-Nom   write-that-Nom   many-be
       'There are many occasions where important matters are written.'

(18)   Shizyoosha-ga   kashi-te ite   nai.   [transitive + *iru*]
       cars for test driving-Nom   rent   there isn't
       'There isn't a car left, with all the cars for test driving having been rented out.'

(19)   Jooren-kara-wa   hana-ga   okut-te imasita. [transitive + *iru*]
       regular-from-Top   flowers-Nom   send
       'Flowers have been sent from regulars.'

With intransitive verbs
(20)   Hitori-no jinbutsu-ga   hikookijiko-de   shin-de aru.   [intransitive + *aru*]
       one-Gen   person-Nom   plane crash-in   die
       'One person has been dead in a plane crash.'

(21)   Komichi-ga   hashit-te   aru.   [intransitive + *aru*]
       small path-Nom   run
       'A small path is running.'

(22)   Imada   yuki-ga   hut-te aru… [intransitive + *aru*]
       still now   snow-Nom   fall
       'It's still snowing now…'

(23)   itsumo nobot-te aru-de aroo   josei   [intransitive + *aru*]
        always climb   -probably woman
        'the woman who probably has been climbing (mountains) all the time'

(24)   hiroi   guraundo-de odot-te aru   minasan   [intransitive + *aru*]
        large   field-at   dance   everybody
        'everybody who is dancing in a large field'

The verbs in (17-19) are all transitive and do not have morphologically related intransitive counterparts. These examples take the innovative pattern of (14b), and are interpreted as if they appeared in the conventional pattern of (5b). In (20-24) the verbs are intransitive, and they too are independent in their morphological make-up: that is, they do not have transitive counterparts with which they share verbal roots. These verbs appear in the innovative pattern of (14a). It may be pointed out that while (20) conveys the resultative meaning just as in all the examples that we have examined so far, (22-24) in contrast bear the progressive interpretation, on a par with the sentence in (1'), as we briefly mentioned at the outset.[1] The progressive interpretation is never associated with the conventional intransitive construction of (5b), but it is a possible meaning for (5a) if the subject NP corresponds to the agent. Thus, the innovative patterns of (14) with the resultative interpretation, as is observed in the majority of our CMC data, are primarily obtained in the intransitive constructions, but the phenomenon seems to extend to the same construction with the progressive meaning. Crucially, however, even interpreted with the progressive meaning, the pairing of intransitive verbs with *aru* in (21-24) is not a part of the normative intransitive construction, and clearly diverges from the conventional pairing between the transitivity of verbs and the *iru/aru* selection.

This section has presented the CMC data in which what would generally be conceived as incorrect usage of the two Japanese grammatical constructions are of frequent use on the Internet. The number of these samples is too great to be dismissed as a linguistic anomaly; instead, the innovative patterns that are richly attested in our online data should be regarded as alternatives to the traditional normative patterns. That is, to the extent that it is exhibited by the CMC data, the innovative patterns have gained the status of being normative in their own right.

4.   Potential Language Change in Progress
The most likely generalization of the frequent appearance of the innovative patterns of (14) is that the two normative constructions of (5) seem to be extending their form-meaning pairings to include two new related constructions

---

[1] The verb in (21), *hashiru* "run", is normally used as an unergative verb with an agentive subject. However, it can appear in the gerundive form followed by *iru, hasit-te iru,* along with a non-agentive subject, and specifically describes a state of spatial configuration. See Tsujimura (2001) for details. In (21), although *aru*, instead of *iru*, is used, such spatial configuration is the intended interpretation.

where the rigid restriction on the transitivity of the verb is no longer strictly imposed. That is, the patterns in (5) and those in (14) lose their distinction as a result of lifting the specification on transitivity. They all primarily have the resultative interpretation, but it is possible that they also leave room for an additional meaning, namely, the progressive interpretation when the subject NP is the agent of the verb. Still focusing on the resultative interpretation, we can schematize the newly emerged construction as a simpler form-meaning pairing in (25).

(25)   syntax: NP<theme/patient> … [$_{VP}$ verb (gerund) + *iru/aru*]
        semantics: resultative description of NP

The analysis of the emerging construction of (25), as an instance of language change that is currently on-going, can be considered with respect to the apparent-time construct (Labov 1972). One method for observing linguistic change is by sociolinguistic examination through real-time data. Real-time studies are conducted by surveying speakers either longitudinally or cross-sectionally. The former type of survey follows a small number of individual speakers over a long period of time. The latter is used when fieldwork is conducted in a community at some time, and the same community is revisited at a later period for further fieldwork using the same methods. However, an innovative approach to observing language change in progress is developed by Labov (1972) in his seminal study of Martha's Vineyard. He observed that (p.23) "shifting frequencies of usage in various age levels", which may be reflected in the data from different age groups tested at one and the same point in time, is one of the significant tenets to indicate that language change is in progress. This innovative view has come to be known as the apparent-time construct, and has been widely applied to a number of sociolinguistic investigations.

From the perspective of the apparent-time construct, there seem at least three interpretations for the new variation evidenced in our online data. First, the phenomenon may be specific to a unique communication mode of CMC. As was briefly mentioned in the introduction, the language and linguistic behavior used in CMC has come to constitute a new full-fledged communication genre which is further divided into sub-genres such as diary and filter entries (Herring et al. 2004), and hence should now be counted as a variable in considering language change. Taken as a new type of communication genre, CMC combines a spontaneous nature with a recordable form, and also internal to Japanese, its linguistic style is a cross between the spoken and written forms. These factors underlying CMC may well contribute to the emergence of the innovative forms whose normative restrictions on transitivity are lifted and whose distinction between *iru* and *aru* is obscured. On this view, then, it is likely that the innovative intransitive patterns are specific to, and hence characteristic of, this new mode of communication.

A second interpretation makes the assumption that Japanese web-users tend to be those of the younger generation; consequently, the users' divergence from the strictly normative patterns reflects an age-specific phenomenon. In this interpretation, the users' age is a crucial variable for the change. Such linguistic change in progress may permanently stay with the users' generation or can be a temporary "trend" (i.e., as an age-graded phenomenon) that eventually fades away as the users get older. The two key variables, communication genre and age, may of course interact with each other.

The third interpretation is that the phenomenon reflects a more general language change in progress beyond the boundaries of communication modes and age that is spreading throughout the Japanese speech community. It is the nature of CMC that allows the change to be captured and apparent.

These possible interpretations must be evaluated in detailed studies of CMC users and non-users in future investigations. For example, the prediction that the communication genre of CMC is the main contributing factor for the emerging innovative patterns could be validated if the users accept sentences of the emerging forms in CMC but not outside the computer mediated environments. If, on the other hand, the users accept the innovative forms independent of the nature of communication modes, it is more likely that the linguistic change in question is a general phenomenon. As for age as a contributing variable, if of two sufficiently distant age groups of CMC users, only the younger group accepts the innovative patterns, then the change in the intransitive construction can be considered specific to the younger generations; if, in contrast, two age groups do not show a significant difference, an explanation for the innovative forms is to be found elsewhere, such as in the specific communication mode of CMC; or, it could be a general, longer-lasting change that has not been previously recognized, perhaps due to prescriptive influences.

Whatever the nature of the motivations may be, the two emerging patterns of the intransitive construction, which would have been judged ungrammatical in traditional lines of linguistic research, are well attested in online data. The extent to which they are reasonably conventionalized is also readily observed. The innovative forms may seem somewhat surprising at first given more traditional communication modes as our data sources, but the examination of CMC has been crucial to detecting a potential linguistic change in progress that would otherwise have been overlooked.

References

Haspelmath, Martin. 1993. More on the Typology of Inchoative/Causative Verb Alternations. In B. Comrie and M. Polinsky, eds., *Causatives and Transitivity*, 87-120. Amsterdam: John Benjamins.

Herring, Susan. 2001. Computer-Mediated Discourse. In D. Tannen, D. Schiffrin, and H. Hamilton, eds., *The Handbook of Discourse Analysis*, 612-634. Oxford: Blackwell.

Herring, Susan. 2003. Gender and Power in Online Communication. In J. Holmes and M. Meyerhoff, eds., *Computer-Mediated Communication: Linguistic, Social and Cross Cultural Perspectives*, 81-108. Amsterdam: John Benjamins.

Herring, Susan. 2004. Computer-Mediated Communication and Woman's Place. In R. Lakoff, ed., *Language and Woman's Place*, 216-222. Oxford: Oxford University Press.

Herring, Susan and John Paolillo. 2006. Gender and Genre Variation in Weblogs. *Journal of Sociolinguistics* 10(4):439-459.

Herring, Susan, Lois Ann Scheidt, Sabrina Bonus, and Elijah Wright. 2004. Bridging the Gap: A Genre Analysis of Weblogs. *Proceedings of the 37th Hawai'I International Conference on System Sciences*. Los Alamitos: IEEE Computer Society Press. http://www.blogninja.com/DDGDD04.doc.

Jacobsen, Wesley. 1992. *The Transitive Structure of Events in Japanese*. Tokyo: Kurosio.

Labov, William. 1972. The Recent History of Some Dialect Markers on the Island of Martha's Vineyard, Mass. In Davis, L.M. ed., *Studies in Linguistics in Honor of Raven I. McDavid Jr.* Tuscaloosa: U. of Alabama Press.

Miyaji, Atsuko. 1956. Goyoo [Errors]. *Kokugokokubun* 25:45-64.

Nishimura, Yukiko. 2003a. Establishing a Community of Practice on the Internet: Linguistic Behavior in Online Japanese Communication. *BLS* 29:337-348.

Nishimura, Yukiko. 2003b. Linguistic Innovations and Interactional Features of Casual Online Communication in Japanese. *Journal of Computer-Mediated Communication* 9(1). http://jcmc.indiana.edu/vol9/issue1/h=nishimura.html.

Tsujimura, Natsuko. 2001. A Constructional Approach to Stativity in Japanese. *Studies in Language* 25.3:525-553.

Creole Phonology:
An Alternative to Markedness-Based Accounts

WHITNEY WARD
Yale University

1.   The Role of Markedness in Creole Phonology

A central question in the field of creole studies concerns whether creole grammars reflect the emergence of language universals during creolization ("universalist" accounts) or if they closely replicate the grammars of the substrate languages from which they emerge ("substratist" accounts) (see Arends et al. 1994 for a distilled account of theoretical approaches to creolization). The problem has been most considered in creole syntax, but with the development of Optimality Theory (Prince and Smolensky 1993), which places a special emphasis on universal phonological markedness, this debate has expanded into the field of creole phonology (e.g. Alber and Plag 2001, Lipski 2002, Uffmann 2003, Singler 2000). These markedness-based explanations of the creolization of phonology are somewhat problematic, however, and this paper will offer an alternative to such explanations.

Optimality Theoretic analyses have been used in support of both universalist and substratist accounts of creolization. What these accounts have in common is the assertion that differences between creole and superstrate phonologies are the result of the promotion of markedness constraints during creolization. Proponents of universalist accounts assert that creoles represent the "emergence of the unmarked" during creolization. Because high ranked markedness is considered to be a sort of phonological default and the lack of language data during creolization results in the inability to promote all of the appropriate faithfulness constraints, the result of creolization is a less universally marked phonology than that of any of the input grammars. Proponents of substratist accounts, however, argue that the African languages that are the most common creole substrates are phonologically unmarked in the same ways as many creoles. Substratists suggest that the apparent "emergence of the unmarked" is due to the application of substrate constraint rankings to superstrate lexical items, and not to any universal tendency towards high-ranked markedness.

Despite its central role in Optimality Theory, the use of typological markedness as an explanatory mechanism in synchronic phonology has been

criticized both because using typological rarity as the formal basis for explaining that rarity is circular, and because markedness is often epiphenomenal; the actual explanation for the preference of some sound patterns is due to (arguably) extra-grammatical factors like perceptibility or tendencies of diachronic change (e.g. Haspelmath 2006, Blevins 2004). Beyond the general problems with the use of markedness as an explanatory mechanism in phonology, the specific use of high-ranked markedness in explaining phonological changes that occur during creolization is problematic for a number of reasons. First, both substratist and universalist theories have difficulty when the ranking of faithfulness constraints is needed in the creole grammar to dictate which repair strategies are used to avoid marked structures. This would not be problematic if each creole used only a single repair strategy to resolve a non-optimal structure (always using epenthesis to resolve consonant clusters, for instance) but analyses of actual creole data show that this is not the case. Since there is not a universal ranking of faithfulness constraints, and substrate speakers do not encounter markedness violations in their own languages that would provide evidence of faithfulness constraint ranking, markedness-based theories have difficulty explaining the choice of different repair strategies to resolve the same marked structure.

Universalist accounts are also problematic in that they may require that markedness constraints be internally ranked. For example, though there is a tendency for creoles to prefer CV syllables (e.g. Sebba 1997), which are the least marked syllable type (Blevins 1995), there are often a variety of other acceptable syllable types as well. If creolization is the promotion of markedness, it is not clear why some marked structures are eliminated and others are allowed to remain. Uffmann (2003) avoids this problem in his more limited universalist account, suggesting that high ranked markedness is the result of substrate leveling, a process that selects the least marked of the possible substrate grammars as the basis for the creole. Like Uffmann's model, substratist accounts do explain the origin of markedness constraint rankings (they are taken directly from the substrate). However, these models cannot explain why creole phonologies are often not identical to those of their substrates.

2. The Alternative Account
2.1 Three Factors that Shape Creole Phonology
The alternative account presented here characterizes creolization as a process of rapid sound change occurring because of imperfect second language acquisition. Differences between the superstrate and creole phonologies result from three factors that reflect this characterization of the creolization process: cue robustness and segment perceptibility, perception of substrate forms by second language learners, and production of these forms when they are correctly perceived. The first of these factors will lead to the apparent favoring of universally "unmarked" structures while the latter two explain the resemblance of creole and substrate phonological patterns. This account is motivated by the observation that the phonological changes which occur during creolization resemble listener-initiated

sound changes in non-contact situations as well as changes that occur during second language acquisition and borrowing. Creolization of phonology, in this view, is a set of sound changes driven by a group of non-native speakers.

2.2   Gradualism and Creolization as Second Language Acquisition

This proposal is closely aligned theoretically with accounts that treat creolization as a special case of second language acquisition (SLA). Though the SLA hypothesis has been discussed with relation to the syntactic features of creoles (for an overview see Mather 2006) it has not been widely used to account for creolization in phonology. Creolization differs from normal second language acquisition in that access to native speakers of the target language is limited. This target language is also being used as the primary language of communication among speakers who speak neither the same L1 (substrate) nor the L2 (superstrate). Proposals that treat creolization as SLA differ from the standard descriptions of creole languages as nativized pidgins formed in a single generation. Instead, creolization is claimed to be a gradual process, carried out primarily by adult speakers. Though there are advocates of both the single generation and gradualist accounts of creolization, gradualist proponents suggest demographic evidence shows that some plantation creoles (specifically the creoles of Surinam and Jamaica) were in existence before a large number of children could have acquired the creole natively. In some of these cases imported substrate speakers vastly outnumbered native creole speakers during the time of creolization (Arends et al. 1994, Arends 1995). These demographic factors suggest that creolization may have occurred gradually and been driven by adult speakers attempting to acquire the superstrate as a second language.

2.3   Cue Robustness and Perceptibility

Each of the three factors that explain the phonological changes that occur during creolization has been observed in other areas of linguistics. Cue robustness and segment perceptibility have been used to ground markedness constraints and explain phonotactic restrictions. Previous work on the perceptibility of contrasts has shown that phonotactic constraints can often be explained by general principles of segment perceptibility (e.g. Wright 2004, Blevins 2003, Steriade 1999). The segments that are most easily perceived in particular positions are also those that are most likely to be preserved during creolization. Phonological changes related to this factor that occur during the creolization process are also similar to those observed during listener initiated sound change (Ohala 1993) and as part of the program of Evolutionary Phonology (Blevins 2004). Changes of this type need not depend on the nature of the substrate language, which allows this model to account for many of the phonological characteristics of creoles that do not appear to be taken directly from the substrate languages.

2.4   Second Language Perception and Production

The second factor shaping creole phonology, the perception of contrasts by second language speakers, has also been discussed outside of the creole liturature. Previous work has shown that the phonological structure of L1 can affect listeners' perceptions of L2 leading to perceptual epenthesis (Dupoux et al. 1999, Kabak 2003) or the reshaping of phonological categories (Khul 1991, Best 1994) among other segmental and phonotactic changes. Because early creole speakers are second language learners, their perceptions of the superstrate will be shaped by their own (substrate) phonology. Changes that occur during creolization could be the result from the misparsing of superstrate forms in a way that conforms to the linguistic expectations of substrate speakers.

The final factor that influences the creolization process is the production of contrasts by early creole speakers. Even when phonological contrasts are perceived correctly, they may not be reproduced accurately by second language learners. Davidson (2006, 2007), for example, has shown that gestural mistiming can result when L2 speakers attempt to produce non-native consonant clusters. The fact that creoles are created through perception and production of a language by adult learners can account for substrate influence on creole phonology. The three factors taken together offer explanations for the major features of creole phonologies without the use of high ranked markedness as an explanatory mechanism.

3.   Comparing the Accounts: A Case Study of Sranan
3.1   History of the Sranan Language

This approach has advantages when compared to previous markedness-based accounts of creole phonology. First, it avoids the general criticisms of the use of markedness as an explanatory device. Secondly, it provides an account of phenomena that are difficult to explain using other accounts. This can be exemplified through a close examination of the syllable structure of Sranan, an English based creole that emerged in the middle of the 17th century in Surinam and is still spoken there today. The primary substrate languages are the Bantu language Kikongo and the Kwa languages Gbe and Twi (although, importantly, Twi speakers were not brought to Suriname until after English speakers were no longer present). The history of colonization in Surinam suggests gradual creolization was the likely path of development for Sranan. English settlers were present in the colony only from approximately 1651 to 1690 (the Dutch occupied the colony from 1680 until the late 20th century). A pidgin version of Sranan must have formed during this short period of exposure to English. Both during and after this period of colonization by English speakers, new slaves were being brought to the island in very large numbers (Arends 1995). The poor treatment of slaves in Surinam (even by the standards of the time) and difficult conditions in the colony led to a very high mortality rate and a need to introduce new slaves constantly. For the same reason, very few children were born in Surinam during the time the creole was being formed. Sranan is an ideal case study here because data is available from the early stages of creolization (before restructuring and contact

with Dutch) and because Alber and Plag (2001) already provide an overview and Optimality Theoretic account of Sranan phonology. These authors describe a number of processes that apply to English words when they were adapted into Sranan. Processes of deletion and epenthesis conspire to result in an apparent preference for CV syllables in this creole.

3.2 The Emergence of the CV Syllable in Sranan
3.2.1 Word Initial Deletion
The first process that results in the restructuring of English syllables is deletion of word initial [s] where it occurs as part of a complex onset with a stop. Some examples are given in (1) below.

(1) speak   >   piki
     spoil   >   pori
     stand   >   tan
     story   >   tori
     strong   >   tranga
     square   >   kweri
     scratch   >   krasi

The examples in (2) demonstrate that [s] is preserved in initial [s] + nasal clusters.

(2) smoke   >   smoko
     snake   >   sneki

Alternative strategies of epenthesis or deletion of the second consonant in these sequences are not observed. Somewhat different strategies are applied to word internal and word final consonant clusters, however.

3.2.2 Word Internal Deletion
Word internally, clusters are simplified either by deletion of the first or second element in the cluster as shown in (3).

(3) doctor   >   datra
     goodnight   >   kuneti

     master   >   masra
     nasty   >   nasi
     softly   >   safri
     sister   >   sisa

If the word internal consonants are a series of two stops, or a stop followed by a nasal, the first stop is deleted. However, if the cluster is a fricative followed by a stop, the fricative is preserved and the stop is deleted. Further data presented in

(4) shows that clusters of nasal followed by stop are preserved (data is adapted from Herlein 1718 and Nepveu 1770, two texts included in Arends and Perl 1995).

(4)   windows   >   windels
         handsome   >   hansum
         sometime   >   somtem

3.2.3 Word Final Cluster Simplification
In final position, clusters are simplified by deleting the second segment in the cluster (unless the first element is a nasal) as shown in (4). In the later development of Sranan, the NC clusters are also reduced by the deletion of the stop, but in the earliest stages these stops are preserved.

(5)   field   >   firi
         first   >   fosi
         haste   >   hesi
         soft   >   safu

         want   >   wanti
         paint   >   pendi

3.2.4 Word-final Epenthesis
As is apparent above, there is also a process of word final epenthesis. Words ending in non-nasal consonants take an epenthetic final vowel. More examples are given in (6) below.

(6)   afraid   >   freed
         because   >   bikasi
         nose   >   noso
         top   >   tapu

Final nasals trigger neither deletion nor epenthesis as exemplified in (7).

(7)   begin   >   begin
         man   >   man
         name   >   nen
         time   >   ten
         sometime   >   somtem

The authors note that final [ŋ] does trigger epenthesis, though no examples of this type are given.

4.   An Existing Markedness Based Account of the Syllable in Sranan

Alber and Plag (2001) argue that the syllable structure of Sranan is the result of transfer from the substrate languages and, using an OT framework, they treat the creolization process as one of massive borrowing. Words from the lexifier language are taken as the input to the grammar of the substrate language. The output strives to be faithful to the English input but not violate the markedness constraints that are highly ranked in the substrate grammars. In this particular case, the authors provide an analysis using the constraints in (8) with the constraint ranking in (9).

(8)   CODA COND: Only nasals are possible codas
        SSP: Sonority must increase toward the syllable peak
        NO SKIP: No internal deletion
        NO INTRUDE: No internal epenthesis
        MAX: No deletion
        DEP: No Epenthesis

(9)   SSP, CODA COND, NO INTRUDE >> MAX, NO SKIP >> DEP

If the authors' hypothesis is correct, this ranking should be present both in the grammar substrate and creole grammar. They do demonstrate that this ranking can account for the Sranan data shown above. First, the ranking of CODA COND and MAX over DEP can account for word final epenthesis. Coda obstruents are not allowed, and the best repair is to insert a final vowel. Coda nasals do not cause a violation and are allowed to remain. The high rank of SSP causes clusters of [s] followed by a stop to be non-optimal and can account for word initial deletion. Initial deletion is preferred as a repair strategy because the constraints against internal epenthesis or deletion are highly ranked. Because of this, the best repairs will occur at edges, and only deleting the initial [s] is optimal. Final deletion reflects the mirror image of this process, so in word final clusters the second of two consonants is deleted (this occurs along with final epenthesis).

Internal clusters prove slightly more complicated. The ranking provided has two optimal candidates. For example, the word "nasty" could result in either [na.ti] or [na.si]. In either case, only a single consonant is deleted, resulting in one violation of NO SKIP and one violation of MAX. Epenthesis is dispreferred due to the higher ranking of NO INTRUDE and the faithful form violates either CODA COND or the SSP. The authors believe that there may be a constraint that causes the least sonorous consonant to be deleted, but they do not attempt to include this constraint in their model. Despite this lack of a complete explanation for internal cluster simplification, this ranking provides a fairly straightforward analysis of the Sranan data. The type of syllable that is allowed by these constraints is also quite close to the syllable type allowed by the two early substrate languages.

Despite the successes of some portions of this analysis, the Sranan example demonstrates that difficulties arise when creolization is simply treated as relexification of the substrate grammar. The first problem arises in explaining

mismatches between the creole grammar and the grammars of the major substrate languages. Alber and Plag point out in a footnote that this problem exists for their analysis of Sranan. There are no nasal codas in either Gbe or Kikongo, the two major substrate languages of Sranan (these codas are allowed in Twi, but speakers of this language did not arrive in Surinam until late in the development of the creole, and nasal codas were already present in the language before their arrival). Nasal codas do occur in the creole, despite their absence in the substrate languages. In order for the pure substratist account to explain this, it must be assumed that the constraint CODA COND, which prohibits obstruent codas but not nasal ones, must be highly ranked, while a more general constraint banning all codas must not be. This seems unlikely to be the case in the substrate grammars since there is no evidence from these languages that codas of any type are permitted.

The second general problem with the substratist account (also noted by the authors) is that substrate languages do not have alternations that provide evidence for the ranking of faithfulness constraints. Since speakers of these languages never come in contact with violations of the high ranked markedness constraints, there should be no evidence that one type of repair strategy is preferred over another. This seems especially problematic for a complex analysis like the one provided for Sranan, because the same repair strategy is not always preferred. Four faithfulness constraints must be ranked correctly in order for the appropriate grammar to emerge in this creole, and different rankings are required for word internal clusters and clusters at edges. Why should such differences be present in substrate grammars when speakers of these languages are never provided with evidence for the ranking of faithfulness?

5.   Applying the Alternative: The Three Factors in Sranan

The three factors proposed above can account for the phonological changes observed in Sranan while avoiding the problems encountered by the markedness-based approach. Each of the changes that result in the syllable structure of Sranan can be explained by some combination of these factors. First, word internal clusters that do not include fricatives are resolved by deletion of the first of the two consonants (C1C2>C2). Perceptual factors can account for this type of change, which is also observed in normal sound change. In English, word internal consonants show a large degree of overlap (Zsiga 2000). Because of this, the first of two adjacent consonants is not released into a vowel so formant transition and burst cues for this consonant are not robust. The obscuring of these cues increases the likelihood that only the second of the two consonants will be perceived. Listeners who have little experience with heavily overlapped consonant clusters may have greater difficulty in identifying two consonants from the percept of a single closure and a single release. This also explains the perhaps unexpected preservation of nasals in medial clusters. Because the cues for nasal manner are robust throughout the consonant closure, not just at the release into a vowel, nasals are perceived more easily even in overlapping clusters. Cue robustness,

along with substrate speakers' limited experience perceiving overlapped consonants, can explain the behavior of these clusters without the use of markedness constraints.

Unlike medial codas, which are repaired through deletion, final codas are repaired by epenthesis of a final vowel. In borrowing and second language acquisition, as well as normal sound change, epenthesis can result from the misinterpretation of a final stop burst as an intended final vowel (e.g. Kang 2004). The perception of English final stops by substrate speakers might result in similar perceptual epenthesis. A slightly problematic aspect of this analysis is that epenthesis in Sranan also occurs after the fricative [s], which, unlike stop consonants, does not have a release burst. However, I speculate that the offset of frication at the end of a word final [s] may also have burst like properties and could be interpreted as a vowel. The similar behavior of stops and fricatives in triggering epenthesis is not limited to Sranan as both consonant types also trigger perceptual epenthesis in Japanese (Dupoux et al. 1999). The use of different strategies to eliminate codas in medial and final positions is explained by the differences in perceptibility of segments in these positions. Because medial codas occur in overlapped clusters, there is not a strong burst to be misinterpreted as an epenthetic vowel in that position. The perception of medial and final codas will be different and can explain the differing behavior of codas without the need for unmotivated ranking of multiple faithfulness constraints.

The preservation of final nasal (and liquid) codas can also be explained in this account. Because nasals have no burst that could be misinterpreted as an epenthetic vowel, epenthesis does not occur following nasals. The changes in nasal place shown in example (7) (reproduced below) can also be attributed to perceptual factors.

(7)   name   >   nen
        time   >   ten

Though cues for nasal manner are robust even in final position, cues for nasal place occur mostly at the CV transition. Given this, changes in place features in coda position may be expected during creolization.

Consonant clusters in final position are resolved by both the deletion of the second consonant and epenthesis of a final vowel. Because epenthesis is the result of misinterpretation of a stop burst, the loss of C2 is unlikely to be the result of the listeners' inability to perceive the burst cues for this stop. The reason for this cluster reduction may instead be the speakers' inability to produce coda clusters as native speakers do. Browman and Goldstein (2000) have shown that the coordination of oral articulator gestures in coda position is more difficult than gestural coordination in onset position. Substrate speakers who have no experience with coda clusters may be unable to replicate this coordination pattern. The preservation of homorganic nasal + stop clusters in this position could result from the need to coordinate only the velum gesture (which substrate speakers

already must do in order to produce single nasal consonants), as only a single oral articulation is needed for such clusters. Experimental evidence has shown that gestural mistiming often results when speakers attempt to produce non-native consonant clusters and the effects of this can be observed in loan word adaptation.

One aspect of Sranan phonology that is difficult to explain in either of the accounts discussed here is the behavior of [s] + stop clusters. Initial clusters of this type are repaired through the deletion of [s] while initial [s] + sonorant clusters are preserved. Medial fricative + stop clusters, however, are resolved through the deletion of the second consonant (C1C2 > C1). This differs both from initial [s] clusters and other medial clusters. Alber and Plag argue that word initial clusters simplify only if they violate the SSP and they contend that [s] + stop clusters cause such a violation. Though this may be the case given some form of the SSP, Wright (2004) and others have suggested that sibilant fricatives often form fricative + stop clusters and that these clusters are not typologically marked. Because of this, the elimination of these clusters based on high ranked markedness is problematic. The ranking provided by Alber and Plag cannot account for this systematically differing behavior of internal clusters.

It is also somewhat difficult to account for the behavior of these [s] clusters using perceptual and production based explanations. The cues for sibilant fricatives are robust throughout the consonant closure, so misperception of these segments is unlikely. The inability of substrate speakers to replicate gestural coordination in obstruent + obstruent clusters could explain the loss of [s] in initial position. The substrate languages allow obstruent + sonorant clusters, so the proper coordination for [s] + nasal clusters should already be available to creole learners. However, it could be the case that coordination for each type of cluster must be learned separately. Perceptual factors also cannot easily explain the behavior of internal [s] clusters since cues for [s] and C2 should both be robust in this position. Most of the examples given for this type of cluster are [s] + [t] sequences. It could be the case that coordinating these two segments, which both involve tongue tip gestures but have different specifications for tongue position, is particularly difficult for L2 speakers. It is also possible that the [t] is perceived as a transitional element instead of an intended full consonant and thus not reproduced by creole speakers. These explanations are preliminary, however, and the behavior of [s] clusters remains somewhat problematic in both accounts.

6.   Conclusion

The case study of Sranan demonstrates that an appeal to perceptual and production related factors offers a viable alternative to markedness promotion in accounting for phonological restructuring during creolization. This account also avoids the problems inherent in the use of markedness as an explanatory mechanism in phonology. An appeal to the three factors described above provides an explanation of the use of multiple "repair strategies" in creolization and allows for the influence of both universal and substrate factors. This account also relates the phonological changes observed during creolization to similar changes attested

in normal diachronic change and second language acquisition. Continuing typological and experimental work on creole phonology may provide more support for such alternatives to markedness in explaining the creolization process.

References

Alber, Birgit and Ingo Plag. 2001. Epenthesis, Deletion and the Emergence of the Optimal Syllable in Creole: The Case of Sranan. *Lingua* 111: 811-840.

Arends, J. and M. Perl. 1995. *Early Suriname Texts: A Collection of Early Sranan and Saramaccan Documents*. Frankfurt: Vervuert.

Arends, Jacques, Pieter Muysken, and Norval Smith, eds. 1994. *Pidgins and Creoles: An Introduction*. Philadelphia: John Benjamins Publishing.

Best, Catherine T. 1994. The Emergence of Native-Language Phonological Influences in Infants: A Perceptual Assimilation Model. In J. Goodman and H. Nusbaum, eds. *The Development of Speech Perception: The Transition from Speech Sounds to Spoken Words,* 167-224. Cambridge, MA: MIT Press.

Blevins, Juliette. 1995. The Syllable in Phonological Theory. In J.A. Goldsmith ed., *The Handbook of Phonological Theory,* 206-244. Cambridge, MA: Basil Blackwell.

Blevins, Juliette. 2004. *Evolutionary Phonology.* Cambridge: Cambridge University Press.

Blevins, Juliette. 2003. The Independent Nature of Phonotactic Constraints: An Alternative to Syllable-Based Approaches. In C. Fery and R. van de Vijver eds, *The Syllable in Optimality Theory.* New York: Cambridge University Press.

Browman, Catherine and Louis Goldstein. 2000. Competing Constraints on Intergestural Coordination and Self-Organization of Phonological Structures. *Les Cahiers de l'ICP, Bulletin de la Communication Parlee* 5:25-34.

Davidson, Lisa. 2006. Phonotactics and Articulatory Coordination Interact in Phonology: Evidence from Non-Native Production. *Cognitive Science* 30(5):837-862.

Davidson, Lisa. 2007. The Relationship Between the Perception of Non-Native Phonotactics and Loanword Adaptation. To appear in *Phonology*.

Dupoux, Emmanuel, Kazuhiko Kakehi, Yuki Hirose, Christophe Pallier, and Jaques Mehler. 1999. Epenthetic Vowels in Japanese: A Perceptual Illusion. *Journal of Experimental Psychology: Human Perception and Performance* 25:1568-1578.

Haspelmath, Martin. 2006. Against Markedness (and What to Replace it With). *Journal of Linguistics* 42:25-70.

Kabak, Baris. 2003. *The Perceptual Processing of Second Language Consonant Clusters*. Ph.D. diss., University of Delaware.

Kang, Hyun-Sook. 2004. Perceptual Similarity in Loanword Adaptation: English Postvocalic Word-Final Stops in Korean. *Phonology* 20:219-273.

Kuhl, Patricia K. 1991. Human Adults and Human Infants Show a 'Perceptual Magnet Effect' for the Prototypes of Speech Categories, Monkeys Do Not. *Perception & Psychophysics* 50:93-107.

Lipski, John M. 1992. Epenthesis vs. Elision in Afro-Iberian Language. In T. Satterfield, C. Tortora, and D. Cresti eds., *Current Issues in Romance Languages,* 173-188. Philadelphia: John Benjamins Press.

Mather, Patrick-Andre. 2006. Second Language Acquisition and Creolization: Same (i-) Process, Different (e-) Results. *Journal of Pidgins and Creoles* 21(2):231-274.

Ohala, John J. 1993. The Phonetics of Sound Change. In C. Jones, ed., *Historical Linguistics: Problems and Perspectives*, 237-278 New York: Longman.

Prince, Alan and Paul Smolensky. 1993. Optimality Theory: Constraint Interaction in Generative Grammar. *Rutgers Optimality Archive* 537.

Sebba, Mark. 1997. *Contact Languages.* New York: St. Martins Press.

Singler, John Victor. 2000. Optimality Theory, the Minimal Word Constraint, and the Historical Sequencing of Substrate Influence in Pidgin/Creole Genesis. In J. McWhorter, ed., *Language Change and Language Contact*, 335-352. Philadelphia: John Benjamins Press.

Steriade, Donca. 1999. Alternatives to the Syllabic Interpretation of Consonantal Phonotactics. In O. Fujimura, B. Joseph, and B. Palek eds., *Proceedings of the 1998 Linguistics and Phonetics Conference,* 205-242. Prague: The Karolinum Press.

Uffmann, Christian. 2003. Markedness, Faithfulness and Creolization: The Retention of the Unmarked. In I. Plag ed., *Phonology and Morphology of Creole Languages*. Tubingen: Max Neimeyer Verlag.

Wright, Richard. 2004. A Review of Perceptual Cues and Cue Robustness. In B. Hayes, R. Kirchner, and D. Steriade eds., *Phonetically Based Phonology*. New York: Cambridge University Press.

Zsiga, Elizabeth C. 2000. Phonetic Alignment Constraints: Consonant Overlap and Palatalization in English and Russian. *Journal of Phonetics* 28:69-102.

Whitney Ward
Yale University
Department of Linguistics
370 Temple Street, Room 204
New Haven, CT 06520

whitney.ward@yale.edu

PARASESSION:
MULTILINGUALISM AND FIELDWORK

Field Notes on the Pronominal System of Zhuang

ADAMS BODOMO

The University of Hong Kong/Stanford University

1.   Introduction

The Guǎngxī Zhuang Autonomous Region in southwestern China has one of the biggest number of minority languages in China, and indeed the largest minority language, Zhuang, which is the focus of this paper. It is thus one of the most multilingual regions of the country. In Guǎngxī, a child growing up in a Zhuang-speaking village would pick up Zhuang as a mother-tongue. If the village is adjacent to other villages where the other 10 minority languages of the region, including Yao, Miao, Mulao, Dong, Maonan, Hui, Yi, Jing, Shui, and Gelao, are spoken, the child may pick up one or more of these. When the child moves to the district capital or nearest town, she may pick up Guiliu if she is of northern Zhuang stock; or a variety of Cantonese (baakwa) if she is of southern Zhuang origins. If the child attends school she would have started learning how to speak, read, and write Mandarin (Pǔtōnghuà), the national language. By the time the child leaves her village, her district capital, or the nearest town for Nánníng, the capital city of Guǎngxī, or any of the other Chinese cities like Guìlín, Guǎngzhōu, Shànghǎi, or the national capital, Běijīng, she would speak anywhere from three to four or more language varieties, including her dialect of Zhuang, one or two other minority languages, a lingua franca, such as Guiliu or Cantonese, and, of course, the national language, Mandarin (Pǔtōnghuà). Foreign languages, such as English and Japanese, may complete the picture.

Not only does the average rural-turned-urban Zhuang child have the possibility of speaking different languages, proficiency in these languages are also at different levels and, more importantly, there is a lot of code-mixing and code-switching phenomena in actual conversational situations, such that borrowing of words and expressions from one variety of speech to the other is not uncommon.

The Guǎngxī Zhuang linguistic area thus presents a scenario of multilingualism, polyglottism, and, consequently, language contact phenomena such as code-mixing and code-switching, leading to a veritable medley of language influence.

This kind of scenario presents challenges for linguistic fieldwork, especially that aimed at collecting authentic materials and systematically studying the structure of a particular language variety and how it is used in context. The challenges include how to identify and locate ideal and fluent speakers, how to identify and locate the right environments in which the language is used, and how to negotiate through the range of language contact phenomena in order to tease out the right linguistic structures one is investigating without influences from other linguistic systems.

This paper describes how these challenges were addressed during a series of field trips to the Guǎngxī Zhuang Autonomous Region between 2003 and 2006. We do this by first describing the fieldwork and language situation in Section 2, detailing the choices we made in selecting where to go and what techniques to use once we were there. Section 3 is an outline of the major linguistic features of the Zhuang language. Section 4 focuses on a description of the pronominal system, comparing and contrasting its major distinctive features with those of the pronominal system of languages such as English, Cantonese, and Mandarin. Section 5 summarizes and concludes the issues discussed in the paper.

2.   Language Situation and Fieldwork

In this section, we first describe the language situation of Zhuang including its genetic classification and geographical spread before turning to a description of the fieldtrip activities.

2.1.   The Language Situation

Zhuang is a branch of the Kam-Tai language group (along with languages such as Thai, Lao, and Dai), which in turn belongs to the larger Tai-Kadai language family (Edmondson and Solnit 1990). In 2002 the number of speakers were estimated to be about 16 million (more precisely 16,178,811 (PCO 2002)). Qin (2004) estimates Zhuang speakers to be about 20 million. In addition to the Guǎngxī Zhuang Autonomous Region, Zhuang is also spoken in the Zhuang-Miao Autonomous Prefecture of Yúnnán Province, in the Liánshān Zhuang-Yao Autonomous County of Guǎngdōng Province, in Cóngjiāng County of Guìzhōu Province, and in the Yao Autonomous County of Húnán Province, and, outside China, in northern Vietnam by the Tay and Nung Ethnic groups. These varieties are hardly ever mutually intelligible, and indeed the divide between Northern Zhuang and Southern Zhuang is more of an interlingual than an intralingual divide. In terms of literacy, there are two writing systems, a Zhuang character writing system based mainly on Chinese characters, and a romanization system, which is supposed to be the official writing system but which is not much used. On the whole Zhuang writing is not very much an everyday practice, even though

there are some Zhuang magazines like Sam Nyied Sam in Nánníng that disseminate information in written Zhuang.

2.2. Fieldwork in Guǎngxī: Choices, Methods and Techniques

Given that Zhuang-speaking communities are hardly found anywhere outside China, field trips to China and Guǎngxī, with the aim being to collect authentic and naturalistic data, and, of course, to understand the cultural context, are crucial. I believe that one should always go to the field with an idea of what sort of questions to ask (of course, with an open mind for new questions and issues), so most of the hypotheses and issues were often formulated after preliminary data elicitation from two speakers in Hong Kong (who are my students) and from the few written documents of Zhuang available in libraries and on the internet. Fieldwork began on the Zhuang language with funding support from grant institutions in Hong Kong and so far the following fieldtrips have been undertaken:

i. Hong Kong—Nánníng City—Débǎo County—Jìngxī County—Tiányáng County (April 2003)

ii. Hong Kong—Nánníng City—Mǎshān County—Jīnchāi Town—Dongping Village / Nánníng City—Guìlín City—Yángshuò County (December 2004)

iii. Hong Kong—Nánníng City— Mǎshān County—Jīnchāi Town—Dongping Village / Nánníng City—Wǔmíng County—Luóxū Town—Xianshan Village (October 2005)

iv. Hong Kong—Nánníng City—Běihǎi City—Qīnzhōu City—Chángtān Town—Butou Village (August 2006)

A major conundrum in Guǎngxī is the apparent conflict between economic development and cultural preservation. In general, each time a Zhuang-speaking settlement develops into a modern centre of business and commerce it ceases to be a Zhuang-speaking settlement because more Han-speaking people come into the area and the new town turns into a Mandarin- or Cantonese-speaking town or city! Of course, this situation is not limited to the Zhuang minority group alone, but it is of some concern for other minority groups in China as echoed by the Dalai Lama with regards to the Tibetan minority group in connection with the start of a new railway from Beijing to Tibet:

> He said that while the Chinese constitution promised regional autonomy to minority nationalities, the guarantee was not "implemented fully…. What happens on the ground is that large populations from the majority nationalities have spread into these minority regions. Consequently, there is a danger of the languages and rich traditions of the minority nationalities becoming gradually extinct." (Dalai Lama, 2007)

A careful look at the pattern of fieldtrip itinerary is one of city/town to village. We noticed that, as a result of this conundrum, Zhuang is hardly ever spoken as a public or common language of communication in any city. Indeed, Nánníng, the capital city of the Guǎngxī Zhuang Autonomous Region, has ceased to be a

Zhuang-speaking settlement, and is now mainly a Mandarin-speaking city. In fact, the trend is that children born in the city to Zhuang-speaking parents generally do not pick up Zhuang as their mother-tongue. This important language use phenomenon was the basis of one of our first field trip choices: to do most of the data collection in villages rather than in towns. As mentioned above, communication in these cities is often characterized by a mix of languages (code-switching and code-mixing) such that even when a fluent speaker was found, it was not possible to find actual situations in which only Zhuang would be used over a considerable stretch of time. As a result, most of the recordings we made were done in rural settings by traveling to the villages of our informants.

In terms of methodology and technique, a major choice we had to make was very much related to this issue of language survival. The concern of most Zhuang people, even in the village, is how to document and preserve their language. We noticed that once we were in the village, people mainly got interested in what we were doing when they had some understanding that the work we were doing might lead to the documentation and preservation of their language. As a result of this, in subsequent visits, we decided to develop a technique of dialogue repetition and dramatization in the village based on linguistic texts we had carefully constructed from a proficiency course book (Bodomo and Pan 2007). Very often the villagers would be very amused about the texts and actually dramatize them, say them aloud, discuss them, saying what is authentically Zhuang and what is not, and finally suggesting better ways of making the conversation, and once everybody was satisfied with the texts, we then proceeded to do photo-, audio-, and video-recording of the dialogues. This way we got testimony from the language users themselves that what we were coming up with was indeed authentic linguistic data. Of course, other more spontaneous recordings took place in the form of participating in the everyday lives of the people, especially rites of passage like funerals and birth celebrations, routine farm work situations in which we followed the villagers to the fields and asked them to identify plant, insect, and animal names for us, during which we photo-, audio-, and video-recorded them. These semi-controlled dialogue settings along with the spontaneous settings ensured that we collected pronunciation, lexical items, and syntactic constructions of authentic Zhuang from fluent speakers and without the risk of influences from other linguistic systems through language mixing as we witnessed in the cities. Connecting one's linguistic field research explicitly to issues about language documentation, preservation, and revitalization is an important field research technique and strategy, in Guǎngxī, in particular, and other minority linguistic situations, in general.

3.   Major Features of the Zhuang Language
In this section, we provide an outline sketch of the major linguistic features of Zhuang. Further information about the major linguistic features of the language can be found in our forthcoming grammar (Bodomo, in preparation).

3.1. Phonology

Each of the two dialects we have studied so far (Mashan in Northern Zhuang and Qinzhou in Southern Zhuang) has nine vowel phonemes. This is based on minimal pairs set up from our field notes (Bodomo, in preparation), including the close front vowels /iː/ and /ɪ/, the close-mid front vowel /eː/ (Mashan) /ɛː/ (Qinzhou), the open front vowels /aː/ and /a/, the open-mid back vowel /ɔː/, and the close back vowels /ʊ/, /ɯ/, and /uː/. There are a number of diphthongs and triphthongs in each of these dialects. Also based on minimal pairs from our field notes, we have 23 consonants for Mashan Zhuang and 19 for Qinzhou including bilabials, labio-dentals, dentals, alveolars, velars, glottals, palatals, labialized velars, palatalized bilabials, and palatalized velars, with the difference that the labialized and palatalized consonants occur in Mashan but not in Qinzhou.

Like other Chinese languages, Zhuang is a tone language, with six "stretchy" tones and two "checked" ones in both Mashan and Qinzhou. Tones in Mashan Zhuang are marked as Tone 1- 8: (Tone1= 53, Tone2=22, Tone3=242, Tone4=24, Tone5=33, Tone6=31; Tone 7 and 8 are marked respectively by letters p, t, k and b, d, g at the end of word/syllable boundaries). According to Zhang (1998) the so-called Standard Zhuang (this is based on the Wuming dialect but is barely intelligible with other dialects and is thus very little used by speakers of other dialects) has 22 initials and 108 finals, including six vowels, 12 compound vowels, 30 nasal vowels, and 60 vowels ending with codas.

3.2. Morphosyntax

The basic word order of the language is SVO as attested in the following declarative sentences with a nominal object in (1a) and a pronominal object in (1b):

(1) a. Gou   aeu   nohmou.   b.   Gou   gyaez   mwngz.
       Gou53 aeu53 no31mou53.   Gou53 gyae22 mwng22.
       1SG   take   pork   1SG   love   2SG
       'I am picking up pork.'   'I love you.'

Interrogative structures are, at least, of two types, including in situ and A-not-A choice questions, as shown in (2):

(2) a. Mwngz   gwn   gazmaz.
       Mwng22 gwn53   ga22ma22.
       2SG   INGEST what
       'What are you eating?'

   b. Mwngz   gwn   ndi   gwn?
       Mwng22 gwn53   ndi53 gwn53.
        2SG   INGEST NEG INGEST
       'Are you going to eating something or not?'

The negative particle as can be seen in (2) usually occurs between the subject and the verb, as shown in (3):

(3)   Gou   ndi   gwn   ngaiz.
        Gou53 ndi53 gwn53   ngai22.
        1SG   NEG   INGEST cooked rice
        'I am not eating cooked rice.'

As can be seen in the various sentences, the language has little inflectional morphology, as common morphosyntactic categories like gender, agreement, tense, and case are not marked on nouns and verbs. However, the language has aspectual markers attached to verbs as in (4) and quite an intricate system of nominal classifiers as shown in (5):

(4)   Gou   gwn-gva
        Gou53 gwn53-gva33
        1SG   eat-PERF
        'I have eaten.'

(5) a. *song boux vunz* 'two CL person'
    b. *song duz mou* 'two CL pig'
    c. *song ndaen lwggam* 'two CL orange'
    d. *song ndaen lwgmanh* 'two CL pepper'

The major word classes of the language are listed in (6):

(6) a. Noun *ngai* 'cooked rice'
    b. Verb *gwn* 'to eat'
    c. Adjective *sang* 'tall'
    d. Determiner *bwnj saw naex* CL-book-DET 'this book'
    e. Adverb *nyaeng* 'slowly'
    f. Preposition *nywqgwnz daiz de* on-table-the 'on the table'
    g. Conjunction *cimh* 'and'
    h. Ideophone *hiz-liz-humh-lumh* 'noisy actions'
    i. Pronoun *gou* 'I', *mwngz* 'you'

We now focus on one of these word classes, the pronominal system in the next section.

4.   The Pronominal System of Zhuang

Having outlined some basic choices and techniques of field research in a multilingual environment like Guǎngxī, and having sketched the major morphosyntactic features of Zhuang, we now focus on outlining some prominent features of the pronominal system of Zhuang based mainly on data from Mashan

and Qinzhou Zhuang. The various kinds of pronouns include personal, possessive, reflexive, reciprocal, interrogative, and demonstrative pronouns. Relative and definite/indefinite pronouns do not exist in the language; relative constructions and definiteness are marked in other ways. For reasons of space we will concentrate on the personal, possessive, and reflexive pronouns here. For a more comprehensive description of the pronominal system, see Bodomo (in preparation).

4.1. Personal Pronouns

The first, second, and third person singular and plural personal pronouns for Mashan Zhuang and Qinzhou Zhuang are shown below in (7) and (8) respectively:

(7)

Items Person	Mashan Zhuang	Notes
1st Person	*gou53*	1.SG: 'I'; 'me'
	dou53 (exclusive)	1.PL: 'we, without you' ; 'us, without you'
	raeu22 (inclusive)	1.PL: 'we, including you'; 'us, including you'
2nd Person	*mwng22*	2.SG: 'you'; 'you'
	sou53	2.PL: 'you'; 'you'
3rd Person	*de53*	3.SG: 'he'/'she'/'it'; 'him'/'her'/'it'
	gyoeng33de53	3.PL: 'they'; 'them'

(8)

Items Person	Qinzhou Zhuang	Notes
1st Person	*gu33/hong24gu33*	1.SG: 'I'; 'me'
	toi53gu33 (exclusive)	1.PL: 'we, without you'; 'us, without you'
	toi53laeu33/hong24laeu33 *(inclusive)*	1.PL: 'we, including you'; 'us, including you'
2nd Person	*mung33/hong24mung33*	2.SG: 'you'; 'you'
	toi53mung33	2.PL: 'you'; 'you'
3rd Person	*de33/hong24de33*	3.SG: 'he'/'she'/'it'; 'him'/'her'/'it'
	toi53de33	3.PL: 'they'; 'them'

In terms of person, number, gender, and case, as can be seen in the data from the personal pronoun charts in (7) and (8), Zhuang is similar to other Tai-Kadai languages. Unlike English, it does not mark gender and case.

In terms of person reference, the most distinctive thing by far is what I term here the "-clusivity" distinction, whereby the first person plural has two forms, one inclusive of the listener/hearer and the other exclusive of the listener/hearer.

(9) a. Dou   bae   ndaem   faex.   (Mashan Zhuang)
      Dou53 bae53 ndaem53   fae24.
      1.PL   go   plant   tree
      'We (not including the listener) go to plant trees.'

    b. Raeuz   bae   yohyaux.
      Raeu22   bae53 yo31yau24.
      1.PL   go   school
      'We (including the listener) go to school.'

(10) a. Toihguz   bae   ma   lanz.   (Qinzhou Zhuang)
      Toi53gu33 bae44   ma44 lan33.
      1.PL   go   back   home
      'We (not including the listener) go back home.'

    b. Toihlaeuz   baij   goiq.
      Toi53laeu33   bai24 goi11.
      1.PL   walk   first
      'We (including the listener) go first.'

However, this is not always the case for all the dialects of Zhuang. For instance, there is no distinction between the exclusiveness and inclusiveness of the first person plural in Wuming dialect, as shown in (11).

(11)   Raeuz   bae   haw.
      Raeu31   bae24   haw24.
      1.PL   go   market
      'We (either including the listener or not) go to the market.'

These features of exclusiveness and inclusiveness can also be found in some Chinese dialects (Mei &Yang 1995), particularly in the Beijing dialect, Dongbei dialect (Nie 1995), Min dialects, and Wu dialects. The data in (12) illustrates the '-clusivity' features across various Chinese dialects.

(12)

Items / Dialects	Singular	Plural
Beijing Dialect (Běijīng Region)	我 [wǒ]: 'I'	我们 [wǒmen]: 'we' (exclusive)
		咱们 [zánmen]: 'we' (inclusive)

Min Dialect (Fújiàn Province)	我 [ŋuai³³]: 'I'	我各侬 [ŋuai³³ kou²¹nøyŋ⁵³]: 'we' (exclusive)
		侬家 [naŋ²¹ŋa⁵⁵]: 'we' (inclusive)
Dongbei Dialect (Hēilóngjiāng Province)	我 [wǒ]: 'I'	我们 [wǒmen] / 姆们 [mǔmen]: 'we' (exclusive)
		咱们 [zánmen] / 咱 [zán]: 'we' (inclusive)

In spite of the above mentioned areas, most Chinese speakers tend to use *wǒmen* in situations of either including or excluding the hearer/listener when they speak Standard Chinese/Pǔtōnghuà.

4.2. Possessive Pronouns

There are two types of pronominal possessive constructions in Mashan Zhuang: (i) possessee + pronoun (13); (ii) possessee + (possessive marker) + pronoun (14):

(13)   saw   gou
       saw53 gou53
       book   1.SG
       'my book'

(14) a. saw   (duz)   gou   b. * gou   duz   saw
       saw53 (du22) gou53   gou53   du22   saw53
       book   (DU)   1.SG   1.SG   DU   book
       'my book'

   c. maq   gou   d. * maq   duz   gou
      ma33   gou53   ma33   du22   gou53
      mother 1.SG   mother DU   1.SG
      'my mother'

   e. duz   gou
      du22   gou53
      DU   1.SG
      'mine'

As we can see from (14a), the possessive marker *duz* is optional. In Mashan Zhuang, one can not use *duz* for expressing family relations (see 14d).

Not all dialects of Zhuang exhibit the two types mentioned above. For instance, type (ii) cannot be found in Qinzhou Zhuang. However, Qinzhou Zhuang has another way to express possession. The data from (15) to (16) illustrate two types of possessive constructions in Qinzhou Zhuang.

(15)   possessee + pronoun

   a. ma   guz
     ma44 gu33
     mother 1.SG.
     'my mother'

   b.* guz   ma   c. *guz   de   ma
     gu33 ma44   gu33 de44 ma44
     1.SG mother   1.SG. DE   mother

(16)   pronoun + possessive marker + possessee

   a. guz   de   lauxsae   b. * lauxsae   guz
     gu33 de44 lau22sae44   lau22sae44 gu33
     1.SG. DE   teacher   teacher   1.SG
     'my teacher'

At first, the two constructions in (15) and (16) might look like expressing the differences between alienable and inalienable possessions as found in the system of many African languages. However, it seems that, in Qinzhou Zhuang, the difference is rather between possession involving family relations and non-family relations.

4.3.   Reflexive Pronouns

Zhuang does not have an indigenous morpheme for expressing reflexivity like *-self* in English, and *-meme* in French. For instance, in expressing the idea of 'I cut myself', Mashan Zhuang employs the following construction in (17) but Qinzhou does not, as shown in (18):

(17)   Gou   raemj   gou.   (Mashan Zhuang)
     Gou53 raem242 gou53.
     1.SG   cut   1.SG
     'I cut myself.'

(18)   * Guz laemj   guz.   (Qinzhou Zhuang)
     Gu33 laem24 guz.
     1.SG   cut   1.SG

However, influenced by Mandarin, in which *zìjǐ* indicates the reflexive, a second way of expressing reflexivity in Zhuang is using a borrowed morpheme, such as *swhgeij* in standard Zhuang, and *seihgeij* and *sakga* in Mashan and Qinzhou Zhuang, respectively.

(19)   Gou   raemj   gou   seihgeij.   (Mashan Zhuang)
        Gou53 raem242 gou53 sei31gei242.
         1.SG   cut   1.SG   self
        'I cut myself.'

(20)   Guz   laemj   sakga.   (Qinzhou Zhuang)
        Gu33   laem24 sak53ga44.
        1.SG   cut   1.SG self
        'I cut myself.'

More details on the reflexivity of Zhuang pronouns can be found in Bodomo (2005).

What the discussion of even just these three types of pronouns alone shows us is that contrastive and comparative studies of the various dialects of each language, on the one hand, and of the target language and neighbouring languages or languages of influence, on the other, is crucial in understanding some intricacies. Intra-dialect comparison is needed in all three cases to tease apart the differing uses of the '-clusivity' feature, and in understanding the differing ways of marking family relations between Mashan and Qinzhou, etc. Interlingual comparative studies were necessary to identify and understand the surprising lack of reflexive pronouns in Zhuang and how this is resolved with borrowings from Mandarin.

5.   Summary and Conclusion

In this paper, we have outlined the experiences and the lessons we learned from doing fieldwork in a multilingual environment in southwestern China. We have shown this part of China to be a highly multilingual region, home to many minority languages and cultures such as the Zhuang, Yao, and Mulao, in which inhabitants show a high degree of polyglottism. A major case of language shift is occurring in which the use of Zhuang and other minority languages is restricted mainly to rural areas because Zhuang-speaking villages, like Jìngxī, which develop into towns, become more and more Mandarin-speaking towns. Zhuang-speaking villages become non-Zhuang-speaking towns! And children of Zhuang-speaking parents in cities are likely not to speak Zhuang as a mother-tongue. This scenario of multilingualism and language shift has consequences for doing fieldwork. For fieldwork to be effective, and in order to collect authentic data, choices must be made to do the data collection in rural rather than in urban settings. Given that the population is justifiably anxious about the survival of their language and culture, fieldwork must be explicitly couched in terms of not only mere language documentation and preservation, but also language revitalization, such as writing proficiency books and designing language acquisition programmes with the field materials we have collected for the community and for foreigners. This is certainly one way of giving back to the community what has been taken from them. A second major aspect to collecting reliable data in a

multilingual environment is to explicitly design methods and techniques for teasing out what actually belongs to the target system of investigation and what is borrowed. We have shown that even with a very basic and closed subsystem within the language, like the pronominal system, one has to do not only inter-dialectal contrastive and comparative surveys, one also has to do a systematic comparative analysis of the target language and its neighbouring languages. Gathering data from a multilingual fieldwork situation involves an intricate negotiation between the target language system and those of surrounding languages.

References

Bodomo, A. B. 2005. Binding relations in Mashan Zhuang. Paper presented at the International Workshop on Zhuang Language. The University of Hong Kong, May 12, 2005.

Bodomo, A. B. in preparation. The Grammatical Structure of Zhuang, ms, HKU.

Bodomo, A. B. and Pan Yanqin. 2007. *A Proficiency Course in Zhuang: Fieldwork Documentation and Revitalization of a Language and Culture of Southwestern China*. Hong Kong: Linguistic Society of Hong Kong.

Dalai Lama. 2007. Dalai Lama Criticizes Tibet Railway. http://asia.news.yahoo.com/070310/afp/070310143553asiapacificnews.html (accessed March 11, 2007).

Edmondson, Jerold A., and David B. Solnit (eds.). 1990. *Comparative Kadai: the Tai branch*. Dallas, Tex.: Summer Institute of Linguistics.

Nie Zhiping. 1995. Hēilóngjiāng fāngyán kǒuyǔ zhōng de rénchēng dàicí [Pronouns in Heilongjiang Dialects]. *Journal of Qiqi Ha'er Normal University*.

Population Census Office, National Bureau of Statistics of China. (ed). 2002. *Tabulation of the 2000 Population Census of the People's Republic of China*.

Mei Tsu-Lin and Yang Hsiu-Fang. 1995. Jǐge Mǐnyǔ yǔfǎ chéngfèn de shíjiān céngcì [The Chronological Levels of Several Grammatical Constituents in Min Dialect]. *Zhōngyāngyánjiùyuàn lìshǐyǔyán yánjiùsuǒ jíkān* [Bulletin of the Institute of History and Philology Academia Sinica] 66(1):1-21.

Qin, Xiaohang. 2004. *Zhuang Lexicology*. Beijing: Minzu Chubanshe.

Zhang Shengzhen. 1998. *The History of Zhuang*. Beijing: Minzu Chubanshe.

Adams Bodomo
School of Humanities (Dept. of Linguistics)
The University of Hong Kong
Pokfulam Road, Hong Kong

abbodomo@hkucc.hku.hk

Indonesian Money, Balinese People:
Codeswitching and Numerals in Balinese Sociopolitical Discourse[*]

EDMUNDO LUNA
University of California, Santa Barbara

0.   Introduction

Past studies on codeswitching (which is defined here as the alternation between two or more languages within a single conversation) have highlighted many of its characteristics that play unique roles in what we know about language and interaction. These characteristics include its structural properties, as exemplified by such models as the Linear Equivalence Constraint (Poplack 1980:73, Poplack 1981), the Matrix Language Frame Model (Myers-Scotton 1993), a typological approach (Muysken 2000), among others. These characteristics also include its socio-interactional motivations (Gumperz 1964, Zentella 1982, 1997), as well as motivations that combine structural and socio-interactional considerations, such as Shenk (2006), which investigates the role of prosody in codeswitching within interactions from a discourse-functional perspective.

Given the breadth of the codeswitching literature, the contribution of this study is an attempt to address the following questions: how and where does codeswitching fit in interactional contexts where multilingual speakers are restricted to particular codes in their native language? These questions highly reflect the interactional situation for bilingual speakers of Balinese and Indonesian (both Austronesian languages of the Sundic sub-branch) who participate in *sangkep banjar* or *paruman banjar*, periodic meetings of the *banjar*, an essential sociopolitical institution in Bali, Indonesia (Eiseman 1990, Geertz 1975, Hauser-Schäublin 1997, Hobart 1975, Howe 2001, Warren 1995).

This study will demonstrate that even in linguistically constrained interactions, codeswitching can and does indeed occur once an appropriate trigger has been invoked. In this case, one possible trigger is the semantic domain of money and finance, which prompts the use of Indonesian rather than Balinese numerals and

figures. This particular motivation for codeswitching suggests some connection of the national and provincial governments' role to the financial matters of any given *banjar*.

This study has two goals. One goal is to show that *sangkep* participants index matters directly dealing with institutions above the village level (e.g. the provincial and national level) by codeswitching to Indonesian at the mention of numerals and financial figures. The other goal is to show that *banjar* are responding to competing pressures: one is to preserve goals and practices that are associated with Balinese cultural identity through the use of Balinese; the other is to report to and acknowledge national- and provincial-level institutions for which *banjar* are also responsible through the use of Indonesian.

1.   Background
1.1.   The *banjar*
The *banjar*, as stated above, is an essential sociopolitical institution in Bali; in fact, it is the smallest recognized political unit on the island. A typical *banjar* is made up of several *kuren* (households), each of which is represented by the active membership of married males (i.e. the household heads). However, the *banjar* is far from a homogeneous institution – one would certainly expect to notice some differences from one *banjar* to the next. That being said, there are a number of characteristics that all *banjar* have in common: 1) Villages have at least one *banjar* (but many have more than one); 2) membership to a *banjar* is compulsory once a man marries. The *banjar* where he and his family take up membership is usually the one of his father, provided there is enough room to allow more members; 3) each *banjar* has a charter of regulations (*awig-awig*), which sets terms and conditions for office term limits, fines, ritual and legislative punishment, and so on; and 4) the *banjar* itself oversees the social and spiritual life of the village, mostly through resolutions passed by consensus during the *sangkep*, which usually take place in the *bale banjar* (a pavilion dedicated for *banjar* use), but can take place in other consecrated assembly space.

1.2.   Language Use in Bali
The Balinese language is famous for its socially constrained lexicon, which will be referred to here as *speech styles* (cf. Errington 1988 on a similar phenomenon in the related language Javanese). The speech style conventions in Balinese have been characterized in the following manner (Eiseman 1990), even though the actual situation is much more complex (Arka 2005, Artini 1993, Howe 1989, 2001):

- Low speech styles are used when addressing those of lower castes, as well as intimates and family members.

- High speech styles are used when addressing those of higher castes.

- Middle speech styles are used when addressing those whose castes are unknown. After the castes between the speaker and addressee have been ascertained, the participants adjust their speech styles accordingly. Middle speech styles are also used when a high-caste speaker and a low-caste

addressee are talking about a third person who is of higher caste than either participant.

Thus, if one were to ask someone if s/he wanted to take a bath, there are (at least) three ways of expressing this, as illustrated in (1):

(1) LOW   Cai/Nyai[1] lakar mandus?
      MID   Jerone   jagi   masiram?
      HIGH Iratu   jagi   masucian?
            you   FUT   bathe
      "Will you take a bath?" (from Eiseman 1990:139; translation mine)

These speech style conventions are used in most informal interactions (informal conversations, market transactions, and so on).

The meetings of the *banjar* (*sangkep/paruman banjar*), on the other hand, are unique in this regard due to a temporary suspension of these speech style conventions that is enacted within these contexts. Instead, only high and middle speech styles are used as a preventative measure against insulting anyone in the assembly. Reverting to using low speech styles as per informal interactional practices is highly undesirable since

> "the use of improper or insulting language is a serious offence which causes ritual pollution of the whole *banjar*. This state must be annulled, ideally paid by the offender" (Hobart 1975:73).

The use of high and middle speech styles is greatly admired in Balinese interactions (Howe 2001:91), since it reflects the highly desired social quality of *alus* 'refined', as opposed to *kasar* 'coarse, uncouth'. Reflecting the *alus* quality is key for a speaker attempting to convey respect to other participants, especially when assembly consensus on potentially contentious issues is sought. On the other hand, Indonesian has been regarded as more "neutral" in cases where it is spoken along with regional languages, with formulaic roles to play in public discourse contexts (Anderson 1990, Durie 1995).

2.   Data

The corpus used for this study is comprised of two meetings that were recorded in two separate villages in Bali in October 2005. These two meetings, identified here as PENG05 and BAT05, occurred in two villages approximately 10 miles apart within the southeastern regency of Gianyar.

PENG05 took place in a *bale banjar* and lasted approximately 2.5 hours, while BAT05 took place in the *jaba tengah* (middle courtyard) of a *pura dalem* (a foundational temple dedicated to the spirits of the dead) and lasted approximately 1.5 hours.

The recordings were then transcribed into Intonation Units (IUs), based on the transcription system described in Du Bois et al. (1993). This resulted in PENG05

---

[1] *Nyai* is the feminine second person pronoun, which is only found in low speech styles.

having 4991 IUs, and BAT05 having 3272 IUs. The meeting data were also analyzed for clauses (i.e. they had to contain at least one predicate), which resulted in 1776 clauses in PENG05 and 1457 clauses in BAT05.

3.   Instances of Codeswitching

Clauses were counted as tokens of codeswitching if more than one element were uttered in Indonesian. An example of such a token (with the Indonesian elements in boldface) is illustrated in (2):

(2)   191   SUARA: ...(1.7) **total**e   mangkin,
                                           total-NE now

         192   ida dane maduwe **kas   harian,**
                  all.of.you MA-have **funds daily**

         193   **sepuluh juta,**
                  ten   million

         194   **nem ratus   sepuluh ribu,**
                  six   hundred ten   thousand

         195   **tiga   ratus   sembilan puluh rupiah.**[2]
                  three hundred nine   ten   rupiah
         "The total now, all of you have the daily-accrued funds [totaling] Rp.
         10,610,390 (about US$1,170)." (BAT05)

     Clauses with only one lexical or grammatical item in Indonesian were treated as containing borrowings rather than as tokens of codeswitching. An example of this is illustrated in (3):

(3)   434   SUARA: ...(3.6) Dadi,
                                           become

         435   **persetujuan** ida dane   ring,
                  agreement   all.of.you LOC

         436   parum   sane sampun lintang taler,
                  meeting REL PFV   pass   thus
         "So, [this was] the agreement from all of you in the previous meetings."
         (BAT05)

     From this analysis, codeswitching is rather rare in these meetings, although it does occur more frequently in BAT05 (above 20%) than in PENG05 (less than 10%), as shown in (4):

---

[2] The *rupiah* is the current national currency of Indonesia.

(4)

Number of Codeswitched Clauses in PENG05 and BAT05.

	PENG05	BAT05
□ Non-CS	1640	1100
■ CS	136	357
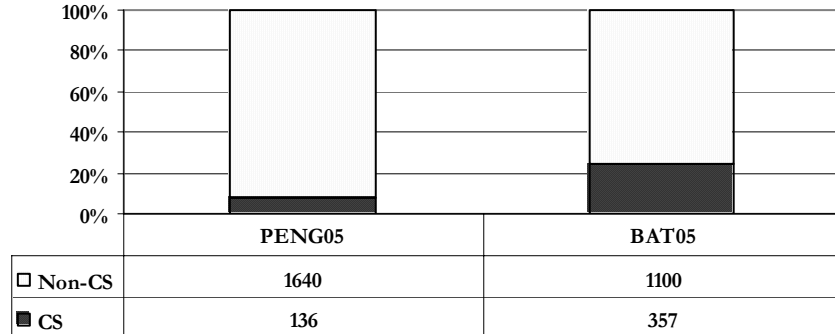
Even though figures in (4) suggest that codeswitching into Indonesian is still rather rare in these meetings, the discussions in sections 4 will demonstrate that numerals and financial figures play large roles in triggering the codeswitching that does occur in the data.

4.   Numerals and Codeswitching
There are 144 tokens of both Balinese and Indonesian numerals from the two meetings. Examples with both types are given in (5) and (6) respectively, with the Balinese numerals in italics and the Indonesian numerals in boldface:

(5)   620   KANDRA: pecalang   niki,
                         village.security.force this

       621   *duang   dasa* dini.
              two:NAS ten   here
       "The 20 members of the village security force here." (PENG05)

(6)   340   SUARA: **...hasil pasar**   duwene,
                       profit market possess-NE

       341   ...(1.6) sat=u,
                  one

       342   **..seratus   dua puluh lima juta,**
              one.hundred two ten   five million
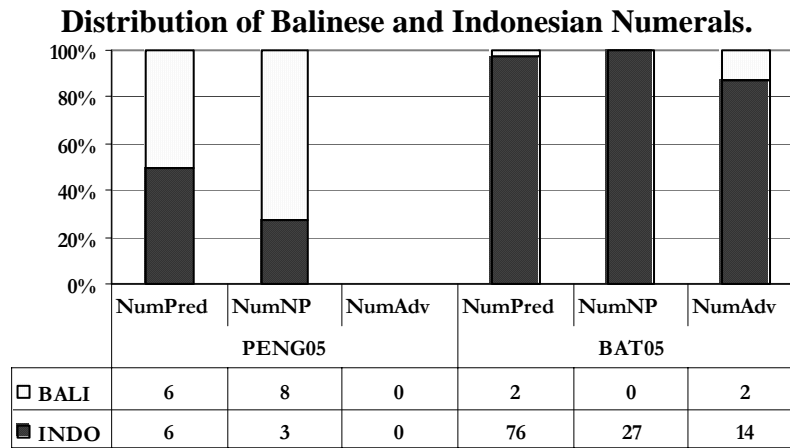
       343   **nem ratus   tujuhbelas,**
              six   hundred seventeen

       344   **..ribu,**
              thousand

478

345 **empat ratus rupiah.**
four hundred rupiah
"The profit from the market [amounts to] Rp. 125,617,400 (more than US$13,000)." (BAT05)

In terms of distribution and frequency of Balinese vs. Indonesian numerals as predicates, NP modifiers, and adverbials, there is a visible difference between the two meetings, as shown in (7):

(7)

Distribution of Balinese and Indonesian Numerals.

	NumPred	NumNP	NumAdv	NumPred	NumNP	NumAdv
	PENG05			BAT05		
□ BALI	6	8	0	2	0	2
■ INDO	6	3	0	76	27	14

As the figures in (7) show, the numerals in PENG05 show an equal distribution between Balinese and Indonesian numeral predicates, and a majority of Balinese NP- modifying numerals. On the other hand, the numerals in BAT05 show a strong tendency for Indonesian numerals overall.

Of course, one obvious question that emerges from these figures is what factors would motivate such a distribution. One hypothesis is the structural differences between the Balinese and Indonesian numerals being a primary factor. In order to test this hypothesis, comparisons between corresponding numerals in Balinese and Indonesian must be made. An initial comparison is presented in (8):

(8)

Some Numerals in Balinese and Indonesian.

Numeral	Balinese	Indonesian
'one'	sa	satu
'two'	dua (L) / kalih (H)	dua
'three'	telu (L) / tiga (H)	tiga
'four'	pat	empat
'five'	lima	lima
'ten'	dasa	sepuluh
'twenty'	duang dasa (L)/kalih dasa (H)	duapuluh
'twenty-one'	selikur	duapuluh satu
'twenty-two'	dualikur	duapuluh dua
'twenty-five'	selae	duapuluh lima
'thirty'	telung dasa (L)/tigang dasa (H)	tigapuluh
'thirty-five'	pasasur	tigapuluh lima
'one hundred'	satus	seratus
'two hundred'	satak	dua ratus

As illustrated above in (8), both numeral systems are basically decimal, but the Balinese system also contains several suppletive forms, especially for higher-order numerals, which came about by several intersecting cultural practices such as special names for Chinese cash coin combinations and the like, e.g. *selae* 'twenty-five' < *sa-* 'one' + *lawe* 'thread (of 25 Chinese cash coins)' and *satak* 'two hundred' < *sa-* 'one' + *atak* 'thread of 200 coins' (Comrie 2005, Eiseman 1990). Thus, one could ask at this point if the codeswitching into Indonesian via numerals is due to the complexity resulting from the presence of suppletive forms within the Balinese numeral system.

However, this seems not to be the case, since there are some higher-order Balinese numerals in the data, as illustrated in (9) and (10):

(9)   947   KANDRA: ...ngaturang   ring,
                      N-offer-ANG LOC

         948   ..kenten bunga-bunga niki,
                thus   profit.account this

         949   *...satak   seket,*
                two.hundred fifty
       "[I will] mention something about the 250 profit accounts." (PENG05)

(10)   769   KANDRA: ..katahnyane *karobelah   yuta,*
                      at.most   *one.hundred.fifty million*

770   ..plaus   bunga,
        t.o.offering flower

771   nika.
        that
"At most [there will be] 150 million plaus offerings." (PENG05)

Therefore, other factors have to be considered, as the following discussion in section 5 will demonstrate.

5.   Quantified Monetary Figures vs. Other Entities
As demonstrated in section 4, numeral complexity has little to do with the distribution of Balinese and Indonesian numerals in the meeting data. Instead, it appears that one of the main factors of Balinese vs. Indonesian numeral distribution is the manner in which monetary figures are expressed during these meetings, as illustrated by the examples in (11) and (12):

(11)   79   SUARA: ...(1.8) **Sisa   kas   lama,**
                                remaining funds long.time

        80   ..ida dane maduwe   **sembilan juta,**
                all.of.you MA-have **nine   million**

        81   **empat ratus   delapanbelas ribu,**
                four   hundred eighteen   thousand

        82   **lima ratus.**
                five hundred
        "The remaining funds in the long-term account all of you have [amount to]
        Rp 9,418,500 (under US$1,000)." (BAT05)

(12)   586   SUARA: ..Katahnyane,
                        at.most

        587   **tujuh ratus,**
                seven hundred

        588   **delapan puluh dua ribu,**
                eight   ten   two thousand

        589   **seratus   rupiah.**
                one.hundred rupiah
        "At most, Rp. 782,100" (PENG05)

    In contrast, other entities, e.g. people, tend to be quantified with Balinese numerals, as illustrated in examples (13) and (14):

(13)   619   KANDRA: akehnyane,
                              at.most

        620   *pecalang   niki,*
                village.security.force this

        621   *duang   dasa* dini.
                two:NAS ten   here
        "At most, the 20 members of the village security force here." (PENG05)

(14)   238   PANYARIKAN: sane nenten ngrauhang,
                                  REL NEG   N-come-ANG

        239   wantah,
                only

        240   ...(2.9) *ulung   dasa,*
                        eight:NAS ten

        241   ...*kutus diri.*
                eight   CL:person
        "Just 88 (people) did not come." (PENG05)

As shown in (13) and (14), the entities *pecalang niki* 'the village security force' and *sane nenten ngrauhang* 'those who have not come' are quantified with Balinese rather than Indonesian numerals.

In terms of distribution, the tendencies for Indonesian numerals quantifying financial figures and for Balinese numerals quantifying other quantified entities appear to hold, as suggested by the figures in (15):

(15)
Distribution of Numerals Quantifying Financial Figures vs. Other Entities.

	FINAN	OTHER	FINAN	OTHER
	PENG05		BAT05	
☐ BALI	1	14	1	3
▪ INDO	5	3	117	0
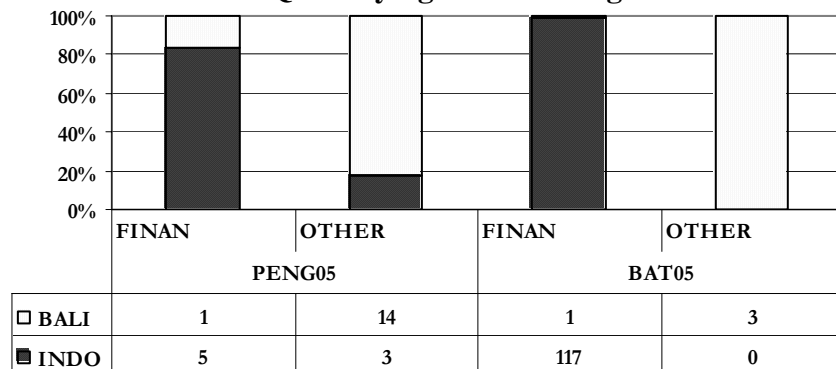
As illustrated in (15), PENG05 shows the majority of financial figures being quantified by Indonesian numerals, and other entities by Balinese numerals. Furthermore, this tendency is stronger still in BAT05.

6. Motivations for Codeswitching with Numerals in the *sangkep*

Now that a primary factor for determining the distribution between Indonesian and Balinese numerals (and subsequent codeswitching) has been found, the question that remains to be addressed is the range of possible motivations for codeswitching with numerals in these meetings.

It appears that the use of Indonesian numerals within the *sangkep* is motivated primarily by the *banjar's* roles and responsibilities in several national- and provincial-level institutions. For example, one consideration is that *banjar* located in villages within or near heavily touristed areas (such as the villages in the present study) are responsible for administering funds which enter the local economy via various funding machines, such as taxes levied at markets with heavy tourist traffic and at tourist-themed restaurants and hotels which are under the auspices of the PHRI (*Perhimpunan Hotel Restoran Indonesia* 'The Indonesian Hotel and Restaurant Association'). For *banjar* which do not encounter a high volume of tourists, there are other supra-village institutions for which they take responsibility. One example of this is the LPD (*Lembaga Perkreditan Desa* 'Village Credit Council'), a provincial level program which is intertwined with village-level activities at the financial level. In essence, the financial figures associated with these various institutions comprise a possible "bridge" for Balinese speakers to codeswitch into Indonesian.

7. Concluding Remarks

To summarize, it appears that Balinese speakers in a *sangkep banjar* can codeswitch to Indonesian when numerals associated with financial figures are mentioned. The motivation for this is most likely the fact that financial figures are most often associated with national- and provincial-level institutions, which occur in the form of taxes, programs with financial credit incentives, and so on.

Thus, the codeswitching attested in these meetings index the competing pressures for which the *banjar* is responsible: while the institution is ultimately responsible for preserving much of the Balinese cultural identity (part of which is using Balinese), it also presents itself as a viable and influential political institution in the national (i.e. Indonesian) level, as indexed through the use of Indonesian.

Abbreviations:

-ANG   derivational -*ang* suffix (primarily valency-changing and some idiomatic functions; cf. Sidhakarya 1998)
CL   classifier
EXIST existential verb
HESIT hesitation particle
LOC   locative
MA-   "S-Trigger" prefix (see Cumming 1991 for "trigger" terminology)

N-   "A-Trigger" prefix
NAS   nasalized numeral form (cf. Eiseman 1990)
-NE   definite/possession marker (cf. Luna and Cumming 2006)
NEG   negation particle
PFV   perfective
REL   relativizer

Transcription conventions after Du Bois et al. (1993)

.   final intonation contour
,   continuating intonation contour
--   truncated intonation contour
-       truncated word
%   glottal stop
=   prosodic lengthening
..   short pause
...   long pause
(x.y)   length of long pause (in seconds)

References

Anderson, B.R.O'G. 1990. *Language and Power: Exploring Political Cultures in Indonesia*. Ithaca: Cornell University Press.

Arka, I Wayan. 2005. Speech Levels, Social Predicates and Pragmatic Structure in Balinese: A Lexical Approach. *Pragmatics* 15(2/3):169-203.

Artini, Luh Putu. 1993. Style Shifting in Balinese Dialogue: A Discourse-Based Study. *La Trobe Papers in Linguistics* 6.

Comrie, Bernard. 2005. Endangered Numeral Systems. In Jan Wohlgemuth and Tyko Dirksmeyer, eds., *Bedrohte Vielfalt: Aspekte Des Sprach (En) Tods [Endangered Diversity: Aspects of Language Death]*, 203-230. Berlin: Weissensee Verlag.

Cumming, Susanna. 1991. *Functional Change: The Case of Malay Constituent Order*. New York: Mouton de Gruyter.

Du Bois, J. W., Stephan Schuetze-Coburn, Danae Paolino, and Susanna Cumming. 1993. Outline of Discourse Transcription. In Jane A. Edwards and Martin D. Lampert, eds., *Talking Data: Transcription and Coding Methods for Language Research*, 45-89. Hillsdale, NJ: Lawrence Erlbaum.

Durie, Mark. 1995. Framing Acehnese: Language Choices and Discourse Structures in Aceh. Presented at BLS 21.

Eiseman, Fred B. Jr. 1990. *Bali: Sekala and Niskala, Vol. 2: Essays on Society, Tradition, and Craft*. vol. 2. Hong Kong: Periplus Editions Ltd.

Errington, J. J. 1988. *Structure and Style in Javanese: A Semiotic View of Linguistic Etiquette*. Philadelphia: University of Pennsylvania Press.

Geertz, Hildred, and Clifford Geertz. 1975. *Kinship in Bali*. Chicago; London: University of Chicago Press.

Gumperz, John J. 1964. Linguistic and Social Interaction in Two Communities [December]. *American Anthropologist* 66(6).

Hauser-Schäublin, Brigitta. 1997. *Traces of Gods and Men: Temples and Rituals as Landmarks of Social Events and Processes in a South Bali Village*. Berlin: Dietrich Reimer Verlag.

Hobart, Mark. 1975. Orators and Patrons: Two Types of Political Leader in Balinese Village Society. In Maurice Bloch, ed., *Political Language and Oratory in Traditional Society*, 65-92. London; New York; San Francisco: Academic Press.

Howe, Leo. 1989. Hierarchy and Equality: Variations in Balinese Social Organization. *Bijdraagen tot de Taal-, Land- en Volkenkunde*:47-71.

Howe, Leo. 2001. *Hinduism & Hierarchy in Bali*. Oxford; Santa Fe: James Currey; School of American Research Press.

Luna, Edmundo, and Susanna Cumming. 2006. Polysemy, Homophony, Definiteness, and Possession: The Case of Balinese *-(N)E*. Paper presented at 10th International Conference on Austronesian Linguistics (10ICAL), Puerto Princesa, Philippines.

Muysken, Pieter. 2000. *Bilingual Speech: A Typology of Codemixing*. Cambridge: Cambridge University Press.

Myers-Scotton, Carol. 1993. Common and Uncommon Ground: Social and Structural Factors in Codeswitching. *Language in Society* 22:475-503.

Poplack, Shana. 1980. Sometimes I'll Start a Sentence in Spanish Y Termino En Espanol: Toward a Typology of Code-Switching. *Linguistics* 18:581-616.

Poplack, Shana. 1981. Quantitative Analysis of a Functional and Formal Constraint on Codeswitching. *Centro de Estudios Puertorriqueños, Working Papers* (2).

Shenk, Petra Scott. 2006. The Interactional and Syntactic Importance of Prosody in Spanish-English Bilingual Discourse. *International Journal of Bilingualism* 10(2):179-205.

Sidhakarya, Wayan. 1998. The -Ang and -in Suffixes as Verbal Case Markings in Balinese. In Shobhana L. Chelliah and Willen J. de Reuse, eds., *The Fifth Annual Meeting of the Southeast Asian Linguistics Society*, 317-333. Tempe, AZ: Arizona State University.

Warren, Carol. 1995. *Adat and Dinas: Balinese Communities in the Indonesian State*. Oxford; Singapore; New York: Oxford University Press.

Zentella, Ana Celia. 1982. Codeswitching and Interactions among Puerto Rican Children. In J. Amastae and Elías-Olivares, eds., *Spanish in the United States: Sociolinguistic Aspects*, 386-412. Cambridge, New York: Cambridge University Press.

Zentella, Ana Celia. 1997. *Growing up Bilingual: Puerto Rican Children in New York*. Oxford: Blackwell.

Edmundo Luna
Department of Linguistics
UC Santa Barbara
3607 South Hall
Santa Barbara, CA 93106-3100

ecluna@umail.ucsb.edu

Documenting One Language in a Multi-Lingual Community

CHRISTINA M. WILLIS
University of Texas at Austin

## 0.	Introduction

Increasingly linguists agree that mono-lingual communities are not the norm (Woolard 1999). As such, the fact that most areas of India are multi-lingual is hardly surprising. The reported number of living languages in India varies from 114 languages, (Abbi 2001) to 415 (Gordon 2005). Including Hindi and English, there are twenty-three official languages recognized by the constitution of India. The official languages are spoken throughout the subcontinent alongside the many other un-official languages (and their dialects).

This paper examines the linguistic situation of the area in and around Dharchula, Uttarakhand[1] a border town in the Indian Himalayas, which serves as the field site for my language documentation and description project[2] of Darma, a Tibeto-Burman language (called Darmiya by Grierson 1967-68, and others). I will demonstrate the importance of employing a methodology for data collection that results in natural discourse, and how this discourse can highlight the effects of language contact and the frequency of borrowing, and codeswitching. While these language practices can make it challenging for linguists to tease apart indigenous linguistic forms from borrowed forms or segments of codeswitching, relying on natural discourse for analysis provides data that realistically reflects the practices of a multi-lingual community. I will also demonstrate that by employing multiple methodologies, a researcher can gain a more thorough understanding of the language. Additionally, working with the same community for an extended period of time brings a deeper understanding of the language and the linguistic practices of its speakers.

---

[1] Formerly part of Uttar Pradesh, Uttarakhand was known as Uttaranchal until early 2007.

1.   The Community of Dharchula, India

The Darma people are one of three groups that comprise the Rang tribe (called *Bhotiya* by the Government of India). The Rang people live in the state of Uttarakhand, India in and around Dharchula. The town sits in a narrow valley above the Kali River, which serves as a natural border between India and Nepal. Dharchula is one of the last major communities before the Indo-Tibetan border to the north. I made multiple trips to Dharchula between 2002 and 2005; the town served as my base of operation during fieldwork.

The Darma traditionally migrate seasonally spending the winter months in and around Dharchula (elevation ~3,000 ft), and the summer months in the Darma Valley (elevation ~10,000-14,000 ft). The Darma Valley lies northeast of Dharchula, and comprises fourteen villages, which straddle the banks of the Dhauli Ganga (called the Darma River by some Rang people).

Before 1962, the Rang conducted trade at markets in Tibet; this practice ended abruptly in 1962 when a conflict between China and India closed the border, which forced many Rang to adopt a sedentary lifestyle. Those who took steady jobs ceased to participate in the annual migration. While the border reopened in 1992, few Rang have returned to the trade practice. During my research I found that while the majority of Rang people remain in the Dharchula area, few families could afford time off work to make the seasonal migration; those families who do often live at a subsistence level. Some people who grew up in the post-trade era now work as civil servants; they live away from the Dharchula community to fulfill their duties. This has resulted in a growing Rang diaspora across India. It is difficult to ascertain the exact number of Rang people, and the population of Darma people is merely an estimate. Based on the 2001 Census (Office of the Registrar General 2001), the Darma population is about 2,615.

In the Dharchula community there are a number of languages used in daily interactions, and most people are multi-lingual. The languages spoken belong to two genetic families: Indo-European (AKA Indo-Aryan) and Tibeto-Burman. For a researcher from outside the community, however, identifying all of the languages is problematic. This is due in large part to the fact that the people themselves disagree on what to call some of the languages they speak. In the following subsections, I will provide an overview of the languages identified by members of the community and discuss the status of each within the linguistic community.

1.1.   The Tibeto-Burman (TB) Languages

There are three TB languages spoken by the Rang people in the Dharchula community Byansi, Chaudangsi, and Darma (some older Rang people also speak Tibetan). Byansi is reported to have three distinct varieties (S.R. Sharma 2001a, Trivedi 1991), but these have not been documented separately for comparison. Of the three languages, only Byansi has been described in a full grammar (Trivedi 1991). There are short sketches of Byansi (S.R. Sharma 2001a), Chaudangsi (Krishan 2001), and Darma (Krishan 2001); none of these sketches is deemed

complete by its author. While the Rang consider their individual languages distinct, they commonly refer to all three varieties as *Rang boli* or *Rang lo*, both of which literally mean 'Rang dialect' (*boli* is Hindi and *lo* is Darma).

While the classification of these three TB languages is not conclusive (Saxena 1997, S.R. Sharma 2001b), they are considered to be closely related (Hale 1982, Ruhlen 1991, Voegelin and Voegelin 1977). Ruhlen classifies the Rang languages as sisters to Rangkas under the Almora branch of the West Himalayan, Tibeto-Burman languages (1991:331). In other systems, Darma, Byansi and Chaudangsi, while not classified as sisters, are closely related (cf Hale 1982, Voegelin and Voegelin 1977).

1.2.   The Indo-Aryan (IA) Languages

Like the rest of India, Uttarakhand is linguistically diverse. In this mountainous region, speakers of IA languages and speakers of TB languages often live in the same communities. While Hindi is used for some daily discourse and is the medium of instruction in many local schools, some people in the Dharchula area do not speak Hindi well. Those who do not speak Hindi rely on alternate IA languages as their lingua franca.[3] In addition to the TB languages, there are at least three IA languages spoken within the Dharchula community and possibly four. When I asked which languages (other than Hindi) are used locally, they were identified as Pahari (*pahar* means 'mountain' in Hindi),[4] Kumauni, and Nepali. In his description of Byansi, Trivedi reports three IA languages: Kumauni, Nepali, and Hindi (1991:1).

Some locals claim that the Pahari, Kumauni, and Nepali spoken in and around Dharchula are three distinct varieties, while others claim these are different names for the same language. Speakers of Nepali from Kathmandu say that the Nepali spoken in Dharchula is very different from the variety in the capital. Likewise, speakers of Kumauni from Pithoragarh say that the Kumauni in Dharchula is a different dialect. This latter claim is supported by the description of Kumauni in the online version of the *Ethnologue* (Gordon 2005), and by D.D. Sharma's historical account of the languages of the region (1983). Some locals explain the situation by stating that neither Nepali nor Kumauni is spoken in Dharchula; rather the language is Pahari. This confusion about the linguistic scenario is compounded by the fact that the IA languages of Dharchula have not been the focus of linguistic study and have not been documented separately. For the purposes of this paper, however, I will follow Trivedi and define the local IA languages as Hindi, Nepali, and Kumauni.

---

[3] The TB languages are generally not spoken by non-Rang people. The exception to this is the lower caste people who work as the servants of Rang families. While these lower caste people understand and speak the Rang languages, the Rang usually do not recognize them as part of the speech community.

[4] This *autonym* 'Pahari' used by people in Dharchula for their language should not be confused with the different varieties of Pahari spoken in the state of Himachal Pradesh.

1.3. Language Status

In this region, the language of standard education is Hindi, which is also the official language of the local government.[5] As a result, Hindi has the highest prestige within the Dharchula community as a whole. Within the Rang community the Byans people hold the most prestige and have the most economic resources (S.R. Sharma 2001a, Trivedi 1991). The Chaudangs is the smallest Rang tribe and is often considered a subset of the Byans. The assumption that the Chaudangs speak a dialect of Byansi (D.D. Sharma 1989) has recently been questioned due to the fact that Chaudangsi has not been described separately. Krishan (2001) provided a brief sketch of Chaudangsi, with the proviso that further work needs to be done to establish the relationship between Byansi and Chaudangsi. While the local perception is that Darma is the 'original' Rang language, the Darma people have the lowest socio-economic status within the Rang community. Unlike the Byans and Chaudangs who reside in Dharchula, the economic center of the area, the Darma spend their winters in smaller towns that do not have many opportunities for employment. As a result many Darma people survive on subsistence agriculture combined with meager earnings from selling traditional hand-woven rugs and blankets.

The social hierarchy of the Rang community manifests itself in a number of ways, the most salient to me as a researcher pertains to the language choices Rang people make in public. While visiting with Chaudangs and Darma shopkeepers in the local bazaar, I noticed, and it was reported to me, that Byansi speakers would frequently initiate a conversation in Byansi. Sometimes the non-Byans Rang person would respond in Hindi or Kumauni. I never witnessed a Darma speaker initiating a conversation with a Byans or Chaudangs person in Darma. I was told that is was because Byans and Chaudangs people do not understand Darma. Conversely, Byans people reported that Byansi is the lingua franca of the Rang tribes. This, however, is not the case. I encountered many Rang people who neither spoke Byansi nor considered it a lingua franca of the Rang people.

When I trekked to the villages in the Darma Valley I met a Byans woman, whom I call 'Auntie', who is married to a Darma man; they are part of the Rang diaspora. Many of her female in-laws were born and raised in Darma-speaking families, are married to Darma men who live in the Rang community, and speak Darma on a daily basis. Auntie, however, uses Hindi in her daily life, and does not speak Darma fluently. Despite this, Auntie participated in my research enthusiastically by initiating conversations and encouraging her Darma relatives to speak so that I could record them. Her in-laws, aware that my project was to document Darma specifically, chided Auntie for using other languages while I was recording. Even when prompted to speak in Darma, Auntie spoke in Byansi, English, and Hindi.

---

[5] There are also English-medium schools in the Dharchula area. Increasingly locals view English as the language required to achieve success in modern society. While English has very high prestige and I sometimes used it during my fieldwork, few families use the language in the home.

Auntie's language practice demonstrates that while people are adamant that there are three distinct varieties of Rang languages, speakers do not always recognize the differences. In general I found that Rang people viewed their languages as dialects in the pejorative sense of the term. Meaning they view Hindi as a language, but Darma as a 'mere dialect'. Some speakers laughed at my project; they did not see how I could produce a descriptive grammar of a dialect because it is devoid of grammar. This perception of Darma as a dialect along with the higher status of the other Rang tribes led to situations where a group of Darma-speaking people would cede the floor to a Byansi-speaking person while I was recording. Because I do not speak Darma fluently, I was sometimes not aware of the situation until I sat down with my consultant to transcribe and translate the recordings. Fortunately, my primary consultant would alert me to places where someone had switched to Byansi.

2.   Current Approaches to Language Documentation and Description

Currently, linguists rely primarily on a 'discourse-centered approach' to documentation and description (Sherzer 1987) rather than on direct elicitation where utterances are translated from the contact language into the target language. By focusing on naturally-occurring speech, the linguist can find and analyze words and structures that might not surface when sentences from one language are translated into another. Additionally, the texts gathered through this approach are culturally significant and provide context-based data. This methodology has become widely accepted, and it is the norm for linguists to base their descriptions of a language on natural discourse. It is also the norm for modern descriptive grammars to contain complete interlinearized texts so that 'raw' data is available to everyone (cf Epps 2005, LaPolla 2003, and others).

The languages of the Himalayas are found to share features with nearby IA languages. Some of these similarities can be attributed to the fact that the patterns found in the languages of South Asia form a distinct linguistic area (Masica 2005). One areal feature of South Asian languages is the converb construction. The converb is a non-finite particle that is found with verb stems and is used to concatenate multiple clauses under a single matrix verb. This type of discourse structure is found in both IA and Himalayan TB languages (e.g. Dolakha Newari as described by Genetti 1994).

While the presence of converb constructions is a feature of South Asian languages, the pattern found in Darma is slightly different than what is found in IA languages such as Hindi. In Darma, the converb construction is found throughout natural discourse (especially in historical narratives); it is used to advance the narrative and tie events together. As we see in example (1) below, [6]

---

[6] Examples are written in a practical orthography where e = [ɛ]; ee = [e]; t = voiceless dental stop, t' = voiceless alveolar stop, c = voiceless palatal stop, j = voiced palatal stop, 7 = glottal stop; [STOP]h = aspirated stop; ng = [ŋ]; x = voiceless palatal fricative; xh = voiceless uvular fricative; rC = retroflex consonant; r' = alveolar tap; Ṽ = nasalized vowel.

several clauses can be concatenated under a single matrix verb (each converb[7] is presented in bold and the matrix verb is underlined).

(1) [to   7esa   hee   jo   [7u   su   jo nini
     [then   like.this.H   be.H   that.H [3SG   ERG   um

     khurapat   dimag   **ga-len**   ju,]   [7u   su   gertho
     mischievous.idea.H   mind.H   do-CVB   after] [3SG   ERG   mill.flour

     mee   **po-len**   ju,]   [pulis   su   jo nini, **t'um-len**   ju]
     fire   light-CVB   after] [police.E   ERG   um   capture-CVB   after]

     jo nini,   raja   daro   sar   <u>pu-kur'-su</u>.]
     um   king.H   near   deliver   COMPL-take.away-PST]
     'Then it is like this, that he, um, after planning the mischievous idea, after he set the mill on fire, the police, um, after capturing (him), um, (they) took him away and delivered (him) to the king.' (T0025: Kiti Phondar. 019)

Converb constructions like this are rarely found in elicited utterances. Those that do appear in elicited examples were usually produced after I provided a parallel construction in Darma. For example, in an elicitation session with my primary consultant I provided the sentence 'She took the baby into the house and kept it there' fully expecting a converb construction in the Darma version. Instead I got example (2) below. At the time I knew that converb constructions were commonly used, and after some coercion I was able to obtain example (3) below. My consultant then stated that the latter example was 'better Darma.'

(2) [7u   su   min   xyeno   song   r'u   <u>xhe-su</u>],
     [3SG   ERG   small   child   house   LOC   house-PST],

     [7ido   teer'ee   <u>ki-ta-su</u>.]
     [then   over.there   COMPL-keep-PST]
     'She took the small child into the house, then (she) kept (it) there.'
     (T0042: Elicited. 513)

---

[7] Abbreviations used for the Darma data are as follows: person is indicated 1, 2, 3; ABL ablative; BEN benefactive; COMPL completive; COND conditional; CVB converb; DEM.NEUT demonstrative neutral distance; DEM.NONVIS demonstrative non-visible; E English word; EMPH emphatic; EMPRO emphatic pronoun; ERG ergative; FUT future; H Hindi word; INF infinitive; LOC locative; NOM nominalizer; NPT non-past; PL plural; POSS possessive; PST past; REL relative; SG singular.

(3)   [[7u   su   min   xyeno   song   r'u   **xhe-lan**]
        [[3SG   ERG   small   child   house   LOC   house- CVB]

        teer'ee   ki-ta-su.]
        over.there   COMPL-keep-PST]
        'She took the small child into the house and kept it there.' (T0042:
        Elicited. 514)

Without the natural discourse texts that I analyzed for the description of Darma, my grammar would not include an adequate description of the converb constructions as they are commonly used in narrative texts.

3.   Challenges for the Researcher

Keating and Egbert (2004) discuss the nature of discourse in cultural terms. Different cultures have different norms for conversation. As an outside researcher, understanding what the norm is for the society being studied can be a challenge. Is the conversation following an appropriate pattern or are the speakers diverging from the pattern to assert power or show deference? In a multi-lingual speech community, understanding what the norms are can become even more complicated when the researcher is studying texts that have borrowed words, segments of codeswitching, interference from a prestige language, and so forth.

The fact that it is difficult for researchers to tease apart codeswitching, borrowing, interference, and contact phenomena is not new, but it is important that researchers acknowledge the limitations of their analysis (Woolard 2004:82). This is especially true when the researcher is neither from the community nor a native speaker of the contact language. In my own research, some of the understanding that I now have about conversational norms and borrowing and codeswitching are the product of working over the course of several years within the same community. I hope that as I continue to work with the Darma, my understanding of the language use and practice within the community will deepen.

One problem I faced in the Darma-speaking community was getting people to allow me to record. Often when people resisted being recorded, they would explain their reluctance by saying that I should record a 'good Darma speaker' and that I should not waste precious disc space on their conversation. The notion of a 'good Darma speaker' perplexed me for quite some time, and my consultants were unable to explain to me what people meant by this. Eventually, I was brought to a man deemed a 'good Darma speaker' who, in front of a large gathering of Darma, told a story and sang a song. I was surprised that the man was deemed a good Darma speaker because throughout his narrative he used lots of Hindi words and sizeable portions of the story were told in Hindi. The song turned out to have a lot of Kumauni in it.

So why was he deemed a 'good Darma speaker'? Clearly my idea of a good speaker and the perception of the Darma community did not match up. To me a good speaker is someone whose stories contain Darma words and structures. It

wasn't until later that I began to understand what it means to be a 'good speaker' in the Rang community. The act of story telling or leading songs requires innovation, wit, and great skill with words. The words do not need to be Darma, they just need to be woven together well. After I recorded the man who used lots of Hindi, another man took the floor. While his narrative contains less Hindi, his style was not as well received. In the text, he recapitulates the end of the story the previous man had told, and uses it to segue into the story of another famous Darma person. Just after he segues, a woman in the audience accuses him of conflating the two stories, which was perceived as evidence of his inferior style.

Factors such as language contact, language shift, language change, and codeswitching can result in usage that some speakers would not consider part of their language. Despite the use of borrowing and codeswitching by the skilled Darma speaker, when questioned directly about some borrowed structures, speakers would not recognize them as indigenous to Darma. This was especially true if the borrowed structure was juxtaposed with a Darma construction. Finding structures that are potential borrowings and comparing them to indigenous forms is not always easy. This challenge can be compounded by the fact that the borrowings may come from the contact language (i.e., the language used in interview sessions).

One example from my research involves a type of relative construction that I found in natural discourse called a correlative. Like the converb, the correlative is an areal feature of South Asian languages. I had reason to believe that the correlative was available in Darma based on D.D. Sharma's comparative grammar of the Tibeto-Himalayan languages (1994:278). Structurally, correlative constructions are different from relative constructions. An utterance with a relative clause such as 'the boy who is standing is tall' is rendered 'which boy is standing, that boy is tall' in a correlative construction. The Darma example provided by D.D. Sharma is shown in (4) below.[8]

(4)   khämi   ra-yän   idu   de-yän.
       who   come   he   go
       'Who(soever) comes he will go.' (D.D. Sharma 1994:278)

During my research I found that speakers used the correlative construction in natural discourse. Examples are shown in (5)-(7) below.

---

[8] This example is presented using the orthography employed by Sharma. The ä is schwa.

(5) 7ido   th'ilo   th'a-len   baktee,   7agar' **jo**   **mi**
    DEM.NONVIS game   play-CVB   time   if.H   REL.H man

    la-r'(u)   su   7idu   th'ilo   yu   la-n   to
    hand-LOC ABL   DEM.NONVIS game   down   fall-3.NPT then.H

    7idu   **mi**   dãd   parr-ni.
    DEM.NONVIS man   fine.H   must.H-3.NPT

    'At the time of playing that game, if from some man's hand that th'ilo
    falls, then that man must be fined.' (T0031: Cuti Gabla. 073)

(6) jo   ning   jon   jen 7ã ning 7ã jo hee minu bale   jen,
    that.H 1PL   youth PL uh 1PL   uh um.H   small brother PL

    hringxya jen, jo   bera ki-xhee-nu   lee-ni,   jo
    sister   PL   that.H song COMPL-study-NOM be-3.NPT REL.H

    7abi   gu   **kala**   ni-ni   **jo**   **7abi**
    EMPRO.H POSS performance.H be-3.NPT   REL.H EMPRO.H

    rthung-mu th'a-mu   lee-ni.
    dance-INF   play-INF   be-3.NPT
    'That our youth, uh, our, uh, um, the small brothers and the sisters
    whoever has been studying songs, that is their own performance; that is
    their own dancing and playing (= choreography).'
    (T0031: Cuti Gabla. 084)

(7) matlab   jo   **jis**   **t'etr'a** r'u   dee-mu lan
    meaning.H that.H REL.H field.H   LOC   go-INF   work

    ga-m(u) t'ingni,   **7i**   **t'etr'a** dangsu   hay skul
    do-INF   want.H-3.NPT DEM.NONVIS field   BEN   high school.E

    khaxhcu na   lagbag   7apna   kar'ir'   t'uneeda.
    ABL   EMPH about.H EMPRO.H career.E choose.H-3.NPT
    'Meaning whoever wants to do work in some field, for that field from high
    school only, one chooses about one's career.' (T0041: Conversation. 122)

Confirming the correlative construction during elicitation sessions was not a problem. When I provided my primary consultant with a correlative construction in Hindi and asked for the Darma equivalent, I would get the exact same structure with Darma words. At one point I began to notice a construction that was not a

correlative, but appeared to function as a relative. Examples from natural discourse are shown in (8)-(10) below.

(8)   …kidang   dee-nu   mi...
         … Kidang go-NOM   person
         '…the people going to Kidang…' (T0025: Kiti Phondar. 061)

(9)   Dharchula   xyung-nu   wala   jen ni-yang.
         Dharchula   sit-NOM   one.H   PL   be-FUT
         '(They) will be people who sit in Dharchula.' (= 'They must be residents of Dharchula.) (T0032: Conversation. 125)

(10)   hã   wan-lan   jo nini khami tuktu   wan-je   nongdi
         then   arrive-CVB   um   who   first   arrive-COND later

         wan-nu   mi   jen jati   ga-ta.
         arrive-NOM   person   PL   food   make-3.NPT
         'Then, arriving, um, whoever arrives first makes food for the people who arrive later.' (T0033: Alam Ceremony. 002)

In another elicitation session, I tried to obtain a relative clause from a consultant who also speaks English. I thought that by not providing the Hindi correlative, my chances of eliciting a relative clause would increase. When I supplied the English prompt 'the boy who is standing is tall', however, my consultant provided the correlative construction found in example (11) below. I tried a different sentence and got the example in (12) below. I then provided my consultant with an example of the structure I was looking for, and he provided example (13) below.

(11)   hadu   jo   ki-ne-n(u)   ni-ni   7idu   xyenu
         DEM.NEUT   REL.H COMPL-stand-NOM   be-3.NPT DEM.NONVIS   boy

         bungnu   ni-ni.
         tall   be-3.NPT
         'That one who is standing, that boy is tall.' (T0042: Elicited. 373)

(12)   t'eme bera   ga-da   7idu   filam   su   lee.
         girl   song   do-3.NPT   DEM.NONVIS   Filam   from   be
         'The girl is singing. She is from Filam.' (T0042: Elicited. 377)

(13)   bera   ga-nu   t'eme   filam   su   lee.
         song   do-NOM   girl   Filam   from   be
         'The girl who is singing is from Filam.' (T0042: Elicited. 379)

When comparing the Hindi-like correlative in (12) to the relative structure in (13), my consultant declared that the relative construction was preferred. These examples show the importance of not taking every structure found in natural discourse at face value. This borrowed structure nearly obscured an indigenous structure that is still in use.

4.   Conclusion

In this paper, by presenting the scenario from my own documentation project, I have shown the importance of the linguistic context of data obtained during the documentation and description of a language. I have also reinforced the assertion that a discourse-centered approach to documentation and description provides an efficient method to gathering contextual data, and that such an approach is especially valuable in a multi-lingual speech community. While the discourse-centered approach to data collection is the preferred method, I hope that I have also demonstrated that it is still imperative to further explore the structures obtained through natural discourse with direct elicitation. While the researcher should not rely solely on a translation approach, direct elicitation can be combined with a context-based methodology to gain a deeper understanding of speaker ideologies (e.g. which structures the native speaker deems 'better'). Finally, the situation of my own fieldwork has brought to the forefront the fact that working with the same community for an extended period of time brings a deeper understanding of the language and the linguistic practices of its speakers.

References

Abbi, Anvita. 2001. *A Manual of Linguistic Field Work and Structures of Indian Languages*. Munich: LINCOM.

Epps, Patience L. 2005. A Grammar of Hup. Ph.D. diss., University of Virginia. Published 2005, Ann Arbor: UMI.

Genetti, Carol. 1994. *A Descriptive and Historical Account of the Dolakha Newari Dialect*. Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa.

Gordon, Raymond G., Jr. 2005. *Ethnologue: Languages of the World, 15th Edition*. Dallas: SIL International. Online version: http://www.ethnologue.com/.

Grierson, G.A., ed. 1967-68. *Linguistic Survey of India*. Delhi: Motilal Banarsidass.

Hale, Austin. 1982. *Research on Tibeto-Burman Languages*. New York: Mouton Publishers.

Keating, Elizabeth, and Maria Egbert. 2004. Conversation as a Cultural Activity. In A. Duranti, ed., *A Companion to Linguistic Anthropology*, 169-196. Malden, MA: Blackwell Publishing.

Krishan, Shree. 2001. Darma, Chaudangsi, and Raji. In R.J. LaPolla ed., *New Research on Zhangzhung and Related Himalayan Languages*, 343-501. Osaka: National Museum of Ethnology.

LaPolla, Randy J. 2003. *A Grammar of Qiang*. New York: Mouton de Gruyter.

Masica, Colin P. 2005. *Defining a Linguistic Area: South Asia*. New Delhi: Chronicle Books.

Office of the Registrar General. 2001. *Census of India 2001*. New Delhi: Office of the Registrar General.

Ruhlen, Merritt. 1991. *A Guide to the World's Languages, Vol. 1: Classification*. Stanford, CA: Stanford University Press.

Saxena, Anju. 1997. Internal and External Factors in Language Change: Aspect in Tibeto-Kinnauri. *Reports from Uppsala University Linguistics* 32.

Sharma, Devi Datta. 1983. *Linguistic History of Uttarakhanda*. Hoshiarpur: Vishveshvaranand Vedic Research Institute.

Sharma, Devi Datta. 1989. *Tibeto-Himalayan Languages of Uttarkhand*. New Delhi: Mittal Publications.

Sharma, Devi Datta. 1994. *A Comparative Grammar of Tibeto-Himalayan Languages (of Himachal Pradesh and Uttarakhand)*. New Delhi: Mittal Publications.

Sharma, Suhnu Ram. 2001a. A Sketch of Byangsi Grammar. In R.J. LaPolla ed., *New Research on Zhangzhung and Related Himalayan Languages*. Osaka: National Museum of Ethnology.

Sharma, Suhnu Ram. 2001b. A Study on the Tibeto-Burman Languages of Uttar Pradesh. In Randy J. LaPolla ed., *New Research on Zhangzhung and Related Himalayan Languages*. Osaka: National Museum of Ethnology.

Sherzer, Joel. 1987. A Discourse-Centered Approach to Language and Culture. *American Anthropologist* 89:295-309.

Trivedi, G.M. 1991. *Descriptive Grammar of Byansi: A Bhotiya Language*. Calcutta: Anthropological Survey of India.

Voegelin, C.M., and F.M. Voegelin. 1977. *Classification and Index of the World's Languages*. New York: Elsevier.

Woolard, Kathryn A. 1999. Simultaneity and Bivalency as Strategies in Bilingualism. *Journal of Linguistic Anthropology* 8:3-29.

Woolard, Kathryn A. 2004. Codeswitching. In A. Duranti, ed., *A Companion to Linguistic Anthropology*, 73-94. Malden, MA: Blackwell Publishing.

Christina M. Willis
The University of Texas at Austin
Department of Linguistics
1 University Station, B5100
Austin, Texas 78712

cmwillis@mail.utexas.edu